



MENANGLE PARK

LOCAL ENVIRONMENTAL STUDY

JULY 2010



MENANGLE PARK LOCAL ENVIRONMENTAL STUDY

Document prepared by

MG Planning Pty Ltd
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M|G Planning
URBAN PLANNERS

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GLOSSARY

1% AEP	1 in 100 flood event
AHMP	Aboriginal Heritage Management Plan
CAMBA	China-Australia Migratory Bird Agreement
CSM	Coal seam methane
DCP	Development control plan
DECCW	NSW Department of Environment, Climate Change and Water
DET	NSW Department of Education and Training
DEWHA	Commonwealth Department of Environment, Water, Heritage and the Arts
DOP	NSW Department of Planning
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ha	hectare
IDO	Interim development order
JAMBA	Japan- Australia Migratory Bird Agreement
km	kilometre
LEP	Local environmental plan
LGA	Local Government Area
m	metre
MDP	Metropolitan Development Program
MLD	megalitres per day
mm	millimetre
MSB	NSW Mine Subsidence Board
NPW Act	<i>National Parks and Wildlife Act 1974</i>
PMF	Probable maximum flood
RTA	NSW Roads and Traffic Authority
SEPP	State Environmental Planning Policy
SOJI	Hawkesbury-Nepean Statement of Joint Intent
SREP	Sydney Regional Environmental Plan
TMAP	Transport Management and Accessibility Plan
TN	Total nitrogen
TP	Total phosphorous
TSC Act	<i>Threatened Species Conservation Act 1995</i>
TSS	Total suspended solids
VMP	Vegetation management plan
WSUD	Water sensitive urban design



EXECUTIVE SUMMARY

Menangle Park lies on the south-western outskirts of Sydney, approximately 60 kilometres from the City's centre. It is located within the Local Government Area (LGA) of Campbelltown approximately 5.5 km to the south west of the Campbelltown CBD. The site is still largely rural in character, with less than 250 residents living in the suburb of Menangle Park (2006 Census). However, its location on the fringe of Sydney means that it is an area undergoing significant change.

At the end of 2001 in light of concerns over Sydney's housing market and housing affordability, the NSW Government announced that a number of areas in south-west Sydney, including Menangle Park, would be investigated for urban development. The area was included in the Metropolitan Development Program (MDP) with a notional total yield of 4,200 residential lots. The MDP is the Government's key program for tracking and managing housing supply both in existing urban areas as well as "greenfield" areas such as Menangle Park.

Campbelltown City Council in conjunction with Landcom subsequently initiated site investigations and the preparation of a Local Environmental Study (LES). The purpose of the LES is to investigate the environmental, social and economic opportunities and constraints of the study area and identify parameters for its future urban development. However, following preparation of the preliminary LES work on the Menangle Park release area was put on hold pending a decision from the NSW Government regarding whether mining of the coal resource which underlies the site or urban development would be pursued on the site. In May 2006, the NSW Government advised that mining of coal resources beneath Menangle Park should be restricted to enable urban development to occur at the scale and form necessary to make that development viable. This was in recognition of the importance of Menangle Park's contribution to land supply in the Sydney Metropolitan Region.

Further analysis has since been undertaken on a number of the site's constraints to determine overall development viability and to confirm an acceptable footprint for urban development. In addition, consultation has occurred throughout preparation of the LES with State Government agencies, local government, community groups, residents, land owners and Aboriginal groups. The preliminary LES has now been revised and updated to incorporate the findings of this additional analysis. The revised LES is based on a comprehensive investigation of the environmental, social and economic characteristics of the site so that appropriate and sustainable development can be achieved for the site.

Using baseline information and having regard to existing land uses and land ownership, site values identified in each of the technical studies have been overlain to identify the capability and suitability of a range of land use options. Areas of high significance have been taken either as constraints to further development or have been protected in the process of identifying a development footprint.

For the purpose of identifying the site's capability and suitability for urban development a series of urban development footprints were tested as part of the structure planning work undertaken by the consultants, Urbis. The various scenarios have been assessed against the objectives developed for the site which aim to ensure that any proposed development of the site is sustainable and provides a balance between environmental, economic and social outcomes.

Having regard to the specialist environmental studies summarised in Chapter 4, the key issues for development of the site are as follows:

- Over one third of the site is subject to flooding under the existing 1% AEP flood event including the majority of the land to the west of the railway line.
- To the east of the railway line local creeklines play a significant role on site including providing for local drainage, flood storage, riparian corridors, vegetation corridors, areas of potential indigenous archaeology etc;

- While the site accommodates an existing railway line, electrification of the rail line is not viable. A high quality bus connection between Menangle Park and Macarthur Interchange will be needed to ensure there is adequate accessibility of the site by means other than private motor vehicle;
- Given the relative isolation of the site from existing employment and services, adequate access arrangements need to be provided to ensure appropriate and equitable access. This should include access via public transport, walking and cycling to ensure the sustainability of any development on site.
- The planned Spring Farm Parkway (connecting Campbelltown to Camden) will traverse the site and will provide improved accessibility. It will however result in some visual impacts and requires careful consideration to minimise adverse impacts on the visual quality of the site and more specifically the heritage values of Glenlee House;
- A total of 121ha of remnant vegetation listed as either “Critically Endangered” or “Endangered” Ecological Communities remains on the site. Development of the site will require removal of some of these communities subject to an agreed offsetting strategy to ensure a net increase in vegetation condition of existing remnant vegetation and ‘no net loss’ in terms of vegetation distribution;
- The site is underlain by a significant coal resource which has been earmarked for mining within a 30 year timeframe. However it is understood given available information at the time of writing, that mining of this resource would result in mine subsidence which is likely to have significant adverse impacts on any built structures on site. A government decision has been taken that urban development of the site should be pursued as a priority to add to the supply of urban land.
- The site accommodates major sand and soil resources some of which have been mined or are proposed to be mined. Current approvals and extraction time frames indicate that extraction is likely to coincide with urban development. Appropriate measures therefore need to be applied to avoid land use conflicts.
- The site accommodates three items of State heritage significance, five items of local significance and two potential sites of non indigenous heritage significance. The existing listed items should be conserved in any development of the area. Of the two potential sites, the disused railway platform is located within the Menangle Park Paceway site (Lot 3 DP 593211) which is listed as a heritage item under Campbelltown IDO No 15. The railway viaduct has not been identified by RailCorp as a heritage item on their Section 170 Register and there does not appear to be sufficient evidence at this time to include the viaduct as a local heritage item in any new LEP for the site.
- In relation to non Indigenous archaeological sites it is not possible to identify the full extent of any impacts at this time. Where an archaeological site coincides with an area for urban development disturbance is likely. In areas earmarked for rural or riparian land uses the extent of impact may be minimal. Detailed assessment of likely impact should be undertaken at the DA stage for the proposed development / subdivision works and should comply with the requirements of the Heritage Act 1977 in relation to excavation etc.
- Sensitive visual environments have been identified adjacent to the F5 Freeway, in the vicinity of Glenlee House and on prominent ridgelines throughout the site. An appropriate curtilage has been provided around Glenlee House in the proposed Structure Plan. Any development in these areas would need to be designed sensitively to minimise adverse visual impacts.
- Areas of high potential Indigenous archaeological sensitivity and high cultural values have been identified across the site as well as known sites. A significant proportion of these areas is located in riparian corridors and would therefore be preserved. However other areas are located within areas of potential urban development and may therefore be affected by development subject to compliance with relevant legislation. Notwithstanding this impact it is considered that areas to be retained reflect an appropriate representative sample of sites across the area.
- Utility services can be augmented or new services provided to service the future development;
- Air quality impacts associated with existing extractive industries and gas wells have been identified and buffer zones recommended. These impacts are unlikely to have a significant impact on future urban development provided that appropriate management measures are followed.



- Significant parts of the site are affected by noise from the F5 Freeway and the rail line. If these areas are proposed for development appropriate noise amelioration will be required.
- Bushfire risk does not have any significant implications for the site however it should be taken into account in the detailed subdivision design and APZs incorporated where necessary.

Following this assessment a preferred development option has been identified for the site, comprising approximately 3,400 residential dwellings proposed to be developed over a 15 year timeframe. The lower yield of 3,400 dwellings is considered reasonable given the site constraints and given that the Menangle Park site is not located in a highly accessible area. Achieving the original MDP target of 4,200 dwellings would have required extensive cut and fill which would have otherwise resulted in significant impacts on the Nepean River and its flooding regime.

This preferred option has been further analysed to determine appropriate land uses for various developable parts of the site having regard to the site's values, environmental constraints and infrastructure servicing issues. Recommendations have been made for the future zonings, appropriate development controls and staging of development as well as mechanisms for the delivery of infrastructure.

1 BACKGROUND

1.1 INTRODUCTION

Menangle Park lies on the south-western outskirts of Sydney, approximately 60 kilometres from the City's centre. It is located within the Local Government Area (LGA) of Campbelltown approximately 5.5 km to the south west of the Campbelltown CBD. The site is still largely rural in character, with less than 250 residents living in the suburb of Menangle Park (2006 Census). However, its location on the fringe of Sydney means that it is an area undergoing significant change.

At the end of 2001 in light of concerns over Sydney's housing market and housing affordability, the State government announced that a number of areas in south-west Sydney, including Menangle Park, would be investigated for urban development. The area was included in the Metropolitan Development Program (MDP) with a notional total yield of 4,200 residential lots. The MDP is the Government's key program for tracking and managing housing supply both in existing urban areas as well as "greenfield" areas such as Menangle Park.

Campbelltown City Council ("Council") in conjunction with Landcom subsequently initiated site investigations and in September 2004 a preliminary Local Environmental Study (LES) was prepared for the study area by consultants, MG Planning. The preliminary LES was supported by a number of technical studies addressing the major physical and social issues likely to affect redevelopment of the site. Whilst the preliminary LES identified that the site could support urban development, it was also identified that the site is underlain by a high quality coal resource which is of State significance. Consideration of the potential impacts of coal mining on the site determined that mining of the site after urban development took place would be likely to result in unacceptable impacts on that development, primarily in the form of mine subsidence. The report therefore concluded that the decision regarding what development should ultimately occur on the site is a matter for the State Government in balancing the competing demands of coal mining and urban land supply.

Following preparation of the preliminary LES work on the Menangle Park release area was put on hold pending a decision from the State Government regarding whether mining or urban development would be pursued on the site. In May 2006, the State Government advised that mining of coal resources beneath Menangle Park should be restricted to enable urban development to occur at the scale and form necessary to make that development viable. This was in recognition of the importance of Menangle Park's contribution to land supply in the Sydney Metropolitan Region.

Further analysis has since been undertaken on a number of the site's constraints to determine overall development viability and to confirm an acceptable footprint for urban development. There are some significant challenges to development of the site. These include:

- the extent of flood liable land;
- the presence of vegetation of high ecological significance as well as items of Indigenous and non-Indigenous heritage;
- infrequent and indirect public transport to the site and constraints on road access;
- noise associated with the F5 Freeway and railway line;
- the costs of providing infrastructure.

The preliminary LES has now been revised and updated to incorporate the findings of the additional studies. The revised LES is based on a comprehensive investigation of the environmental, social and economic characteristics of the site so that appropriate and sustainable development can be achieved for the site.

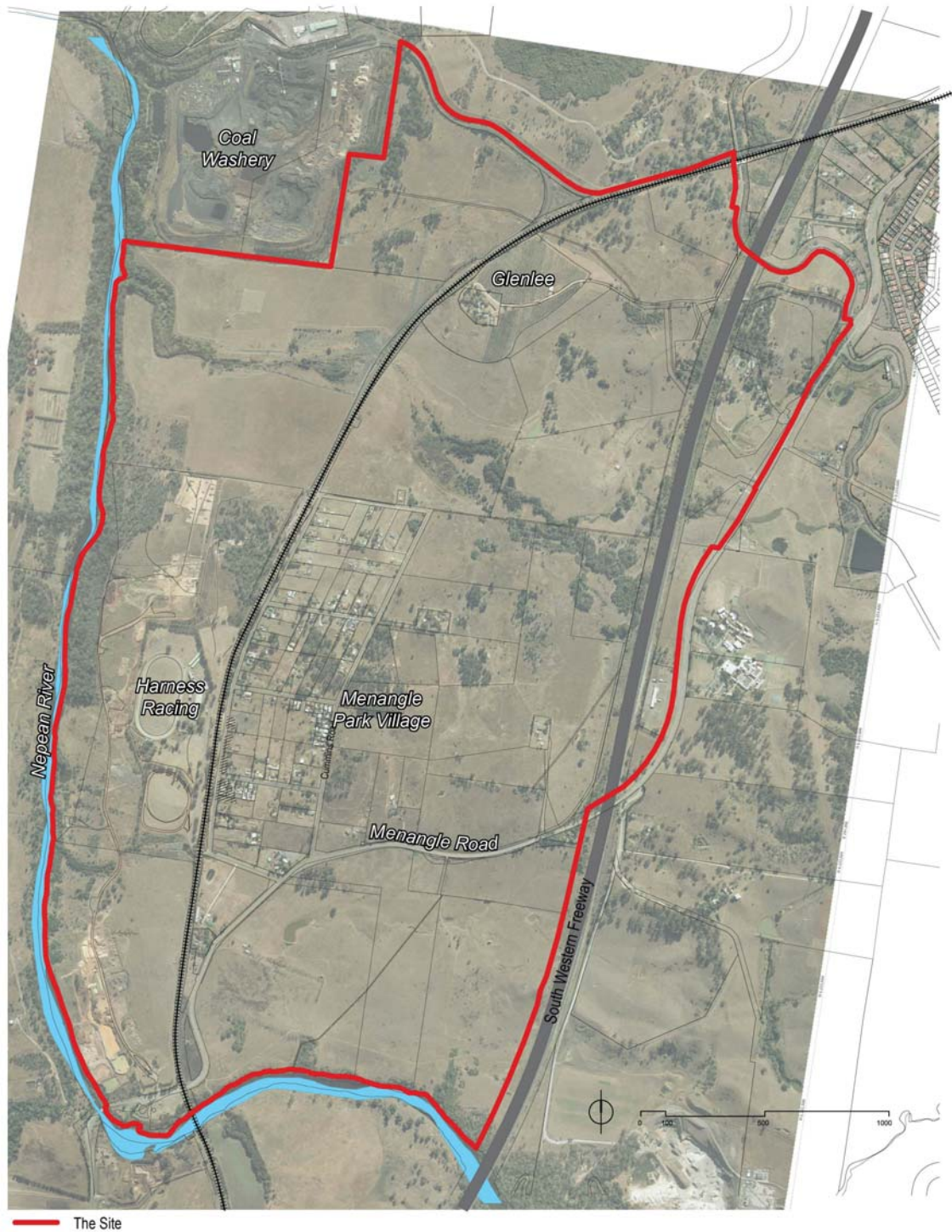


Figure 1: Study Area (Source: Landcom)

1.2 PURPOSE OF LES

The purpose of this LES is to investigate the environmental, social and economic opportunities and constraints of the study area. It is based on an iterative process, drawing together information and analyses from various specialist studies as well as the outcome of a structure planning process involving key stakeholders. The specialist reports are listed in Section 1.4 below.

The LES provides the mechanism by which the results of the technical analyses are summarised and evaluated and the future planning framework for Menangle Park is articulated. It identifies the capability of the study area to accommodate urban development and recommends appropriate land use zones for incorporation into a subsequent draft local environmental plan for the area.

The Department of Planning has introduced a new process for preparing local environmental plans and amendments have been made to the EP&A Act to facilitate the new process. However, as Council resolved to prepare the draft local environmental plan for Menangle Park before 1 July 2009, under savings and transitional arrangements it will continue to be prepared and made under the previous plan making provisions.

The preparation of the LES is a statutory requirement. Prior to recent changes to the EP&A Act relating to local plan making, Section 57 of the Act required that

- (1) *Where a council decides to prepare a draft local environmental plan ..., it shall prepare an environmental study of the land to which the draft local environmental plan is intended to apply.*
- (2) *A council shall prepare an environmental study in accordance with such specifications, if any, relating to the form, content and preparation of the study as have been notified to the council by the Director-General and are then applicable.*
- (3) *(Repealed)*
- (4) *The environmental study referred to in subsection (1) shall be prepared with regard to such matters, relating to the environment of the area to which the draft local environmental plan is intended to apply, as the council, subject to the specifications, determines.*
- (5) *Where, in relation to a request or submission made by or on behalf of a person to a council, an environmental study referred to in subsection (1) of particular land is prepared by the council for the purposes of a draft local environmental plan to enable the carrying out of development on the land, the council may, subject to and in accordance with the regulations, recover the costs and expenses, determined in accordance with the regulations, incurred in the preparation of the environmental study, from the person.*

On 24 December 2002, Council wrote to the former Planning NSW (now Department of Planning) to advise of its resolution of 17 December 2002 under Section 54(4) of the EP&A Act to prepare a draft LEP for Menangle Park. The letter also identified issues to be addressed in the LES. A copy of Council's letter is provided at Appendix 1. In response to the Council's Section 54(4) notice, Planning NSW identified a number of additional issues to be addressed in the LES, including transport and access to and from Macarthur and Campbelltown centres and links to Camden and other growth areas. A copy of the Planning NSW correspondence is provided at Appendix 2.

In 2007 the Department of Planning subsequently identified a number of further matters to be addressed in the LES:

- the recommendations of the Working Group set up to investigate potential conflicts between urban development and coal mining in the Menangle Park area, as described in the Department's letter to Council of 4 May 2006 (Appendix 3);
- a structure plan for the release area including staging of development, taking into consideration any need for access to coal resources;
- provision of infrastructure and appropriate funding mechanisms for that provision;



- incorporation of the environmental study work undertaken for the Glenlee Industrial Precinct. (It should be noted that the Glenlee Industrial Precinct is no longer within the Menangle Park study area and therefore incorporation of this work is no longer relevant.)

A copy of the Department's letter is provided at Appendix 4.

Regard has been given to the above matters in the preparation of this Study.

1.3 PROJECT OBJECTIVES

Campbelltown City Council and Landcom have identified the following vision for Menangle Park:

"As an impressive southern gateway to the Sydney Metropolitan Region, Menangle Park will become a unique urban community characterised by sustainable design, accessibility and a vibrant town centre. As part of the broader Macarthur community, Menangle Park's urban form will capitalise on the existing economic resources, existing natural and cultural heritage qualities and the adjacent Nepean River".

Key objectives for the LES are as follows:

- To identify land suitable for future residential development to assist in meeting the State Government's objective of improving housing supply and housing affordability;
- To undertake an integrated planning approach that draws together expertise from a comprehensive technical consultant team, government stakeholder interests and community involvement in a controlled rezoning program;
- To prepare planning documentation that will lead to the development of a sustainable community and a quality urban design;
- To determine the visual, natural and cultural values of the study area and to determine appropriate guidelines to ensure these values are recognized;
- To ensure that sensitive environmental features are adequately protected through the statutory planning framework;
- To determine the visual, natural and cultural values of the study area and to determine appropriate guidelines to ensure these values are recognized;
- To consider the infrastructure needs of future urban development and ensure that mechanisms to deliver the infrastructure are clearly identified.

1.4 PROJECT METHODOLOGY

This report is based on the findings of a series of technical studies together with the results of a structure planning process. An initial round of technical studies was completed for the Preliminary LES during 2003 and 2004. In some cases the findings of these initial technical studies have remained valid and only minor changes have been necessary to ensure the information is up to date. In other cases, major revisions were required and new studies have been prepared.

The following studies have informed the preparation of the LES:

Specialist Report	Author
<i>Menangle Park Transport Management and Accessibility Plan</i> , June 2010	AECOM Australia Pty Ltd
<i>Menangle Park Land Release Area Acoustic Assessment Report</i> , May 2010	AECOM Australia Pty Ltd
<i>Menangle Park WSUD Strategy</i> , June 2010	AECOM Australia Pty Ltd
<i>Hawkesbury-Nepean Water Quality Targets</i> , March 2009	AECOM Australia Pty Ltd
<i>Non-Indigenous Heritage Study Menangle Park, NSW</i> , March 2010	Casey & Lowe Pty Ltd
<i>Report on Land Capability Study – Menangle Park Release Area</i> , August 2004	Douglas Partners
<i>Review of Land Capability Study – Menangle Park Urban Release Area</i> , December 2009	Douglas Partners
<i>Menangle Park Flora, Fauna and Aquatic Assessments</i> , April 2009	Eco Logical Australia
<i>Bushfire Risk Management Study for the Menangle Park Site</i> , June 2010	Eco Logical Australia
<i>Menangle Park LES Local Flooding and Stormwater Quantity Management (Detention)</i> , May 2010	GHD
<i>Report for Menangle Park Flood Study</i> , September 2008	GHD
<i>Report on Menangle Park Offsetting Strategy</i> , May 2010	GHD
<i>Mineral Resources of the Menangle Park Development Site – Review</i> , January 2010	Harvest Scientific Services
<i>Menangle Park Visual Assessment Study (Draft)</i> , March 2010	Hassell Ltd
<i>Social Sustainability for Menangle Park</i> , February 2010	Heather Nesbitt Planning
<i>Menangle Park Development Air Quality Review 2010 Update</i> , April 2010	Heggies Pty Ltd
<i>Archaeological Assessment of Indigenous Heritage Issues</i> , May 2010	Jo McDonald Cultural Heritage Management Pty Ltd
<i>Infrastructure Report</i> , January 2010	Lean & Hayward
<i>Draft Structure Plan</i> , May 2010	Urbis
<i>Employment Lands and Retail Study</i> , Draft Report, March 2007	SGS Economics and Planning

Using baseline information and having regard to existing land uses and land ownership, site values identified in each of the technical studies have been overlain to identify the capability and suitability of a range of land use options. Areas of high significance have been taken either as constraints to further development or have been protected in the process of identifying a development footprint.

For the purpose of identifying the site's capability and suitability for urban development a series of urban development footprints were tested as part of the structure planning work undertaken by Urbis. The various scenarios have been assessed against the objectives developed for the site which aim to ensure that any proposed development of the site is sustainable and provides a balance between environmental, economic and social outcomes. In addition, a "no development" option is tested against the objectives.

Following this assessment a preferred development option has been identified for the site, comprising approximately 3,400 residential lots proposed to be developed over a 15 year timeframe. This option has then been further analysed to determine appropriate land uses for various developable parts of the site having regard to the site's values, environmental constraints and infrastructure servicing issues. Recommendations have been made for the future zonings, appropriate development controls and staging of development as well as mechanisms for the delivery of infrastructure.

1.5 CONSULTATION

Throughout the Study, consultation has occurred with State Government agencies, local government, community groups, residents, land owners and Aboriginal groups. It has occurred through varying means:

- Written correspondence as required by Section 62 and Section 34A of the EP&A Act;
- Targeted meetings (water quality, transport, flooding, mineral resources, natural habitat, education, heritage and indigenous);
- Inter agency government workshops;
- Human services workshops; and
- Resident/land owner meetings.

1.5.1 Government Agencies

As part of the work undertaken for the Preliminary LES in 2003, the following NSW Government agencies were formally consulted under Section 62 and 34A of the EP&A Act.

- Department of Planning (formerly Department of Planning and Natural Resources),
- Sydney Water
- NSW Rural Fire Service
- Integral Energy
- Trans Grid
- Roads and Traffic Authority (RTA)
- NSW Fire Brigade
- NSW Police Service
- Ambulance Service of Australia
- Department of Agriculture
- Ministry for Transport
- Department of Community Services
- Department of Environment, Climate Change and Water (DECCW)
- Department of Mineral Resources
- NSW Technical and Further Education Commission
- State Rail Authority
- Department of Sport and Recreation
- Department of Housing
- South Western Sydney Area Health Service
- Telstra
- AGL
- Mark Latham, Member for Werriwa
- Hon. Craig Knowles, Member for Macquarie Fields
- Camden Council
- Sutherland Shire Council
- Wollondilly Council
- Wollongong City Council

- Department of Education and Training (DET)
- Mine Subsidence Board
- NSW Dam Safety Committee
- Resource NSW
- Liverpool City Council
- Interline Bus Services
- Busways
- State Emergency Services
- Valuer Generals Office
- Sydney Catchment Authority
- Rail Infrastructure Corporation
- Cubbitch Barta Native Title Claimants
- Tharawal Local Aboriginal Land Council

Since 2003 there has been ongoing consultation with the Government agencies, including DECCW, RTA, DET, Department of Planning (including the Heritage Branch) and Sydney Water.

Given the time that has elapsed since the Preliminary LES was prepared and the additional work that has been undertaken, further formal consultation with Government agencies under Section 62 and 34A of the EP&A Act is proposed.

1.5.2 Community

Since the project was initiated in 2002 there has been ongoing consultation with the community. A series of briefings have been held with the community and newsletters and written correspondence have also been disseminated.

Information exchange between the Project Manager APP Corporation, Council staff and community meetings has covered a number of topics ranging from the effects of increased land values with rezoning and consequent Local Government rate increases, to the values and potential displacement of the existing equestrian interests of land owners. Whilst there have been many verbal representations made by individual land owners expressing a desire to either maintain the status quo at Menangle Park or to encourage urban development, it is considered that the most appropriate form of consultation to gauge community reaction will be through formal public exhibition following preparation of this local environmental study.

1.6 PROJECT TEAM

A Project Working Group has been established to oversee the project comprising representatives from Campbelltown City Council and Landcom and project managers, APP Corporation.

The LES has been prepared with input from various specialist studies and consultants. The project team is as outlined below:

RESPONSIBILITY	CONSULTANT
Project Management	APP Corporation
Structure Planning	Urbis
Statutory Planning	MG Planning
Noise	AECOM
Transport and Accessibility	AECOM
Water Sensitive Urban Design	AECOM
Non Indigenous Heritage	Casey & Lowe
Land Capability	Douglas Partners
Bushfire	Eco Logical Australia
Flora, Fauna and Bushfire	Eco Logical Australia
Local Flooding	GHD
Nepean River Flooding	GHD
Mineral resources	Harvest Scientific Services
Visual Assessment	Hassell
Social Planning	Heather Nesbitt Planning
Air Quality	Heggies
Indigenous Heritage	Jo McDonald Cultural Heritage Management
Survey and Utility Services	Lean & Hayward
Economics and Employment	SGS Economics and Planning

Input to the planning process has also been provided by a range of NSW State Government agencies through a series of inter-agency meetings and workshops. Participating organisations include:

- Department of Planning
- Mine Subsidence Board
- Heritage Branch, Department of Planning
- Department of Primary Industries
- RTA
- DECCW
- DET
- Sydney Water.

1.7 STRUCTURE OF REPORT

This LES comprises three main components – background discussion, site analysis and assessment. The introduction to the project and context in which the LES has been prepared is discussed in Chapter 1. Chapter 2 provides a general overview of the study area, including land ownership, existing land uses and zoning. It also discusses the regional context of Menangle Park.

Chapter 3 discusses the existing planning framework and the implications of relevant legislation to the site. Chapter 4 contains a summary of the findings of the technical studies which support the Study and identifies implications for future land use and recommended management measures / controls.

Chapter 5 looks more closely at the major issues which impact on development at Menangle Park and identifies appropriate responses to address those issues. The preferred development option for Menangle Park is discussed in the context of the structure planning work undertaken by Urbis. Chapter 5 also outlines the implementation framework for the development, including statutory planning recommendations and governance framework. Recommendations have been made for future zonings in addition to future development controls for inclusion in a Development Control Plan (DCP).

2 THE SITE AND ITS CONTEXT

2.1 THE STUDY AREA

Menangle Park lies on the outskirts of south western Sydney within the Campbelltown LGA. It is approximately 5.5 km to the south west of the Campbelltown CBD. The site's location is shown in Figure 2.

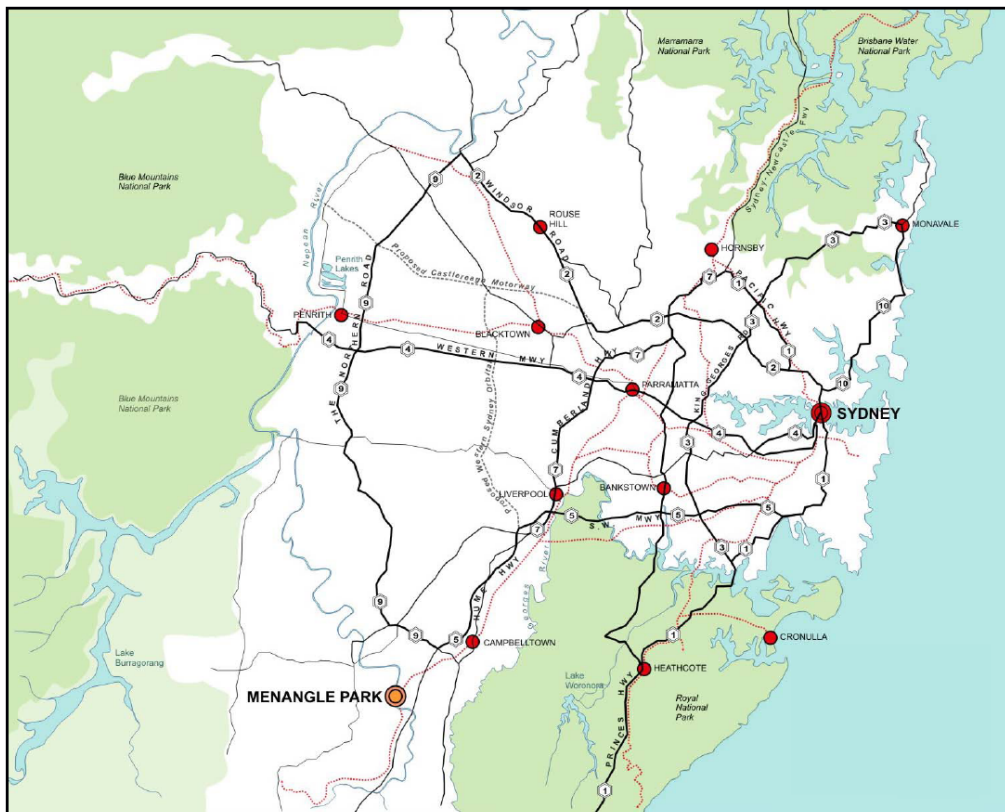


Figure 2: Site Location

The site has a total area of approximately 888 hectares and is bounded by the Nepean River to the south and the west, the Hume Highway (F5 freeway) and Menangle Road to the east and the Mount Annan Botanic Garden to the north. The study area is shown at Figure 1.

The site is generally characterized by undulating hills to the north, east and south flattening out in the centre.

The eastern part of the site comprises broad rolling hills with gentle to moderate slopes (3 - 10 %), passing to the west into a gently sloping to a flat alluvial terrace (0 - 5 %) adjacent to the Nepean River. A major tributary system flows east across the northern part of the site towards the Nepean River, and three minor tributaries enter the Nepean River in the south and south west of the site.

Over one third of the site is flood affected and there are significant sand deposits within the site.

The dominant vegetation comprises scattered woodland remnants and rural grassland with patches of natural bushland along the Nepean River and associated creek corridors.



2.2 EXISTING LAND USES AND LAND OWNERSHIP

Much of the land at Menangle Park is still used for rural agricultural purposes including horse agistment, cattle grazing and orcharding. The land has been cleared for grazing over the past decades and has been farmed since the issue of land grants in the early 1800s.

While the site is largely rural in character it contains a village area towards the centre of the site. The village area comprises approximately 61ha and contains large residential and rural residential allotments. There are around 130 private dwellings within the village of generally older style weatherboard but with some more substantial brick and tile dwellings having been recently constructed.

The site is transected from the north to the south by two major transport links – the F5 Freeway and the Southern Highlands railway line. There are also a number of easements across the site, particularly on the eastern side of the F5. These include the Sydney gas pipeline, high voltage electricity easements and the Sydney Water Supply Canal.

The Menangle Park Paceway for horse trotting is located on the western side of the railway line. Facilities provided at the Paceway include a 1400m racing track, stables, a public stand and private function areas. The facility is set to expand with the decision of the NSW Harness Racing Industry in late 2008 to relocate its Harold Park operations to Menangle Park. The Menangle Park Paceway site will be subject to a separate assessment and rezoning process. However, the technical studies and maps throughout this report incorporate information relating to the Menangle Park Paceway site and future access options to the Paceway through Menangle Park have been considered as part of the background studies for this LES.

In addition to rural uses, parts of the site contain extractive resources and are currently the subject of leases for gas, sand and coal extraction (refer Section 4.7 of for additional details).

The study area contains a number of Indigenous and Non-Indigenous heritage items including the Glenlee Estate which is listed on the State Heritage Register.

Apart from Menangle Park Village, the site generally falls into three major land ownerships, Campbelltown City Council, Landcom and the NSW Harness Racing Club. Land ownership is shown in Figure 3.

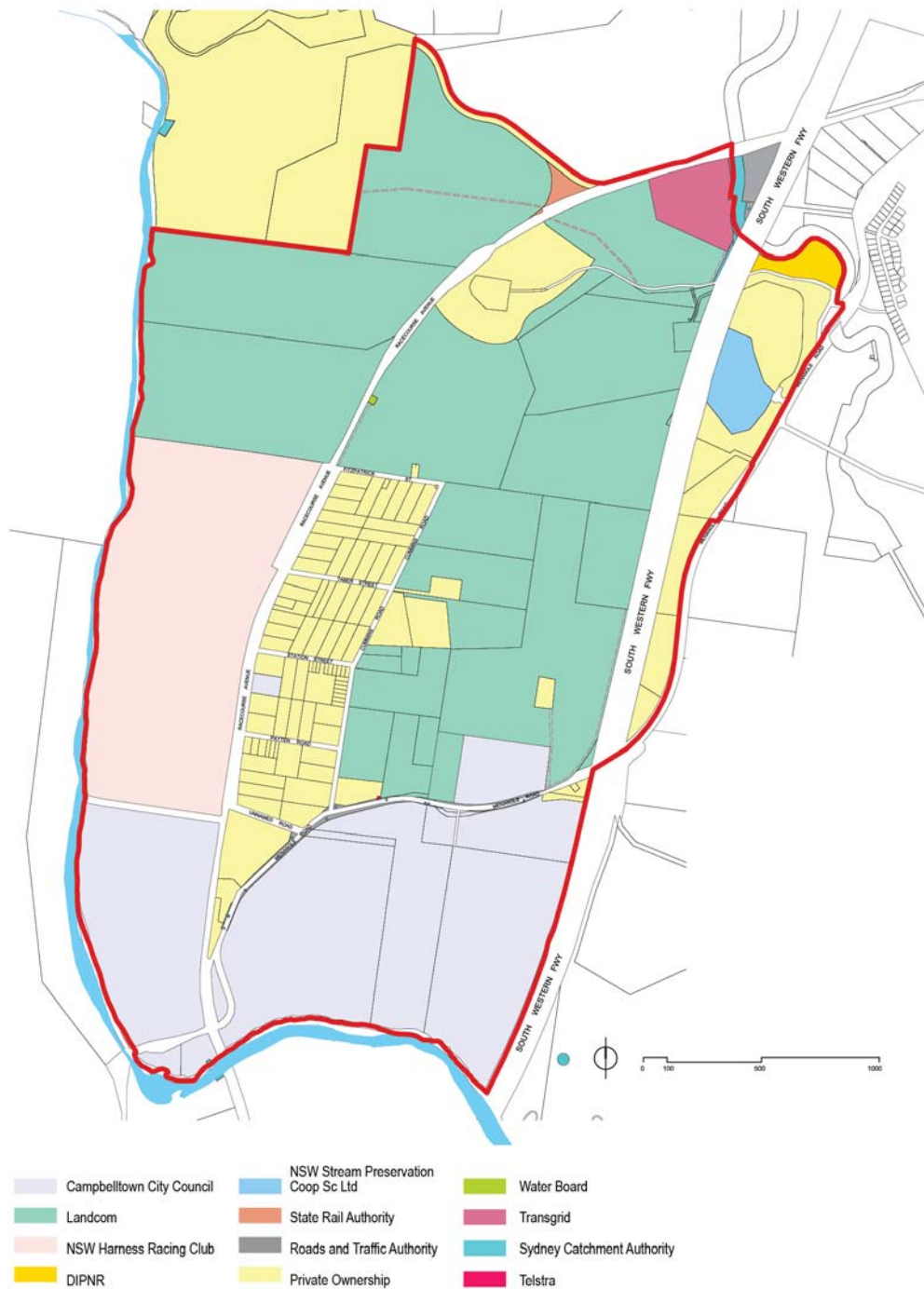


Figure 3: Land ownership (Source: Urbis, Landcom, Campbelltown Council)

2.3 THE SURROUNDING REGION

Campbelltown is part of the Macarthur Region, an area of some 3,067 square kilometres comprised of the Campbelltown, Camden and Wollondilly LGAs.

The Campbelltown LGA encompasses an area of approximately 312 square kilometres, extending from Glenfield in the north, Wedderburn in the south, the Scenic Hills in the west and Georges River in the east. The F5 freeway linking Sydney to Canberra bisects the LGA and, together with the Main Southern Railway Line, provides Campbelltown residents with direct access to Sydney's CBD. Most of the Campbelltown LGA lies within the Georges River catchment, apart from 39 square kilometres, including Menangle Park, which falls within the catchment of the Nepean River.

To the south and west of Menangle Park lies the Wollondilly LGA in the foothills of the Southern Highlands. It is predominantly rural in character with extensive areas of natural bushland. There are numerous townships scattered across the Shire including Menangle, Appin, Wilton, Picton, Tahmoor, and Bargo.

Camden LGA is located to the north-west of Menangle Park. It contains a mix of agricultural lands, villages and towns and new residential suburbs, with associated commercial and industrial development. Further north lies the Liverpool LGA which is predominantly urban in character although there are pockets of semi-rural and rural lands still remaining.

The site's regional context is shown in Figure 4.

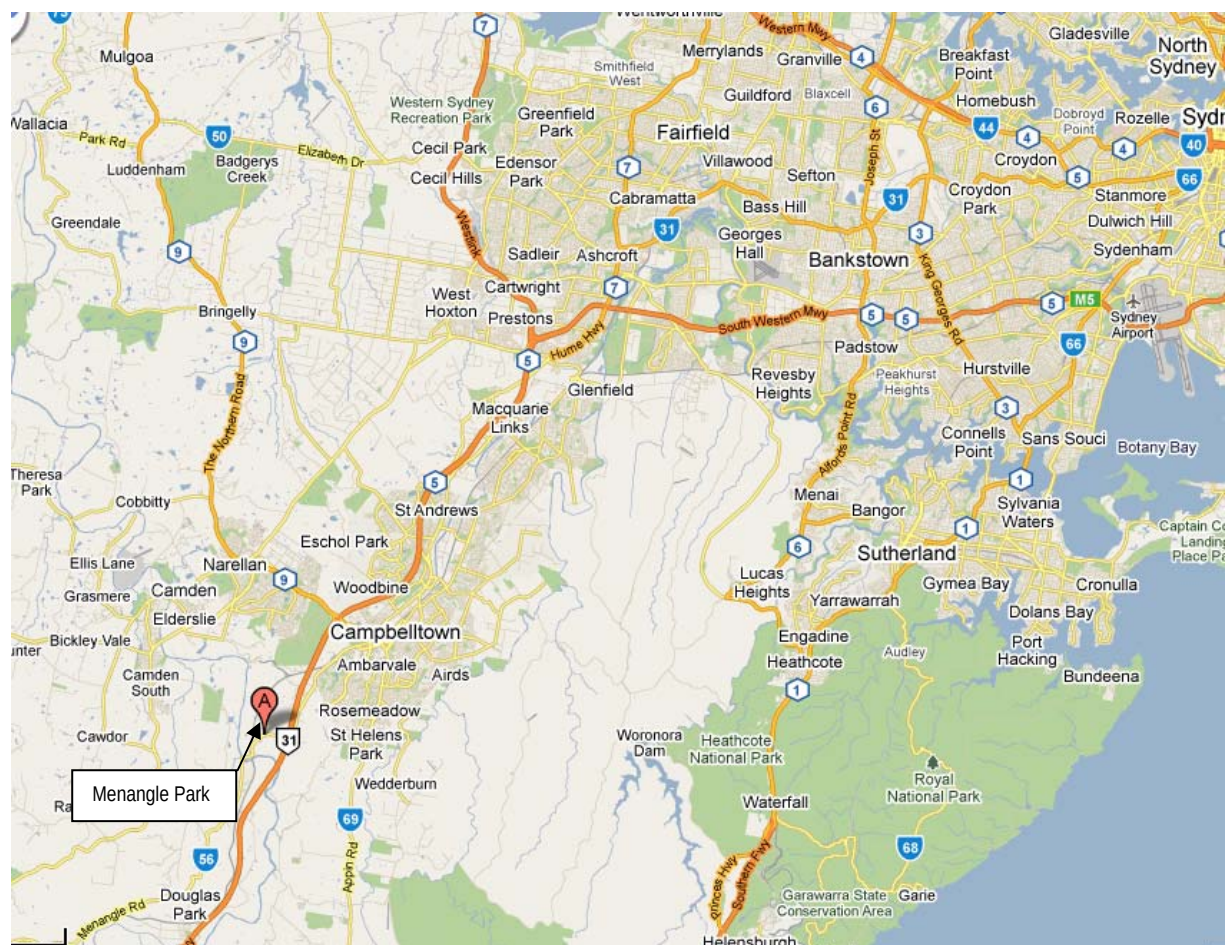


Figure 4: Regional context (Source: Google Maps)

2.4 EXISTING DEMOGRAPHIC PROFILE

The following information regarding the demographic profile of Campbelltown LGA is drawn from the *Social Sustainability for Menangle Park* report prepared by Heather Nesbitt Planning (February 2010).

With 143,000 residents in 2006, Campbelltown City is one of the most populated LGAs in the Sydney metropolitan area. A major regional centre for south-west Sydney, Campbelltown City's growth has been relatively small in recent years as the LGA's residents mature and household sizes decrease.

With many of its suburbs housing large concentrations of Housing NSW tenants and the LGA lacking a strong employment base, the City has significant challenges including;

- Young age profile with more than one in four residents (29%) aged under 17 years old.
- Low proportion (7%) of residents aged 65 years and over.
- An age profile typical of the older outer suburbs of Sydney dominated by families with teenage children.
- Almost one in four households (22%) are one parent families with children
- Almost one in three homes (30%) are rented with almost half (12%) of these being owned by Housing NSW.
- Below average median weekly household incomes (\$1066 compared to \$1154 for Sydney)
- Above average unemployment rate (7.6% compared to Sydney 5.3%) with those employed primarily working in retail trade and manufacturing.
- Majority (20%) employed in clerical, sales and service occupations.

In terms of overall social disadvantage, Campbelltown City has a SEIFA¹ index of 954 making it the fifth most disadvantaged LGA in Sydney after Fairfield (876), Auburn (922) and Canterbury (927) and Bankstown (954).

Campbelltown's demographic profile reflects its evolution as a new residential area in the 1970s and 1980s for young families, to an area that now has a solid age structure that is generally aging. The peak residential boom in Campbelltown is reflected in the high proportion of the population aged under 50 (75.4%), as shown in Table 1 below.

Table 1: Campbelltown Age Structure

Age Group	Number	% of total LGA population	% Change since 1991
0 to 4	10,636	7.5	-3.3
5 to 11	15,872	11.1	-3.8
12 to 17	15,090	10.6	-1
18 to 24	16,006	11.2	0.2
25 to 34	19,251	13.5	-4.1
35 to 49	30,607	21.5	0.3
50 to 59	18,901	13.3	7.5
60 to 69	9,089	6.4	2.7
70 to 84	5,937	4.2	1.7
85 and over	994	0.7	0.4
Total	142,383	100.00	0.5

Source: MACROC Community Profile, 2006

¹ The ABS Index of Relative Social-Economic Disadvantage (SEIFA) is derived from attributes such as low income, low educational attainment, high unemployment, jobs in relatively unskilled occupations and other variables which reflect disadvantage

2.5 SETTLEMENT PATTERNS AND GROWTH

Significant growth has occurred within south-western Sydney over the last 30 years. Much of the growth in Campbelltown LGA occurred in the 1970s and early 1980s, its population increasing dramatically from 10,440 in 1956 to 121,297 by 1986. Since that period there has been only modest growth. In fact, according to the ABS Census between 1996 and 2006 Campbelltown's population actually declined from 143,773 persons to 142,837 persons.

Conversely, since the early 1990s there has been substantial growth in both the Liverpool and Camden LGAs. Between 1996 and 2006 Liverpool grew by 44,765 residents to a total population of 164,962, representing an annual average growth rate of 3.7%, and Camden's population increased by around 17,238 residents to 49,347, representing an even higher average growth rate of 5.4% per annum. Population growth trends in the South West Region are shown in Table 2.

Table 2: Population Growth in the Region 1996 to 2006

Local Government Area	1996	2001	2006	Annual Average Growth 1996-2001	Annual Average Growth 2001-2006
Camden	32,045*	43,779	49,204	7.3%	2.5%
Campbelltown	143,431	145,294	142,382	0.3%	-0.4%
Liverpool	119,793	153,633	164,440	5.6%	1.4%
Wollondilly	33,346	36,953	39,892	2.2%	1.6%

*Population figures exclude overseas visitors

Source: ABS

Population projections prepared by the Transport and Population Data Centre, NSW Department of Planning, suggest that there will be substantial population growth in Camden and Liverpool between 2011 and 2031 and moderate growth in Campbelltown and Wollondilly (refer Table 3). In fact, Camden is expected to experience the largest population increase out of all the LGAs across NSW.

Table 3: Population Projections for South West Region 2011-2031

	2011	2016	2021	2026	2031	Projected % growth 2011-2031
Camden	63,663	30,420	109,388	136,761	165,138	159%
Campbelltown	159,762	167,679	178,152	184,408	187,001	17%
Liverpool	192,862	213,915	228,765	247,504	266,156	38%
Wollondilly	46,050	48,847	51,708	54,382	56,801	23%

Source: Transport and Population Data Centre, NSW Department of Planning, *NSW SLA Population Projections 2001-2031, 2005 Release, Detailed Data – Version 1*

To accommodate this growth the Draft South West Subregional Strategy (Department of Planning, 2007) sets a target of 155,000 new dwellings by 2031. This is to be made up of 40,000 new dwellings in existing areas, 100,000 in the South West Growth Centre (comprising parts of Liverpool, Camden and Campbelltown) and 15,000 in other greenfield areas (including Menangle Park).

Most of the land available for new residential development is found in the three council areas of Liverpool, Campbelltown and Camden. The Metropolitan Development Program Report 2008/09 estimates the total release area potential for Camden LGA at 20,284 dwellings, Campbelltown LGA at 8,459 dwellings and Liverpool LGA at 11,157 dwellings.

The MDP provides both short term (2008/09 to 2012/13) and medium term (2013/14 to 2017/18) dwelling forecasts. In the short term the MDP estimates that in South Western Sydney the number of new dwellings constructed in release areas will total approximately 15,809 with a further 22,049 forecast to be developed in the medium term. Of the dwellings to be constructed in the short to medium term, it is estimated that Camden will produce the most dwellings (14,000) followed by Liverpool (11,080) and Campbelltown (7,799). The MDP notes that Menangle Park has a potential to accommodate up to 3,600 dwellings although no dwelling production is anticipated in the short term².

Most of the greenfields development in Camden will be focused in the two release areas of Elderslie and Spring Farm. In the case of Campbelltown, the majority of the land development activity is expected to come from Menangle Park and Edmondson Park. Liverpool's development focus will be at Edmondson Park, Aerodrome and Yarrunga.

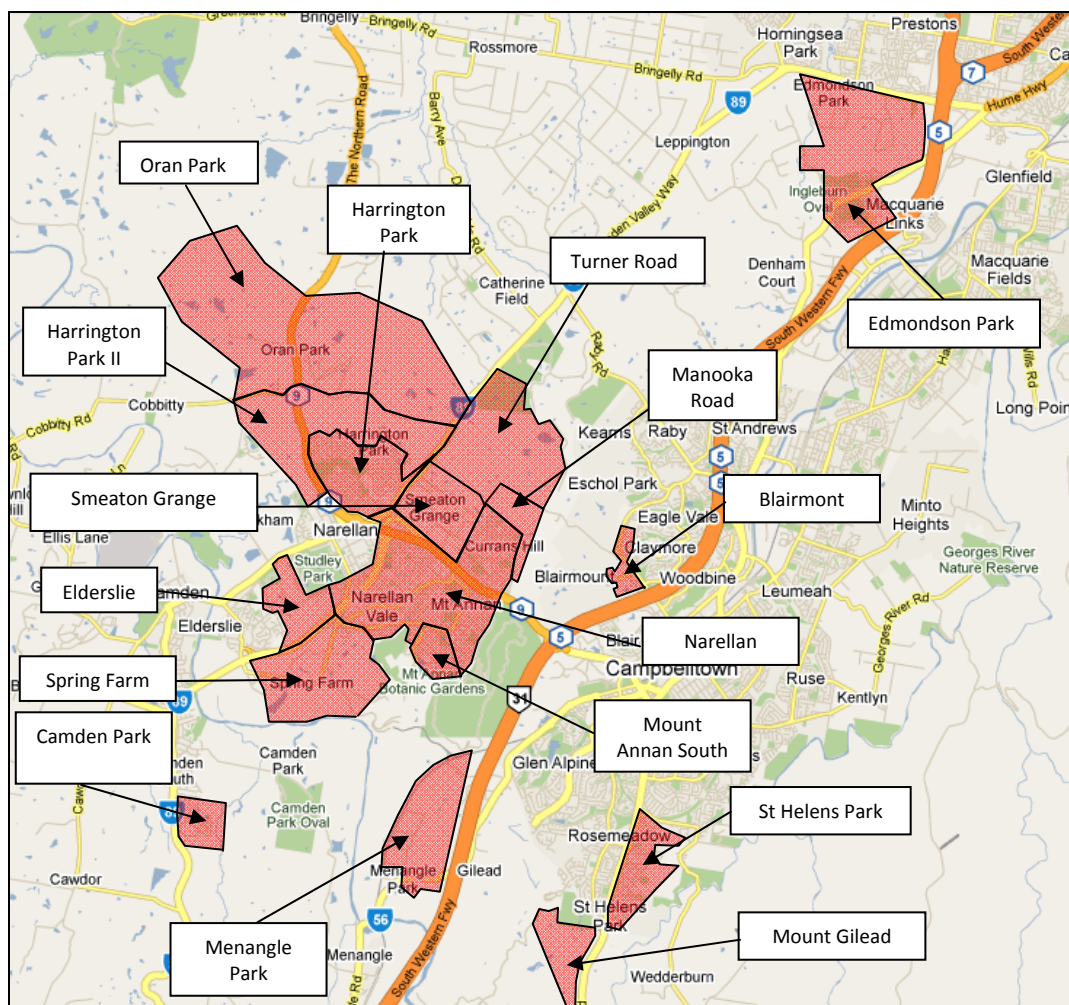


Figure 5: Release Areas in the Vicinity (Basemap source: Google Maps)

² The previous MDP dwelling potential estimate for Menangle Park of 4,200 dwellings has been revised downwards to 3,600 dwellings following advice from Council (refer discussion in Section 5.1.2).

3 PLANNING FRAMEWORK

There are a range of Commonwealth, State and local government legislative and policy requirements that have potential implications for any urban development at Menangle Park. The main legislative and policy provisions that apply are outlined below. More detailed discussion on particular statutory and other requirements is also provided in the specialist studies that support this LES.

3.1 COMMONWEALTH LEGISLATION

3.1.1 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The Commonwealth Environment Protection & Biodiversity Conservation Act 1999 (EPBC Act) stipulates that approval from the Commonwealth Environment Minister is required if a development is likely to have a significant impact on matters considered to be of national environmental significance. Cumberland Plain Woodland is listed as a matter of national environmental significance. Additionally, four of the fauna species known or likely to occur on the site are listed under the EPBC Act as well as a further seven migratory fauna species, including JAMBA, CAMBA and Bonn Convention listed species. Further discussion on these is provided in Section 4.3.

The Commonwealth Department of the Environment, Water, Heritage and the Arts (DEWHA) advised Eco Logical Australia in 2004 that whilst comment by this agency is not technically required during the structure plan stage, that the species, vegetation communities, and the size of the project warrant advice being sought from DEWHA on the referral and approval process. DEWHA also recommended the submission of a draft referral to allow any comments by DEWHA to be taken into consideration before the finalisation of the proposed structure plan.

Since the initial advice the Commonwealth and NSW have entered into a bilateral agreement in relation to assessments made under Part 3A, Part 4 and 5 of the EPBC Act. The changes relate only to assessment, and for controlled actions referrals and approvals are still required. For this process DEWHA will examine and review the environmental assessment prepared under NSW law. As before, consent is not required from DEWHA at the structure plan stage.

It should be noted that DEWHA has been consulted during the course of preparation of this LES. Further detail on consultation undertaken is provided in Section 4.3.

3.2 STATE LEGISLATION

A number of NSW Government Acts are relevant to development activity on the site. The main legislation applying to Menangle Park is summarised in Table 4.

Table 4: Summary of State Legislation

Legislation	Relevant Requirement	Addressed in section of LES
Environmental Planning and Assessment Act, 1979	The EP&A Act sets out the framework for planning in NSW including requirements for the preparation of environmental planning instruments and provisions relating to the control of development. In particular, the Act includes requirements for the preparation, consultation and content of environmental studies as well as for the subsequent preparation of a local environmental plan. In July 2009, the NSW Government introduced reforms to change the way that local environmental plans (LEPs) are developed and approved. This system is known as the 'gateway' plan-making process. As notification was given to the Director-General regarding the preparation of a Draft LEP prior to 1 July 2009, the Menangle Park LEP will continue to be made under the old local plan-making system.	Throughout – LES prepared primarily to satisfy requirements of EP&A Act.
Heritage Act 1977	The Heritage Act sets out requirements for the protection of heritage items listed under the Act	Addressed in Section 4.9 of LES and in <i>Non Indigenous Heritage Study</i> (Casey & Lowe Pty Ltd, March 2010). There are three items in Menangle Park listed on State Heritage Register.
Threatened Species Conservation Act 1995	The TSC Act lists not only species which are threatened or endangered but also threatening processes. It provides for the identification by the Minister of critical habitat and sets out provisions to protect and encourage the recovery of threatened species, populations and communities listed under the Act. In 2007 a formal process for offsetting and biobanking was established by the State government (Biodiversity Banking and Offsets Scheme) under the TSC Act. This is a voluntary scheme and was not approved when the offsetting strategy for Menangle Park commenced. Accordingly it is not being applied at Menangle Park.	Addressed in Section 4.3 of LES and in <i>Flora, Fauna and Aquatic Assessments</i> (Eco Logical Australia, April 2009) and <i>Offsetting Strategy</i> (GHD, May 2010).
National Parks and Wildlife Act 1974	The NPW Act provides for the conservation of objects, places and features of conservation value in addition to the protection of native flora and fauna. The Act specifically requires consent to destroy or disturb aboriginal objects and for the Director of the National Parks and Wildlife Service (now DECCW) to be notified if any Aboriginal objects or places are discovered on land. It provides for the issue of stop work orders if the Director General considers that works will damage an aboriginal item or place.	Addressed in Section 4.3 (Flora and Fauna) and 4.8 (Indigenous Heritage) of the LES. Also addressed in specialist studies: <i>Flora, Fauna and Aquatic Assessment</i> (Eco Logical Australia, April 2009) and <i>Archaeological Assessment of Indigenous Heritage Issues</i> (Jo McDonald Cultural Heritage Management, May 2010)
Water Management Act 2000	This Act aims to provide for the sustainable and integrated management of the water sources of the State for today and for the future.	Riparian areas have been assessed in accordance with Water Management Act – refer discussion in Local Flooding and Stormwater Quantity Management Report (GHD, May 2010)

Legislation	Relevant Requirement	Addressed in section of LES
Rural Fires Act 1997	This Act aims to prevent, mitigate and suppress fires, coordinate bushfire fighting and protection, protect people and property from fires and protect the environment. The Act requires that a person must obtain a bushfire safety authority prior to developing bushfire prone land residential, rural residential or special fire protection purposes (integrated development under the EP & A Act). An application for a bushfire safety authority must be lodged as part of the development application process and must demonstrate compliance with the <i>Planning for Bushfire Protection 2006</i> (Rural Fire Service). The requirements of <i>Planning for Bushfire Protection 2006</i> must also be met in the preparation of a LEP or DCP in accordance with Section 117 (EP&A Act) Direction 19.	Addressed in Section 4.4 of LES and the <i>Bushfire Assessment Scoping Study</i> undertaken by Eco Logical Australia (ELA) (2004) and the subsequent review <i>Bushfire Risk Management Study</i> (June 2010) also undertaken by ELA
Protection of the Environment Operations Act 1997	This Act aims to protect the environmental quality of the State particularly through the minimisation and reduction of pollution.	Air, noise and water quality impacts are addressed in Chapter 4 of this report.
Petroleum (Onshore) Act 1991	This Act controls gas exploration, drilling and extraction. The Act is administered by the Department of Mineral Resources.	Addressed in Section 4.7 of the LES and the <i>Mineral Resources of the Menangle Park Development Site – Review</i> undertaken by Harvest Scientific Services (January 2010).

3.3 STRATEGIC PLANS AND POLICIES

3.3.1 City of Cities: A Plan for Sydney's Future – Sydney Metropolitan Strategy

The Sydney Metropolitan Strategy, prepared by the Department of Planning, provides a vision for Sydney over a 25 year timeframe and details strategies to help Sydney grow in an economically, socially and environmentally sustainable manner. Population projections estimate that Sydney will grow by up to 1.1 million people between 2004 and 2031. To cater for these growth projections, the NSW Government has determined that additional homes, jobs and employment space will be required. These requirements need to be fulfilled in a way that also supports the sustainable vision for the city. Eight key elements have been identified which will help support the vision. These are:

1. Stronger Cities Within the Metropolitan Area
2. Strong Global Economic Corridor
3. More Jobs in Western Sydney
4. Contain Sydney's Urban Footprint
5. Major Centres will Emerge as Jobs, Service and Residential Locations
6. Fair Access to Housing, Jobs, Services and Open Space
7. Connected Centres
8. Better Connected And Stronger Regions

A key factor in ensuring that the projected growth of Sydney is managed appropriately will be to ensure the provision of housing is sufficient to meet the needs of the city. Additional housing will also be required to meet the changing living arrangement of those in the Sydney region with average household size anticipated to fall from 2.65 to 2.36 people per private dwelling.

In order to secure the necessary housing stock, The Sydney Metropolitan Strategy provides key objectives and actions including:

- Provide 30–40 per cent of new housing in land release areas
- Apply sustainability criteria for new urban development

- Plan for increased housing capacity targets in existing areas
- Improve monitoring of future housing and employment supply
- Facilitate redevelopment of existing apartments and higher occupation of existing dwellings

The Metropolitan Strategy is supported by a series of sub-regional strategies which aim to guide land use planning in respective subregions under the umbrella policy direction that is the Metropolitan Strategy. The Campbelltown LGA is addressed in the Draft South West Subregional Strategy (Department of Planning, 2007). The Subregional Strategy sets a target of 155,000 new dwellings by 2031. This is to be made up of 40,000 new dwellings in existing areas, 100,000 in the South West Growth Centre (comprising parts of Liverpool, Camden and Campbelltown) and 15,000 in other greenfield areas (including Menangle Park). It also sets a total employment target for Campbelltown by 2031 of 26,000 additional jobs. It identifies key actions required to accommodate growth within the Subregion including the following actions relevant to Menangle Park:

- *Planning for major housing growth* – Councils to plan for sufficient zoned land to accommodate their housing targets
- *Planning for employment growth* – Councils to provide for sufficient commercial and employment land to meet employment capacity targets
- *Recognise and support unique rural character* – improve access to quality parks and public spaces, protect Sydney's natural environment and diversity of plants and animals, and protect Aboriginal cultural heritage
- *Intensify areas around centres and public transport corridors* – plan for a housing mix in local centres consistent with their employment role and within walking catchment of public transport corridors.

Section G2.3.2 of the Metropolitan Strategy states that any substantially new Greenfield area will be required to meet sustainability criteria. An assessment of the Menangle Park Release Area in relation to these sustainability criteria is provided in Table 5.

Table 5: Assessment Against Metropolitan Strategy Sustainability Criteria

Threshold Sustainability Criteria for listing of site on MDP	Measurable Explanation of Criteria	Assessment Against Criteria
1 Infrastructure Provision Mechanisms in place to ensure utilities, transport, open space and communication are provided in a timely and efficient way	- Development is consistent with any relevant residential development strategy, subregional strategy, regional infrastructure plan and Metropolitan Strategy - The provision of infrastructure (utilities, transport, open space and communications) is costed and economically feasible based on Government methodology for determining infrastructure contribution - Preparedness to enter into development agreement	- Development consistent with Metropolitan Development Program 2008/09, Metropolitan Strategy and Draft South West Subregional Strategy - Assessment of infrastructure funding is currently being costed. Local infrastructure will be funded through Development Contributions Plan. - Potential for release area to be considered for Special Infrastructure Contribution for the provision of regional infrastructure. Currently under consideration by State Government.
2 Access Accessible transport options for efficient and sustainable travel between homes, jobs, services and recreation to be existing or provide	- Accessibility of the area by public transport and appropriate road access in terms of: - Location/land use; to existing networks and related activity centres - Network: the areas potential to be serviced by economically efficient public transport services - Catchment; the area's ability to contain or form part of the larger urban area which contains adequate transport services. Capacity for land use/transport patterns to make a positive contribution to achievement of travel and vehicle use goals. - No net negative impact on a performance of existing subregional road, bus, rail, ferry and freight network	- Transport Management and Accessibility Plan (TMAP) recommends a package of measures to be implemented as follows: - Policy measures aimed at increasing levels of pedestrian and cycle movements - Transport service improvements, including an integrated package of bus service improvements that are responsive to the development of the site. - Infrastructure improvements to provide easy pedestrian and cyclist access to Macarthur via a connection to the Regional Cycleway, together with cycle parking and comprehensive directional signage. - Public transport infrastructure, such as public transport priority at key intersections, a public transport spine within the site and the upgrade of Macarthur Interchange to better facilitate transfers between bus and rail. - Public transport information, such as comprehensive timetable information on all stops and key retail locations, together with a community intranet. - Road network improvements within Macarthur to widen selected links and to provide intersection improvements at key locations. - TMAP identifies implementation mechanisms to ensure these measures are put in place. - No net negative impact on existing transport network will arise from development.
3 Housing Diversity Provide a range of housing choices to ensure a broad population can be housed	Contributes to the geographic market spread of housing supply, including any government targets established for aged, disabled or affordable housing	Structure Plan provides for range of housing types and densities. Mix of housing types and densities also to be reflected in planning controls for the site.
4 Employment Lands Provide regional/local employment opportunities to support Sydney's role in the global economy	- Maintain or improve the existing level of subregional employment self containment - Meets subregional employment capacity targets: - Employment related land is provided in appropriately zoned areas.	- Employment area located in Menangle Park in accordance with Metropolitan Strategy and Draft South West Subregional Strategy - Employment area will help provide jobs in close proximity to residents - Employment land to be provided in appropriately zoned area in vicinity of existing employment activities.
5 Avoidance of Risk Land use conflicts, and risk to human health and life, avoided	- Available safe evacuation route (Flood and Bushfire - No residential development within 1:100 floodplain - Avoidance of physically constrained land: high slope; highly erodible	- Safe evacuation routes provided (refer discussion in Chapter 4). - No residential development within 1:100 floodplain - Structure Plan ensures areas which are physically constrained are protected from inappropriate development

Threshold Sustainability Criteria for listing of site on MDP	Measurable Explanation of Criteria	Assessment Against Criteria
	Avoidance of land use conflicts with adjacent, existing or future land use and rural activities as planned under regional strategy	Urban footprint/Structure Plan designed to avoid potential land uses conflicts between land uses.
6 Natural Resources Natural resource limits not exceeded/environmental footprint minimised	- Demand for water does not place unacceptable pressure on infrastructure capacity to supply water and on environmental flows - Demonstrates most efficient/suitable use of land - Avoids identified significant agricultural land - Avoids impacts on productive resource lands; extractive industries, coal, gas and other mining and quarrying - Demand for energy does not place unacceptable pressure on infrastructure capacity to supply energy; requires demonstration of efficient and sustainable supply solution	- Additional water reservoir may be needed to cater to future residential population however Sydney Water has not raised concerns about water supply capacity to service site. - Area identified as suitable for urban development in Structure Plan based on detailed analysis of site constraints, including - the difficulty of evacuating people from the western side of the railway during flood periods, even though there is land on the western side above the 1% AEP; - the presence of significant vegetation; - the need to protect important heritage items and their curtilages; - the steep slopes and visual prominence of some areas; - the presence of a number of major utility easements on the site. - Final urban footprint represents most efficient/suitable use of land. - No significant agricultural land identified in Menangle Park - Proposed urban structure/development staging avoids impacts on productive resource lands - Issue of subsurface coal resource has been considered by NSW Government and priority given to urban development of site. - New Zone Substation will be required to meet energy demand from release area.
7 Environmental Protection Protect and enhance biodiversity, air quality, heritage and waterway health	- Consistent with Government approved Regional Conservation Plan (if available) - Maintains or improves areas of regionally significant terrestrial and aquatic biodiversity. This includes regionally significant vegetation communities; critical habitat; threatened species; populations; ecological communities and their habitats. - Maintain or improve existing environmental condition for air quality - Maintain or improve existing environment condition for water quality and quantity - Consistent with community water quality objectives for recreational water use and river health (DEC and CMA) - Consistent with catchment and stormwater management planning (CMA and local council) - Protects areas of Aboriginal cultural heritage value (as agreed by DEC)	- No known Regional Conversation Plan applies to site. - Vegetation protection strategy, which includes protection of the Nepean River corridor, prepared in liaison with DECCW (refer discussion in Section 4.3). - Refer discussion in Section 4.5 re air quality. No significant adverse impacts anticipated. - Water quality and quantity will be improved with the implementation of specific WSUD measures. <i>Hawkesbury-Nepean Water Quality Targets</i> (EDAW AECOM, 2009) report prepared to determine whether release area can meet water quality targets. Provided appropriate water quality protection measures are put in place, report concludes that targets can be met (refer discussion in Section 4.2). - Aboriginal cultural heritage is addressed in Section 4.8 of this report and <i>Archaeological Assessment of Indigenous Heritage Issues</i> (Jo McDonald Cultural Heritage Management, May 2010). This includes measures to protect areas of high cultural value.
8 Quality and Equity in Services Quality health, education, legal, recreational, cultural and community development and other government services are accessibly	- Available and accessible services - Do adequate services exist? - Are they at capacity or is some available? - Has Government planned and budgeted to further service	Social Sustainability Report (Heather Nesbitt Planning, February 2010) prepared which identifies existing services currently available and new services that will be required. Local services to be funded through Development Contributions Plan. .

Threshold Sustainability Criteria for listing of site on MDP	Measurable Explanation of Criteria	Assessment Against Criteria
	provision? Developer funding for required service upgrade/access is available.	- Government agencies have been consulted and key services (e.g. Primary School) will be provided in accordance with development staging and Government priorities - State Government currently considering appropriateness of applying Special Infrastructure Contribution for regional infrastructure.



3.3.2 Action for Air

Action for Air is the NSW Government's 25-year plan for managing air quality in Sydney, the Illawarra and the Lower Hunter. It began in 1998 and comprises a whole-of-government strategy covering the full array of sources that contribute to air pollution, from how we plan our cities, roads and public transport, to cleaner vehicles and fuel, and industrial and household emissions. *Action for Air* supports the objectives and initiatives outlined in the State Plan and the Metropolitan Strategy.

The aims of *Action for Air* are:

- reducing emissions so that we comply with the State Plan's cleaner air targets, that is, meeting the national air quality standards for six pollutants as identified in the Air National Environment Protection Measure (NEPM), and
- reducing the population's exposure to air pollution, and the associated health costs.

Action for Air seeks to provide long-term ongoing emission reductions. It does not target acute and extreme exceedences from events such as bushfires. Key strategies outlined in the Plan include:

- Integrate air quality goals and urban transport planning;
- Provide more and better transport choices
- Make cars, trucks and buses cleaner,
- Promote cleaner business,
- Promote cleaner homes,
- Manage the impact of open burning, and
- Monitor, report on and review air quality.

The 2009 Update of *Action for Air* outlines the gains that have been made over 10 years since the plan was introduced. It notes that air quality has improved over the past 10 years – many of the most dangerous pollutants are down by 30% and we consistently meet national air quality standards for four of six major air pollutants (lead, carbon monoxide, sulfur dioxide and nitrogen dioxide). These reductions are a significant achievement, particularly as over the past 20 years Sydney's population has grown by 21% and the number of passenger vehicles, the main contributor of several significant air pollutants, has increased by 58%. However it also notes that major challenges still exist particularly in relation to ozone and particle pollution. Further discussion on air quality is included in Section 4.5.

3.4 STATE ENVIRONMENTAL PLANNING POLICIES

The following State Environmental Planning Policies (SEPPs) are relevant to Menangle Park:

3.4.1 State Environmental Planning Policy No. 19 – Bushland in Urban Areas (SEPP 19)

SEPP 19 aims to protect and preserve bushland within urban areas having regard to its value to the community as natural heritage, its aesthetic value and its importance as a recreational, educational and scientific resource. Bushland is defined as:

land on which there is vegetation which is either a remainder of the natural vegetation of the land or, if altered, is still representative of the structure and floristics of the natural vegetation.

The Policy applies to the Campbelltown LGA and requires that in preparing an LEP for land other than rural land, the Council shall:

- (a) have regard to the general and specific aims of the Policy; and



- (b) give priority to retaining bushland unless it is satisfied that significant environmental, economic or social benefits will arise which outweigh the value of the bushland.

In terms of development the Policy requires that bushland zoned or reserved for public open space shall not be disturbed without development consent (except in particular circumstances). It also identifies matters which Council must take into account in determining whether to grant development consent for the disturbance of bushland.

The SEPP seeks to provide for the restoration and regeneration of bushland in urban areas through the preparation and implementation of management plans.

It further controls development on land adjoining land zoned for public open space requiring that a consent authority consider the need to retain bushland on the land, the effect of the development on the adjoining bushland and any other relevant matters prior to granting development consent.

Bushland on site is addressed at Section 4.3 of this Study.

3.4.2 State Environmental Planning Policy No. 44 – Koala Habitat Protection (SEPP 44)

SEPP 44 aims to encourage the conservation and management of areas of natural vegetation throughout the State that provide habitat for koalas. Its intent is to ensure a permanent free-living population of koalas over their present range and reverse the current trend of koala population decline. The Policy applies to the Campbelltown LGA and requires that land be investigated to determine whether it includes 'potential koala habitat' and/ or 'core koala habitat'.

SEPP 44 requires councils to undertake studies to identify land that is potential and core koala habitat and provide appropriate protection to this land through zoning and development control provisions. It also requires that where land that incorporates potential or core koala habitat is proposed to be rezoned, the Director-General of the Department of Planning will consider directing that a local environmental study be prepared for the land.

Koalas have been sighted in the vicinity of Menangle Park and there are koala feed trees located within the site. For some vegetation on the site more than 15% of koala feed trees listed on the schedules to the policy were observed, which indicates 'potential koala habitat'. The presence of potential koala habitat triggers an assessment under SEPP 44 for any proposed development in the area. Accordingly any development application on land on site which forms either a potential koala habitat would require assessment under SEPP 44. Further detail on this issue is provided in the *Menangle Park Flora, Fauna and Aquatic Assessments* prepared by Eco Logical Australia (April 2009).

3.4.3 State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55)

SEPP 55 aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment.

Clause 6 requires that a planning authority must not include land in an environmental planning instrument which allows the change of use of land unless:

- (a) the planning authority has considered whether the land is contaminated; and
- (b) if the land is contaminated, the planning authority is satisfied that the land is suitable in its contaminated state (or will be suitable after remediation) for all the purposes for which land in the zoned area concerned is permitted to be used; and
- (c) if the land requires remediation to be made suitable for any purpose permitted in the zone, the planning authority is satisfied that the land will be remediated before it is used for that purpose.

Clause 6 further requires that prior to including land in any particular zone, the planning authority is to have regard to a preliminary investigation report carried out in accordance with the Contaminated Land Planning Guidelines. A preliminary investigation report has been prepared for Menangle Park entitled *Report on Land Capability Study of the Menangle Park Urban Release Area* prepared by Douglas Partners Pty Ltd, April 2004 (Updated December 2009). A summary of the findings are at Section 4.1 of this Study. Based on initial sampling, there is no evidence for significant



widespread or diffuse contamination across the site. The preliminary contamination assessment found that contaminant levels across the site were generally low and do not indicate signs of restriction on development of the site. It is however anticipated that more localised areas of contamination may occur that are related to past activities such as uncontrolled tipping and filling, chemical storage and disposal, pesticide use, and disposal of material containing asbestos. Further investigations may be required at the time of development to determine the nature and extent of contamination on a site by site basis.

In particular it is noted that the old fireworks factory site (Lot 59, DP 10718) has been found to contain asbestos cement sheet fragments from the demolition of site buildings, and it is understood that waste products associated with fireworks manufacturing were buried on the site. A detailed contaminated site assessment and a remediation action plan have been prepared by Charlie Furr of Consulting Earth Scientists, and remediation is currently underway. Accordingly remediation of the site is being undertaken in accordance with the requirements of SEPP 55.

3.4.4 SEPP (Mining, Petroleum Production and Extractive Industries) 2007

This Policy sets out the statewide planning framework for development involving mining, extraction and petroleum production. It provides for certain activities to be undertaken without consent and requires consent for other activities. It identifies exempt development and complying development provisions and overrides certain limitations applied by a LEP.

Under this Policy, mining, sand extraction and other extractive industries (e.g. gravel, clay, soil, rock), and petroleum production may generally be carried out with development consent. This includes mining and/or extractive industry in any part of a waterway, provided that it is not in an environmental conservation zone.

Before determining an application for consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must:

(a) consider

(i) the existing uses and approved uses of land in the vicinity of the development, and

(ii) whether or not the development is likely to have a significant impact on the uses that, in the opinion of the consent authority having regard to land use trends, are likely to be the preferred uses of land in the vicinity of the development, and

(iii) any ways in which the development may be incompatible with any of those existing, approved or likely preferred uses, and

(b) evaluate and compare the respective public benefits of the development and the land uses referred to in paragraph (a) (i) and (ii), and

(c) evaluate any measures proposed by the applicant to avoid or minimise any incompatibility, as referred to in paragraph (a) (iii).

In addition, the consent authority must ensure that:

- impacts on significant water resources, including surface and groundwater resources, threatened species and biodiversity are avoided, or are minimised to the greatest extent practicable,
- that greenhouse gas emissions are minimised to the greatest extent practicable.

Any new proposals for sand extraction in Menangle Park would need to be undertaken in accordance with this SEPP.



3.4.5 SEPP (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 provides the planning framework to facilitate development of a wide range of Government infrastructure, including utility services, road and rail corridors, schools, health facilities, parks and the like. The Infrastructure SEPP provides permissibility and development assessment provisions which apply across the State for each infrastructure sector. Any new infrastructure at Menangle Park will be dealt with under this SEPP.

The SEPP also includes provisions applying to development adjacent to infrastructure. These include:

- requirements for a consent authority to consider the potential safety risks or risks to the integrity of the gas pipeline that are associated with proposed development adjacent to licensed gas pipeline corridors;
- provisions to ensure that noise sensitive development (e.g. residential buildings, hospitals, churches and child care centres) proposed in or adjacent to certain road or rail corridors is not adversely affected by road or rail noise or vibration. (Further discussion on this issue is provided in Section 4.6.)

Development of infrastructure at Menangle Park, and in some cases development adjoining infrastructure, will need to be undertaken in accordance with the provisions of the Infrastructure SEPP.

3.5 DEEMED STATE ENVIRONMENTAL PLANNING POLICIES

From 1 July 2009 regional environmental plans are deemed (under clause 120 of Schedule 6 to the EP&A Act) to be State Environmental Planning Policies.

3.5.1 Sydney Regional Environmental Plan No. 20 – Hawkesbury Nepean River Amendment No. 2

SREP 20 Amendment No. 2 aims “to protect the environment of the Hawkesbury-Nepean River system by ensuring that the impacts of future land uses are considered in a regional context”. The Plan contains a series of policies and subsequent strategies to achieve this aim. Policies relate to matters such as total catchment management, environmentally sensitive areas, water quality and quantity, heritage, flora fauna etc.

The Menangle Park site is within the Hawkesbury-Nepean Catchment and includes a number of creeks that are tributaries of the Hawkesbury-Nepean River system as well as the Nepean River itself. Therefore planning for the release area has considered in detail the impacts of the development on the health of the system.

3.6 SECTION 117 DIRECTIONS

The following (relevant) Section 117 Directions apply to any proposed Draft LEP for Menangle Park as the proposed draft LEP was notified to the Director General of the Department of Planning prior to 1 July 2009. Draft LEPs must be consistent with these Directions or if not, satisfactory justification must be provided for any inconsistency.

Table 6: Assessment Against Section 117 Directions

DIRECTION	EFFECT OF DIRECTION	IMPLICATIONS FOR MENANGLE PARK
1. Employment and Resources		
1.1 Business and Industrial Zones (applies to existing or proposed business or industrial zones)	Draft LEPs shall: ▪ encourage employment growth in suitable locations, ▪ protect employment land in business and industrial zones, and ▪ support the viability of identified strategic centres. ▪ retain the areas and locations of existing business and industrial zones, ▪ not reduce the total potential floor space area for employment uses and related public services in business zones, ▪ not reduce the total potential floor space area for industrial uses in industrial zones, and ▪ ensure that proposed new employment areas are in	No reduction in land zoned for business purposes. Area proposed as new employment area in Menangle Park identified in the Draft South West Sub Region Strategy as strategically located to support a range of employment uses. Also identified in Metropolitan Strategy as proposed new employment area therefore in accordance with Regional and Sub Regional Strategies. Further

DIRECTION	EFFECT OF DIRECTION	IMPLICATIONS FOR MENANGLE PARK
	accordance with a strategy that is approved by the Director-General of the Department of Planning. unless justified by a strategy which is approved by the Director-General of the Department of Planning (DOP) or an appropriate planning study, or is in accordance with the relevant Regional or Sub-Regional Strategy.	discussion on new employment lands provided in Section 4.14.
1.2 Rural Zones (applies to DLEP affecting land within an existing or proposed rural zone)	Draft LEPs shall: - protect the agricultural production value of rural land - not rezone land from a rural zone to a residential, business, industrial, village or tourist zone. - not contain provisions that will increase the permissible density of land within a rural zone (other than land within an existing town or village). unless justified by a strategy which is approved by the Director-General of the DOP or an appropriate planning study, or is in accordance with the relevant Regional or Sub-Regional Strategy.	Menangle Park identified by NSW Government for future urban development. Justification for rezoning provided by this LES.
1.3 Mining, Petroleum Production and Extractive Industries (applies to DLEP that would prohibit or restrict mining etc.)	In the preparation of a draft LEP, the council shall: - consult the Director-General of the Department of Primary Industries to identify any: (a) resources of coal, other minerals, petroleum or extractive material that are of either State or regional significance, and (b) existing mines, petroleum production operations or extractive industries occurring in the area subject to the draft LEP, and - seek advice from the Director-General of DPI on the development potential of resources, and - identify and take into consideration issues likely to lead to land use conflict between other land uses and : (a) development of potential resources, or (b) existing mines, extractive industries etc. Where a draft LEP prohibits or restricts development of new or existing resources, or proposes land uses that may create land use conflicts, council shall: - provide the Director-General of DPI with a copy of the draft LEP and notification of the relevant provisions, - allow the Director-General of DPI a period of 40 days from the date of notification to provide in writing any objections to the terms of the draft LEP, and - include a copy of any objection and supporting information received from the Director-General of DPI with the statement to the Director-General of DOP or nominated delegate.	Draft LEP may be inconsistent only if provisions are of minor significance. Department of Primary Industries consulted regarding proposed rezoning. Refer discussion in Section 4.7 regarding mineral and extractive resources.
2. Environment and Heritage		
2.1 Environment Protection Zones	A draft LEP shall include provisions that facilitate the protection and conservation of environmentally sensitive areas. A draft LEP that applies to land within an environment protection zone or land otherwise identified for environment protection purposes in a LEP shall not reduce the environmental protection standards that apply to the land.	There will be some reduction in environment protection zones however areas of environmental sensitivity have been identified and will be zoned accordingly in draft LEP.

DIRECTION	EFFECT OF DIRECTION	IMPLICATIONS FOR MENANGLE PARK
2.3 Heritage Conservation	A draft LEP shall contain provisions that facilitate the conservation of: - items, places, buildings, works, relics, moveable objects or precincts of environmental heritage significance to an area, in relation to the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of the item, area, object or place, identified in a study of the environmental heritage of the area, - Aboriginal objects or Aboriginal places that are protected under the NPW Act, and - Aboriginal areas, Aboriginal objects, Aboriginal places or landscapes identified by an Aboriginal heritage survey prepared by or on behalf of an Aboriginal Land Council, Aboriginal body or public authority and provided to the council, which identifies the area, object, place or landscape as being of heritage significance to Aboriginal culture and people.	Heritage provisions to be included in Draft LEP. (Note: Standard instrument provisions consistent)
3. Housing, Infrastructure and Urban Development		
3.1 Residential Zones (applies to existing or proposed residential zones and other zones where residential permitted)	A draft LEP shall include provisions that encourage the provision of housing that will: - broaden the choice of building types and locations available in the housing market, and - make more efficient use of existing infrastructure and services, and - reduce the consumption of land for housing and associated urban development on the urban fringe, and - be of good design. A draft LEP shall, in relation to land to which this direction applies: - contain a requirement that residential development is not permitted until land is adequately serviced (or arrangements satisfactory to the council, or other appropriate authority, have been made to service it), and - not contain provisions which will reduce the permissible residential density of land.	Draft LEP will zone areas for residential development. Provisions to be consistent with these objectives and will provide for increased densities and a variety of housing types in appropriate locations. Development not to proceed until satisfactory arrangements made for servicing.
3.3 Home Occupations	Draft LEPs shall permit home occupations to be carried out in dwelling houses without the need for development consent.	Draft LEP to be consistent (Note: Standard instrument provisions consistent)
3.4 Integrating Land Use and Transport	A draft LEP shall locate zones for urban purposes and include provisions that give effect to and are consistent with the aims, objectives and principles of: - Improving Transport Choice – Guidelines for planning and development (DUAP 2001), and - The Right Place for Business and Services – Planning Policy (DUAP 2001).	Draft TMAP prepared which aims to achieve greater mode split to public transport. Proposed Structure Plan has been designed to maximise public transport use and walking and cycling both within the release area and to other centres outside Menangle Park.
4. Hazard and Risk		
4.2 Mine Subsidence and Unstable Land	This direction applies in relation to a planning proposal that permits development on land that is within a mine subsidence district, or has been identified as unstable. When preparing a planning proposal that would permit development on land that is within a Mine Subsidence District the Council must: - consult the Mine Subsidence Board - incorporate relevant provisions into the draft Local Environmental Plan A planning proposal must not permit development on unstable land.	Menangle Park is within the South Campbelltown Mine Subsidence district however no development is proposed on unstable land. There is also potential for coal mining under the site and this issue has been considered by the State Government as part of its deliberations regarding this release area. Further discussion on this issue is provided in Section 4.7.

DIRECTION	EFFECT OF DIRECTION	IMPLICATIONS FOR MENANGLE PARK
4.3 Flood Prone Land	A draft LEP shall: - include provisions that give effect to and are consistent with the NSW Flood Prone Land Policy and the principles of the Floodplain Development Manual 2005 (including the Guideline on Development Controls on Low Flood Risk Areas). - not rezone land within the flood planning areas from Special Use, Special Purpose, Recreation, Rural or Environmental Protection Zones to a Residential, Business, Industrial, Special Use or Special Purpose Zone. - not contain provisions that apply to the flood planning areas which: (a) permit development in floodway areas, (b) permit development that will result in significant flood impacts to other properties, (c) permit a significant increase in the development of that land, (d) are likely to result in a substantially increased requirement for government spending on flood mitigation measures, infrastructure or services, or (e) permit development to be carried out without development consent except for the purposes of agriculture (not including dams, drainage canals, levees, buildings or structures in floodways or high hazard areas), roads or exempt development. - A draft LEP must not impose flood related development controls above the residential flood planning level for residential development on land, unless a council provides adequate justification for those controls to the satisfaction of the Director-General of DOP (or delegate). - For the purposes of a draft LEP, a council must not determine a flood planning level that is inconsistent with the Floodplain Development Manual 2005 (including the Guideline on Development Controls on Low Flood Risk Areas) unless a council provides adequate justification for the proposed departure from that Manual to the satisfaction of the Director-General of DOP (or delegate).	No increase in development potential proposed within floodway areas. Draft LEP to be consistent with requirements of Floodplain Development Manual. (Note: Standard instrument provisions consistent). In addition the proposed Structure Plan provides for roads that are aligned to facilitate evacuation in the event of floods larger than the 1% AEP.
4.4 Planning for Bushfire Protection	In the preparation of a draft LEP a Council shall consult with the Commissioner of the NSW Rural Fire Service under section 62 of the EP&A Act, and take into account any comments so made, A draft LEP shall: - have regard to Planning for Bushfire Protection 2006, - introduce controls that avoid placing inappropriate developments in hazardous areas, and - ensure that bushfire hazard reduction is not prohibited within the APZ. A draft LEP shall comply with the following provisions, as appropriate: - provide an Asset Protection Zone (APZ) incorporating at a minimum: (a) an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and	Rural Fire Service to be consulted under Section 62 of EP&A Act. Bushfire assessment prepared by Eco Logical which identifies appropriate measures to ensure consistency with Planning for Bushfire Protection 2006. Draft LEP to be consistent (Note: Standard instrument provisions consistent)

DIRECTION	EFFECT OF DIRECTION	IMPLICATIONS FOR MENANGLE PARK
	(b) an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road, - contain provisions for two-way access roads which links to perimeter roads and/or to fire trail networks, - contain provisions for adequate water supply for firefighting purposes, - minimise the perimeter of the area of land interfacing the hazard which may be developed, - introduce controls on the placement of combustible materials in the Inner Protection Area.	
5. Regional Planning		
5.1 Implementation of Regional Strategies	Draft LEPs shall be consistent with a regional strategy released by the Minister for Planning	Draft LEP to be consistent with South West Sub-regional strategy (refer discussion in Section 3.3)
6. Local Plan Making		
6.1 Approval and Referral Requirements	(4) A draft LEP shall: - minimise the inclusion of provisions that require the concurrence, consultation or referral of development applications to a Minister or public authority, and - not contain provisions requiring concurrence, consultation or referral of a Minister or public authority unless the council has obtained the approval of: (a) the appropriate Minister or public authority, and (b) the Director-General of DOP (or delegate), prior to a certificate under section 65 of the EP&A Act being issued, and - not identify development as designated development unless the council: (a) can satisfy the Director-General of DOP (or delegate) that the class of development is likely to have a significant impact on the environment, and (b) has obtained the approval of the Director-General of DOP (or delegate) prior to a certificate being issued under section 65 of the EP&A Act	Draft LEP to adopt Standard LEP template and to be consistent with this direction.
6.2 Reserving Land for Public Purposes	A draft LEP shall not create, alter or reduce existing zonings or reservations of land for public purposes without the approval of the relevant public authority and the Director-General of DOP (or delegate). When a Minister or public authority requests a council to reserve land for a public purpose in a draft LEP and the land would be required to be acquired under Division 3 of Part 2 of the Land Acquisition (Just Terms Compensation) Act 1991, the council shall: - reserve the land in accordance with the request, and - include the land in a zone appropriate to its intended future use or a zone advised by the Director-General of DOP (or delegate), and - identify the relevant acquiring authority for the land. When a Minister or public authority requests a council to include provisions in a draft LEP relating to the use of any land reserved for a public purpose before that land is acquired, the council shall: - include the requested provisions, or	Public open space zones to be included in draft LEP. Land to be acquired will be identified in Section 94 Contributions Plan or will be nominated for acquisition by relevant public authority only after that authority's approval has been granted. Approval will similarly be sought from each relevant agency for any other reservations involving acquisition before land is rezoned.



DIRECTION	EFFECT OF DIRECTION	IMPLICATIONS FOR MENANGLE PARK
	take such other action as advised by the Director-General of DOP (or delegate) with respect to the use of the land before it is acquired. When a Minister or public authority requests a council to include provisions in a draft LEP to rezone and/or remove a reservation of any land that is reserved for public purposes because the land is no longer designated by that public authority for acquisition, the council shall rezone and/or remove the relevant reservation in accordance with the request.	



3.7 LOCAL PLANS AND POLICIES

The following local environmental plans and development control plans currently apply to Menangle Park. However, to enable urban development to proceed on the site, it is intended that a new LEP and DCP will be prepared. Once these instruments are adopted, the existing planning framework described below will no longer apply to Menangle Park.

The study area is currently zoned partly under Campbelltown Interim Development Order No. 15 and partly under Campbelltown Local Environmental Plan – District 8 (Central Hills Lands) as shown on Figure 6.

3.7.1 Campbelltown Interim Development Order No. 15

Menangle Park is primarily within Zone 1- Non-Urban under IDO No. 15. In Zone 1 the following uses are prohibited:

Bulk stores, caravan parks, car repair stations, commercial premises, industries other than rural industries, extractive industries or home industries, liquid fuel depots, motor showrooms, residential buildings, refreshment rooms, roadside stalls; service stations; shops, timber yards, transport terminals, warehouses.

Any purpose other than those listed above is permissible with development consent.

Under clause 7 of IDO No. 15, land in Zone 1 shall not be subdivided unless each allotment has a minimum area of 40 hectares. However subdivision of land to allow allotments of not less than 2ha (up to a maximum of not more than 3 as specified and only where consistent with other specific requirements regarding frontage and depth) is permissible where Council is satisfied that the proposed use is for agriculture or another permissible use other than a dwelling house.

Under IDO No 15 there is a 40ha subdivision minimum for Non Urban land west of the freeway and a 100ha subdivision minimum for Non Urban land east of the freeway. Mining is permissible with consent.

3.7.2 Campbelltown Local Environmental Plan – District 8 (Central Hills Lands)

Land in the north east of the site to the east and west of the F5 Freeway is currently zoned 7(d1) Environmental Protection (Scenic) under Campbelltown LEP D8. No development is listed as permissible without development consent in the 7(d1) zone. The following uses are prohibited in the zone:

Aerodromes; animal boarding or training establishments; airports; boarding-houses; bulk stores; bus depots; car repair stations; caravan parks; clubs; commercial premises; drive-in theatres; entertainment and amusement parks; extractive industries; gas holders; general stores; generating works; hotels; heliports; industries (other than home industries or rural industries); intensive horticulture; intensive livestock keeping; junk yards; liquid fuel depots; mines; motels; motor showrooms; places of assembly; recreation facilities; refreshment rooms; residential flat buildings; roadside stalls; sawmills; service stations; shops; tourist facilities; transport terminals; warehouses.

All other uses are permissible with development consent.

The minimum allotment size for the subdivision of land within the 7(d1) zone is 100 ha and consent can generally not be granted for the erection of a dwelling house on land zoned 7(d1) unless that allotment has a minimum area of 100ha. However additional dwellings on land may be approved under certain circumstances.



Figure 6: Existing zoning (Source: Campbelltown City Council)



3.7.3 Campbelltown (Sustainable City) Development Control Plan 2009

This Comprehensive DCP came into effect on 24 June 2009 and is in two parts. Volume 1 applies to land within the Campbelltown LGA with the exception of certain specified land to which separate DCPs apply. Volume 2, which relates to the engineering requirements for development, applies to all land within the Campbelltown LGA.

Volume 1 currently applies to the Menangle Park area and contains requirements that apply to all types of development and then specific provisions relating to residential, mixed use, commercial, industrial and child care centre development. However as part of the current study it is proposed that a site specific section of the DCP will be prepared to guide the future development of the Menangle Park release area. An amendment to Campbelltown (Sustainable City) DCP 2009 will therefore be required to incorporate a site specific section applying to Menangle Park.

Volume 2 currently applies to Menangle Park and will continue to apply following the preparation of the Menangle Park DCP.

3.7.4 Development Control Plan No. 49: Rural Environmental Sub-Division Dwelling Policy

This DCP applies to all land zoned for scenic protection and non-urban uses. The land which makes up Menangle Park is affected by both of these zones. This plan aims to retain the existing rural/residential character found within these zones through the provision of detailed guidelines in relation to:

- (a) Subdivision standards;
- (b) Provision of services and amenities;
- (c) Erection of dwellings;
- (d) Erection of outbuildings; and
- (e) Creation of dual occupancy buildings.

3.7.5 Development Control Plan No. 83: Heritage Policy

This DCP contains the heritage provisions for Campbelltown LGA and identifies heritage items within Campbelltown (Appendix 1) and specifies items identified by the Heritage Act (State Items) in Appendix 2. It requires development consent for certain works to a heritage item and specifies works that do not require consent. It also specifies information required when seeking consent for works to a heritage item. Further it includes requirements for conservation and heritage incentive provisions.

The following items located within the Study area are identified under the DCP:

Table 7: Items listed in Heritage DCP

ITEM	ADDRESS
Glenlee	Lot 1 DP 713646, Glenlee Road (Note: identified as item identified by Heritage Act)
Menangle House	Lot 102, DP776612
Menangle Railway Viaduct	over Nepean River
Menangle Weir	Near railway viaduct
Riverview	Lot 2, DP 589899, Menangle Road
The Pines	Lot 12, DP 786117, Menangle Road
Menangle Park Paceway	Lot 3, DP 593211, Racecourse Avenue
Upper Canal	Generally following western boundary of LGA and south

4 SITE ANALYSIS

To be able to assess the development capability of Menangle park a number of environmental and technical investigations have been carried out on the site. These studies have identified both the opportunities and constraints offered by the site and which influence the eventual development that may be considered. A list of the studies is provided in Chapter 1. This Chapter provides a brief summary of the findings of these studies having particular regard to the implications for future urban development. These studies have informed the preparation of the proposed Structure Plan and have also taken account of the proposed Structure Plan in developing their conclusions.

Where further detailed technical information is required on the issues outlined below, please refer to the source document. Copies of the technical studies are available from Campbelltown City Council.

4.1 LAND CAPABILITY

Information in this section is drawn from the *Report on Land Capability Study* undertaken by Douglas Partners Pty Ltd in 2004 and the review of that Study undertaken similarly by Douglas Partners in December 2009. The Land Capability Study was prepared to assess the general suitability of the Menangle Park site having regard to soil erosion and instability, soil salinity, acid sulphate soils and soil contamination.

4.1.1 Existing Conditions

The eastern part of the Menangle Park site comprises broad rolling hills with gentle to moderate slopes (3-15%) passing to the west into a gently sloping to flat alluvial terrace (0-5%) adjacent to the Nepean River. The rolling hills in the north and eastern part of the site are underlain by Bringelly Shale and Ashfield Shale of the Triassic Wianamatta Group. The low lying areas to the west are underlain by Quarternary "low level" alluvial deposits of the Nepean River Valley. Tertiary "high level" alluvial deposits are preserved in the central part of the site between the Hume Highway and the Main Southern Railway Line. Soil landscapes on site form primarily the Blacktown (to the east) and Theresa Park (to the west) Soil Landscapes with more limited areas of Luddenham soils in the north.

Soil Erosion

The soil erosion potential of soils is dependent on their dispersivity and sodicity. Soils can be assessed to be non-dispersive to highly dispersive with sodicity varying from non-sodic to highly sodic.

On the Menangle Park site high sodicity and moderate to high dispersivity were identified in samples from both the Blacktown and Theresa Park Soil Landscapes. These are generally located in the valleys and on mid to lower slopes formed on shale of the Wianamatta Group.

Slope Instability

The Blacktown and Theresa Park Soil Landscapes can be prone to slope instability due to slumping and soil creep particularly on steep south-facing slopes underlain by shale. However, as the majority of the slopes occurring on the site have a gradient of less than 15%, slope instability is considered unlikely. However the prominent hill in the south east of the site adjacent to the Hume Highway has a low to moderate risk of instability due to slopes in excess of 15%.

Soil Salinity

The site has been found generally to have non-saline conditions in the central and western parts which are underlain by tertiary and Quarternary alluvial deposits and slight to moderately saline conditions in some areas associated with drainage lines in the north and south underlain by shales of the Wianamatta Group. The highest salinity conditions (slight to moderately saline conditions) were found to occur in drainage areas within the Blacktown and Luddenham Soil Landscapes

Acid Sulphate Soils

The soil samples collected across the site revealed no potential or actual acid sulphate soil material on site.

Soil Aggressivity to Buried Structures

Soil conditions on site have been assessed as being non aggressive to moderately aggressive towards concrete structures and non aggressive to mildly aggressive towards iron and steel.

Soil Contamination

Following a preliminary contamination assessment it was identified that there was no evidence of significant or widespread or diffuse contamination across the site. However potential localised contaminants could arise on site from a number of sources including land filling, application of pesticides, storage of chemicals, contaminated groundwater movement, asbestos, septic tanks etc. Several areas were also identified as having moderate potential for contamination based on current or past land use and/or anecdotal evidence. These areas include the old fireworks site, Lot D DP 19853 former farm shed (asbestos), areas of cut and fill associated with Sydney Gas extraction plants etc, land associated with sand mining operations adjacent to Nepean River, various agricultural properties, pindone bait laid for rabbits on Cummins Road and Glenlee Olive Estate.

4.1.2 Issues and implications

The Land Capability Assessment concludes that the site is suitable for urban or rural-residential development generally across most areas of the site outside flood prone areas. The study does however identify some areas that may have issues related to soil salinity, soil erodability, slope stability and contamination. Specific measures are recommended in the report to address these matters. These include:

- Site specific testing and adoption of appropriate salinity management measures (including use of appropriate road and pavement construction techniques, avoidance of excavation in lower slope areas, use of appropriate building and landscape techniques including damp proof courses, salt resistant bricks and sulphate resistant cement etc) as required;
- Hydrogeological assessment to determine potential impact of cut/fill activities, if proposed, on groundwater levels and soil salinity. It should be noted that there will be no large scale bulk filling across the site;
- Further assessment of contamination on a site by site basis including preparation of preliminary assessment and further assessment if contamination identified;
- Detailed consideration of appropriate engineering and building works on land with moderately steep slopes in the south east of the site adjacent to the Hume Highway having regard to low to moderate landslide risk in this location;
- Preparation of detailed Soil and Water Management Plans in accordance with Managing Urban Stormwater: Soils and Construction (1988) for development addressing site issues such as areas of slight to moderate salinity and moderately dispersive soils which result in a moderate to high potential for erosion of exposed soils.

These matters can be addressed at the subdivision stage having regard to controls to be incorporated into the DCP for the site.

4.2 FLOODING AND DRAINAGE

Information in this section is drawn from the following documents:

- *Report for Menangle Park Flood Study (Nepean River) prepared by GHD (Sept 2008 Rev 4);*
- *Local Flooding and Stormwater Quantity Management prepared by GHD (May 2010);*
- *Menangle Park WSUD Strategy Report prepared by AECOM (June 2010).*

These reports were prepared to assess the Menangle Park site characteristics and design issues in relation to flooding, water quality and stormwater drainage. The reports have had regard to the proposed Structure Plan with the exception of the Menangle Park Flood Study which preceded the preparation of the Structure Plan. However, relevant findings of the Menangle Park Flood Study were incorporated into the Local Flooding and Stormwater Quantity Study undertaken by GHD (May 2010).

4.2.1 Existing Conditions

Relevant factors affecting flooding and drainage include climate, topography, existing waterways and creeks, riparian corridors, climate change etc. Menangle Park is located in a climatic zone where there is the possibility of a relatively high month of rainfall at any period during the year. A mild seasonal pattern is evident with generally the average being higher in late summer and early autumn, dropping to a low towards the end of winter and early spring.

In terms of topography the site has three distinct drainage creek valleys draining roughly east to west and discharging into the Nepean River. Approximately 60 to 70% of the site is located in reasonably steep terrain with slopes in excess of 2 to 3 %. This is to the east of the Nepean River alluvial terrace (floodplain) which occupies the central and western part of the site.

Existing water quality on site is being impacted by existing land uses. Testing undertaken indicated faecal coliform contamination and suspended solids and nutrients exceeding guideline values. This is thought to be the result of the failure of onsite wastewater treatment systems, pumping of these systems into the stormwater network and the presence of stock and horses on site.

Nepean River Flooding

The Menangle Park Flood Study³ (GHD, September 2008) models the 1%, 5% and 20% AEP design storms (1 in 100 year flood event, 1 in 20 year flood event and 1 in 5 year flood event respectively) and the Probable Maximum Flood (PMF). The modelling identified that under existing conditions (taking account of approved sandmining):

- The racecourse avenue railway underpass is inundated in all simulated design events;
- The northern railway culvert is subject to flooding from the Nepean River as well as local flooding in all simulated design events;
- At the southern part of the site, all floods greater than the 20% AEP overtop Menangle Road and discharge through the railway underpass before re-entering the Nepean River upstream of the Menangle Park Paceway;
- There is a large storage area on the south-western side of the river where three tributaries drain from the town of Menangle;
- The railway is mostly above the 1% AEP storm however in the PMF it is flooded.

In terms of flood hazard, given that the majority of the floodwaters are deeper than 1.0m, the majority of the Nepean River floodplain is categorised as High Hazard.

Figure 7 shows the extent of flood impact in a 1 in 100 year flood event.

³ The Menangle Park Flood Study also models various scenarios involving sand mining and development west of the railway line. However, none of these scenarios is anticipated by this LES.

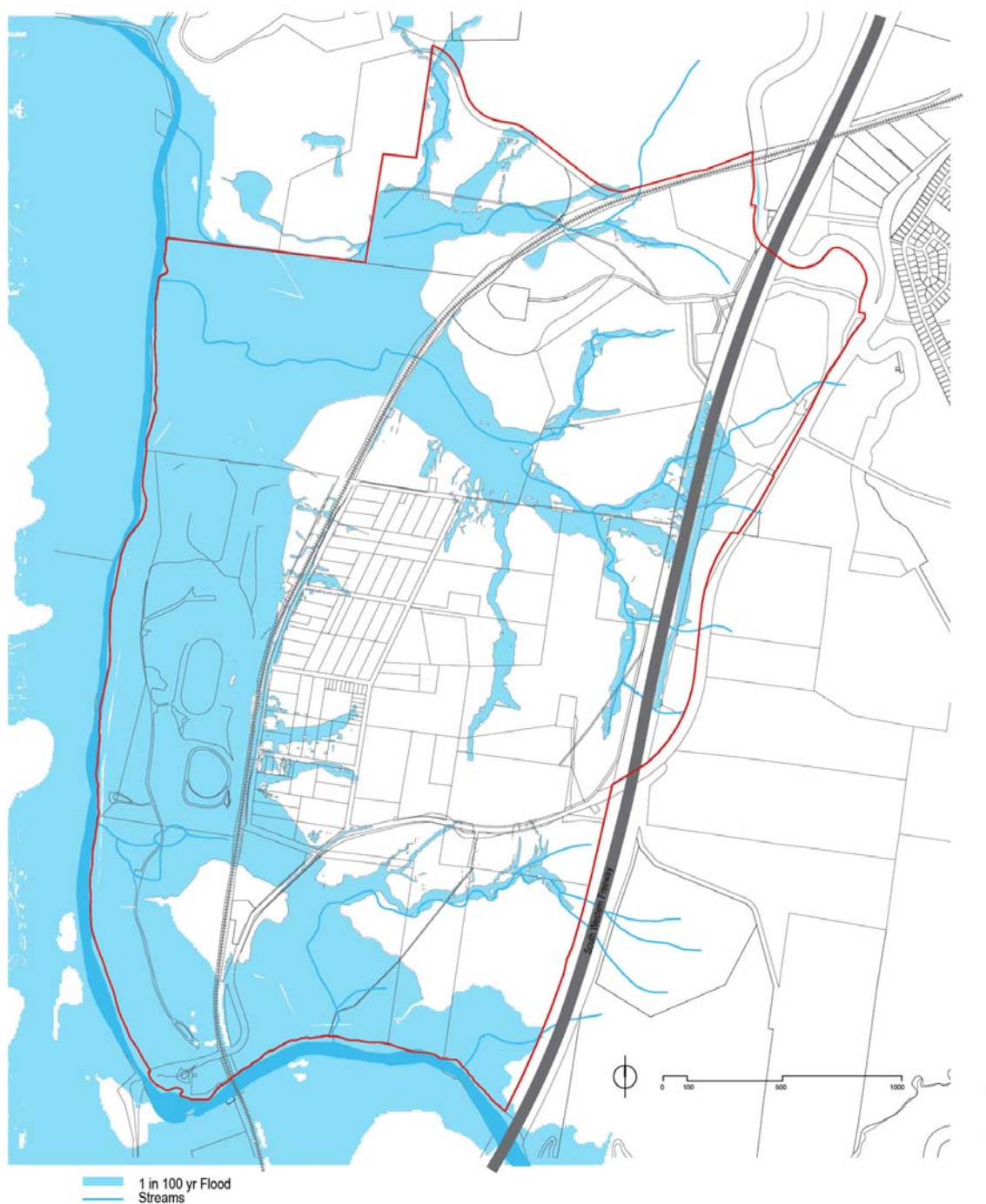


Figure 7: Areas currently subject to 1% AEP flood (Source: GHD)

Local Flooding and Stormwater Quantity Management (Detention)

The Nepean River bounds the site to the west and receives discharge from all drainage systems on the Menangle Park site. A large portion of the site includes the Nepean River and its floodplain. Otherwise the site is drained generally in a westerly direction via 5 creeks (referred to as creek N, M (Howes Creek), S1, S2 and small tributaries to the west of Menangle Park). Along the drainage paths some creeks discharge under the South Western Freeway, Main Southern Railway and/or Menangle Road. These crossings are achieved via culverts. A number of the creeks have farm dams along their reaches.

Creeks within the study area (excluding the Nepean River itself) have been categorised in accordance with the Water Management Act with management objectives for each category stream identified below. Streams were categorised as shown in Table 8.

Table 8: Stream Categories

Category	Management Objectives
3 rd Order - Category 1 Environmental Corridor	Minimum Core Riparian Zone (CRZ) of 20-40 m from the top of each bank, with a further 10m vegetated buffer to counter edge effects. The entire riparian zone is to consist of local provenance native vegetation with the CRZ including full structural floristics of the endemic vegetation community. Utility services, bushfire asset protection, recreational activities and stormwater treatment facilities etc to be located outside the CRZ
2 nd Order - Category 2 Terrestrial and Aquatic Habitat	Minimum CRZ of 20 m from the top of each bank, with a further 10m vegetated buffer to counter edge effects. The entire riparian zone is to consist of local provenance native vegetation, with the CRZ including full structural floristics of the endemic vegetation community. Utility services, recreational activities and stormwater treatment facilities etc to be located outside the CRZ
1 st Order - Category 3 Bank Stability and Water Quality	CRZ minimum width of 10m from top of each bank on each side of the drainage line and generally no vegetated buffer. Vegetation used in restoration will be of local provenance. Previous planning decisions have, on occasions, enabled 1st order streams to be 'managed' like a vegetated buffer and/or incorporated into WSUD initiatives.

The relevant riparian zones as determined by creek classifications above are illustrated on Figure 8 and have been incorporated into the proposed Structure Plan.

Stormwater Quality Targets

In response to the Final Reports of the Healthy Rivers Commission Independent Inquiry (released August 1998 and April 1999) management objectives were investigated by the Healthy Rivers Commission (HRC) and a Statement of Joint Intent (SOJI) was established in 2001 for the sustainable management of the Hawkesbury Nepean River System. All agencies and Councils are responsible for adopting the water quality objectives to use as guidelines for planning purposes. The specified water quality objectives for nutrients are nominated as the criteria to be adopted for the initial phases of an adaptive management regime for water quality. With the special condition dedicated to the protection of the Hawkesbury Nepean River as represented in the SOJI, more stringent targets are recommended.

An investigation was undertaken (AECOM, 2009) to determine appropriate stormwater quality targets for the Menangle Park site, discharging to the Hawkesbury-Nepean River System, that reflect the intent of the SOJI. The analysis led to the recommendation that an appropriate frequency of compliance to the stipulated SOJI water quality targets be set at 93% and 97% of the time for Total Phosphorous (TP) and Total Nitrogen (TN) concentrations respectively. The recommended corresponding load-based targets for pollutant load reduction of Total Suspended Solids (TSS), TP and TN are 85%, 70% and 55%. This represents more stringent stormwater quality targets than are typically adopted currently across Sydney and Australia which nominate pollutant load reduction of 85%, 65% and 45% for TSS, TP and TN.

With the stretch target for stormwater quality for Menangle Park, it will be necessary to incorporate water sensitive urban design (WSUD) solutions that extend the conventional WSUD approach. This will involve the bioretention systems that are specifically designed for enhanced nitrogen removal. The strategy for delivering the identified water quality target is presented in the *Menangle Park WSUD Strategy Report* prepared by AECOM (June 2010) and discussed below.



Figure 8: Riparian Corridors (Source: Menangle Park WSUD Strategy, Aecom, June 2010)

4.2.2 Issues and implications

Local Flooding and Stormwater Quantity Management

Following analysis of the existing flood environment, further work has been undertaken to understand the impact of flooding and drainage on potential development of the Menangle Park site. This has looked at both the local and the Nepean River flood conditions. In particular the 5% AEP design storm for the Nepean was incorporated into the modelling of flooding of the 1% AEP in the local creeks. This level was used as the local control for downstream flooding in the Local Flooding and Stormwater Quantity Study (GHD, May 2010)

Flooding represents a significant development constraint on the site. All creeks within the study area exhibit local flooding and local flooding conditions could potentially worsen with increased impervious areas resulting from urban development.

It should be noted that as part of the analyses undertaken for this LES, a detailed examination was made of fill options in the floodplain to potentially increase the development footprint. This was ultimately disregarded due to the high volumes of fill that would be required, environmental impacts and financial feasibility. Only minor fill is proposed in localised areas to allow a sensible development footprint to be established.

Flood management for Menangle Park is required to mitigate the impacts of both nuisance flooding associated with the capacity of drainage infrastructure and potentially hazardous flooding in major storm events. The Campbelltown (Sustainable City) DCP requires that developed flood peaks match the undeveloped natural peak flow rates for all storm events up to and including the critical 1% AEP event. To this end, detention basins are proposed to maintain the pre-development storm discharges in the post-development drainage design scenario for storm discharges for the 20% to 1% AEP events.

The location of the proposed detention basins is shown in Figure 9. Further detail regarding detention capacity and effectiveness is provided in the Local Flooding and Stormwater Quantity Management report (GHD, May 2010).

In assessing the flood risk, consideration needs to be given to the full range of risks to people and property. Generally this will require:

- All buildings to be located above the Flood Planning level associated with the creeks across the site and any precinct basins or local flood routes. It is proposed that Flood Planning Levels be adopted that locate floor levels of buildings with a freeboard of 300mm to 500mm (depending on flow depth) above the 1% AEP flood levels;
- Flood evacuation planning for all areas designated as flood prone land. To this end the road layout has been adopted that facilitates evacuation.

Stormwater Quality Management

A WSUD Strategy has been prepared by AECOM (June 2010) to address the water related aspects of ecologically sustainable development for any future development of the site. This study builds on the stormwater quantity information outlined in the Local Flooding and Stormwater Quantity (Detention) Study (GHD, May 2010). The report identifies an appropriate strategy to address potable water conservation, stormwater quality control, flow management, riparian corridor management and wastewater pollution control. It outlines the design mitigation measures that can address the impacts of urbanisation on hydrology and water quality.

The stormwater quality management strategy for Menangle Park has been prepared according to general WSUD principles. The WSUD Strategy aims to meet a number of objectives and performance targets as outlined in Table 9.

Table 9: WSUD Objectives for Menangle Park

Objective	Performance Measure and Target
1. Water Conservation	Combination of water efficiency and reuse options for a 45+% reduction on the benchmarked water use. ¹ Stretch target: 60+% reduction on the benchmarked water use. where a reticulated non-potable (recycled) water supply is available the target reduction is increased to 60% with a stretch target for a 70+% reduction on the benchmarked water use. ²
2. Stormwater Pollution Control	55% reduction in the mean annual load of TN ³
	70% reduction in the mean annual load of TP
	85% reduction in the mean annual load of TSS
3. Flow Management ⁴	Maintain 1.5 year ARI peak discharge to pre-development magnitude. Stream Erosion Index ⁴ (SEI) of 2 Stretch target: SEI target of 1 (limit the erosion potential of urban waterways to the pre-development erosion potential).
4. Flood Protection	Maintain the 5 year – 100 year ARI peak discharges to pre-development magnitude.
5. Riparian Corridor Management	Provision of riparian corridors to meet the NSW Office of Water's requirements
6. Wastewater Pollution Control	No dry weather sewer overflows Restrict wet weather sewer overflows to a maximum of 10 overflows each 10 years

Notes:

- 1 The water conservation target extends the compliance requirement under the NSW Government's BASIX scheme for a 40% reduction from the benchmark water use of 90,340 L/p/year (247 L/p/d). A 40% reduction from the benchmark water use is equivalent to 149 L/p/d, a 45% reduction is equivalent to 136 L/p/d.
- 2 Landcom's WSUD Policy (2010) has identified targets and stretch targets for water conservation for lots and apartments in areas with and without reticulated non-potable water supply. For single residential lots in areas with no reticulated non-potable (recycled) water supply available (target 45% reduction, stretch target 60+% reduction). For single residential lots in areas with reticulated non-potable (recycled) water supply available (target 60% reduction, stretch target 70+% reduction).
- 3 The stormwater pollution control and flow management targets in the above table reflect the recommendations of a report into water quality measures required to meet water quality objectives appropriate for the Hawkesbury Nepean River System consistent with investigations by the Healthy Rivers Commission (HRC) and the commitments of the SOJL, 2001. These target reductions exceed Landcom's baseline reduction targets for a 45% reduction in TN, 65% reduction in TP and 85% reduction in TSS.
- 4 The purpose of the flow management target is for waterway stability – to minimise the impact of frequent events on natural waterways and to minimise bed and bank erosion. The SEI is the ratio of pre to post development erosion potential. The SEI target of 2 implies that post-development stormwater management must limit the increase in erosion potential of urban waterways to no more than twice the pre-development erosion potential. The combination of maintaining the 1.5 year ARI peak discharge to predevelopment magnitude and inclusion of stormwater treatment of frequent storm events (typically up to the 3 month ARI) will limit the SEI to between 1-2.
- 5 The riparian corridor management target is consistent with the NSW Office of Water's classification system and management requirements. The requirements for riparian corridor widths have been established for the site through collaboration with the NSW Office of Water.
- 6 The wastewater pollution control targets are proposed due to the sensitivity of the Nepean River downstream of the site.

Measures recommended to protect stormwater quality and flows include:

- Environmentally sympathetic drainage channels along the identified main flow routes. The required width of the vegetated swales varies, according to the conveyed flows. These channels will convey flows up to 100-year ARI storm event with an allowance for freeboard and will be vegetated swales;
- Precinct scale co-located detention/ bio-retention basins at key locations to treat the quantity and quality of stormwater flows. These systems would essentially comprise a basin (to provide detention function) combined with bio-retention (to provide water quality treatment function) situated in the invert of the basin.
- Rainwater tanks throughout, as required and as appropriate.

Further detail on the recommended measures is provided in both the WSUD Strategy (AECOM, June 2010) and the Local Flooding and Stormwater Quantity Management (Detention) Report (GHD, May 2010).

As noted above, all land below the 1% AEP will not be developed for urban purposes. Only uses such as parks, conservation areas and the like would be permitted on land below the 1% AEP. This is reflected in the proposed Structure Plan. Proposed zonings and provisions in the draft LEP will also need to take account of this restriction. In addition, the proposed DCP will need to incorporate principles for stormwater management and specific controls to guide future development.

Flood Evacuation

The Campbelltown (Sustainable City) DCP and the NSW Floodplain Development Manual require that effective flood evacuation procedures must be provided for all flood prone lands (i.e up to the PMF). Most of the precinct site area is generally located above PMF levels however in the event of such an extreme event occurring, flooding will be very widespread. Areas that are inundated by mainstream PMF flooding require a flood evacuation strategy.

Some of the lower lying areas of the development would be subject to inundation in a PMF, however the undulating topography and proposed orientation of roads would be expected to provide evacuation routes. Elevated areas would provide suitable evacuation muster areas.

The management of floods and floodplains are the responsibility of Campbelltown City Council. The State Emergency Service is mainly responsible for dealing with flood response. Flood planning and land management rest with Council. The main considerations for the evacuation strategy are:

- The areas to be evacuated, which include areas within 500 year ARI flood extents;
- Numbers of people to be evacuated and the response time available;
- Muster areas and evacuation routes; and
- Resources and transport means necessary to meet these needs.

Given the timing of flood peaks, the evacuation will be required at short notice. The strategy and operations must be pre-planned during design stages. It is considered, the site has sufficient space and locations to assemble and evacuate during flood events. The road orientation will facilitate "intuitive evacuation" i.e. roads head to high ground.

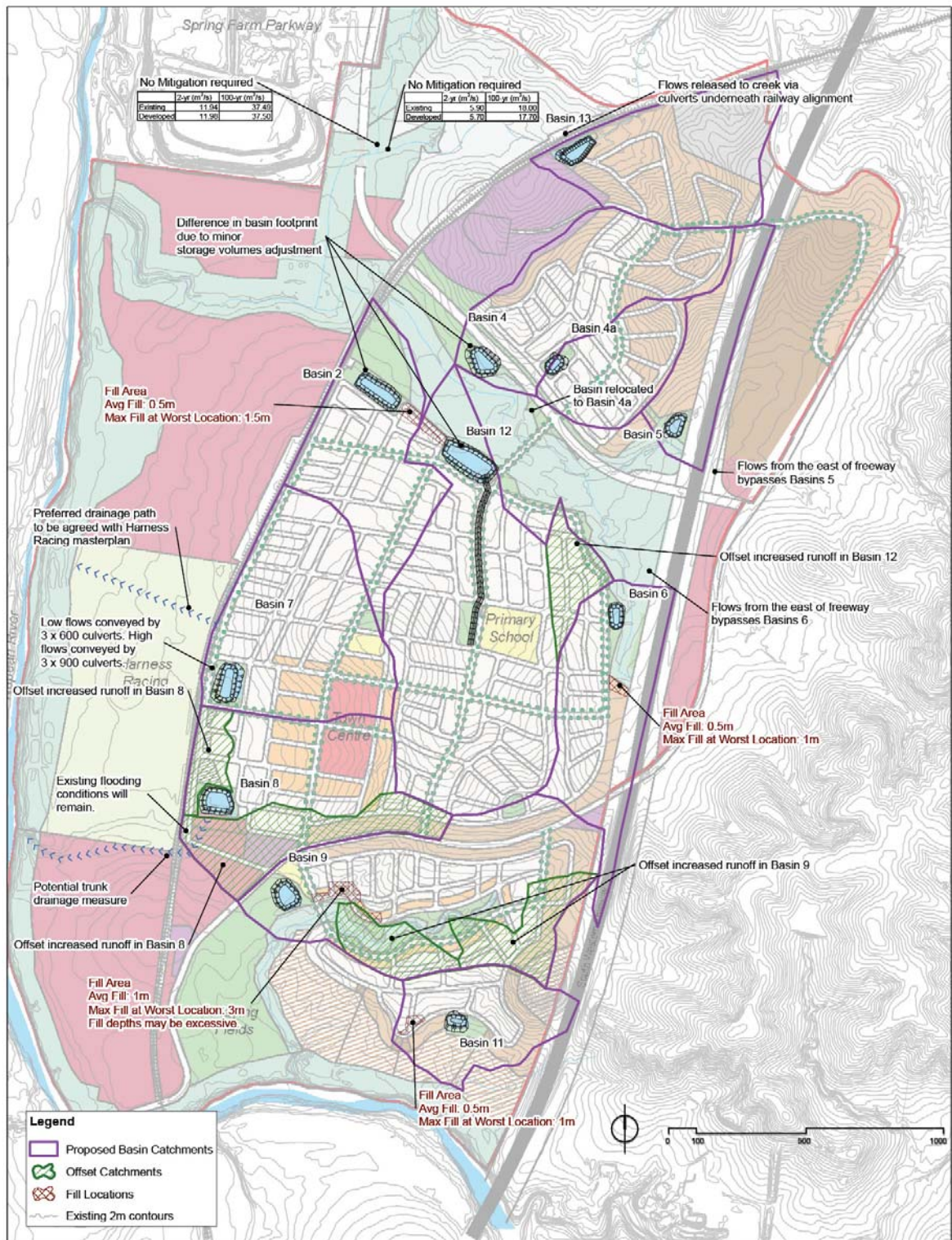


Figure 9: Stormwater Management Strategy (Source: Local Flooding and Stormwater Quantity Management (Detention), GHD Ltd, May 2010)

4.3 FLORA, FAUNA AND AQUATIC

An initial flora, fauna and aquatic assessment of the release area was undertaken by Eco Logical Australia Pty Ltd in 2009 (*Menangle Park Flora, Fauna and Aquatic Assessments*, April 2009). This report was intended to identify possible constraints to development posed by flora, fauna and aquatic communities on the site. The work undertaken by Eco Logical was then subsequently reviewed by GHD Ltd as part of an 'Offset Strategy' for the site (*Report on Menangle Park Offsetting Strategy*, May 2010). The following is a discussion of the findings of both these reports.

4.3.1 Flora, Fauna and Aquatic Assessments

The *Menangle Park Flora, Fauna and Aquatic Assessments* report was based on fieldwork, desktop analysis and the application of "Ecological Constrain Analysis" techniques. The key findings of the assessments are as follows:

Flora

A search of the Atlas of NSW Wildlife identified that four threatened plant species have been reliably recorded in the vicinity (within 5 kilometres) of the study area in the recent past (refer Table 10). However, none of these species were detected within the study area during the course of survey work for the Menangle Park project.

Table 10: Threatened flora species in vicinity of site (identified in Atlas of NSW Wildlife)

Species	Risk Code*	Location	Habitat
<i>Cynanchum elegans</i>	TSC-E1 3ECi	Razorback Range	Sheltered slopes in dry rainforest. Suitable habitat not present in study area
<i>Eucalyptus benthamii</i>	TSC-V 2VCi	Nepean River, Camden	Riparian Forest along Nepean River on sandy alluvial flats
<i>Pimelea spicata</i>	TSC-E1 3ECi	Mt Annan, Narellan	Cumberland Plain Woodland on clay soils
<i>Pomaderris brunnea</i>	TSC-V 2VCi	Nepean River, Camden Park	Alluvial flats along Nepean River

*Risk Codes

TSC	Threatened Species Conservation Act
E1	Endangered - species at risk of extinction within 20 years
V	Vulnerable - species at risk of extinction in 20 to 50 years
2	Species with a restricted distribution in Australia (range < 100km)
3	Species with a range of greater than 100km but occurring in small populations and specific habitats
C	Species represented in at least one conservation reserve
a	Species with over 1000 plants in conservation reserves
I	Species with a known population of less than 1000 in conservation reserves

Field surveys found no species listed under the TSC Act. The following species of regional significance were encountered during the course of the field survey.

Table 11: Regionally significant flora species

Common name	Species Name	Significance Reasoning
	<i>Maireanna microphylla</i>	Known from only 3 sites in western Sydney, including Leacock Regional Park and Menangle Park
Western Boobialla	<i>Myoporum montanum</i>	Known from only 4 locations in western Sydney in the Camden and Blacktown local government areas
Narrawa Burr	<i>Solanum cinereum</i>	Known from only 5 locations within western Sydney, including dry rainforest at Fairfield City Farm, Campbelltown (including Menangle Park), Camden and Holroyd.

Six native plant communities listed as 'endangered ecological communities' under the TSC Act were found in the study area. These are shown in Table 12.

Table 12: Endangered ecological communities in Menangle Park

Vegetation Type	Community*	Hectares	% of total site area
Riparian Forest	River-flat eucalypt forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions	55	6
Alluvial Woodland	River-flat eucalypt forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions		
Riparian Woodland	River-flat eucalypt forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions		
Shale Plains Woodland	Cumberland Plain Woodland†	50.25	6
Shale Hills Woodland	Cumberland Plain Woodland†		
Freshwater Wetland	Sydney Freshwater Wetlands	9.81	1
TOTAL		115.06	13

* River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions includes and replaces the previous listing of this vegetation as 'Sydney Coastal River- Flat Forest' Endangered Ecological Community.

†Cumberland Plain Woodland is listed as a Critically Endangered Ecological Community

Fauna

A total of 29 species listed under the TSC Act or EPBC Act were considered in the assessment. Four species of listed insectivorous bats were tentatively identified through call recordings: eastern false pipistrelle (*Falsistrellus tasmaniensis*), eastern freetail-bat (*Mormopterus norfolkensis*), greater broad-nosed bat (*Scoteanax rueppellii*), and large-footed myotis (*Myotis adversus*). The powerful owl (*Ninox strenua*) has been observed in riparian forest in the study area (local resident pers. comm.). No other listed species were observed during the study period. Based on habitat availability, a further 8 listed species of fauna were considered likely to occur in the Menangle Park study area.

Of the species known or likely to occur, four are listed under the EPBC Act: green and golden bell frog (*Litoria aurea*), grey-headed flying-fox (*Pteropus poliocephalus*), regent honeyeater (*Xanthomyza phrygia*), and the swift parrot (*Lathamus discolor*). Migratory species are also listed under the EPBC Act, with two migratory species, Latham's snipe (*Gallinago megala*) and the leaden flycatcher (*Myiagra ruficollis*), observed in the Menangle Park study area, and five species considered likely to occur (Table 13). One of these migratory species, the regent honeyeater, is also listed as endangered under the EPBC Act and TSC Act. A total of ten regionally significant species, or signs of these species, were observed and a further 20 regionally significant species were considered to be likely to occur in the Menangle Park study area based on habitat availability.

Table 13: Threatened Fauna Species that are likely to occur

Common Name	Species Name	TSC Act	EPBC Act
Common Bentwing-bat	<i>Miniopterus schreibersii</i>	V	-
Cumberland land snail	<i>Meridolum corneovirens</i>	E	-
Eastern False Pipistrelle	<i>Falsistrellus tasmaniensis</i>	V	-
Eastern Freetail-bat	<i>Mormopterus norfolkensis</i>	V	-
Greater Broad-nosed Bat	<i>Scoteanax rueppellii</i>	V	-
Green and Golden Bell Frog	<i>Litoria aurea</i>	E	V
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	V	V
Koala	<i>Phascolarctos cinereus</i>	V	-
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	V	-
Large-footed Myotis	<i>Myotis adversus</i>	V	-
Powerful Owl	<i>Ninox strenua</i>	V	-
Regent Honeyeater	<i>Xanthomyza phrygia</i>	E	E
Swift Parrot	<i>Lathamus discolor</i>	E	E

The listing of species under the TSC and EPBC Act is indicated by E – Endangered, V = Vulnerable

Aquatic

The existing aquatic habitat within the study area is highly degraded due to land clearance, agricultural activities, loss of riparian vegetation, pollution, erosion and sedimentation.

Two fish species listed under the Fisheries Management Act could potentially occur in the study area: the Macquarie Perch (*Macquaria australasica*) and the Australian Grayling (*Prototroctes maraena*). Macquarie Perch have been recorded in the Nepean River system and the Australian Grayling has been recorded in the Hawkesbury-Nepean River system.

Given the degraded nature of the aquatic habitats, the occurrence of mosquito fish and the barriers to fish passage, no threatened or endangered species or regionally significant species were found within the study area and are not considered likely to be found there in the future.

Implications

Overall, the ecological values of the site are highly degraded due to extensive clearing, continuing agricultural and mining activities, weeds, feral animals, fragmentation of habitat, barriers to the movements of both terrestrial and aquatic animals, erosion and poor water quality.

Despite these numerous impacts, the site does contain remnant Cumberland Plain vegetation. This community has been extensively cleared and the majority of remnants from Western Sydney are under increasing pressure for development. The site contains Cumberland Plain Woodland which is a Critically Endangered Ecological Community as well as other Endangered Ecological Communities, and habitat for flora and fauna species listed under the TSC Act and EPBC Act. Furthermore, 3 regionally significant flora species and 30 fauna species are known to occur, or likely to occur on the site.

In terms of the Cumberland Plain Woodland impacts have been kept to a minimum and where impacts occur offsets are proposed. This is as required to gain a "Controlled Activity" approval (refer *Menangle Park Offsetting Strategy*, GHD, May 2010 for further detail).

Figure 10 shows the distribution of vegetation on the site.

An ecological constraints analysis was undertaken as part of the Flora and Fauna Assessments. This included both a vegetation constraint analysis and a terrestrial fauna constraint analysis.

The results of this analysis can be seen in Figure 11. Stands of remnant vegetation supporting mature trees with hollows and having high recovery potential were assigned a high ranking for vegetation constraint. Areas with high fauna constraint generally relate to the areas with high recovery potential. Further detail regarding the ecological constraints analysis is provided in the Flora and Fauna Assessments Report.

The Flora Fauna Assessments Report identifies five areas (hereafter referred to as 'management units') with higher ecological values. Four of these management units are located within the Menangle Park Release Area. The fifth unit, "Racecourse Woodlands", is located within the Menangle Park Paceway site but has been excluded from the evaluation due to the Menangle Park Paceway development plans. The Flora, Fauna and Aquatic Assessments report makes a number of recommendations relating to each of these management units. Table 14 provides a summary of the management units and recommended protection measures. The approximate extent covered by each management unit is shown in Figure 12. Each of these four management units is protected under the proposed Structure Plan.

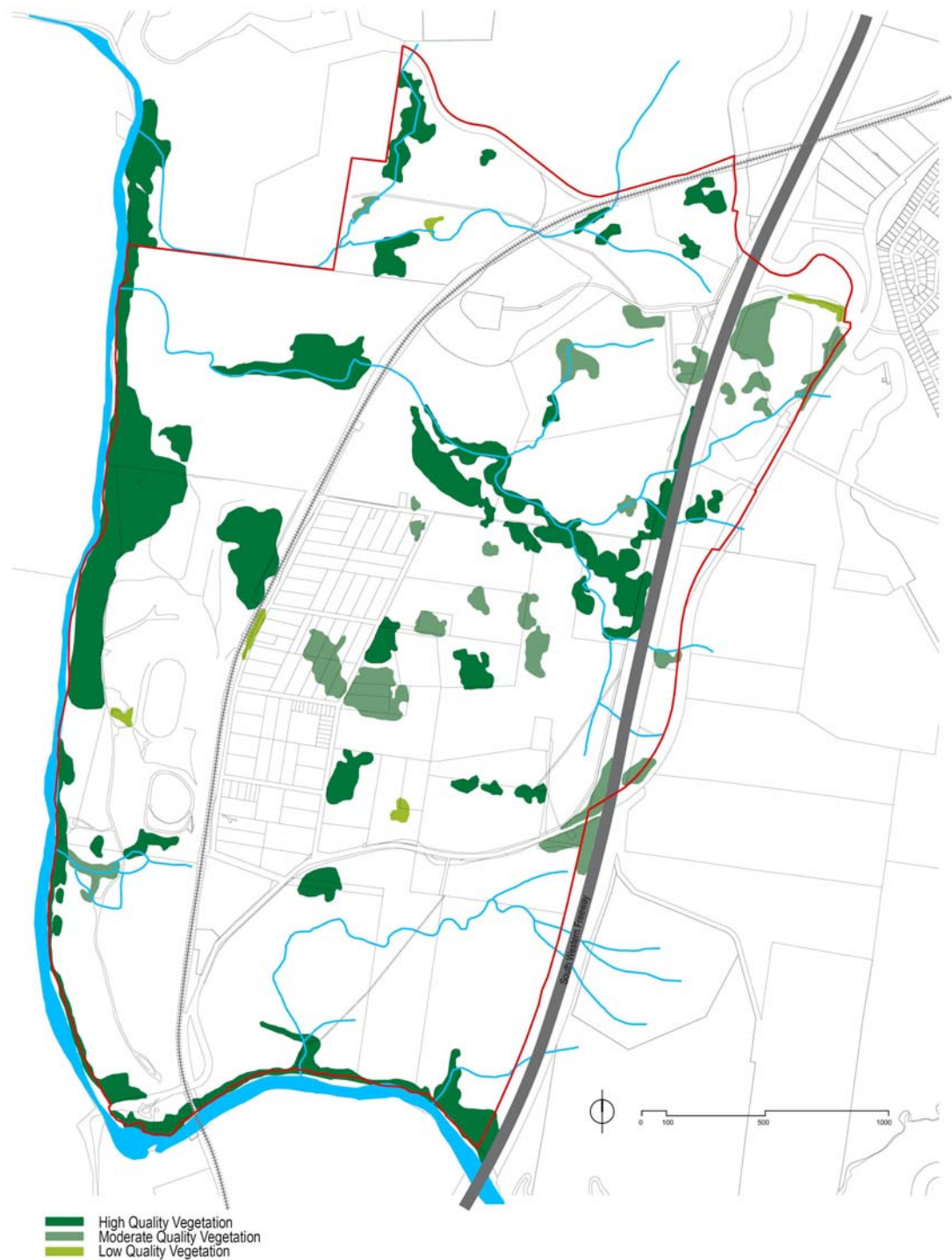


Figure 10: Vegetation distribution (Source: Urbis based on Offsetting Strategy prepared by GHD)
(Note that the categorisation of some vegetation was subsequently downgraded following further analysis as part of the Offsetting Strategy. Refer to Section 4.3.2 for further discussion)

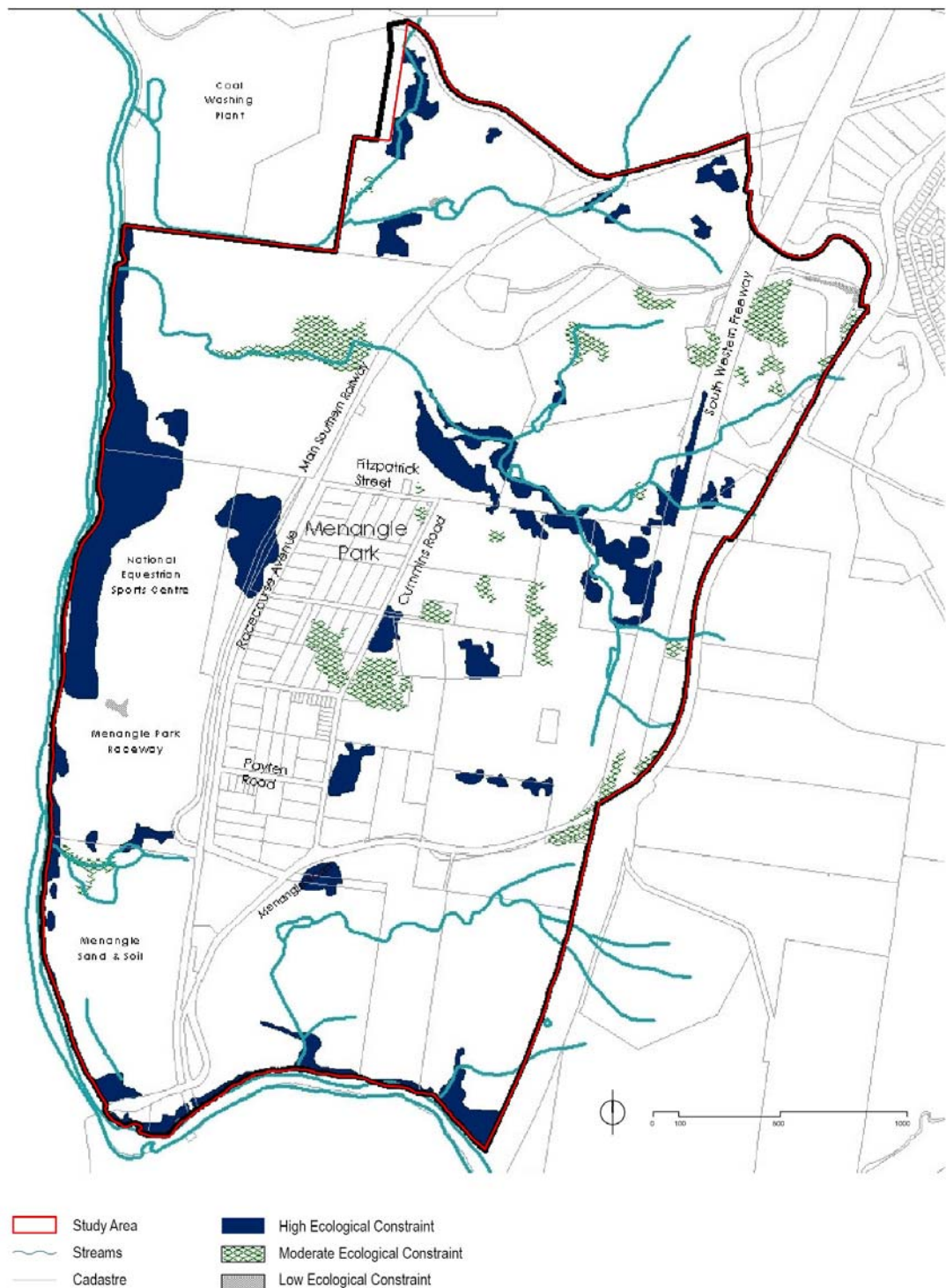


Figure 11: Ecological Constraints (Source: *Menangle Park Flora, Fauna and Aquatic Assessments*, Ecological Australia, April 2009)

(Note that the categorisation of some areas of high ecological constraint was subsequently downgraded following further analysis as part of the Offsetting Strategy. Refer to Section 4.3.2 for further discussion)

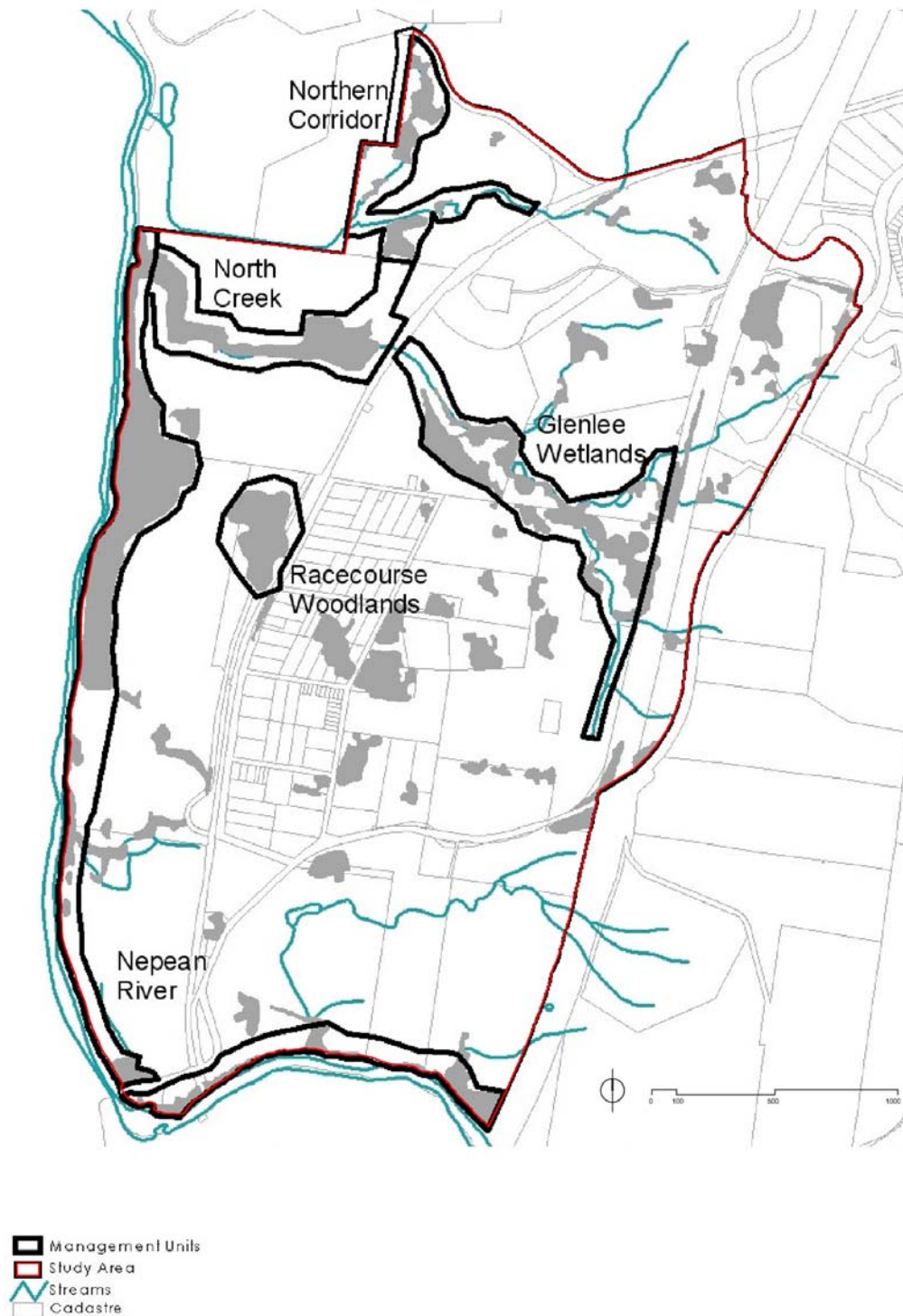


Figure 12: Vegetation Management Units (Source: *Menangle Park Flora, Fauna and Aquatic Assessments*, Ecological Australia, April 2009)

(Note that "Racecourse Woodlands" management unit excluded from the evaluation due to the Menangle Park Paceway development plans)

Table 14: Management Units and recommended protection measures

Name	Ecological Justification	Recommendations	Implementation
Nepean River Banks	Adjacent to Nepean River, a major waterway. Large grouping of high constraint areas. Threatened and regionally significant species. Connectivity through, and beyond, Menangle Park	Where remnant vegetation has been reduced to less than 100m from the bank of the Nepean River, revegetate these areas with local provenance riparian species. Where remnant native vegetation adjacent to the Nepean River extends more than 100m from the banks, these areas should be retained. Remove exotic tree and shrub species and other weeds, particularly Gleditsia and Privet.	Nepean River Banks shown as "Riparian" under proposed Structure Plan and to be rezoned for environmental protection/open space purposes in draft LEP. Revegetation and weeding to be responsibility of relevant management authority.
Glenlee Wetlands	Large grouping of high constraint areas. Wetland. Threatened and regionally significant species. Headwaters of North Creek.	Vegetation within a corridor of at least 50 metres along either side of North Creek should be conserved. Where existing vegetation extends beyond the 50 metre wide strip, the corridor should be extended to include this vegetation. Connections between the Glenlee, North Creek and Northern Corridor management units should be considered Recommendations to allow fish passage and incorporating fauna culvert design principles.	Glenlee Wetlands located within area shown as "Riparian" and "Open Space" under proposed Structure Plan. To be rezoned for environmental protection/open space purposes in draft LEP. Area identified for regeneration/revegetation under Offset Strategy. Proposed Structure Plan shows Glenlee, North Creek and Northern Corridor management units as linked corridors. Measures relating to fish passage and fauna culvert design to be included in DCP.
North Creek	Grouping of mixed constraint areas. Wetland. Threatened and regionally significant species. Connectivity of Glenlee Management Unit to Nepean River Banks management unit.	Establish vegetation within a corridor of approximately 50 metres along either side of North Creek Offline structural opportunities exist to improve water quality around this area with subsequent benefit to the aquatic habitat. Barriers to fish passage, where possible, should be removed, or modified to meet criteria provided by NSW Fisheries.	North Creek shown as "Riparian" under proposed Structure Plan and to be rezoned for environmental protection/open space purposes in draft LEP. Water quality improvements to be addressed as part of WSUD strategy. Measures relating to fish passage to be addressed in DCP.
Northern Corridor	Grouping of mixed constraint areas (patches). Threatened species habitat. Provides potential connectivity north to Mt Annan Botanic Gardens (ecological corridor will need to be established).	Targeted vegetation management and revegetation to support ecological connectivity to Mt Annan Botanic Gardens. This vegetation management to be integrated with the proposed Spring Farm Arterial Road.	Northern Corridor shown as "Riparian" under proposed Structure Plan and to be rezoned for environmental protection/open space purposes in draft LEP. Proposal provides for linkage with Mt Annan Botanic Gardens. Integration with Spring Farm Arterial Road will need to be considered at detailed design phase.

The Flora, Fauna and Aquatic Assessments report also includes general recommendations relating to the entire Menangle Park site, as detailed in Table 15. A number of these recommendations have been superseded by the findings of the Offset Strategy, as detailed in Section 4.3.2, and therefore a response to the recommendations is also provided in the table.

Table 15: Flora Fauna Assessment - General Recommendations

Recommendation	Response
1. That formal advice be sought from the Commonwealth DEWHA on the referral and approval process for this project. DEWHA provided preliminary recommendations in 2004 suggesting the submission of a draft referral to allow any comments by DEWHA to be taken into consideration before the finalisation of the structure plan.	Meetings have been held with DEWHA staff in Canberra regarding this site. DEWHA staff were advised that a referral would be forthcoming when negotiations with DECCW over the offset strategy have been completed. This referral would be undertaken post rezoning but prior to the approval of any development applications relating to the site.
2. Protect and manage areas of 'high' ecological constraint.	The project has sought to protect high ecological value vegetation, where possible. The focus is on protecting high value vegetation that is greater than 1 ha in area and has the ability to be included in a corridor network. Additionally, 4 'pockets' of remnant vegetation previously classified as 'high constraint' by Eco Logical have been reclassified as either 'moderate or low'. These locations were classified as 'high constraint' on the assumption that they contained suitable habitat for the threatened species, <i>Pimelea spicata</i> . Further targeted surveys have determined this species is not present in these locations, thereby lowering constraint value. The vast majority of 'high constraint' vegetation has been retained and protected.
3. Retain the majority of areas of 'moderate' ecological constraint. The long term management of smaller areas of 'moderate' constraint should be considered, and if these patches are not to be retained their loss should be offset through planting to consolidate remnants and link priority areas (see recommendation 10 below).	The proposed structure plan has included the retention, where possible, of 'moderate constraint vegetation' throughout the corridor network. Offsetting strategy provides for regeneration activities to improve the condition of such vegetation and undertake revegetation activities to further 'link' these resources through the precinct.
4. Provision of a buffer between areas conserved for ecological purposes and areas subject to development. Buffer areas would also assist in bushfire management, both ecologically and by reducing the level of bushfire risk for development.	Vegetation that is retained or regenerating is to be managed for biodiversity protection, and as such APZs are not permitted within these areas. Appropriate measures are identified in Chapter 4 of the Bushfire Risk Management Study.
5. Asset protection zones should not be located in areas set aside for conservation (either retained or planted vegetation).	Vegetation that is retained or regenerating is to be managed for biodiversity protection, and as such APZs are not permitted within these areas. Fire is an important ecological process, and as such must be integrated with long term environmental management. This is addressed in the Bushfire Risk Management Study (Eco Logical, June 2010)
6. Investigate the possibility of "ecological burns". The aim of these would be to remove weed growth and rejuvenate native shrub growth in woodland and riparian forest habitats. Management post fire would also be required.	Addressed in Bushfire Risk Management Study (June 2010).
7. Undertake best practice soil erosion control during construction, and maintain as required, to prevent sediment flow into watercourses and into 'moderate' and 'high' ecological constraint areas.	Best practice soil erosion measures to be included in DCP.
8. Stormwater structures to be located outside of conservation areas.	Stormwater structures are to be located outside areas of high conservation value.
9. The creek to the south of the study site could have a minimum area of riparian vegetation of approximately 5-10m from the top of the bank to facilitate water quality objectives. This can be justified primarily on the grounds of the current poor condition but also because of the considerable riparian zones achieved elsewhere on the site.	Riparian corridor provided for under proposed Structure Plan.
10. Develop and implement an Environmental Management Plan, which should include: a. Management for existing vegetation, b. Revegetation priorities (eg. infill planting in gaps within woodland and riparian forest remnants in conservation areas, connection of fragmented patches of vegetation and a strip along the western side of the motorway) and procedures, such as using local provenance species, c. Management of noxious and environmental weeds, d. Management of feral animals, and e. Plans to formalise access to areas of 'moderate' and 'high' ecological constraint, using fencing, gates, formed walking tracks, etc. as appropriate.	Requirement for preparation of Environmental Management Plans to be included in DCP.

4.3.2 Offsetting Strategy

The proposed Structure Plan incorporates the majority of high ecological value areas into riparian or open space lands. These areas are generally consistent with the recommended management units. However, some areas of high and moderate ecological constraints are proposed to be cleared to allow for the proposed urban development of the site. To address this impact an Offsetting Strategy has been prepared.

The Offsetting Strategy notes that development in accordance with the proposed Structure Plan will impact on 25.4ha of native vegetation including River-flat Eucalypt Forest on Coastal Floodplains (RFEF) and Shale Plains Woodlands (SPW), a sub-community of Cumberland Plain Woodland.

The Offset Strategy was prepared to gain approval from the DEWHA and DECCW for the proposed development footprint. The Offset Strategy is also to be submitted with a referral to DEWHA for approval of the development footprint in accordance with the EPBC Act. As such, the offset strategy has been prepared in consultation with DECCW and DEWHA. In particular, DECCW have been engaged through site visits and regular meetings. This consultation has allowed DECCW to assist in determining offset ratios, locations for offsetting actions, preferred conservation mechanism and the nature of proposed works.

The objectives of the offset strategy for Menangle Park are:

- to improve biodiversity values, through time, throughout the Menangle Park precinct;
- to maintain, through time, a 'no net loss' of native vegetation cover;
- to place conservation security over a high percentage of existing vegetation on-site;
- to invest in improving the condition of conserved vegetation through a structured bush regeneration program;
- to ensure examples of all vegetation communities found on site are included in the open space network (which includes the proposed offset areas under E2 zoning); and
- to conserve all 'high value' ecological features in the open space network.

GHD reviewed the Flora, Fauna and Aquatic Assessments to ascertain vegetation characteristics, such as type and condition, to determine the proposed offset. Additionally, GHD has completed targeted surveys on the site for the threatened herb *Pimelea spicata*. Key assumptions made by GHD in formulating the offset strategy are:

- vegetation associated with the Menangle Park Paceway site and private landholders outside of the village area have not been included in this assessment;
- the four 'pockets' of remnant vegetation (near the town centre and immediately south of Menangle Road) have been downgraded from 'high' to 'medium' constraint. Eco Logical listed these remnants as 'high' constraint due to the potential presence of *Pimelea spicata*. Targeted surveys by GHD have determined that all four of these remnants do not contain this species;
- the three small remnant vegetation 'pockets', located to the north of Menangle Road are moderate in condition;
- impacts associated with the proposed sand mining activities have not been included as it is anticipated these impacts would be assessed under a different approval process;
- the Transgrid holding in the north of the site has not been included in calculations as GHD understand a separate offset strategy has already been negotiated; and
- the rehabilitated lands associated with proposed sand mining activities would be available for offset plantings.

To offset the impact of the loss of 25.4ha of native vegetation, it is proposed to undertake three actions: conservation; rehabilitation and restoration. 47.2 ha of remnant vegetation on site will be conserved with appropriate rehabilitation and 51.2ha of land on the site will be revegetated with appropriate species. This provides offsetting for the loss of vegetation to be removed at a rate of 1:3 for vegetation of high value; 1:2 for vegetation of moderate value and 1:1 for vegetation of low value. Retained remnant vegetation and offset plantings would need to be protected through appropriate environmental conservation zoning under the future LEP for the site. Table 16 summarises the proposed offset strategy.

Table 16: Menangle Park Offset Strategy Summary

Vegetation Condition	Pre Development Total Vegetation	Vegetation Loss (ha)	Revegetation Compensation Ratio (impact: offset)	Revegetation (ha)	(Post Development) Conservation outside of DECCW riparian corridors (ha)	(Post Development) Conservation inside of DECCW riparian corridors (ha)	Restoration (ha)
High	46	1.5	1:3	4.5	18.8	25.3	44.1
Moderate	26.1	22.8	1:2	45.6	0.3	0.9	1.2
Low	3.9	1.1	1:1	1.1	1.4	0.51	1.9
Total	76.0	25.4		51.2	20.5	26.7	47.2

Sufficient land has been identified within the Menangle Park release area for offsetting impacts of the Proposal. The offsets locations are shown in Figure 13.

A key principle of DECCW's Offsetting Guidelines is to provide security in perpetuity for the offset outcomes. In this regard, the majority of conservation and offset actions proposed at Menangle Park will be protected through the use of an E2 Environmental Conservation zone. Where an E2 zone cannot be applied, conservation and offset actions will be protected under a conservation covenant or equivalent as agreed with DECCW. Revegetation and rehabilitation works will be implemented by both Landcom and Campbelltown City Council with Council maintaining management control through their obligation to manage the gazetted open space.

The Offset Strategy is proposed to be implemented over a staged period in accordance with the development program (estimated to be 15-20 years). It is proposed that a detailed vegetation management plan (VMP) would be prepared to implement the offset strategy detailing all rehabilitation components of the offset, performance objectives, and monitoring and reporting requirements. It would guide actions in the conservation and revegetation areas and control the site preparation and regeneration phases. A VMP could be required in the future DCP for the site.

Whilst a formal process for offsetting and biobanking established by the State Government (Biodiversity Banking and Offsets Scheme) was incorporated into the TSC Act in 2007, this is a voluntary scheme and was not approved when the offsetting strategy for Menangle Park commenced. Rather the offsetting strategy for Menangle Park seeks an agreed strategy which will allow the proposed development footprint to gain approval from the DEWHA and the DECCW. It will also be used to gain approval for the development footprint under the EPBC Act.

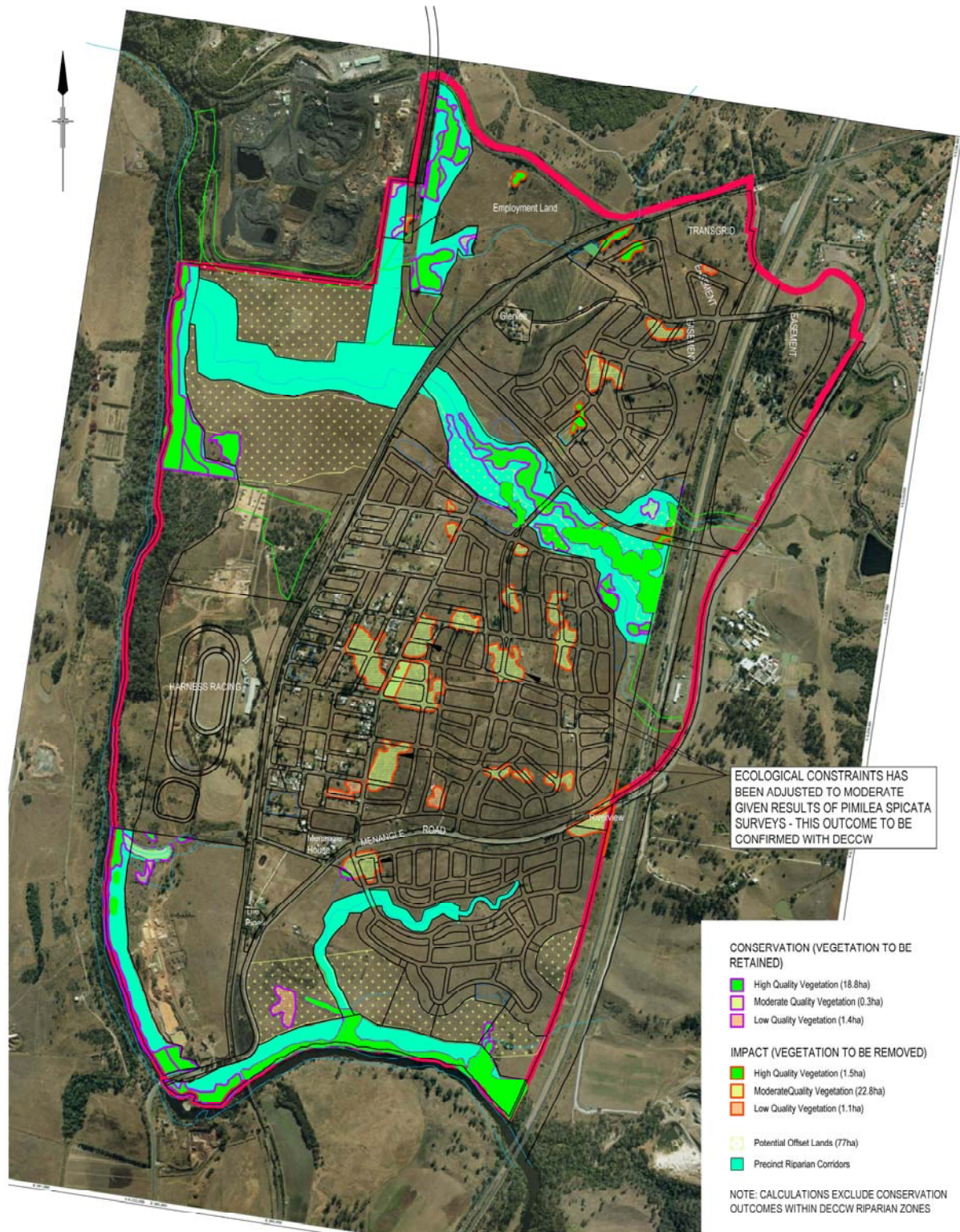


Figure 13: Offset Revegetation Locations (Source: Report on Menangle Park Offsetting Strategy, GHD Ltd, May 2010)

4.4 BUSHFIRE

Information in this section is drawn from the *Menangle Park Bushfire Assessment Report* undertaken by Eco Logical Australia (ELA) (2004) and the subsequent review *Bushfire Risk Management Study for the Menangle Park Site* (June 2010) also undertaken by ELA. The studies comprise an assessment of the bushfire risk associated with the proposed rezoning of the Menangle Park site in accordance with *Planning for Bushfire Protection 2006* (NSW Rural Fire Service 2006).

4.4.1 Existing Conditions

The Menangle Park site comprises primarily flat to moderately sloping land with the dominant vegetation type being woodland and scattered remnant vegetation. These existing site conditions result in the site being assessed as having a low to moderate bushfire hazard rating.

4.4.2 Issues and implications

The bush fire hazard was assessed having regard to the proposed Structure Plan layout incorporating remnant vegetation to be retained and proposed revegetation and restoration works. With reference to slope and hazard assessment of existing conditions, a preliminary asset protection zone assessment was undertaken. The study assumed that most vegetation outside riparian corridors will be either removed for development or managed for recreation therefore the riparian corridors were used to define the bushfire prone vegetation rather than the vegetation currently occurring on the site.

Required asset protection zone widths were identified using vegetation formations, slope classes and relative topographic position of bushland and development. The resultant Asset Protection Zone (APZ) widths were overlain on the structure plan lot layout and potential constraints identified (refer Figure 14).

The assessment concluded that the proposed Structure Plan generally incorporates perimeter roads that will fulfil APZ requirements. Some areas however may require APZs on developable land generally in areas without perimeter roads / trails. APZs in areas where it is unclear whether vegetation is to be retained (e.g. on large lots in north east) have not been mapped. If vegetation is to be retained APZs will be required in this area with the required width based on slope. Similarly the assessment does not include an assessment of development for "special fire protection purposes" (types of development where occupants may be vulnerable to bushfire attack e.g. schools, hospitals, retirement villages and the like) as defined under the *Rural Fires Act 1997*.

Two areas of minor constraint were observed in the proposed Structure Plan:

1. A small amount of incursion of the APZ into lots to the north of the main riparian corridor. Depending on the actual lot orientation in this area, this APZ incursion may be able to be accommodated with appropriate siting of the building footprints outside the APZ area. As such, no specific recommendations are warranted at this stage; and
2. Incursion of an APZ into a number of lots adjoining proposed vegetation offset lands. These offset lands are currently unvegetated although their proposed future landuse is specified as revegetated lands. As such, they have been identified as an area of future hazard and thus likely to require an APZ. The Bushfire Risk Assessment recommends that a small area of required APZ (15m) be sited within the offset lands using conservation sensitive APZ management techniques.

The Bushfire Risk Assessment makes a number of other recommendations to ensure that the proposed Structure Plan complies with *Planning for Bushfire Protection 2006* and to minimise risk:

- Ensure adequate setback from bushfire prone vegetation (provision of APZs as identified);
- Integrate non combustible infrastructure within APZs such as roads, easements and parking areas;
- Ensure adequate access and egress from the site and that road specifications are met as defined in *Planning for Bushfire Protection 2006*;
- Consider adequacy of water supply and the delivery of other services (gas and electricity);
- Provide temporary APZs during any staged development;
- Consider the requirements for ongoing APZ maintenance (where relevant); and

- Consult with the RFS and NSW Fire Brigade with regard to adequacy of existing resources for the proposed development.

Having regard to these strategies the assessment notes that the risk from bushfire can be minimised and the approvals process streamlined. It further concludes that the development is possible as proposed in the proposed Structure Plan from a bushfire planning perspective.

Bushfire risk does not have any significant implications for the site however it should be taken into account in the detailed subdivision design. As bushfire prone land mapping is the trigger for further assessment this should be updated throughout the development phase to reflect vegetation clearing, revegetation and rehabilitation. Further relevant planning controls for bushfire as contained in the Standard LEP Instrument should be included in the LEP for the site.



Figure 14: Asset Protection Zone Assessment (Source: *Bushfire Risk Management Study for the Menangle Park Site*, Eco Logical Australia, June 2010)

4.5 AIR QUALITY

Information in this section is drawn from the *Menangle Park Development Air Quality Review* (Heggies, 2004, 2007 and update dated April 2010) which investigated the existing air quality in Menangle Park and whether future urban development would significantly impact local air quality. It also identifies potential buffer zones to ameliorate anticipated environmental impacts as a result of sand extraction activities and proposed / existing industries. The assessment has regard to the proposed Structure Plan.

4.5.1 Existing Conditions

The Heggies report established the existing air quality environment of the Menangle Park area based on the results of dust deposition and particulate monitoring undertaken in the Menangle Park area, DECCW monitoring data, and an examination of relevant literature. Using these results and appropriate State and Commonwealth legislation and guidelines, project-specific air quality criteria were established which are in place to protect human health and amenity. In summary the data indicates that existing air pollutants concentrations / levels are within guideline values across the Project area. The review does however also recognise the potential for photochemical smog in south west Sydney. It notes that any increase in traffic associated with a development may compound existing adverse air quality especially in the summer months.

The Air Quality Review also identified a number of potentially odorous industries that may impact on future urban development as follows:

- Jack's Gully Waste Management Centre;
- Camden Soil Mix Composting and Recycling Facility
- Menangle Sand & Soil
- Camden Gas Project
- Menangle Park Paceway

4.5.2 Issues and implications

Although the data obtained to characterise the existing air quality environment (in the Air Quality review) showed compliance with criteria levels, several recommendations were made to minimise potential impacts of any development in the area. These are outlined below

Odour

In the case of odour, a buffer zone of approximately 1 square kilometre was recommended to ameliorate potential odour impacts from the activities of the Camden Soil Mix Composting and Recycling Facility on the development. It recommended that any amendment to this buffer area should only be considered following evaluation of the detailed odour assessment undertaken as part of the future Development Application for an enclosed facility, and in any event not prior to the cessation of putrescible waste land filling activities.

The Camden Gas Project is a major coal seam methane (CSM) project involving the extraction of CSM gas located within the Southern Coalfields of the Sydney Basin. The potential for odour impacts is considered unlikely based upon past experience by AGL from similar operations and the siting of well surface locations relative to sensitive residential receivers. The construction of well surface locations and associated infrastructure within Menangle Park is expected to be completed prior to the land release of the area, thereby minimising the potential impacts on amenity resulting from minor air quality impacts during construction. Impacts during operation are also expected to be minimal.

On the provision that gas processing will not be undertaken within the study area and assuming accidental release of gas can be considered to be negligible, a buffer distance of at least 20 m from each well head is suggested. Air quality impacts may be associated with the installation of well heads and laying of pipelines although these impacts will not be permanent.

Particulate Matter

Atmospheric dispersion modelling of the proposed Menangle Park West Sand and Soil Extraction activities was undertaken by Parsons Brinkerhoff in 2009. This assessment has been examined to establish suitable buffer distances associated with future sand extraction within the study area. It is found that appropriate buffer distances are dependent

upon the implementation of suitable dust management practices but may be of the order of 200 m from the site boundary. Suitable separation distances between sand extraction and sensitive receptors are driven principally by the DECCW 24-hour PM10 criterion.

General

The Review noted that construction and operation of the Leafs Gully Power Plant is not expected to have a major impact on the air quality of the area due to the stringent operational controls placed upon the operators. In addition it noted that photochemical smog is an issue in south west Sydney and that any increase in traffic associated with a development on site may compound existing adverse air quality especially in the summer months. It recommends that action should be taken to mitigate this potential impact. The Transport Management and Access Plan (AECOM, June 2010) for Menangle Park is aimed at promoting and achieve improved walking, cycling and public transport use in the area around Menangle Park to meet NSW Government objectives for sustainable travel and environmental impacts. In particular, the TMAP aims to provide an integrated transport network which offers a choice of travel mode and will reduce car dependency. This is consistent with recommendations in Action for Air and the Metropolitan Transport Plan (February 2010) and will assist in minimising air quality impacts. Further details on transport measures are included at Section 4.11 below.

The above recommendations have been taken into account in the development of the proposed Structure Plan for the site. It is also proposed that relevant controls be incorporated into the DCP applying to the site.

4.6 NOISE

Information in this section is drawn from the *Menangle Park Land Release Area Acoustic Assessment Report* (AECOM, May 2010) which investigated the existing acoustic environment in Menangle Park and whether future urban development would be significantly affected by rail or traffic noise.

4.6.1 Existing Conditions

To assess the existing noise environment on site ambient noise monitoring was conducted at four representative locations. The monitoring established the existing noise environment which is affected primarily by road and rail noise. The existing noise environment was assessed against relevant noise criteria as outlined below:

Road Traffic Noise Criteria (residential) – External L_{Aeq} dB(A)

Land Use	Criteria	
	Daytime	Night-time
New residential land use developments affected by freeway/arterial traffic noise	55	50

Road Traffic Noise Criteria (residential) – Internal L_{Aeq} dB(A)

Occupancy	Period	Parameter	Criteria dB(A)
Living Areas	Day (7.00am – 10.00pm)	$L_{Aeq,15hr}$	40
	Night (10.00pm – 7.00am)	$L_{Aeq,9hr}$	40
Bedrooms	Night (10.00pm – 7.00am)	$L_{Aeq,9hr}$	35
	Night (10.00pm – 7.00am) Maximum Noise Level	L_{Amax}	55

Rail Noise Criteria – Internal

Occupancy	Criteria
Living Area (10pm to 7am)	40

Rail Noise Criteria – Sleep Disturbance

$$L_{Amax} \text{ or } L_{A1,1min} < L_{A90} + 15 \text{ dB(A)}$$

The assessment concluded that road noise currently exceeds the relevant criteria for both the day and night times at the bounds of the site. Similarly, rail noise exceeds the rail noise criteria adjacent to the railway line.

4.6.2 Issues and implications

Rail and Road Noise

In addition to the existing noise environment, the future noise environment was modelled against the established noise criteria set out above, using predictions of future rail and road transport movements from AECOM. This was overlain on the proposed Structure Plan to identify areas where the criteria would not be achieved.

Without acoustic treatment in the form of noise barriers/berms, building insulation, building orientation considerations etc. acoustic setbacks would be required to ensure that noise levels at the facades of buildings and also internal noise levels within the development satisfy the established criteria. The noise contours for the day and night-time periods for the Future scenarios (2017), shown in Figure 15, indicate that, where the facade levels are achieved for the respective periods (55 dB(A) during the day time and 50 dB(A) at night), a number of lots along the eastern side of the proposed release area will require appropriate treatment.

In order to be able to subdivide the land release area and maintain the development footprint as proposed in the proposed Structure Plan, one or more of the acoustic treatments identified in Table 17 will need to be adopted for those areas that do not meet the established criteria. It should be noted that the Acoustic Assessment found that noise barriers are unlikely to be feasible and would not achieve the necessary noise mitigation. This is primarily as a result of

the distance any such barrier would need to be setback from the noise source (15-20m from the Freeway) and topographical considerations.

Table 17: Acoustic Treatment Options

Acoustic Treatment Options	Application
Carriage House Studios	"Carriage house" studios are located above garages which are accessed from a rear lane. The buildings, in combination with lower noise walls, act as a noise barrier for the main dwelling at the front of the lot. However, upper levels of these buildings will need to be acoustically treated.
Orientation of residences	Residences may be situated within lots along the site boundary so that they provide acoustic shielding for residences at greater distance from highway, reducing the number of residences requiring noise treatment.
Orientation of rooms and windows	Less noise sensitive rooms such as garages, bathrooms and laundries can be oriented towards the noise source, shielding more noise sensitive areas of the dwelling. Similarly, buildings can be constructed to minimise the number of doors and windows exposed to the noise source.
External walls	Masonry (particularly double brick) or concrete facades provide greater transmission losses than weatherboard or other light-weight structures.
Doors	External doors which open into habitable rooms should be heavy solid-core doors with effective acoustic seals.
Acoustic insulation	Acoustic insulation such as polyester or rockwool/glasswool batts placed between the wall studs of brick veneer and timber framed buildings will reduce the noise entering the building by an additional 5dB(A).
Architectural treatment	Such as double-glazing, provision of air-conditioning and/or mechanical ventilation, enclosed balconies.

In relation to noise from the main southern railway, noise modelling shows that the established noise criterion is likely to be exceeded within 60m of the railway line. The acoustic treatment options in Table 17 will need to be adopted for development in this location also.

Appropriate development controls to address potential noise impacts should be included in the Development Control Plan for Menangle Park. The extent of the acoustic treatment should be further developed during the subdivision DA stage and having regard to the controls in the Menangle Park DCP. The acoustic assessment at the subdivision DA stage will need to demonstrate compliance with Clause 102 of the State Environmental Planning Policy (Infrastructure) 2007 (refer discussion in Section 3.4.5).

Industrial Noise Sources

The Glenlee industrial area is located adjacent to the north west corner of the Menangle Park development boundary. It contains a number of existing industrial uses but is also proposed to be rezoned to allow additional commercial, logistics and industrial uses.

AECOM conducted an acoustic assessment of the Glenlee industrial area which indicated compliance with the established criteria for the day evening and night-time periods at nearby noise sensitive receivers with no mitigation measures required. A review of the predicted operational noise emissions contours, for the day and night-time periods, indicates that the operation of the Glenlee Industrial Area will comply at nearby residential receivers within the Menangle Park land release area. It is also unlikely that there will be any vibrations arising from the Glenlee Industrial development.

Drilling of gas wells is also being conducted across the site. A number of conditions have been imposed on the project to minimise adverse noise impacts upon residential receivers during the construction and operation of the gas wells. It is considered that these conditions will maintain the acoustic amenity of nearby sensitive receivers.



Figure 15: Noise Affection under proposed Structure Plan (Source: AECOM)

4.7 EXTRACTIVE INDUSTRIES

This section draws on information from the *Mineral Resources of the Menangle Park Development Site – Review* report prepared by Harvest Scientific Services (January 2010). The report builds on a previous report prepared in 2004 and assesses the extent of resources in Menangle Park, identified potential environmental impacts in the event of extraction or development and outlines the environmental controls which would minimise the potential impacts from extraction.

4.7.1 Existing Conditions

The study area contains a number of mineral resources (including sand and soil deposits, coal deposits and coal bed methane). These resources have significant economic value however realisation of these resources must be considered in the light of potential land use conflicts, timing etc.

Sand and Soil

The study area contains a number of sand and soil deposits which have varying potential for development. In the northern part of the site, two separate sand and soil deposits (referred to as the Western Deposit and the Eastern Deposit respectively) (refer Figure 16) are yet to be developed apart from the southerly extension of the Western Deposit where extraction has been completed by Menangle Sand and Soil Pty Ltd.

The Western Deposit consists of brown, grey and yellow fluvial sands and silts. It is estimated to contain in excess of 2.9 million tonnes of sand and soil. In 2009 a development application (accompanied by an Environmental Impact Statement) was submitted to Campbelltown City Council to extract approximately 2.4 million tonnes of the resource over a project life of 10-12 years. The application has not been determined at the date of writing.

The Eastern Deposit on site is estimated to contain approximately 4.2 million tonnes in total. These deposits consist predominantly of red and yellow sands, which can generate high quality concrete sands when washed. However, the Eastern Deposit coincides with the area that has been earmarked for urban development and it is understood that it is unlikely to be available for extraction for this reason. In addition, there is likely to be possibly greater land use conflicts with the existing village and access constraints.

Coal

High quality coal underlies a substantial portion of the study area (refer Figure 17). Although several coal seams underlie the study area, only the Bulli Seam is likely to be extracted. The Bulli Seam is of economic thickness throughout most of the area and ranges in thickness from about 2.4 metres in the south to nearly 4.0 metres to the north west. Seam depth varies between 550 metres to 750 metres respectively. It is estimated that the study area contains approximately 38 million tonnes of coal. However given geological factors part of this resource is likely to be unavailable.

The whole of the study area is covered by BHP Billiton's (BHP) Authorisation A248 which gives BHP sole right to mine coal from the area. BHP has indicated that the site lies within its 30 year resource base, which indicates that from their viewpoint it is likely to be extracted within this period (current indications are not less than 8-10 years).

The implications of the coal resource are discussed in Section 4.7.2.

Coal Bed Methane

Coal Bed Methane ("CBM") is the natural gas formed during the coalification process whereby peat and other organic matter is turned into coal by compaction and heat associated with the depth of burial. The composition of CBM is predominantly methane (>95%) with minor amounts of carbon dioxide and other gases (such as ethane) including water vapour.

The Sydney Basin is estimated to contain up to 130,000 PJ of energy in Coal Seam Methane. A small fraction of this resource is located within the AGL-Sydney Gas Limited Joint Venture area (Project Stage II) which encompasses Menangle Park. Menangle Park forms a small part of the available resource however based on advice provided is likely to generate economic flow rates for at least 21 years.

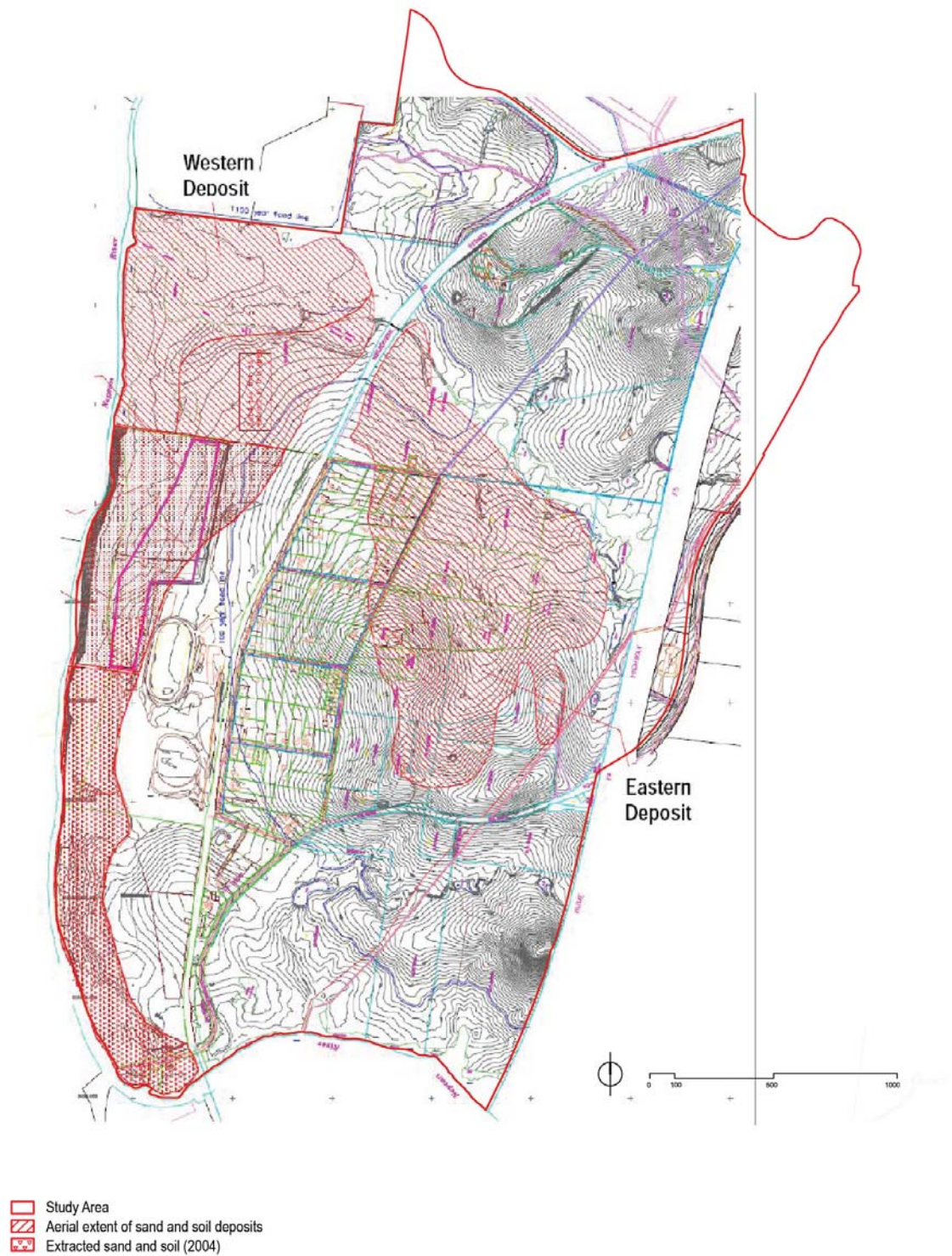


Figure 16: Sand and Soil Deposits (Source: *Menangle Park WSUD Strategy*, AECOM, June 2010)

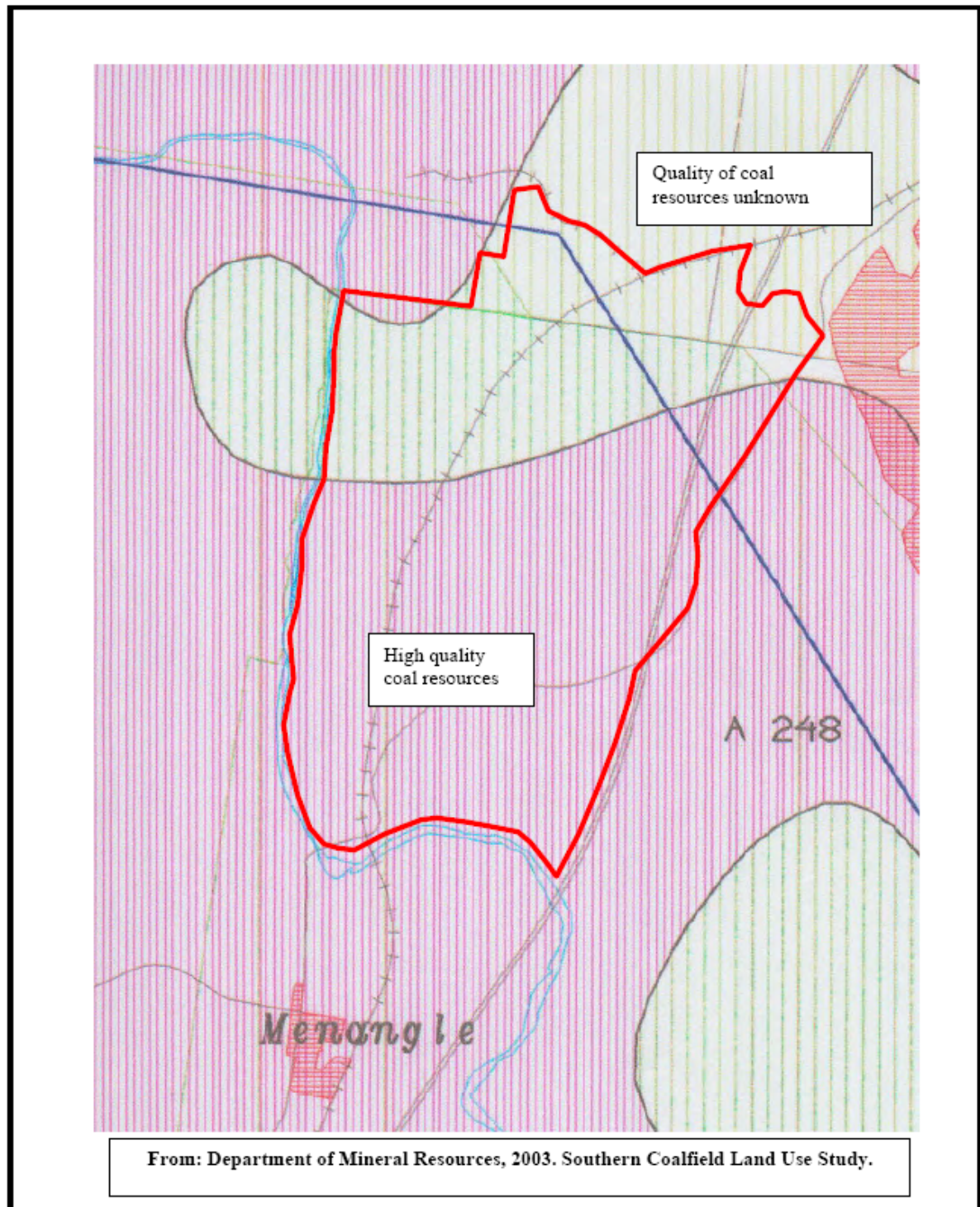


Figure 17: Coal Resource

4.7.2 Issues and implications

Sand and Soil Resources

As noted above a development application has been submitted to extract the western sand and soil deposit over a 10-12 year timeframe. This land is flood liable and would not be suitable for urban development regardless of the proposed extractive use.

The application has not yet been determined at the time of writing. Should approval be granted extraction is likely to coincide with urban development on the eastern part of the site. The Air Quality Review (refer Section 4.5) notes that with good quality dust management techniques in place a buffer distance of approximately 200m is required from the proposed sand extraction. Development of land within this buffer area may therefore need to be restricted until completion of the proposed sand extraction should this be approved.

Strict controls would be required for any approval to ensure that land use conflicts do not arise. Similarly the concurrent construction impacts of the activities would need to be assessed. Specific issues in relation to the environmental impacts of the proposed activity, and any rehabilitation requirements, would be addressed in the EIS and subsequent approval.

As outlined above, it is understood that the eastern deposit will not be extracted given the potential conflicts with the existing village, access difficulties and the proposed future urban development on site.

Coal Deposits

As noted above the Menangle Park site is underlain by a significant coal resource which is the subject of a BHP Billiton Authorisation. If the site were to be mined for coal via long wall mining it is considered highly likely that mine subsidence would occur and that this could result in damage to buildings and infrastructure that are to be developed in the Menangle Park area.

The Mine Subsidence Board (MSB) has reviewed data provided in relation to Menangle Park and has advised that 1.55m of vertical subsidence could be expected. This level of subsidence would have adverse impacts on any built structure and as such, the MSB has indicated concern regarding the proposed urban development of the site. As the land is located within a Mine Subsidence District, the MSB would be required to assess and provide approval for any development or subdivision proposed.

In 2004, both the MSB and BHP Billiton were of the view that development of the MPDS should be limited given the value of the coal resource beneath the site and the incompatibility of mining and urban development on the site. The MSB were particularly concerned that there could be significant liability as a result of the mining if the development of Menangle Park for urban development proceeded. Since that time the matter was escalated to determine the Government priority for the site: coal mining or urban development. Correspondence from the Department of Planning (2006) advised that a resolution had been made to limit the extraction of coal in favour of urban development. A copy of the Department of Planning's letter is provided at Appendix 3. Based on this advice, it has been determined that urban development is the priority for the site at this time. However, this does not absolutely preclude coal mining beneath the site at some time in the future should changes in technology occur or more detailed data indicates that coal mining is possible without damage to property or infrastructure. Rather it has been determined that urban development is the priority for the site at this time.

Coal Bed Methane

The extraction of methane requires the establishment of wells and the implementation of a network of pipelines which connect to the gas treatment plant.

As outlined in the Harvest Scientific Report (January 2010), the impact of methane extraction is considered to be moderate and should not provide hindrance to existing or proposed land uses at Menangle Park. The Air Quality Review (refer Section 4.5) has recommended buffer zones of 20m around any wells within the study area.

4.8 INDIGENOUS HERITAGE

Information in this section is drawn from the *Archaeological Assessment of Indigenous Heritage Issues* (Jo McDonald Cultural Heritage Management, May 2010) and past studies on which that report relies including reports by Jo McDonald Cultural Heritage Management (2004) and HLA Envirosciences (2004). The report assesses the indigenous heritage on site and recommends an appropriate conservation outcome.

4.8.1 Existing Conditions

Past studies of the indigenous heritage values of the Menangle Park site identified some 22 sites containing indigenous heritage based on survey of a representative sample of relevant terrain units. Following on from this work a sensitivity assessment was undertaken. In this analysis an assessment of site disturbance was made with the resultant land disturbance categories (high, medium and low disturbance) translated into Archaeological Sensitivity Zones (good – Zone 1, moderate – Zone 2 and low/no archaeological potential – Zone 3). Other factors such as regional landscape analysis, cultural significance (identified in conjunction with the aboriginal community) and scientific and public significance were also factored in to the sensitivity assessment. The Archaeological Sensitivity Zones therefore indicate the likelihood of an area containing items of indigenous archaeology. Figure 18 shows the Archaeological Sensitivity Zones for Menangle Park.

4.8.2 Issues and implications

The analysis undertaken in the Archaeological Report overlays high potential Archaeological Sensitivity zones together with culturally sensitive land and known archaeological sites on the proposed Structure Plan. Possible conservation zones have then been identified (refer Figure 19).

The assessment concludes that a number of Zone 1 areas are accommodated by the proposed Structure Plan layout and that these areas are therefore good candidates for conservation. However, the assessment indicates that conservation of several representative landscapes will not be achieved by the proposed Structure Plan. However it further notes that while representativeness is an issue there is potentially 47% capture of the significant areas within open space / riparian corridors. Further the broader open space / riparian corridor system has the potential to conserve landscapes which have been identified as culturally significant. Roughly a third of the land identified as being moderately significant also falls within the open space / riparian corridors (see Table 18):

Table 18: Menangle Park Proposed Structure Plan: Archaeological Sensitivity Zones in Open Space.

Sensitivity Zones	Archaeological potential	Area (ha)	Area in Open Space	%	Open Space + Riparian (ha)
Zone 1	Good	102.8	48.7	47%	210.9
Zone 2	Moderate	504	132.2	26%	210.9

Once the Menangle Park conservation outcome is finalised, then a representative sample of the residual Zone 1 lands (i.e. those which do not fall within open space conservation zonings) will be subject to more detailed archaeological investigation to enable salvage of sites to help in better understanding the resource. Salvage would involve open area excavation of high value areas which will be affected by the development's impact.

The Archaeological Report concludes that an assessment of the development footprint and its impact on landscapes with high archaeological and cultural sensitivity indicates that a meaningful cultural heritage conservation outcome should be achieved by the proposed Structure Plan. It notes that a meaningful management outcome will be achieved by a combination of conservation and salvage, with the remainder of the land being considered unconstrained (from an archaeological perspective) for future development. Further it makes the following recommendations:

- A conservation strategy has been devised using the results of this investigation. This strategy identifies a conservation outcome, which incorporates many landscapes with high archaeological potential as well as areas with identified cultural significance. The proponents, Aboriginal community and regulators need to continue discussions about finalising these conservation zones;
- The DCP should identify these conservation zones within areas of open space and riparian corridors and ensure that they are zoned appropriately in the LEP to ensure long term protection;

- Once the Conservation Zone(s) have been finalised, an Aboriginal Heritage Management Plan (AHMP) will be required to ensure the ongoing management of values (Aboriginal and archaeological) in the conservation zone. This AHMP will identify the types of works which can occur within the conservation zone and identify Indigenous heritage conservation priorities. The proponent(s) would be responsible for the development of this AHMP;
- Land which falls outside the Conservation Zone(s) should be considered 'developable land'. The developable lands should be managed on the basis of the sensitivity mapping and the defined management principles;
- There will be a range of impacts within developable land on landscapes which have High Archaeological Sensitivity (Zone 1), cultural sensitivity and Moderate Archaeological Sensitivity. A representative sample of these should be selected for sub-surface investigation (i.e. salvage) as mitigation against their destruction;
- Areas and/or landscapes within Zone 3 have low archaeological potential. These should be considered as developable without archaeological constraint. There would be no requirement for further investigation in these areas;
- A number of identified archaeological surface features occur across the Menangle Park Release Area. These would ordinarily be managed on the basis of their assessed significance and/or potential. The Precinct Planning stage is the appropriate time to determine management outcomes for landscapes and identified sites within the Menangle Park Urban Release Area. The conservation strategy would guarantee that these would be managed on the basis of a 'whole of development' clearance across the developable lands;
- Once the Conservation Zone has been finalised and locations chosen for salvage, a whole of development Section 90 Aboriginal Heritage Impact Permit should be sought from DECCW NSW. Given the likely lifetime of the development process this may need to be undertaken in a staged approach.

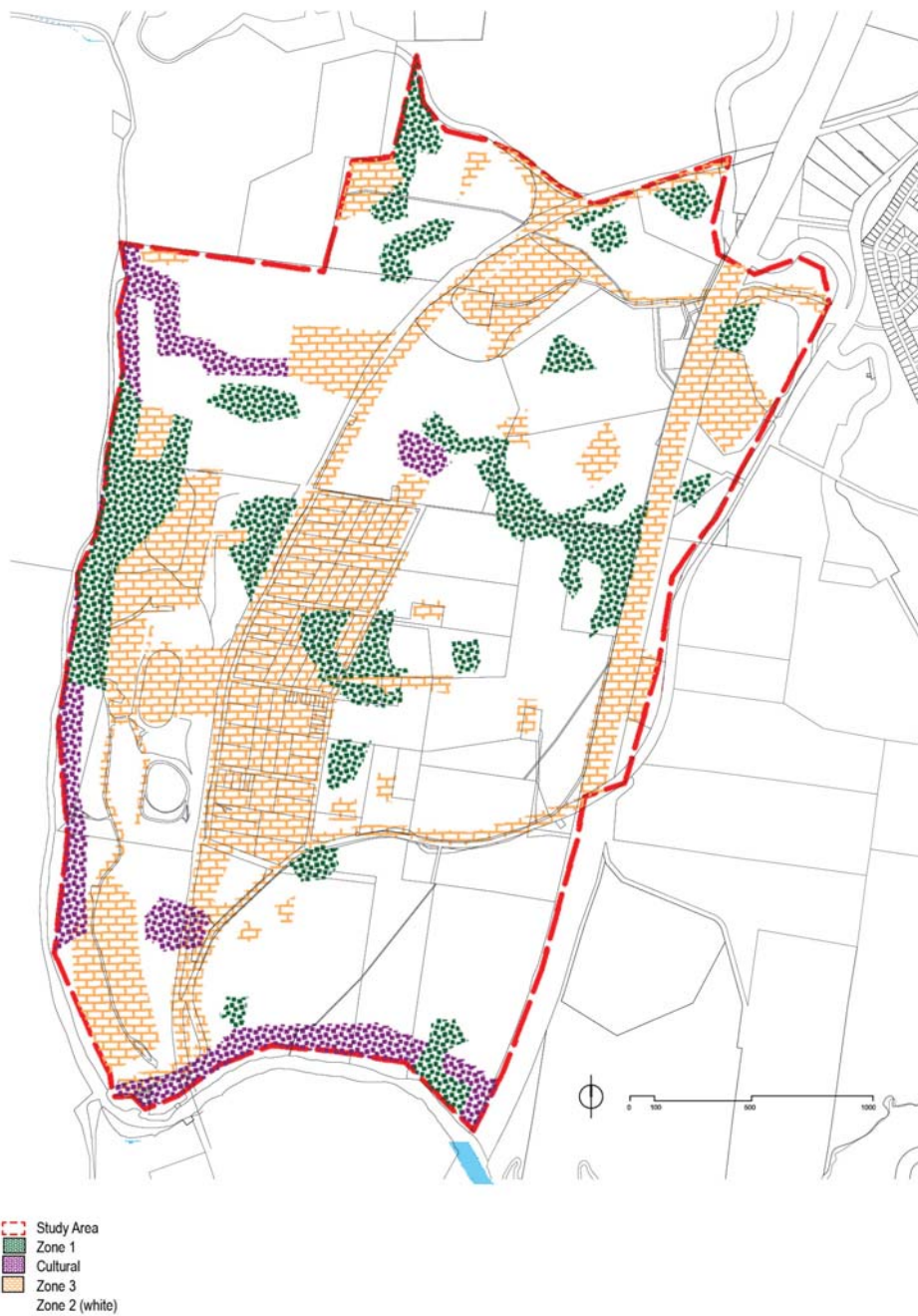


Figure 18: Archaeological sensitivity zones (Source: *Archaeological Assessment of Indigenous Heritage Sites*, Jo McDonald Cultural Heritage Management, May 2010)
(Note: white areas comprise Zone 2)

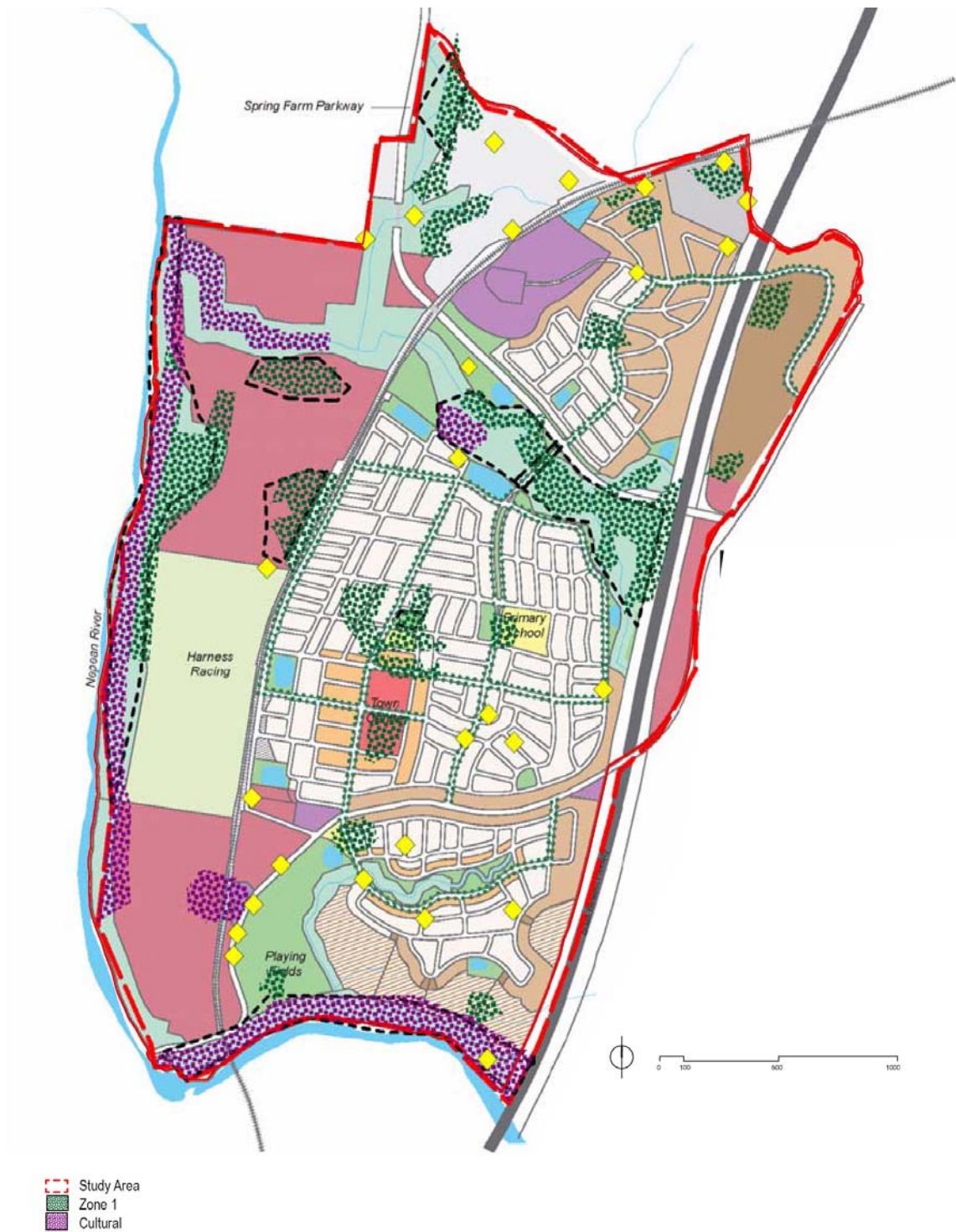


Figure 19: Proposed Structure Plan overlain with Zone 1/culturally sensitive land (Source: *Archaeological Assessment of Indigenous Heritage Issues*, Jo McDonald Cultural Heritage Management, May 2010)
(Note: possible conservation zones outlined in dotted black line)

4.9 EUROPEAN HERITAGE

Information in this section is drawn from the *Non Indigenous Heritage Study* (Casey & Lowe Pty Ltd, March 2010). The report assesses the non-indigenous heritage on site and the impact of the proposed Structure Plan thereon. It recommends measures to mitigate adverse impacts.

4.9.1 Existing Conditions

Menangle Park has a rich and varied non-indigenous heritage stretching from the early land grants in the 1810s, 1820s into the twentieth century with the racecourse and World War II military presence. Some of the mid to later nineteenth-century houses survive with Glenlee as an 1820s house with remnant outbuildings. The location of Menangle Park to the south of Sydney means that it is a place through which major government services need to pass, such as the 1850s railway and Sydney's water supply. In addition there are eighteen identified archaeological sites relating to the nineteenth-century occupation of the study area.

Menangle Park accommodates a number of non-indigenous heritage items and sites, some of State and others of local significance as follows:

State Heritage Items

Menangle Rail bridge over the Nepean River (B2)

Glenlee House and grounds (B7)

Upper Canal including bridge over canal (B9) and aqueduct over railway (B14)

Local Heritage Items

Menangle House (B4)

The Pines (B3)

Riverview (B6)

Menangle Park Paceway (B5)

Menangle Weir (B1)

Two additional items have been identified as worthy of assessment

Railway viaduct near Glenlee

Disused railway platform at Menangle Park station

State listed items are listed on the State Heritage Register under the Heritage Act 1977. Local heritage items are listed in Campbelltown Development Control Plan No 83 – Heritage Policy. Further details of the heritage significance of individual items is outlined in the *Non Indigenous Heritage Study* (Casey & Lowe Pty Ltd, January 2010).

Archaeological items and areas of potential archaeological items, all of which are considered to have local significance, have also been identified on site:

- | | |
|----|--|
| S1 | Briens farm and house site |
| S2 | Berghan's house site |
| S3 | Thomas Vardy's estate, house and stables |
| S4 | Grazier's Inn site |
| S5 | Mt Pleasant - Ward and Taber's site |
| S6 | Noone's farm |
| S7 | Chinese market gardeners house and shed |
| S8 | Railway Hotel (Edrop Estate) inn site |
| S9 | North Menangle Station site |

US10	Thomas Taber's original homestead site
S11	Madden's Hill house site
S12	Ward's house site
US13	Railway sites: stone quarry, tramway, site of workers tent town
US14	Original Edrop homestead, dairy and workers cottages
US15	Archaeological sites, Menangle Park Paceway: racecourse and military sites
US16	Doyle's house site
US17	Tyson's house and farm site
S18	Former bridge over Nepean River

(Note: S denotes site and US denotes unknown site – location unknown but property identified)

Figure 20 shows the listed heritage items and identified archaeological items on site.

Items identified above as known heritage items are protected under the provisions of the Section 60 of the Heritage Act 1977 (State items) or under the provisions of Campbelltown IDO No 15 and Campbelltown LEP No 8. Additional heritage protection provisions are also included Campbelltown DCP 83 Heritage Policy (local items). In addition archaeological items are protected under sections 139, 140 – 146 relating to disturbance of a relic (Heritage Act 1977). In summary where a known relic exists a person cannot disturb the relic without an excavation permit under section 140 of the Heritage Act 1977. Any excavation must also be managed by a qualified archaeologist under the legislation.

4.9.2 Issues and implications

A broad assessment has been made of the impact of the proposed Structure Plan on relevant heritage items and archaeological items. In terms of heritage items the likely impacts have been assessed as follows in Table 19:

Table 19: Potential impacts on listed heritage items

Number	Name of Item	Address	Significance	Proposed Impacts
B7	Glenlee	Lot 1, DP 713646	State	No archaeological issues
B2	Menangle Rail Bridge over Nepean River	Main Southern Railway	State	No impacts
B8	Upper Canal		State	No direct impacts
B4	Menangle House	Lot 102, DP 776612	Local	No direct impacts
B5	Menangle Park Paceway	Lot 3 DP 593211	Local	No direct impacts
B1	Menangle Weir	Near railway viaduct	Local	Outside study area
B6	Riverview	Lot 2, DP 589899 Menangle Road	Local	No direct impacts
B3	The Pines	Lot 12, DP 786117 Menangle Road	Local	No direct impacts

In relation to Glenlee the assessment notes that the curtilage is to be maintained but that development is to take place to the south east and north west and that an assessment of issues associated with impacts on Glenlee's vistas is being separately undertaken by Hassall Pty Ltd. Some concerns were expressed regarding the Spring Farm Parkway being above ground and its impact on views from Glenlee. This matter is addressed in Section 4.10.2.

In relation to archaeological sites it is not possible to identify the full extent of any impacts at this time. Where an archaeological site coincides with an area for urban development disturbance is likely. In areas earmarked for rural or riparian land uses the extent of impact may be minimal. Detailed assessment of likely impact should be undertaken at the DA stage for the proposed development / subdivision works and should comply with the requirements of the Heritage Act 1977 in relation to excavation etc.

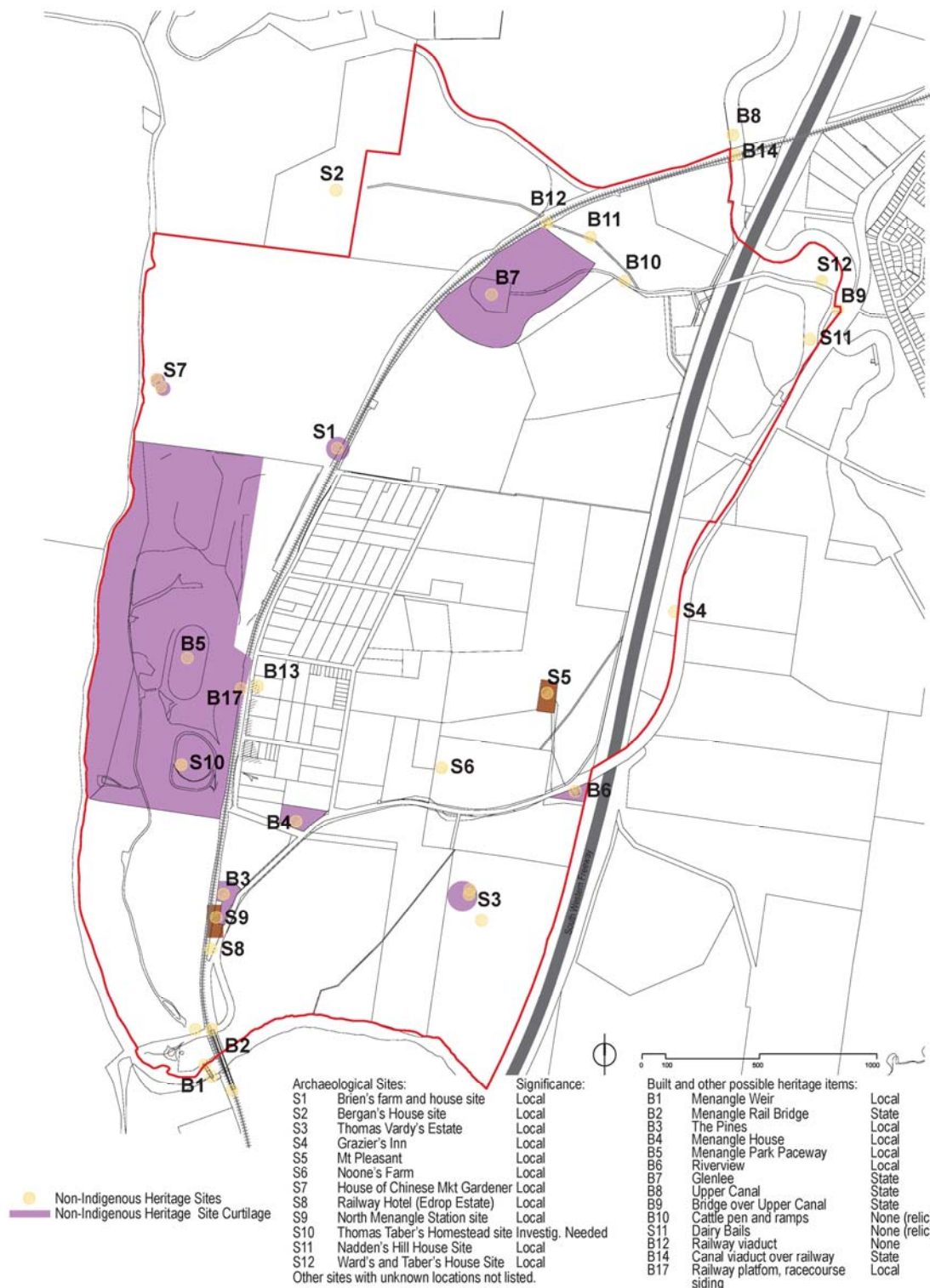


Figure 20: Local Heritage Items and Archaeological sites (Source: *Non-Indigenous Heritage Study Menangle Park*, NSW, Casey & Lowe Pty Ltd, March 2010)



It is recommended that the heritage items and sites within Menangle Park continue to be retained and protected through appropriate listings and development controls. In this regard it is noted that standard heritage provisions including objectives; requirements for consent; effects on heritage significance; heritage impact assessment; heritage conservation management plans; archaeological sites; places of Aboriginal heritage significance; demolition of items of state significance; and conservation incentives; are included in the Standard LEP instrument. Any LEP for Menangle Park would include these provisions. Further protection will also continue to apply under the Heritage Act 1977 to relevant State significant items or archaeological sites. Where identified sites are affected by proposed development, appropriate processes will need to be followed to determine the extent and acceptability (or otherwise) of these impacts.

Two additional items have been identified as having potential local heritage significance – the disused railway platform at Menangle Park station and the railway viaduct near Glenlee. The disused railway platform is now included in the heritage listing of the Menangle Park Paceway site on Lot 3 DP 593211 and it will also be further considered in the heritage assessment being undertaken for the Menangle Park Paceway rezoning proposal. The railway viaduct is within the rail corridor and is not listed on the Railcorp Section 170 Register. The railway corridor in this location is not identified for redevelopment under the proposed Structure Plan however in the event that the railway viaduct was to be affected by a development proposal Council would require an assessment of its heritage significance at that stage.

The heritage assessment recommends the preparation of a Public Interpretation Strategy to guide heritage interpretation within the development area. To avoid piecemeal impacts on archaeological sites across the development area, an Archaeological Management Plan should also be prepared to guide the investigation and recording of archaeological sites. These reports should be required in the DCP prior to any subdivision on site.

4.10 VISUAL LANDSCAPE

Information in this section is drawn from the *Menangle Park Visual Assessment Study* (Hassell Ltd, March 2010). The report assesses the existing visual quality of the site and the impact of the proposed Structure Plan on the visual landscape. It also recommends measures to mitigate adverse impacts.

4.10.1 Existing Conditions

The Menangle Park site occupies low lying and undulating land in the floodplain of the Nepean River. The visual catchment is largely contained by surrounding elevated topography. Existing vegetation also limits views of the site from many vantage points including from the west and south across the Nepean River, from the South Western Freeway and along Menangle Road. Views into the site along the Main Southern Railway are also intermittent as a result of embankment cuttings.

In the north views are contained by undulating topography and existing stands of vegetation. A dominant feature of the landscape is the historic Glenlee estate and homestead which is a focal point for the landscape and is visible from a range of locations both within and outside of the study area. It also offers prominent panoramas to the south and west.

The Menangle Park Village and significant stands of vegetation are the dominant landscape features in the centre of the site while in the south the visual catchment is more expansive, encompassing the flood prone land of the Nepean River and contained to the south and west by riparian vegetation associated with the River. Figure 21 illustrates the visual catchment.

The Menangle Park site is largely rural in character but contains a village area with large residential allotments. It has been cleared for grazing over past decades and has been farmed since the 1800s. The site contains a series of ridgelines to the north, east and in the south with lower lying flat lands towards the Nepean River in the east (and south). A series of creeklines drain across the site in a westerly or southerly direction to the River.

The majority of the site is disturbed however several stands of native and remnant vegetation remain along the Nepean River and some creek lines. Some culturally significant plantings are also present associated with the historic homestead (Glenlee) and the village (including street trees and private plantings in rural holdings).

The cultural landscape on site comprises the Glenlee Estate, the Sydney Water Upper Canal, the Pines, Menangle House, Riverview House, Menangle Park Paceway, Menangle Weir and the Menangle Railway Viaduct.

4.10.2 Issues and implications

The proposed Structure Plan will inevitably result in a significant change to the existing landscape character of the Menangle Park site as the site is transformed from having a rural landscape character to providing a significant new area of urban development. Whilst this objective is recognised it is important that the site is developed in a way that does not encroach on important rural homesteads, road corridors and landscape settings. To this end important views and viewer locations have been identified (refer Figure 22) and an assessment undertaken of the visual impact (determined by a matrix which assesses visual effect and visual sensitivity) that will result from the proposed Structure Plan. Specific recommendations have been made where the impact has been assessed as being either moderate or high. These recommendations are in addition to measures already incorporated into the Structure Plan to minimise visual impact.

The proposed Structure Plan has been developed following considerable review of landscape and cultural characteristics and features of the Menangle Park precinct. The proposed Structure Plan preserves the majority of significant riparian corridors as open space and provides for the augmentation of core riparian vegetation in accordance with DECCW agreements. The Glenlee House and its curtilage are protected and low density detached housing and larger rural-style lots are proposed in the undulating land to the east and north. Rural development is proposed in the more visually dominant, hilly area in the north of the site and provides greater opportunity to retain existing scattered trees and to provide substantial tree canopy vegetation to screen views of new housing. Consideration of setbacks or other measures to ensure achievement of adequate landscaping in private lots for these sites will assist in achieving this.

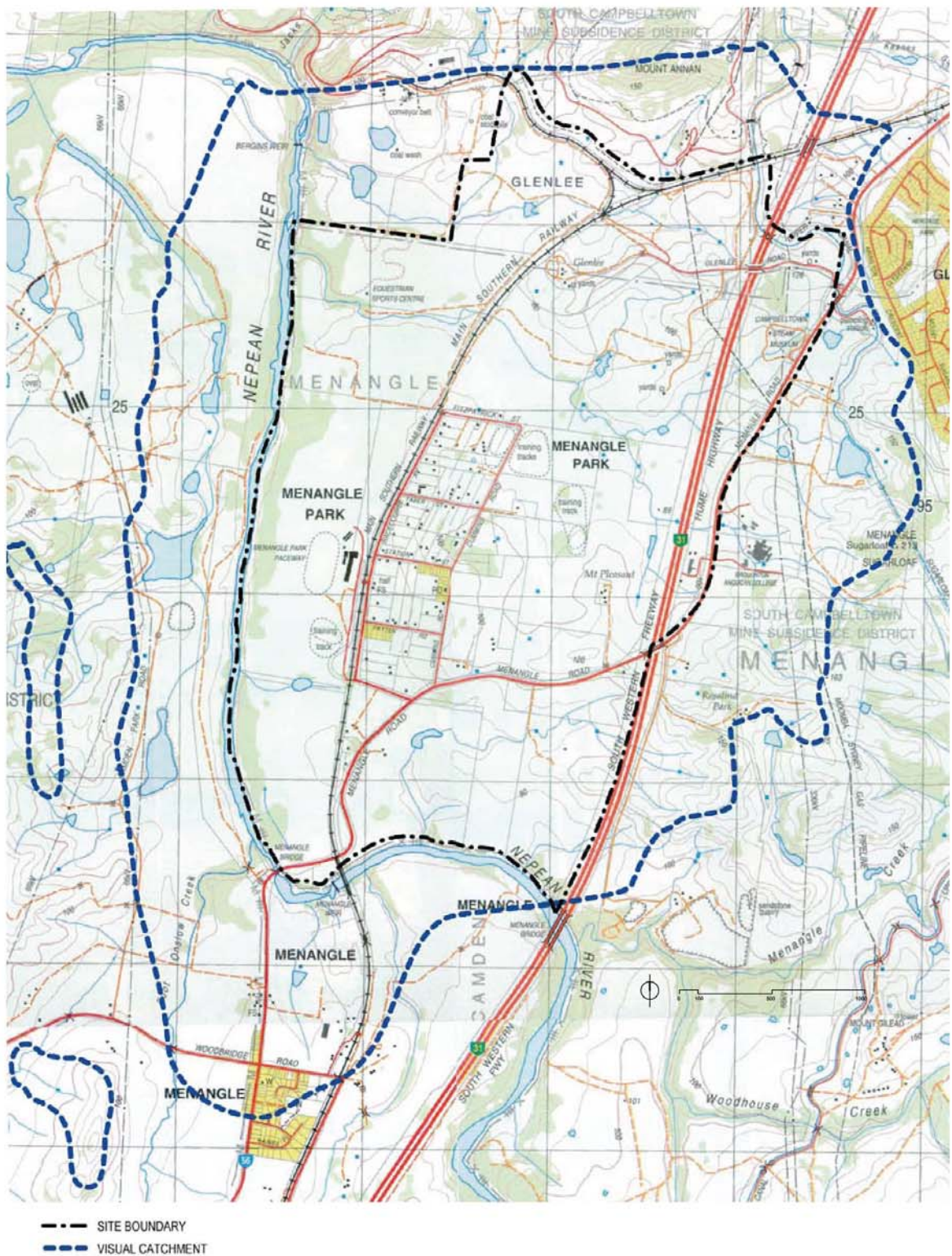


Figure 21: Visual Catchment (Source: *Menangle Park Visual Assessment Study*, Hassell Ltd, March 2010)

Specific recommendations to reduce adverse visual impact are:

- Selective planting to minimise visibility of new land use from sensitive views;
- Minimise the number (and control height and setbacks) of buildings on elevated lands;
- Ensure delivery of high quality landscape embellishment in public domain;
- Ensure reasonable number of lots with area large enough to provide backyard planting on private land;
- Consider built form, colours, materials, setbacks and landscape treatments to minimise impact of development when viewed from distance;
- Augment existing native vegetation in riparian zones; and
- Maintain existing significant vegetation.

Detailed 'site specific' landscaped strategies have been provided incorporating the above measures for the following 'sensitive areas':

- Glenlee Estate;
- Glenlee Road;
- Hume Highway;
- Menangle Road;
- Low Density Residential Development;
- Views from the East (Menangle Road, Rosalind Park and elevated vantage points);
- Views from the South (eg Menangle Village and environs); and
- Other Heritage Items.

To ensure an appropriate visual landscape outcome, these strategies should be incorporated into the DCP for the site. Development applications for subdivision of the site would then be required to be consistent with these detailed site specific controls.

With respect to the Spring Farm Parkway, the visual assessment notes that the arterial will represent a major visual change. The above-ground and elevated alignment of the Spring Farm arterial road (necessary to provide flood free access) will significantly disrupt panoramic views southwest to northwest from Glenlee house and estate to the Nepean River, Camden Park Estate ridgeline and the context of its historic rural setting. The assessment notes that it is possible to screen views of the new arterial road by incorporating screen planting in adjacent open spaces areas however this will not mitigate against the loss of panoramic views and pastoral context of the Glenlee estate.

The Spring Farm Parkway has been identified as an important link between the existing Camden Bypass, the Hume Highway, Menangle Road and a future road corridor linking to Appin Road. In addition, the Parkway provides access to the Spring Farm land release, the Glenlee industrial area and a further east west connection similar to Narellan Road. A number of potential route alignments were examined for the Spring Farm Parkway. The objective of this analysis was to identify a preferred route that minimised environmental impact whilst providing a road that complied with RTA guidelines for arterial road design. Key environmental issues considered in determining the route alignment included:

- the need to provide for conservation corridors linking Mt Annan Botanical Gardens to the Nepean River;
- preserving indigenous and non-indigenous heritage items;
- protecting riparian and identified flood zone areas;
- protecting areas of significant vegetation;

The preferred alignment, as identified in the proposed Structure Plan, is considered to offer the best solution in terms of protecting important environmental values and also meeting RTA requirements.



To mitigate the visual impact of the Spring Farm Parkway, the recommendations in the visual assessment will be incorporated into the DCP.

The visual assessment notes that development of Menangle Park must be considered in the context of its identification on the Metropolitan Development Program. Existing and future development of Spring Farm is creating a new, more urban context for the Menangle Park precinct and landscape. As a result, the visual effect, or change, resulting from the proposed development in this future context will be much lower than from this current predominant rural setting.

The Visual Assessment Study concludes that subject to adoption of the detailed recommendations contained therein, the draft proposed Structure Plan will allow for urban development whilst at the same time preserving the key natural and cultural landscapes on site.

4.11 TRANSPORT AND ACCESS

The following information on transport management and accessibility is based on the *Menangle Park Transport Management and Accessibility Plan* prepared by AECOM Australia Pty Ltd (June 2010). The Transport Management and Accessibility Plan (TMAP) has been prepared to:

- define the transport impacts stemming from development of the Menangle Park release area; and
- develop a package of measures that will assist in managing those transport impacts.

4.11.1 Existing Conditions

Existing Road Network

The existing road network within the study area comprises Menangle Road, a two-way two-lane rural arterial, along with a number of smaller local roads, primarily providing access within Menangle Park village. The local roads are of rural standard, typically 20m wide and laid out in a grid pattern.

Menangle Road is critical to the site, as it is currently the sole provider of external access. Current traffic volumes on Menangle Road are well below capacity due to limited land use activity southwest of Campbelltown and the availability of the F5 for longer distance trips.

The local road network is shown in Figure 23.

The F5 (Hume Highway) is located to the east of the main part of the study area. The F5 is a National Highway and therefore has an emphasis on catering for freight and inter-regional trips. It also provides trunk commuter access between south-western Sydney, the Sydney CBD and industrial areas along the M5 Motorway.

Other major arterial roads in the vicinity of Menangle Park include Narellan Road, the Camden Bypass and Camden Valley Way, and Appin Road. Narellan Road provides the only regional access between Campbelltown, Camden and the F5. It caters for a significant volume of through traffic, in addition to freight movements and F5 bound traffic, and is already nearing capacity. Demands for travel on Narellan Road have increased rapidly as a result of regional growth and are likely to continue to do so.

The regional road network is shown in Figure 24.

At present, the road network in the vicinity of the site performs well. However, within Macarthur Square town centre to the north of the site and Narellan Road, traffic conditions are congested in the morning and in particular during evening peak periods.

Existing Public Transport

CityRail services on the Cumberland Line, South Line and East Hills Line terminate at Campbelltown, while some services on the East Hills Line (via Sydenham) terminate at Macarthur Station. Electrification of the rail line ceases to the south of Macarthur Station and services to Menangle Park are provided by diesel trains on the Southern Highlands Line. There are a limited number of services provided to Menangle Park.

Menangle Park Station is a rural station. Pedestrians can cross the line using an at-grade crossing point with a signalised boom-gate. Pedestrian connectivity to the local area from the station is minimal.

Similarly, there are limited bus services currently servicing Menangle Park. The study area is currently serviced by Busways route 892 from Menangle Park to Campbelltown. Six services are provided each weekday and two on Saturdays, with no services operating on Sundays or public holidays.

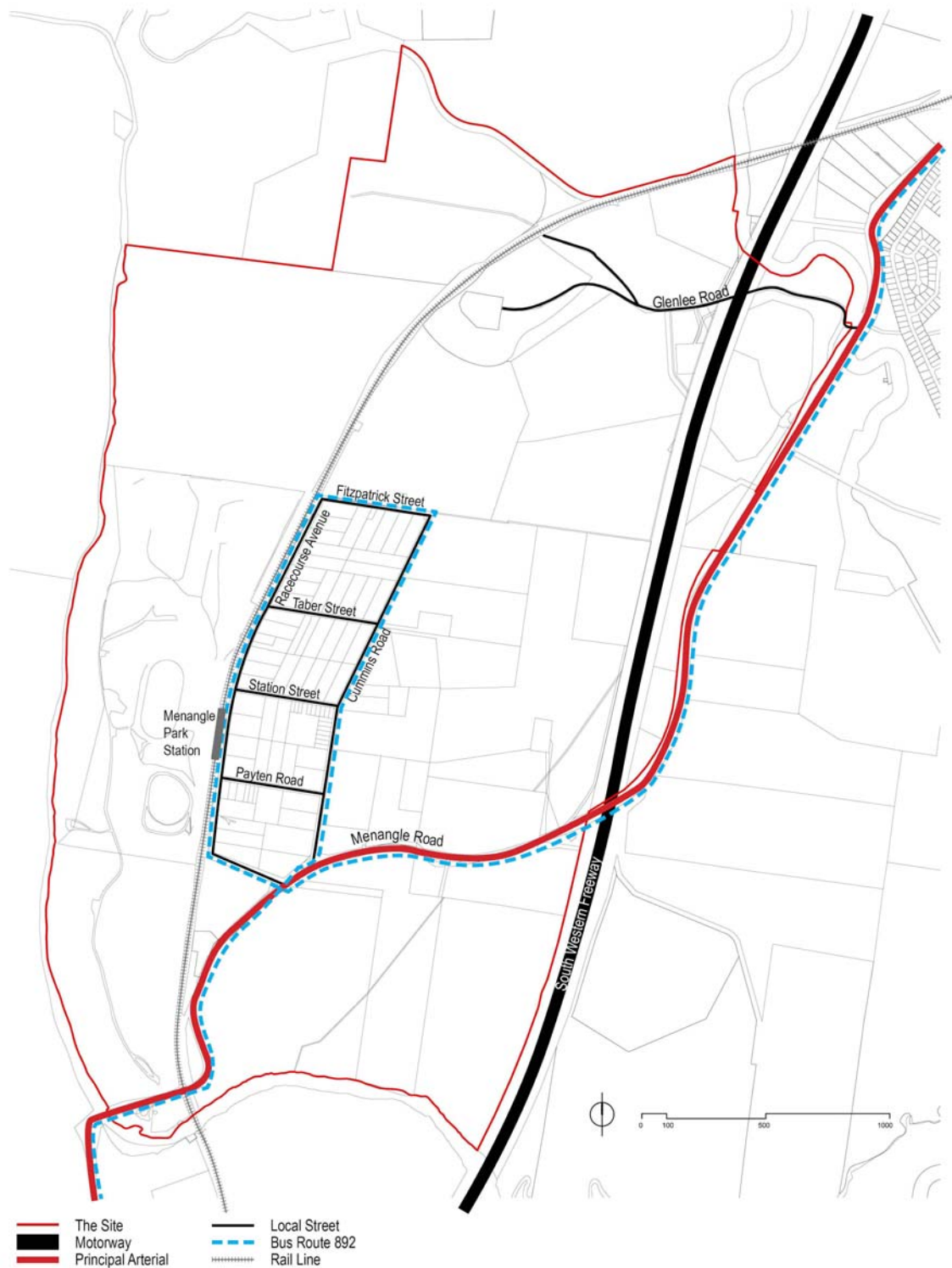


Figure 23: Existing Road Network (Source: Urbis)

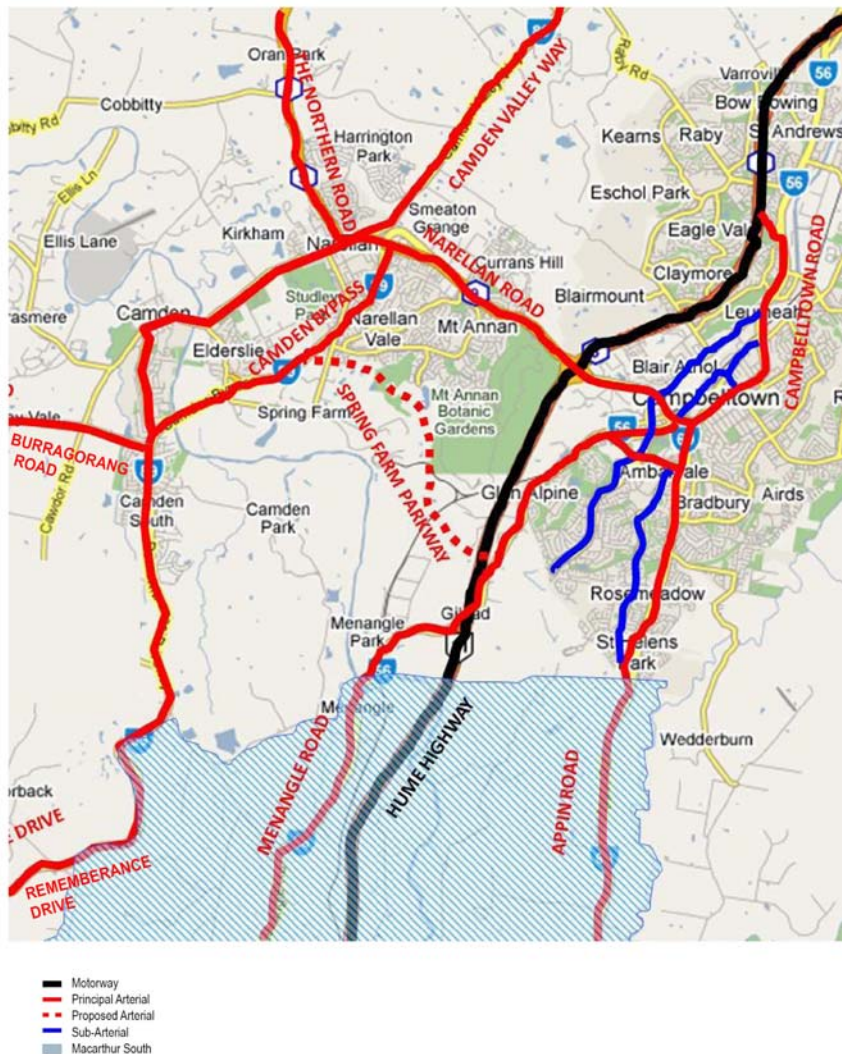


Figure 24: Regional Road Network (Source: *Menangle Park Transport Management and Accessibility Plan*, AECOM, June 2010)

Walking and Cycling

Existing infrastructure for pedestrians is limited in the Menangle Park area, reflecting the low number of residents that currently live in Menangle Park and the rural nature of the area. Footpaths are not provided on local roads and there are a number of other constraints to walking including barriers to pedestrian activity caused by topography, the freeway and rail line.

The Campbelltown cycleway network consists of both on and off road sign posted routes. An on-road cycle route is provided on Menangle Road from the F5 overbridge near Medhurst Road into Macarthur. Cyclists are also permitted to

use shoulder facilities along the F5 through the surrounding region. However, there are no connections for cyclists between Menangle Road and the Freeway.

The constraints to cycling trips within the site are similar to the constraints to pedestrians. In addition, high traffic volumes on key traffic routes and at major intersections reduce the amenity of cycle trips, so that journeys on some routes may be restricted to experienced cyclists.

Existing travel behaviour

The journey-to-work trips of residents in the Glen Alpine area provides a good indication of the patterns expected in the Menangle Park site. Of the potential 2,496 journey to work trips, 14% reported working from home or not going to work during the time of the survey. Of the residents that did go to work, the following travel modes were report:

- 14% were made by rail
- Less than 1% were made by bus
- 75% drove a car
- 6% were passengers in a car, while
- 3% travelled by other modes.

A fairly high proportion of 'self-containment' exists in the South Campbelltown area, with around a third of residents working in the Campbelltown LGA. Approximately one third of trips are made from South Campbelltown to the Campbelltown LGA, the majority of which are to travel zones around the commercial and hospital area of Campbelltown and Englorie Park. Other important destinations include Liverpool (8%) and Camden (5%).

4.11.2 Issues and Implications

Although Menangle Park is accessible by rail, any significant improvement to the service is unlikely in the foreseeable future. An investigation into the feasibility of increasing rail services to Menangle Park was undertaken as part of preliminary investigations. Increasing rail services would require an extension to the CityRail network by constructing an additional line with several overbridges and underpasses. Augmenting services on the existing line is not possible because of constraints associated with use of the line for the national rail freight network by the Australian Rail Track Corporation (ARTC). The investigations into options for extending the CityRail network found that the cost may be in excess of \$280m and therefore it is unlikely that any extension would be financially viable. It is therefore proposed that the diesel service from Menangle Park be retained and that a high quality bus connection be provided from Menangle Park to Macarthur Interchange.

In terms of the road network, the site will be accessed via existing intersections of Menangle Road with Cummins Road and Glenlee Road (relocated to the south to improve visibility), and via two new left in/ left out intersections with Menangle Road. In addition, consideration has been given to a link road connecting Spring Farm and Camden to Menangle Road and the F5, referred to as the Spring Farm Parkway. The site would provide one intersection with this link road and one structure over the Parkway.

The potential for the Spring Farm Parkway between Camden Bypass and Campbelltown to be constructed as a major arterial, possibly with ramps to the F5 has been considered for some time, partly to relieve congestion on Narellan Road and partly to improve access between Camden and Campbelltown. The Spring Farm Parkway would facilitate connection of the Menangle Park Release Area to the Freeway and remove the need for precinct traffic to negotiate the traffic congestion at the Macarthur district centre.

Various options have been considered for the route of the Parkway, the preferred alignment being incorporated into the proposed Structure Plan. However, it should be noted that the Spring Farm Parkway is not a vital infrastructure for the development of Menangle Park to proceed.

The focus of the TMAP is to promote and achieve improved walking, cycling and public transport use in the area around Menangle Park to meet NSW Government objectives for sustainable travel and environmental impacts. In particular, the TMAP aims to provide an integrated transport network which offers a choice of travel mode.

On the basis of the forecast trips generated by the proposed development and the output from the traffic model, the TMAP recommends that a package of measures be introduced. These measures include:

- Policy measures aimed at increasing levels of pedestrian and cycle movements through a comprehensive transport policy that deals with all travel modes, not just cars.
- Transport service improvements, including an integrated package of bus service improvements that are responsive to the development of the site.
- Infrastructure improvements to provide easy pedestrian and cyclist access to Macarthur via a connection to the Regional Cycleway, together with cycle parking and comprehensive directional signage.
- Public transport infrastructure, such as public transport priority at key intersections, a public transport spine within the site and the upgrade of Macarthur Interchange to better facilitate transfers between bus and rail.
- Public transport information, such as comprehensive timetable information on all stops and key retail locations, together with a community intranet.
- Road network improvements within Macarthur to widen selected links and to provide intersection improvements at key locations.

These measures are summarised in Table 20. The TMAP concludes this comprehensive package of measures will meet the needs of Menangle Park residents as the site is developed and will result in a mode shift towards public transport.

Table 20: Summary of Package of Transport Measures

Area	Measure	Detail
Infrastructure	Pedestrian Facilities	Create a cohesive pedestrian network within the site that provides excellent accessibility to public transport services and other land uses
		Provide footpaths of at least 1.2m width on both sides of all roads within the site
	Cyclist Facilities	Cycle lanes (1.4m width) on all collector roads
		Provide connection to Regional Cycleway (2.5m width)
		Provide comprehensive directional signage system for pedestrians and cyclists
		Implement cycle parking at Menangle Park station
		Implement cycle parking at Macarthur Interchange
	Bus Priority	Create quality public transport spines within the site including bus stops with shelters at 400m spacing and 3.5m kerbside lanes on bus routes. In addition bus priority lanes at intersections of Menangle Road/Glenlee Road, Cummins Road/Menangle Road and Collector Road/Spring Farm Parkway.
	Rail	Upgrade Macarthur Interchange.
	Public Transport Information	Implement comprehensive public transport information system at all bus stops and key retail locations
		Develop a community intranet for information dissemination
	Road Network	Widen Menangle Road between Glenlee Road and Gilchrist Drive
	Improve existing intersections with Menangle Road: two roundabouts (with potential to signalise the Cummins Road intersection)	
	Provide two new intersections with Menangle Road, one of which will be signalised	
	A roundabout (or signal) at the intersection of North South Collector Road 1/ Spring Farm Parkway	
	Spring Farm Parkway between Camden Bypass and Menangle Road	
	Ramps to F5 from Spring Farm Parkway	
Transport Services	Bus Services	Provide a bus service between Menangle Park and Macarthur Interchange and Campbelltown Interchange
	Rail Services	Increase frequency of services from Macarthur Interchange
Policy	Parking Policy	Prepare comprehensive Transport DCP (or equivalent) to address needs of all transport modes
		Provide locations responsive parking provision rates
	Pedestrian and Cyclist	Integrate pedestrian and cyclist planning principles into Transport DCP
		Make pedestrian and cycle planning issues fundamental priorities



Figure 25: Proposed Cycle Routes (Source: Menangle Park Transport Management and Accessibility Plan, AECOM, June 2010, Urbis)



Figure 26: Proposed Bus Priority Routes (Source: Menangle Park Transport Management and Accessibility Plan, AECOM, June 2010, Urbis)

4.12 SOCIAL SUSTAINABILITY

Information in this section is drawn from the report *Social Sustainability for Menangle Park* (Heather Nesbitt Planning, February 2010). The report assesses social issues in relation to the Menangle Park area, the social sustainability of any future development on the site and the social and community infrastructure that will be required to support the proposed development.

4.12.1 Existing Conditions

Menangle Park is currently an underdeveloped, rural residential area in the southern precinct of the Campbelltown LGA. It is geographically isolated from surrounding communities and there are a number of physical factors that enhance this isolation including the location of major roads and the train line.

The population of Menangle Park at the last census was 236 persons with a mix of household types and incomes. Key demographic characteristics of the area include a high proportion of youth and older people (one in three aged 50 years and over), high percentage of owner occupiers, generally low household incomes and high car ownership. The proportion of rental accommodation has increased over recent years potentially as an indicator of some residents living in the area until development occurs.

As would be expected with any underdeveloped area with a low population, the existing community infrastructure is limited with residents who currently live in the area relying on services located within the Campbelltown southern suburbs, Campbelltown CBD and Macarthur Square. There is limited provision of social and recreational infrastructure within Menangle Park with no existing public health, public education, welfare/support or emergency services with the exception of the bush fire brigade.

For the majority of services the surrounding communities do not have the capacity to expand and/or services are already in short supply. This includes childcare, preschool and parenting services, youth services, services for special needs groups, services and accommodation for older residents, poor public transport and poor access to library services. Medical and emergency services are also limited. The exception to this rule is existing local schools which are experiencing a decrease in enrolments and have significant capacity for additional enrolments.

The provision of open space in the Campbelltown LGA is good (8.6ha per 1000 residents) however the only formal open space area that currently exists within Menangle Park is the Menangle River Reserve on the Nepean River.

4.12.2 Issues and implications

Community engagement was undertaken to identify potential social issues to be considered in development of the Menangle Park site. The key stakeholder issues identified include:

- Potential physical and social isolation including lack of connection to established suburbs and existing traffic congestion on Menangle Road;
- Limited capacity of some existing services in surrounding suburbs;
- Likelihood that the future Menangle Park residents will be more culturally diverse than evident in Campbelltown City;
- Concern that the proposed development will be a dormitory suburb with poor social connections, limited community cohesion and poor community safety; and
- Lack of affordable housing in many new developments and need for this to be provided at Menangle Park.

These issues highlight the importance of social sustainability to the well being of any future community on site.

To address social issues and to ensure that a socially sustainable development is delivered for the new community at Menangle Park, a social sustainability framework and underlying objectives have been adopted. The development at Menangle Park will need to consider:

- demographic and lifestyle diversity with a range of housing price points;
- equal access to quality, life-long education and information;

- safe and supportive built and natural environments which facilitate positive links between work, home and community life
- Early life with all parents and children from birth to the completion of school having access to quality education, health, recreation and support services and resources;
- Meeting the requirements of high need groups within the community while integrating with and providing social, economic and physical benefits for the broader community;
- Providing local employment, links to established employment areas and business development / training opportunities;
- The development of an identity for the Menangle Park area with strong and viable informal and formal networks linking to the local and broader community;
- Minimising various forms of addictions within the community;
- Providing access to nutritious, affordable food and food culture; and
- High accessibility with community infrastructure within walking/cycling/public transport distance and links to other neighbouring communities, Macarthur Square, Campbelltown Town Centre and the broader region.

Having regard to these objectives, the existing environment, potential social impacts and the needs of the future community recommendations have been prepared to mitigate potential impacts and to capitalise on opportunities. These measures are to be incorporated into a Social Plan which will outline actions, timeframes, responsibilities and funding agreements for social and community services and facilities. This should also include funding of the recommended social initiatives which include a new residents' program, green travel program, consultation and community program, local employment and skills training program and public art and cultural development strategy. The requirement for the preparation of a social plan as outlined in *Social Sustainability for Menangle Park* (Heather Nesbitt Planning, February 2010) should be included in the DCP for the site.

In addition recommended community infrastructure required as a result of the proposed development at Menangle Park has been identified and is shown in Table 21.

These services should be planned for in the proposed Structure Plan and included in relevant agency forward programs and be reflected in the Section 94 Contributions Plan / Development Agreement for the site.

Table 21: Recommended Community Infrastructure

Community Infrastructure Required	Specific Requirements	Provision Strategy
Community Centre	1 x 700 sq.m building	One centre with library link and used by a range of outreach services / community programs
Public Primary School	1 public primary school 3 ha site Slope less than 1 in 10 Rectangular shape	Demand will be shared with private sector reducing public school requirements. Second school or high school can be provided in residential zoned if required. Demand will need to be monitored as development grows. Current population projections would only marginally support public high school and once population ages may be difficult to sustain. Students to be bussed to surrounding schools which have declining enrolments
Long Day child care centre	4 x 60 place private long day care centre – 532 sq.m building and 2150sq.m site	Four or more private centres will be required to meet need. Encouragement of a diversity of providers recommended to avoid ownership monopoly. Also will provide some preschool education for 4 year olds.
Preschool	1 x 60 place community based centre to be provided on school site – 550sq.m building and 2000 sq.m site	Funding to be sought from DET/DOCS and/or in partnership with community-based preschool providers. NSW government policy that all 4 year olds to attend preschool prior to starting primary school. Facility could be co-located on primary school site.
Outside school hours care centre	1 x 60 place centre to be provided in 300 sqm building located on primary school site	Dedicated facility to be provided on school site; but joint use of school playgrounds. If not on school grounds, site requires 12m ² play area per licensed place.
Integrated primary health care centre	500 sqm building as part of Town Centre	New integrated service model. Building to be funded either privately through GPs or pilot funding from Commonwealth and NSW Health. Centre staffed by GPs and outreach community health staff.
Supermarket with other stores including new post office and farmers market. Small convenience stores on Menangle Road.	1 large centre and 1 small centre	Allow space for temporary farmers market in Town Centre either on open space or as part of urban plaza. Need room for 30 stalls or 2000sqm.
Fire Station	2000sqm site	Preferably located on Menangle Road.
Rural Fire Service Station	2000sqm site	Preferably located on Menangle Road.

Community Infrastructure Required	Specific Requirements	Provision Strategy
Local parks	Minimum 0.5 ha useable site for part within 400m walking circle of all residents	Likely to be 4 parks not located in riparian zones. Need to be suitable for multi purpose activities.
Sportgrounds	1 oval and 3 additional sportgrounds	Needs to have floodlighting, parking, amenities block/canteen, irrigation by recycled water etc. Sports code to be determined in consultation with Council and sporting groups.
Tennis Courts	1 tennis court complex with 6 courts	Private provision with potential location along Menangle Road new small shopping centre.
Indoor Sports Courts	1 indoor sports court centre with min 3 courts	Provision by private sector and/or religious organisation which may use it for church activities on weekends and as required. Used for basketball, netball, futsal, volleyball etc.
Informal Youth recreation facilities	Skateboard facility; BMX track, half courts etc	In parks throughout development with easy access to youth and good surveillance / safety.
District Park	2 x District parts as part of riparian zones	Multi purpose parks including BBQ / Picnic facilities and major children's playground with equal access equipment.

In addition the statutory planning instruments (LEP/DCP) for Menangle Park should include provisions as relevant to address the following matters:

Affordable Housing

- Ensure a mix of affordable housing products in accordance with the provisions of Landcom's Housing Diversity Guidelines
- Consistent with Affordable Rental Housing State Environmental Planning Policy 2009 identify appropriately located lots and house/land packages for secondary dwellings, "manor homes" and other affordable rental housing products. This will provide affordable rental opportunities for a range of different households

Universal Housing

- To promote universal design housing, provide a universal housing product in the project home display village and work with project home builders to incorporate into project home designs at Menangle Park.
- For multiunit developments, require a proportion of dwellings to meet the Landcom's Universal Housing Design Guidelines.

Mixed Use Development

- Mixed commercial/residential development be allowed in Town Centre and Neighbourhood Centre to increase housing choice while also reducing the monoculture often evident in new release developments
- Home-based and small businesses be allowed in residential areas including housing products which allow for small businesses

Community Use of School Facilities

- In consultation with the NSW Department of Education and Training, ensure that the proposed public primary school (and any subsequent private/public schools) provide for shared use of school facilities. Early negotiations are required to secure functional design and management agreements for community use of these facilities.

Public Transport and Green Travel

- Provide a high quality and priority pedestrian and bicycle network and support facilities (including bicycle parking/storage facilities) throughout the development consistent with Planning NSW Walking and Cycling Guidelines

Crime Prevention and Community Safety

- Include Safer by Design requirements/provisions in DCP and require major development applications (e.g. Town Centre) to be forwarded to Campbelltown Police for Safer by Design review and comment. Any recommendations from these assessments should be reflected in revised applications for the above developments.

4.13 UTILITY SERVICES

Lean and Hayward has prepared an *Infrastructure Report* (January 2010) to outline existing utility services on site and major 'lead in' works necessary to service the proposed development of the Menangle Park area as outlined in the proposed Structure Plan. Information in this section is drawn from this report.

4.13.1 Existing Conditions

Existing services in the Menangle Park area include potable water, electricity, and telecommunications. The villages of Menangle and Menangle Park are currently unsewered and are serviced by on-site sewerage systems. No gas or recycled water facilities currently exist in the vicinity of the site. Figure 27 shows the general location of existing services on site.

4.13.2 Issues and implications

Existing services within Menangle Park will be required to be upgraded / augmented to accommodate development as proposed under the Structure Plan. Specific works / recommendations for relevant 'lead in' works are outlined below.

Water

The Macarthur Water Filtration Plant currently delivers potable water to the area and has spare headwork capacity. The plant has:

- A maximum day capacity – 160MLD
- A design maximum day capacity – 265MLD
- A 2030 projected maximum day demand – 210MLD

Water from the Macarthur plant supplies the Narellan South reservoir (3km north west of the Study area) which has a capacity of 60ML and a full service level of 161 metres AHD. Sydney Water has advised that it has no plans to upgrade the reservoir and that based on future demand from Oran Park and Turner Road, which are precincts within the South West Growth Centre, the development at Menangle Park will need to consider the inclusion of additional reserve storage capacity (2-3ML elevated reservoir) on the site. The existing 200mm diameter main from the Campbelltown system does not have capacity to serve the proposed development and would need to be upgraded / augmented. Further as development in the South West Growth Centre proceeds a duplication of the 750mm inlet main to Narellan Reservoir will also be required.

Recycled Water

Investigations by Sydney Water have indicated that the provision of recycled water to the site from West Camden is unlikely as there is only sufficient capacity to supply the South West Growth Centres. In any event this would come at a substantial cost due to the length of infrastructure needed to reticulate recycled water within Menangle Park. Given the cost it is unlikely that reticulated recycled water will be feasible on the site. However, it is proposed that rainwater tanks will be provided to satisfy BASIX requirements.

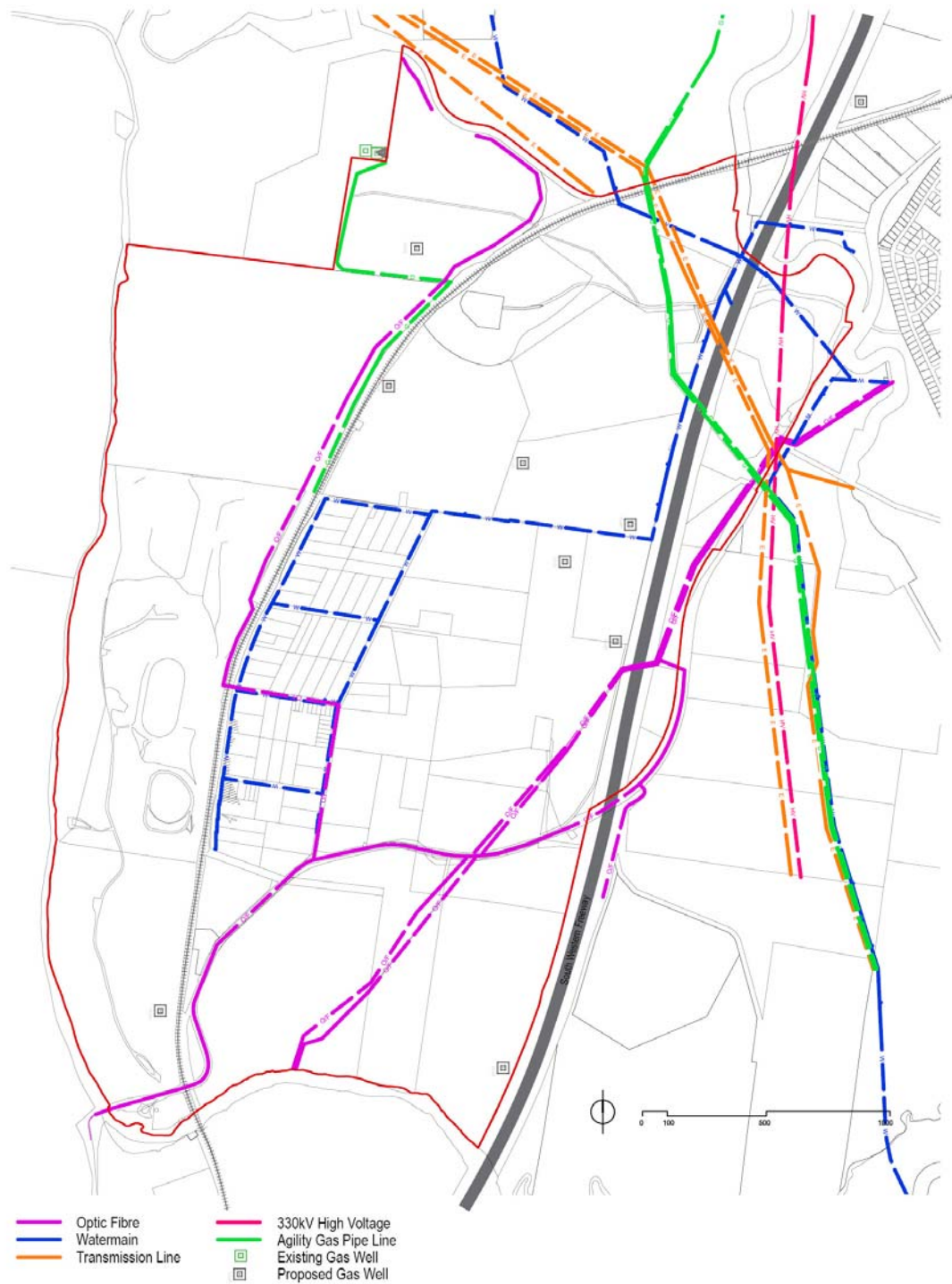


Figure 27: Existing Services (Source: Urbis)

Waste Water

As noted above no sewerage system currently exists in the Menangle Park area with the existing village being serviced by on-site sewerage systems. The area can be serviced by a number of options:

- Provision of pumping stations and rising mains delivering to West Camden Sewerage Treatment Plant – the West Camden STP has capacity to accommodate the proposed development however connection would require up to 3 pumping stations and a rising main of approximately 12.5km.
- Provision of pumping stations and rising mains delivering to Glenfield –based on existing spare capacity and projected urban development in the catchment, it is considered that the Glenfield STP may not have capacity to serve Menangle Park without further augmentation.
- Provision of a new Sewage Treatment Plan in close proximity to the site – this option would need buffer zones and environmental requirements and would have a significant lead time. It could have potential to serve other developments in the area such as Mount Gilead and other future development in Macarthur South.

Landcom has commissioned MWH Global to investigate an Integrated Servicing Strategy for Water Supply, Recycled Water and Waste Water for the release area including Menangle Village, the Sada rezoning and possibly Gilead. This report will be finalised in collaboration with Sydney Water and is expected to be completed mid 2010.

Up to three sewage pumping stations will be required on site, located in each of the catchments. At this stage it is envisaged that one pumping station will be located to the north of the release area in the vicinity of the Transgrid site, one will be located towards the centre of the site within the Howes Creek Corridor and one will be located to the south of the site in the vicinity of the Council playing fields. Further detailed investigations are required before exact locations are determined.

Electricity and Telecommunications

A 66kv/11kv zone substation will be required to service the development along with 2 x 66kv feeders. The 66kv lines will require easements 18-25m in width or 6m if underground. As advised by Integral Energy the Zone substation would take 3-5years to establish from ownership being taken of the land. A range of sites have been considered for the Zone substation. At this stage it is understood that the zone substation may be located on the eastern side of the F5 just north of the proposed Spring Farm Parkway intersection.

Telecommunication services on site are not currently sufficient to meet the likely demand of the development. There is no foreseeable impediment to servicing and appropriate technology and level of services will be determined closer to the date of commencement of the development.

Gas

No gas service is currently located in the area however Alinta (now Jemena) has advised that the Camden Narellan 210kPa network may be able to supply a PE main extension depending on the number of lots in each stage of the development. Alternatively a 6km extension of 250mm steel main from the Campbelltown trunk Reduction Station with a Secondary Reduction Station will be required to service the release area.

4.14 EMPLOYMENT

Information in this section is drawn from the *Employment Lands and Retail Study* (Draft Report) prepared by SGS Economics and Planning (2007). This report was prepared on behalf of Landcom to determine the viability of providing for employment lands at Menangle Park having regard to the advantages and disadvantages of the site.

4.14.1 Economic and Employment Overview

There were 67,974 persons in Campbelltown City's labour force in 2006, of which 18,033 were employed part-time (26.5%) and 42,673 were full time workers (62.8%). Unemployment in 2006 was higher in Campbelltown LGA as compared to the rest of the Sydney Statistical Division (SSD). Overall, 92.4% of the labour force was employed (58.0% of the population aged 15+), and 7.6% unemployed (4.7% of the population aged 15+), compared with 94.7% and 5.3% respectively for the SSD. However, analysis of the labour force participation rate⁴ of the population in Campbelltown City in 2006 shows that there was a larger proportion in the labour force (62.7%) compared with the SSD (60.7%). (ABS, 2006 Census)

Campbelltown's employment profile in 2006 was dominated by jobs in the following sectors:

Manufacturing (9,600 persons or 15.3%)

Retail Trade (7,343 persons or 11.7%)

Health Care and Social Assistance (5,722 persons or 9.1%)

Major employers in Sydney's South West Subregion are the manufacturing and retail trade sectors. Manufacturing is a significant industry sector, with transport and storage emerging strongly. Other significant sectors are property and business services, health and community services, education and construction. The Draft South West Subregional Strategy notes that all these sectors are growing strongly to meet population growth and to service a larger regional catchment.

Campbelltown also has a health/education focus with the University of Western Sydney's School of Medicine and Campbelltown Hospital providing general hospital services.

A report has been prepared by Hill PDA for MACROC which looks at key Employment Prospects for the South West Region (*Employment Prospects for South West Sydney*, August 2008). This report notes that the region is characterised by a high job containment level of 71% (local jobs being taken by residents living in the south west region) however the current excess workforce in the region means that 56% of the residents need to leave the region to access jobs.

Hill PDA had identified a number of key factors that will influence economic growth and increased job numbers in the south east. These include:

- Fostering an attractive development environment through improvements to the development process.
- Continuing to improve transport to the South West as good transport is critical to attract industry.
- Government support for the development of the south west
- The South West must establish itself as an independent cultural focus befitting an independent city.
- The Sydney Metropolitan Strategy anticipates the creation of over 555,000 jobs for the SSD from 2001 to 2031. The total employment target for Campbelltown by 2031, as noted in the Draft South West Subregional Strategy, is 26,000 additional jobs.

⁴ The labour force participation rate is the proportion of the population over 15 years of age that was employed or actively looking for work. The Australian Bureau of Statistics (ABS) notes that "the labour force is a fundamental input to domestic production. Its size and composition are therefore crucial factors in economic growth. From the viewpoint of social development, earnings from paid work are a major influence on levels of economic well-being." (Australian Bureau of Statistics, [Australian Social Trends 1995](#)).

4.14.2 Supply and Demand for Employment Lands

The SGS report indicates that in recent years, Sydney's southwest industrial region has experienced increased popularity amongst developers and users of industrial land, offering a suitable alternative to the traditional industrial suburbs of the South and Inner-West. Existing employment land in the southwest is dominated by manufacturing, construction and transport sectors. More recently, the Westlink M7 has opened up the southwest to firms requiring larger distribution centres.

In the office market, the southwest is expected to enjoy notable growth over the next couple of years, however within the suburb office sector the southwest continues to play a minor role, with the north and northwest continuing to dominate the suburban office market.

In the coming years, the SGS report states that the southwest will be the recipient of strong growth in population and employment. The key factors driving demand for employment land in the southwest region are:

- Population growth increases demand for services, and as such increase the demand for employment lands.
- Infrastructure improvements, including the improved connectivity provided by the M7, which has provided decreased travel costs related to transport from particular areas, and hence increasing the desirability of these locations for manufacturing and distribution activities. The proposed Southern Sydney Freight Line will improve goods distribution when completed.
- A reduction in available industrial land, particularly large parcels, and increased land prices in inner Sydney areas has contributed to the demand for industrial land in outer areas.
- Proximity to an appropriately skilled workforce is a key factor for business location choice. With an increasing residential population, the southwest sector will be a desirable location for businesses whose labour requirements align with the labour force skills of South Western Sydney.

The SGS report also notes that at present, there is a short supply of employment land in west and south west Sydney. The report refers to another study undertaken in 2003 which estimated that approximately 292 hectares of employment land was available across the south west (Liverpool, Camden and Campbelltown, LGAs). In the southwest, employment land has historically been consumed at an average of 50 hectares per annum (five years up to 2003). It is forecast that consumption will increase to 80 hectares in subsequent years, suggesting that the current supply has the capacity to meet demand for a period of approximately 4-5 years. To maintain competitive land stocks and to be able to respond to changing industry dynamics, a land stock of around 10 years is the generally accepted benchmark. In this light, current regional supplies clearly fall short of this mark.

Given that there is only enough industrial employment land to last 4-5 years it is clear that more land is needed to meet not only short-term demand but long-term demand too. Supply and demand analysis for the southwest sub-region indicates that without the release of additional lands, and with current industrial dynamics, land within the southwest sub-region will be exhausted by 2013. In reality, current trends are unlikely to persist in a tightening market. Industry dynamics will change as land becomes more scarce, with industries that are able to intensify their operations doing so, and other, inherently low employment density industries, moving elsewhere (in search of larger lots and cheaper land). This will have the effect of lowering land demand. Nevertheless, even with these changing dynamics there is a need for additional land in the south west – both as a response to population growth and broader metropolitan industry dynamics.

4.14.3 Issues and Implications

The provision of employment lands in Menangle Park is seen as an important opportunity to provide jobs in close proximity to future residents of the area. Both the Metropolitan Strategy and the Draft South West Sub Region Strategy have nominated a new employment area for Menangle Park, which is considered to be strategically located to support a range of employment uses.

However, the SGS report has indicated that there are a number of existing constraints to the establishment of employment lands at Menangle Park: These are:

- No direct access to M5

- The site is unsewered
- Large areas are floodprone
- The site is not within proximity of a major centre
- If developed along with residential, employment activity must be low impact – i.e. cannot be heavy industrial

The SGS report notes that the Menangle Park site is a poor candidate for a business park given its distance from Campbelltown CBD, lack of direct access to the M5, poor public transport access and unremarkable landscape. The existence of a skilled workforce and concentration of manufacturing activity offers some potential for manufacturing related synergies. On balance however, the site would require significant investment before a business park is a possibility.

The current lack of direct motorway access will act as a considerable disincentive for time-sensitive industries or those requiring high volume vehicle movements. Though the Spring Farm Arterial will improve access, the area still suffers from a perceived remoteness. In a local context, the site is not especially close to Campbelltown CBD so does not benefit from access to its services.

Another issue is the potential for the employment lands site to impact on nearby residential lands.

Access to suppliers is likely to be very good for manufacturing industries given the concentration of manufacturing activity in the southwest but will obviously vary by type of business. The southwest region offers a high concentration of skilled labour which would have good road access to the Menangle Park site, and access via Menangle Park train station is reasonable.

Given the identified industry sectors, pre-conditions for development and the nature of the Menangle Park site and location, the key target market is low-impact manufacturing. A diverse mix of manufacturing services the Campbelltown area and 'footloose' industries looking to expand would be primary targets. Some warehousing activity would be a secondary target given the opportunity to offer very large lots. However, these industries would generate much lower employment densities and some may require more direct access to the M5 if they operate with large truck movements.

To make this type of employment activity work, careful attention would need to be given to on-site landscaping and the transition between the industrial area and any surrounding residential areas. This will need to be addressed in the DCP.

In addition, the Spring Farm Arterial would need to be in place before many industries would consider the location over competitor sites elsewhere in the region. M7 proximate areas are likely to be much more attractive for time-sensitive industries such as logistics/ distribution activity.

The identified industry targets will need to be supported by a range of other business services – such as design, office support, professional services, etc. Within this context, such 'ancillary activities' will be an important component of future greenfield business areas.

5 A BLUEPRINT FOR THE FUTURE

This chapter outlines the key issues arising from the specialist studies discussed in Chapter 4 and identifies the implications of these issues for the future development of Menangle Park. The development options, preferred option, required infrastructure provision and implementation framework for the site are also discussed.

5.1 ISSUES AND CHOICES

5.1.1 Major Issues

Having regard to the specialist environmental studies summarised in Chapter 4, the key issues for development of the site are as follows:

- Over one third of the site is subject to flooding under the existing 1% AEP flood event including the majority of the land to the west of the railway line.
- To the east of the railway line local creeklines play a significant role on site including providing for local drainage, flood storage, riparian corridors, vegetation corridors, areas of potential indigenous archaeology etc;
- While the site accommodates an existing railway line, electrification of the rail line is not viable. A high quality bus connection between Menangle Park and Macarthur Interchange will be needed to ensure there is adequate accessibility of the site by means other than private motor vehicle;
- Given the relative isolation of the site from existing employment and services, adequate access arrangements need to be provided to ensure appropriate and equitable access. This should include access via public transport, walking and cycling to ensure the sustainability of any development on site.
- The planned Spring Farm Parkway (connecting Campbelltown to Camden) will traverse the site and will provide improved accessibility. It will however result in some visual impacts and requires careful consideration to minimise adverse impacts on the visual quality of the site and more specifically the heritage values of Glenlee House;
- A total of 121ha of remnant vegetation listed as either “Critically Endangered” or “Endangered” Ecological Communities remains on the site. Development of the site will require removal of some of these communities subject to an agreed offsetting strategy to ensure a net increase in vegetation condition of existing remnant vegetation and ‘no net loss’ in terms of vegetation distribution;
- The site is underlain by a significant coal resource which has been earmarked for mining within a 30 year timeframe. However it is understood given available information at the time of writing, that mining of this resource would result in mine subsidence which is likely to have significant adverse impacts on any built structures on site. A government decision has been taken that urban development of the site should be pursued as a priority to add to the supply of urban land.
- The site accommodates major sand and soil resources some of which have been mined or are proposed to be mined. Current approvals and extraction time frames indicate that extraction is likely to coincide with urban development. Appropriate measures therefore need to be applied to avoid land use conflicts.
- The site accommodates three items of State heritage significance, five items of local significance and two potential sites of non indigenous heritage significance. The existing listed items should be conserved in any development of the area. Of the two potential sites, the disused railway platform is located within the Menangle Park Paceway site (Lot 3 DP 593211) which is listed as a heritage item under Campbelltown IDO No 15. The railway viaduct has not been identified by RailCorp as a

heritage item on their Section 170 Register and there does not appear to be sufficient evidence at this time to include the viaduct as a local heritage item in any new LEP for the site.

- In relation to non Indigenous archaeological sites it is not possible to identify the full extent of any impacts at this time. Where an archaeological site coincides with an area for urban development disturbance is likely. In areas earmarked for rural or riparian land uses the extent of impact may be minimal. Detailed assessment of likely impact should be undertaken at the DA stage for the proposed development / subdivision works and should comply with the requirements of the Heritage Act 1977 in relation to excavation etc.
- Sensitive visual environments have been identified adjacent to the F5 Freeway, in the vicinity of Glenlee House and on prominent ridgelines throughout the site. An appropriate curtilage has been provided around Glenlee House in the proposed Structure Plan. Any development in these areas would need to be designed sensitively to minimise adverse visual impacts.
- Areas of high potential Indigenous archaeological sensitivity and high cultural values have been identified across the site as well as known sites. A significant proportion of these areas is located in riparian corridors and would therefore be preserved. However other areas are located within areas of potential urban development and may therefore be affected by development subject to compliance with relevant legislation. Notwithstanding this impact it is considered that areas to be retained reflect an appropriate representative sample of sites across the area.
- Utility services can be augmented or new services provided to service the future development;
- Air quality impacts associated with existing extractive industries and gas wells have been identified and buffer zones recommended. These impacts are unlikely to have a significant impact on future urban development provided that appropriate management measures are followed.
- Significant parts of the site are affected by noise from the F5 Freeway and the rail line. If these areas are proposed for development appropriate noise amelioration will be required.
- Bushfire risk does not have any significant implications for the site however it should be taken into account in the detailed subdivision design and APZs incorporated where necessary.

Key challenges facing development of the Menangle Park site therefore include:

- Amount of land below 1% AEP flood level;
- Relative isolation of site from existing services etc.
- Visual impact of development and proposed Spring Farm Parkway.
- Indigenous and non-indigenous heritage items and their associated curtilages.
- Rail line – lack of electrification and barrier separating eastern from western part of site.
- High ecological value vegetation
- Vehicular and pedestrian access to the west of the rail line
- Noise impact from F5 Freeway and rail line
- Location of existing easements
- Infrastructure provision given relatively low development yield
- Fragmented land ownership pattern.

The key opportunities and constraints of the site are shown in Figure 28.



Figure 28: Site Issues and Opportunities (Source: Urbis)

(Note that the categorisation of some vegetation was subsequently downgraded following further analysis as part of the Offsetting Strategy. Refer to Section 4.3.2 for further discussion.)

5.1.2 Development Options

Since 2001 Menangle Park has been included in the Metropolitan Development Program (MDP) with a notional total yield of 4,200 residential lots. This inclusion was in response to concerns over Sydney's housing market and housing affordability. However the notional yield of 4,200 residential lots was subject to later detailed environmental investigation to determine the site opportunities and constraints.

In 2004 a Preliminary Local Environmental Study for Menangle Park was prepared (Menangle Park Preliminary Local Environmental Study, MG Planning Pty Ltd, September 2004). This Preliminary LES included detailed environmental investigations, and identified that the site faced significant challenges to achieve the MDP yield target. The Preliminary LES considered options yielding 2,500 dwellings, 4,200 dwellings, 6,200 dwellings, no dwellings (no development option), 1,258 dwellings and coal mining as an alternative to urban development.

The Preliminary LES recommended that if urban development were to be pursued on the site the 'moderate' development option was the preferred option. This option would yield approximately 4,200 residential dwellings or 12,600 persons assuming an average dwelling occupancy rate of 3 persons and an average density of 15 dwellings per hectare. This option was consistent with the MDP notional yield but involved extensive filling of the site to raise land above the existing 1% AEP flood event primarily to the south of Menangle Road and a small area to the west of the railway line. However to still be able to accommodate floodwaters significant excavation in areas adjacent to the river would be required to increase flood storage capacity.

A detailed review of this cut and fill strategy was subsequently undertaken which found that it was unacceptable from both an environmental and economic standpoint, in particular that:

- The filling increased the localised flood afflux upstream to unacceptable levels (in both Campbelltown Council and Wollondilly LGA's);
- The bulk earthworks required was approximately 1.48 million cubic metres (which was considered to be too large in scale for the area);
- Large compensatory excavations would have been required in the flood plain to offset the flood afflux;
- The DECCW had concerns as to the environmental impacts to the creek and riverine systems; and
- The cost of the fill would have been prohibitive and commercially unviable;

In view of these findings, the potential yield that could be developed on the site was revised downwards.

Council subsequently wrote to the Department of Planning seeking its comment as to whether it would support planning for the Menangle Park Release Area proceeding, given that it appeared likely the lot yield would need to be revised downwards from 4,200 lots to an estimated 3,600 lots due to environmental constraints. In response, the Department advised that it agreed in principle with Council's plans for Menangle Park proceeding as proposed (refer correspondence at Appendix 5). The Department noted that it is important that, in planning for the Menangle Park Release Area, Council pay detailed consideration to flooding and other environmental constraints when identifying land for residential development. It also noted that:

In regard to the broader issue of achieving housing lot yields, the Metropolitan Strategy suggests that planning for higher densities should focus on large centres that are well serviced by public transport. Centres such as Macarthur/Campbelltown and Glenfield which are located in close proximity to the heavy rail network are better suited to be the focus for higher density residential development than centres that do not have a major bus route or rail line nearby.

Menangle Park is not located in close proximity to the heavy rail network nor does it have a major bus route within close proximity. Although the site accommodates a rail line it is not electrified and does not provide a viable public transport option for commuters. It is therefore not a site that meets the Government's criteria for higher density areas.

Further detailed analysis of the overall site constraints has led to a further refinement of the site yield to 3,400 dwellings, as reflected in the proposed Structure Plan prepared by Urbis (refer Figure 29). The proposed Structure Plan reflects the findings and recommendations of the relevant specialist studies and has regard to the site constraints. Other significant constraints impacting on yield include:

- the difficulty of evacuating people from the western side of the railway during flood periods, even though there is land on the western side above the 1% AEP;
- the presence of significant vegetation;
- the need to protect important heritage items and their curtilages;
- the steep slopes and visual prominence of some areas;
- the presence of a number of major utility easements on the site.

The lower yield of 3,400 dwellings is considered reasonable given the site constraints and given that the Menangle Park site is not located in a highly accessible area. The proposed structure represents an environmentally and economically sustainable solution to the development of a site which is particularly constrained. The development solution avoids extensive cut and fill which would have otherwise resulted in significant impacts on the Nepean River and its flooding regime. It contains developable land to the east of the railway line and proposed urban development densities which provide for a mix of housing but which at the same time reflect the site's relatively limited access to high frequency public transport. The proposed Structure Plan is outlined in further detail below.

5.2 PROPOSED STRUCTURE PLAN

The proposed Menangle Park Structure Plan is founded around achieving the following vision:

As an impressive southern gateway to the Sydney Metropolitan Region, Menangle Park will become a unique urban community characterised by sustainable design, accessibility, and a vibrant town centre. As part of the broader Macarthur community, Menangle Park's urban form will capitalise on the existing economic resources, existing natural and cultural heritage qualities and the adjacent Nepean River.

Several iterations of layout options have been prepared through the project timeframe. The evolution of the Structure Plan design is discussed in the Draft Menangle Park Structure Plan Report prepared by Urbis (December 2009). Each of the design options produced for the site has been consistently underpinned by a set of design principles. These design principles are detailed below.

North

- Provide larger lots in areas where there are higher numbers of easements.
- Provide larger lots where areas of steeper slope exist, to allow sufficient space to locate a house.
- Locate larger lots abutting heritage items and their curtilage.
- Establish a centrally located open space park at the low point of the northern portion of the site, which also accommodates and protects a patch of vegetation identified as being of high ecological value.
- Locate small lots in areas less constrained by steep slopes, and around the park.

Central

- Subdivide the Menangle Park village based on existing ownership patterns.
- Establish a new road network consistent with existing road reserves.
- Establish a town centre under single ownership to facilitate easy implementation.
- Create boulevard connection between Menangle Park railway station / Menangle Park Paceway site uses and the town centre.
- Explore options for co-location of Menangle Park Paceway uses in the town centre.
- Locate medium density residential development in the town centre.
- Respond to the horse-shoe shaped topography in this area through appropriately sized lots.
- Locate the school close to the town centre but not within it to reduce potential activity conflicts. The school is also located on a collector road for school safety issues.
- Reduce the number of intersections on roads surrounding the school.
- Locate a collector road through the centre of the site connecting with Menangle Park at a low point between two hills. Accommodate a 20m median for drainage in one section of the road.
- Provide larger lots to the north of Menangle Road due to high slope and in areas adjacent to the F5 Freeway due to noise issues. Noise dampening solutions are required for these lots.
- Design lots adjacent to open spaces to overlook these areas.

South

- Locate larger lots on southern facing side of the hill to reduce the visual impact of development from the F5 Freeway.
- Locate larger lots with reduced ownership on flood liable land to reduce the amount of fencing associated with higher numbers of land ownership.
- Locate playing fields on flood liable land already owned by Council. Associated facilities should be located above flood liable land.
- Locate larger lots south of Menangle Road on land with steeper slopes.

East

- Locate larger lots in this area, particularly on land highly constrained due to easements, flood liable land and noise impacts.
- Realign Glenlee Road to facilitate a safer intersection with Menangle Road.

West

- Land in this portion of the site generally remains as is.
- Locate employment activities to the north of this area subject to further detailed investigations.

The proposed Structure Plan for the urban development of Menangle Park is shown in Figure 29.

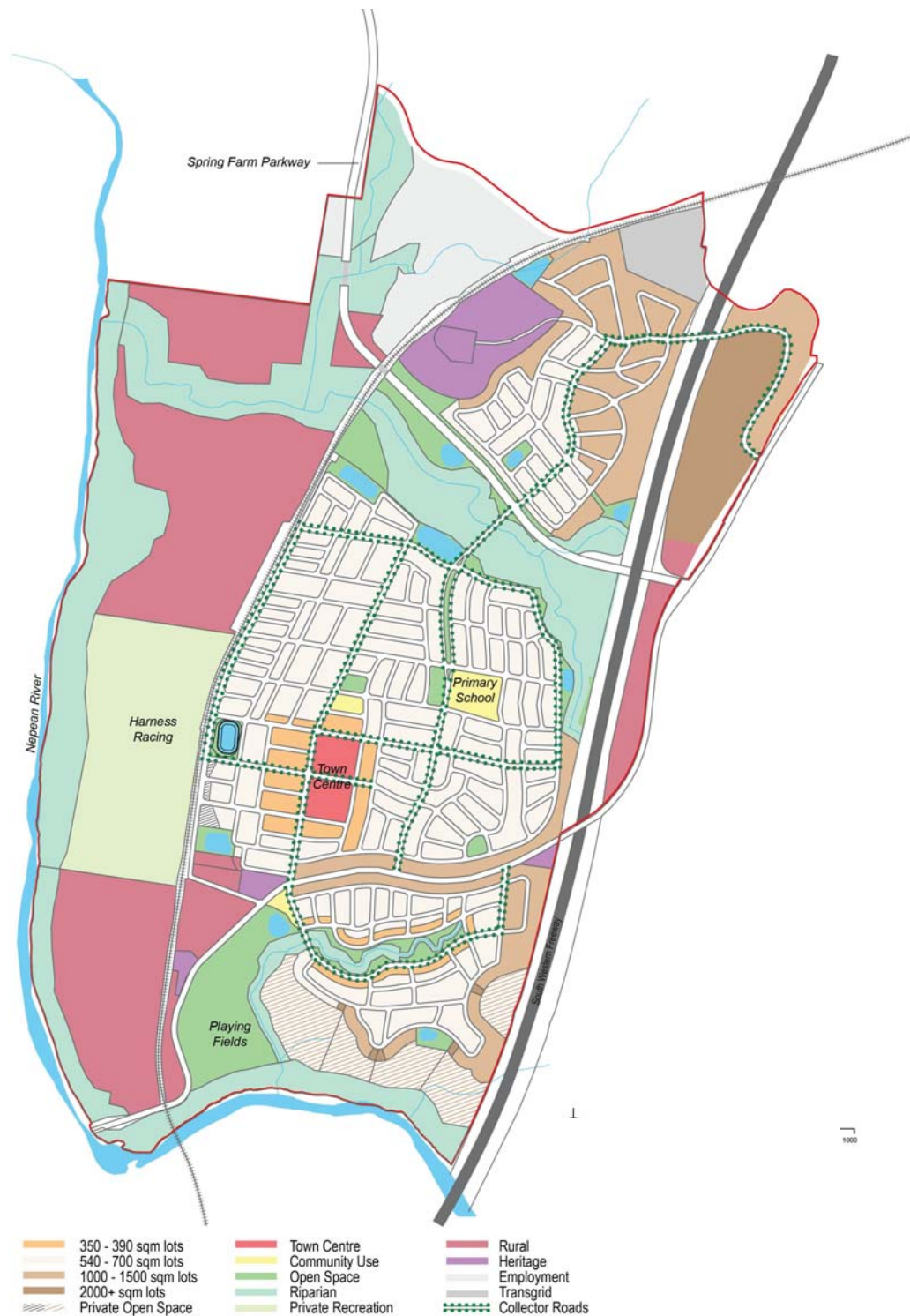


Figure 29: Proposed Structure Plan (Source: Urbis)

5.3 FUTURE COMMUNITY PROFILE

The proposed yield of around 3,400 dwellings is expected to result in a population of around 11,500 people (Heather Nesbitt Planning, February 2010). The proposed timeframe for development of the release area and estimated residential dwelling production per year is shown in the table below.

Table 22: Anticipated Lot Production Program – Menangle Park

Year	No of Residential Lots
1	200
2	200
3	250
4	250
5	230
6	230
7	230
8	230
9	230
10	230
11	230
12	230
13	230
14	230
15	200
Total Lots	3,400

(Source: Landcom)

The Social Sustainability Report has provided a breakdown of the estimated population for Menangle Park based on the differing dwelling densities proposed. This is shown in Table 23.

Table 23: Estimated Population for Menangle Park

Lot Type	No. of dwellings	Estimated occupancy rate	Estimated population
Town centre units	160	2.5	400
350-390m ²	485	2.7	1309
540-700m ²	2274	3.7	8414
1000-1500m ²	427	3.2	1366
2000+m ²	14	3.5	49
Total	3,360		11,538

(Source: *Social Sustainability for Menangle Park*, Heather Nesbitt Planning, 2010)

The indicative age and household characteristics of the future population of Menangle Park is expected to vary with different housing types and price points likely to influence the age profile of households. It will also be affected by the availability of resources such as schools, community facilities, transport and the local job market.

Based on the characteristics of existing areas, both region-wide and recent new developments in the region, it is assumed that Menangle Park will attract a variety of household types from young families (generally first home buyers), established families with teenagers/young adults (second/third home buyers) as well as couple only households (both empty nesters and young couples). The large lot component of the development (i.e. > 1000m²), whilst small in terms of the overall development, would be assumed to attract mainly established families.

Given the household mix expected and historical patterns of settlement in new release areas, Table 24 provides an expected age profile for Menangle Park.

It is important to note that this profile is indicative only with factors such as housing prices, job markets, transport costs and lifestyle trends all likely to play a part in determining the demographic profile of this proposed development.

Similarly, the assumptions underlying these projections, and the rates of growth themselves, need to be closely monitored.

Table 24: Indicative Age Profile for Menangle Park

Age Group	Expected Proportion of Total Population	Indicative Population
0-4 years	9%	1038
5-11 years	13%	1500
12-17 years	15%	1730
18-24 years	12%	1385
25-54 years	44%	5077
55+ years	7%	808
Total	100%	11,538

(Source: *Social Sustainability for Menangle Park*, Heather Nesbitt Planning, 2010)

5.4 IMPLEMENTATION

5.4.1 Staging

In terms of development staging it is anticipated that there may be a number of development fronts as private landowners in the village and north of the site, and Council develop their lands. Development of Landcom owned land is likely to commence in the south-east and move towards the north.

The analysis in Chapter 4 has indicated that urban development can occur concurrently with the sand mining as impacts on residential lands from this activity are unlikely to occur or can be readily mitigated.

Landcom is likely to build some limited infrastructure and services in the town centre in the early stages.

The employment lands in the north will likely not be developed for some time and until the Spring Farm Parkway is in place.

5.4.2 Local Environmental Plan

Having regard to the findings of the specialist studies, the analysis undertaken in this LES and the proposed Structure Plan it is considered that the subject site should be rezoned to allow urban development. A new LEP should be prepared for the site in accordance with the Standard LEP instrument including all relevant special provisions. Detailed planning provisions for the site should be incorporated into a site specific development control plan.

Based on the findings of the site analysis in Chapter 4, a number of key issues will need to be addressed in the LEP. These include:

- **Land use** - Adopt appropriate zonings which reflect the land use allocation in the proposed Structure Plan (Figure 29), including zonings that reflect the differing residential densities, restrictions on floodprone land, environmental and heritage conservation objectives proposed.
- **Residential densities** - Provisions to ensure that the overall target of 3,400 dwellings is met for the release area.
- **Preconditions to carrying out urban development** - Provisions to ensure satisfactory arrangements in place to allow urban development, e.g. public utility services, stormwater quantity and quality works, roadworks etc.

- Floodprone land - Restrictions on development in floodprone land, including heads of consideration for any development that is permitted.
- Subdivision of residential land – Development controls relating to residential lot sizes.
- Protection of native vegetation – Development controls to manage protection of native vegetation, including appropriate mechanisms to assist in the implementation of the vegetation offset strategy
- Heritage – Listing of heritage items and provisions relating to protection and conservation of heritage items

It is considered that the following zones should be adopted, reflecting the land use allocation in the proposed Structure Plan:

RU1 Primary Production	This zone would apply to land identified as “rural” in the proposed Structure Plan. This land is floodprone and intended to be retained for agricultural, extractive industries and other rural uses.
R2 Low Density Residential	This zone would apply to majority of residential land identified in the proposed Structure Plan as comprising lots 540-700m ² in area. Local community uses such as child care centres, schools and community centres should be made permissible in this zone.
R3 Medium Density Residential	This zone would apply to land around the town centre identified in the proposed Structure Plan as comprising lots 350-390m ² in area.
R5 Large Lot Residential	This zone would apply to those areas containing larger residential lots ranging from 1,000m ² and upwards. These areas have been selected for large lot residential development because of their scenic or other landscape values.
B4 Mixed Use	This zone would apply to the Town Centre which is intended to provide for a mix of retail, service, community and residential uses.
IN1 General Industrial	This zone would apply to the employment area located to the north of the site. The general industrial zone allows for a broad range of industrial, warehousing and similar uses which would correspond with the longer term intentions for this area.
SP2 Infrastructure	This zone would apply to the Transgrid site located at the northern end of the site, the F5 Freeway, the Spring Farm Parkway road reservation, the rail corridor and other major infrastructure land. A land reservation acquisition map will be required to identify land reserved for public infrastructure (e.g. Spring Farm Parkway) and a provision inserted into the LEP identifying the relevant acquisition authority.
RE1 Public Recreation	This zone would apply to public open space, including playing fields, local parks and open space corridors. Opportunities for incorporating land along the Nepean River into public open space will also be examined.
RE2 Private Recreation	As the Menangle Park Paceway site is undergoing a separate rezoning process, the appropriate zone for this site is yet to be determined. Until the final land uses for the Paceway are determined, it would be appropriate for the site to be zoned RE2 Private Recreation.
E2 Environmental Conservation	There are a number of sensitive locations within Menangle Park where it would be appropriate to apply the E2 zoning. These locations include riparian corridors, areas identified as having high archaeological sensitivity, sites containing important heritage items (e.g. Glenlee House), and areas identified as having important ecological values. To the very south of the site there are a small number of residential lots identified in the proposed Structure Plan as containing large areas of private open space. This land is floodprone and unable to be developed but

	is not suitable for public open space. It is proposed that these lots be zoned part R5 Large Lot Residential for that part of the lot above the 1% AEP level and part E2 Environmental Conservation for that part of the lot that is floodprone and environmentally sensitive.
--	--

In general it is considered that detailed planning provisions for the subject site should be incorporated in a site specific Development Control Plan.

5.4.3 Development Control Plan

Urban design issues and detailed environmental and development controls should be incorporated into a site specific section of the Campbelltown (Sustainable City) Development Control Plan 2009 for Menangle Park. The DCP should include controls for specific environmental issues as recommended in the specialist studies where not addressed in LEP controls. The DCP should adopt as far as appropriate general controls contained in the Campbelltown (Sustainable City) Development Control Plan 2009 to ensure consistency with the remainder of the LGA. However site specific controls should be prepared for the following matters:

- Urban structure
- Residential density
- Street network and design
- Pedestrian and cycle network
- Public domain, landscape and open space
- Views and vistas
- Heritage
- Environmental management
- Residential development
- Town centre
- Employment area
- Education, civic and community facilities.

The technical studies have made a number of recommendations regarding issues to be addressed in both the LEP and DCP. Most of the issues raised are covered in the scope of the LEP and DCP as discussed above. Other matters discussed in the technical studies will be addressed in the DCP as follows:

Table 25: Additional Matters to be Addressed in DCP

Flooding and Drainage	▪ Flood evacuation requirements ▪ WSUD requirements for subdivision and public domain ▪ Requirement for soil and water management plans
Flora, Fauna and Aquatic Conservation	▪ Measures relating to fish passage and fauna culvert design ▪ Environmental Management Plans to be developed where subdivision involves areas containing important flora, fauna or aquatic species or habitats ▪ Detailed implementation measures to facilitate Vegetation Offset Strategy, including preparation of Vegetation Management Plan
Bushfire	▪ Measures in accordance with <i>Planning for Bushfire Protection 2006</i>
Air Quality	▪ Measures to reduce potential land use conflicts e.g. appropriate buffers
Noise	▪ Acoustic treatment measures
Indigenous Heritage	▪ Aboriginal Heritage Management Plan to be prepared prior to development affecting identified conservation zones
Non Indigenous Heritage	▪ Archaeological Management Plans to be prepared prior to subdivision
Social Sustainability	▪ Provisions to encourage affordable housing

5.4.4 Infrastructure Provision

As Menangle Park is a “greenfield” release area (i.e. it is located on the urban periphery and is not an ‘infill’ area) it will require a range of new public services and facilities to cater to the new population that is expected. This infrastructure is funded from a range of sources including development contributions (i.e. Section 94, State infrastructure contributions or voluntary planning agreements), Commonwealth and State government, local government, non-profit organisations and the private sector.

The technical studies have identified that the expected development in Menangle Park will generate the following impacts on local public services and amenities:

- increased demand for local active and passive recreation facilities, such as sports fields, playgrounds, walking trails and bike paths;
- increased demand for spaces that will foster community life and the development of social capital in Menangle Park, such as meeting spaces and after school child care;
- increased demand for facilities that will support safe and convenient travel between land uses both within the release and to and from destinations outside of Menangle Park, such as new roads and public transport facilities; and
- increased demand for water cycle management facilities as a result of the extra stormwater runoff generated by impervious surfaces associated with urban (as distinct from rural) development.

A range of public facilities and public amenities have been identified as being required to address the impacts of the expected development, including:

- Community facilities;
- Open space and recreation facilities;
- Transport and traffic management facilities; and
- Water cycle management facilities;

It is proposed that these services and facilities will be funded via development contributions imposed on consents for development, in accordance with an adopted Development Contributions Plan. These contributions may be in the form of monetary contributions, works in kind, land dedications, or a combination of these. The Draft Development Contributions Plan is currently being prepared having regard to the revised approach for setting local development contributions recently announced by the NSW Government which includes setting a \$20,000 per residential lot or dwelling limit on local development contributions. The Draft Development Contributions Plan will also have regard to the proposed new Part 5B of the EP&A Act and associated *Draft Development Contributions Guidelines 2009* (Department of Planning, 2009).

The technical studies have also indicated that there is a need for other infrastructure that is not able to be levied for, either partly or fully, via a Development Contributions Plan. This infrastructure includes the Spring Farm Parkway, Menangle Road widening, regional open space along the Nepean River and land for a new primary school. Regional infrastructure of this nature can be funded through “State Infrastructure Contributions”. As with local development contributions, State infrastructure contributions are imposed as a condition of consent. Under the proposed Part 5B of the EP&A Act, State infrastructure contributions will only fund attributable infrastructure and land requirements to support newly developed land and will be determined by the Minister for Planning with the concurrence of the Treasurer or NSW Treasury.

Council has made an initial approach to the Department of Planning regarding the possibility of levying a State infrastructure contribution to fund the regional infrastructure. At the time of writing, no decision had

been made regarding whether a State infrastructure contribution will be imposed on urban development at Menangle Park.

In terms of delivery of utility services, the following funding arrangements will apply:

- Water and wastewater infrastructure will be funded by Sydney Water. Provision of these services can be accelerated by developer funding.
- The provision of the zone substation site is developer funded. Integral Energy will be responsible for designing and constructing the appropriate infrastructure on this site and providing overhead lead in works. If the lead in works are preferred underground, then the difference in cost is developer funded.
- Telecommunication services and gas supply will be reticulated under the normal shared trench arrangements. any lead in works will be funded by the relevant authority.

APPENDIX 1

Letter from Campbelltown City Council

24/12/2002



24 December 2002

FILE COPY

Regional Planning Coordinator
Sydney Region West
Planning NSW
PO Box 404
PARRAMATTA NSW 2150

ATTENTION: David Holden

Dear Mr Holden

**DRAFT MENANGLE PARK LOCAL ENVIRONMENTAL PLAN SECTION 54 (4)
NOTIFICATION**

a) Decision to prepare a draft local environment plan

In accordance with Section 54 (4) of the Environmental Planning and Assessment Act, 1979 and clause 6 of Part 2 of the Environmental Planning and Assessment Regulation 2000 you are advised as follows:

Council at its meeting on 24 November 1987 resolved to prepare a draft local environmental plan to rezone the land from Non Urban 40 ha, Non Urban 100 ha and part 7(d1) – Environmental Protection (100 ha. min.) to part 2(b) – Residential. This resulted in draft LEP No. 90 and a study being prepared. Due to State Government concerns regarding air and water quality, the then Minister for Planning decided not to make the LEP following exhibition by Council. On the basis of recent preliminary studies the State Government has now endorsed the commencement of planning studies and the rezoning process for Menangle Park. On 17 December 2002 Council resolved to prepare a local environmental plan and local environmental study for Menangle Park. A copy of the report to Council and resolution is attached.

b) Background

The State Government has recently announced that Council could commence the master planning and rezoning process for the Menangle Park Urban Release Area to rezone the subject land to part 2(b) – Residential to permit a major residential development of approximately 3500 lots.

c) Date of decision

17 December 2002 (A copy of the report to Council attached).

d) Reason

The reason for preparing the draft plan is to permit the Menangle Park Urban Release, one of the largest development sites in Sydney's southwest, covering approximately 380 ha. and providing approximately 3500 residential lots.

e) Subject land

The subject land, Non Urban 40 ha, Non Urban 100 ha and part 7(d1) – Environmental Protection (100 ha. min.) The area is currently used for a combination of open space, pasture and rural residential development. Landcom and Campbelltown City Council currently own the bulk of the land, with the existing residential areas owned by private landholders.

A locality plan is attached for your information.

f) Range of matters to be dealt with

The plan proposes to rezone the subject land from Non Urban 40 ha, Non Urban 100 ha and part 7(d1) – Environmental Protection (100 ha. min.) to part 2(b) – Residential, under Campbelltown (Urban Area) LEP 2002

g) Current planning position of the subject land

The current zoning of the site is Non Urban 40 ha, Non Urban 100 ha under Campbelltown IDO 15, and part 7(d1) – Environmental Protection (100 ha. min.), under Campbelltown LEP D8.

h) Details of known environment

The land is currently mostly grazing land, with a few scattered trees and some rural-residential development. A Local Environmental Study is proposed, to assess the land in terms of the natural characteristics of Menangle Park and how they might affect or be affected by any development potential. Issues to be considered include topography, drainage catchment patterns and features, slopes and soil stability, wind patterns, bushfire hazard, solar access, aspect, flora and fauna habitat, threatened species, the significance of current land uses, which includes agricultural activity, coal mining and mineral extraction as well as the significance of natural economic resources within the area, including coal, gas and mineral resources and the implications of any potential future extraction on the natural and social environment, local hydrology and road system.

i) Consultation

It is envisaged that consultation pursuant to Section 62 of the Act with the following authorities will be necessary for this rezoning proposal:

- Sydney Water;
- Roads and Traffic Authority;
- State Rail;
- City Rail;
- Rail Infrastructure Corporation;

- Integral Energy;
- Australian Gas Light Company;
- Telstra and any other telecommunications carriers;
- Dams and Safety Committee;
- Interline and Busway (local bus companies);
- NSW Heritage Office;
- NSW Valuer General's Department;
- Dept. of Agriculture;
- Dept. of Community Services;
- Dept. of Health;
- Dept. of Housing;
- Dept. of Land and Water Conservation;
- Dept. of Mineral Resources;
- Dept. of Schools Education, UWS and NSW TAFE;
- Dept. of Transport;
- Environment Protection Authority;
- Resource NSW;
- NSW National Parks and Wildlife Service;
- Planning NSW;
- Camden Municipal Council;
- Wollondilly Shire Council;
- Tharawal Local Aboriginal Land Council and Cubbitch Barta Native Title Claimants Aboriginal Corporation; and
- Emergency service authorities (eg. Ambulance Service, Police, State Emergency Service, NSW Fire Brigade, and local Rural Fire Service.)

j) Council's opinion in relation to an environmental study

Council is of the opinion that an environmental study is necessary because the proposal is considered of major environmental significance. A list of issues to be addressed as part of the LES includes;

- Strategic local, regional and state planning issues.
- Relevant environmental legislation and any other relevant legislation.
- The natural characteristics of Menangle Park and how they might affect or be affected by any development potential. Issues to be considered include topography, drainage catchment patterns and features, slopes and soil stability, wind patterns, bushfire hazard, solar access, aspect, flora and fauna habitat and threatened species.
- Review and outline of the land use history. Menangle Park has been used for agricultural activities and may be contaminated or contain "unhealthy building lands" and controlled/uncontrolled fill.
- The significance of current land uses, which includes agricultural activity, coal mining and mineral extraction.
- The significance of natural economic resources within the area, including coal, gas and mineral resources and the implications of any potential future extraction on the natural and social environment, local hydrology and road system.
- Any restrictions or easements within Menangle Park.

- The gateway role of Menangle Park (significance and how to maintain this), as the proposed development will be highly visible to travellers using the F5 Freeway, Menangle Road and Southern Railway. Views to and from Menangle Park must be considered.
- The relationship and compatibility of the proposed urban land uses with adjacent land uses. Issues include, but are not limited to noise, odour, local road system, and visual impacts.
- Water cycle management that will ensure water quality objectives in the Nepean River and Menangle Creek will be achieved, and flood and stormwater management strategies can be managed.
- Current soil characteristics and potential cumulative impacts on soil quality, and the implications for location and design of buildings, and water quality in the Nepean River and Menangle Creek.
- Potential cumulative impacts on air quality.
- Investigation of development potential for commercial and retail development.
- The estimated residential lot yield, dwelling yield and dwelling types must be outlined based on land capability and suitability criteria.
- The community services and facilities to be provided for Menangle Park based on the residential development yield etc. The upgrade of existing services and facilities in the locality must also be addressed. Analysis of the need for community services and facilities (buildings/centres, recreation, public transport, open space) as a result of any residential development. The cost and feasibility of providing the services and facilities must be assessed.
- The ability to provide infrastructure services (timing and costs), including water, sewerage, electricity, gas, waste management and telecommunications to Menangle Park.
- Transport and traffic management, including utilisation, access and generation of traffic. The impact of traffic within Menangle Park on the existing road system is to be considered along with appropriate access points to Menangle Road, the F5 Freeway and for the continuing existing uses. The modal split of traffic must also be considered. Ways of meeting the transport needs (including public transport options) must also be addressed.
- Investigation of measures to assess environmental, economic and social sustainability of development options. The investigation and evaluation of measures including controls, urban design and provision of infrastructure that helps achieve the above aspects of sustainability.
- Identification of all heritage assets within Menangle Park, including those of Aboriginal and non-Aboriginal cultural significance.
- A summary of environmental planning factors must be provided, which includes an assessment of strengths, risks, opportunities and constraints.

k) Section 65 Certificate

Council requests that the Director issue a Certificate under Section 65 of the Environmental Planning and Assessment Act, 1979.

I) Section 69 Delegation

The Director Planning and Environment does not propose to exercise her delegation under Section 69 of the Environmental Planning and Assessment Act, 1979. The draft plan will be referred to Legal Branch once prepared.

I trust the information supplied is sufficient. Should you require and further advice please contact Jon Bridge on (02) 4645 4563.

Yours sincerely

A handwritten signature in dark ink, appearing to read 'Fay Steward', with a stylized flourish at the end.

Fay Steward
Manager Environmental Planning

Reference: F106950

2.4 Menangle Park Urban Release Area

F106950

Attachment

Draft Study Area

Preamble

The Menangle Park Urban Release area is one of the largest development sites in Sydney's south-west and covers some 380 hectares. The site includes major landholdings owned by Landcom and Campbelltown City Council and an area under multiple land ownership in the Menangle Park village. The site is strategically located along the main southern railway line and the F5 freeway and is a short commute to the Macarthur Regional Centre.

The site was identified in 1980 as a potential future urban area as part of the original planning for major urban areas to meet Sydney's growth needs. On the basis of recent preliminary studies concluding that the key issues of air and water quality objectives can be resolved in a sustainable and viable manner, the State Government endorsed the commencement of the rezoning and master planning process to enable the release of this important release area.

Campbelltown City Council and Landcom, together with State Government agencies, are adopting a whole of Government approach to the urban development of the site. This will enable an efficient and effective process to ensure the timely release of the site.

The site has the capacity for over 3,500 dwellings and will offer a variety of community and service facilities and amenities. It will have public transport corridors linking it to the Macarthur Regional Centre, educational facilities and the greater south-west region. The overall urban development will be infrastructure-led to ensure effective public transport is provided therefore promoting the principles of transit oriented development. It will also take the lead in being an ecologically sustainable community.

The aim of this report is to seek Council's agreement to a management structure for the planning process to enable a comprehensive planning package to be developed for Menangle Park comprising the Local Environment Study (LES), draft Local Environmental Plan (LEP), Draft Development Control Plan (DCP), draft Master Plan and Draft Development Contributions plan.

Report of Manager Environmental Planning

Council's Statutory Delegations under the Environmental Planning and Assessment Act 1979 (The Act)

Council is required to resolve under Section 54 of the Environmental Planning and Assessment Act (the Act) to prepare a draft LEP, and under Section 57 to prepare an LES. Council's records clearly show that both resolutions were made on 24 November 1987, which resulted in draft LEP No. 90 and a study being prepared. However, due to State Government concerns regarding air and water quality issues associated with the proposal, a decision was made by the then Minister for Planning not to make the draft LEP following Council's exhibition of the draft plan on 29 May 1990. There is no record of Council having rescinded its resolutions with respect to both Section 54 and Section 57. The Council will however need to prepare a new, more detailed planning package in

accordance with specifications established by planningNSW. In this regard draft specifications will shortly be sent to planningNSW for comment.

The planning exercise will be jointly funded by Landcom and Council and a separate report has been prepared for Council in this regard. This separate report has been prepared because it is important that the commercial/developer aspects and the planning aspects of this exercise are dealt with separately to eliminate any perceptions of a conflict of interest. For this reason, Council's Environmental Planning Section will manage all aspects of the planning exercise, including the procurement and management of a Project Manager and any consulting firms, whilst the Property and Support Services Section will manage all commercial arrangements with Landcom and other affected landowners within the study area.

Proposed Study Area

Attachment 1 shows the proposed boundary of the study area, however this may need to be further refined throughout the planning process (new information that comes to hand may suggest a refinement of the boundary to enable a more efficient and sustainable design outcome).

Duration of the Planning Exercise

The planning exercise will be undertaken over a likely period of 18-24 months. However, a target date for gazettal of the LEP within 18 months (by the end of July 2004) will be promoted. Throughout that time Council will be kept informed through regular progress reports.

Stakeholders Involvement

a. Menangle Park Steering Group

To ensure that the delivery of Menangle Park is achieved to the satisfaction of all major stakeholders, it is proposed that a Menangle Park Steering Group be established comprising the following representatives:

Council Planning Staff (2)	Director Planning and Environment
	Manager Environmental Planning
Landowners (2)	Council's Manager Property Support Services
	Landcom
Key Government Agencies (1)	Regional Coordinator planningNSW (or nominee)
Independent Community Representative	Mr Albert Stafford (The Stafford Group)

The role of the Steering Group will be to assist in managing the planning exercise by identifying and resolving all major issues that arise throughout the exercise and to manage external relationships critical to the success of the exercise. The Steering Group will have an input into the preparation of consulting briefs and the Project Manager's specification of

responsibilities. However, final decisions on the procurement of either the Project Manager or any consultants will rest with Council. The Group will also play an important role in reviewing and quality assuring all documents that are prepared and publicly exhibited. It is envisaged that the Steering Group will be assisted by the Planning Infrastructure Coordinator and two senior strategic environmental planners from Council's Environmental Planning Section.

In order to ensure that no conflict occurs between Council's role as the planning authority and its role as a landowner/developer, an independent community representative has been nominated for inclusion on the Steering Group. Mr Albert Stafford has extensive experience in release area planning issues and the role of local government in achieving optimal environmental outcomes. Mr Stafford has no pecuniary, perceived or other conflicts of interest in the Menangle Park area and will bring valuable experience and agency contacts to the Group.

b. Technical Working Group

A small team of senior officers from relevant State Government agencies is also proposed to be established to ensure that all key stakeholders are included throughout the planning process. This will enhance the likelihood of a whole of government position being taken, which will be crucial to the success of the planning exercise. State Government agencies proposed to be invited include DLWC, EPA, Sydney Water, Department of Transport, SRA, Department of Mineral Resources, Department of Community Services, Department of Education and NPWS.

The role of the Working Group will be to provide detailed technical input and advice on relevant aspects throughout the planning exercise, and to work closely with the Project Manager and Council planning staff to ensure the timely provision of relevant information and feedback. It is likely that small technical teams will be formed from members of the Working Group to deal concurrently with key aspects of the exercise, such as studies relating to water cycle management (including flooding), infrastructure planning, cultural heritage, transport, community and education facilities, natural environment, economic resources (coal, gas, minerals) and urban design (including open space and dwelling design).

Project Management

a. Project Manager

It is proposed to appoint a Project Manager to undertake the master planning of Menangle Park with the full cost to be met jointly by the major landowners (Landcom and the Council). The tenders for the appointment of the Project Manager will be advertised in mid-January 2003 and it is anticipated that Council will consider the appointment of the Project Manager at its first meeting in March 2003.

b. Milestones for the Delivery of Menangle Park

The key milestones for the delivery of Menangle Park are:

- Appointment of Project Manager

- Appointment of specialist consultants
- Preparation of draft Master Plan, Development Contributions Plan, Development Control Plan and Local Environmental Study (the planning package)
- Exhibition of planning package
- Assessment/refinement of package (having regard to submissions)
- Adoption of draft LEP and Master Plan and associated documentation
- Report to planningNSW for making of the plan
- Gazettal of the LEP

c. Budget Impact

All costs associated with the planning exercise will be borne by the landowners (Landcom and Council) as provided for under Section 57(5) of the Act.

Legal Advice

Council's solicitor has reviewed the proposed structure of the Menangle Park Steering Group and the proposed approach of dealing with Council's planning role and landowner role.

The structure contained in this report has been endorsed and the placement of an independent community representative on the Steering Group is supported for probity reasons.

Conclusion

The decision by the NSW Government provides an exciting opportunity to develop a major new community within the Campbelltown Local Government Area in partnership with Landcom. The decision also provides an opportunity for Council to fully explore and negotiate avenues for infrastructure enhancement that will strengthen Campbelltown's position as an efficient, thriving and innovative regional centre.

This is a major planning exercise and is likely to present few technical difficulties, given the depth of experience in similar exercises by both Council and Landcom staff and the extent of investigations already undertaken over the site. Furthermore, it is considered that the proposed management framework comprising a Menangle Park Steering Group, Technical Working Group and Project Manager will ensure a streamlined process through which Council's objectives for Menangle Park can be achieved.

Officer's Recommendation:

1. That Council agree to the:
 - a. Calling of tenders for a Project Manager for the Menangle Park planning exercise for a period ending at public exhibition of the draft planning package.

- b. Establishment of the Menangle Park Steering Group to guide the development and delivery of the Menangle Park release area and the Technical Working Group to assist with detailed planning.
 - c. Indicative study area shown in Attachment 1 for the planning exercise.
2. That Council resolve to prepare a local environmental plan and local environmental study for Menangle Park, under Sections 54 and 57, respectively of the Environmental Planning and Assessment Act, 1979.

2.4 Menangle Park Urban Release Area

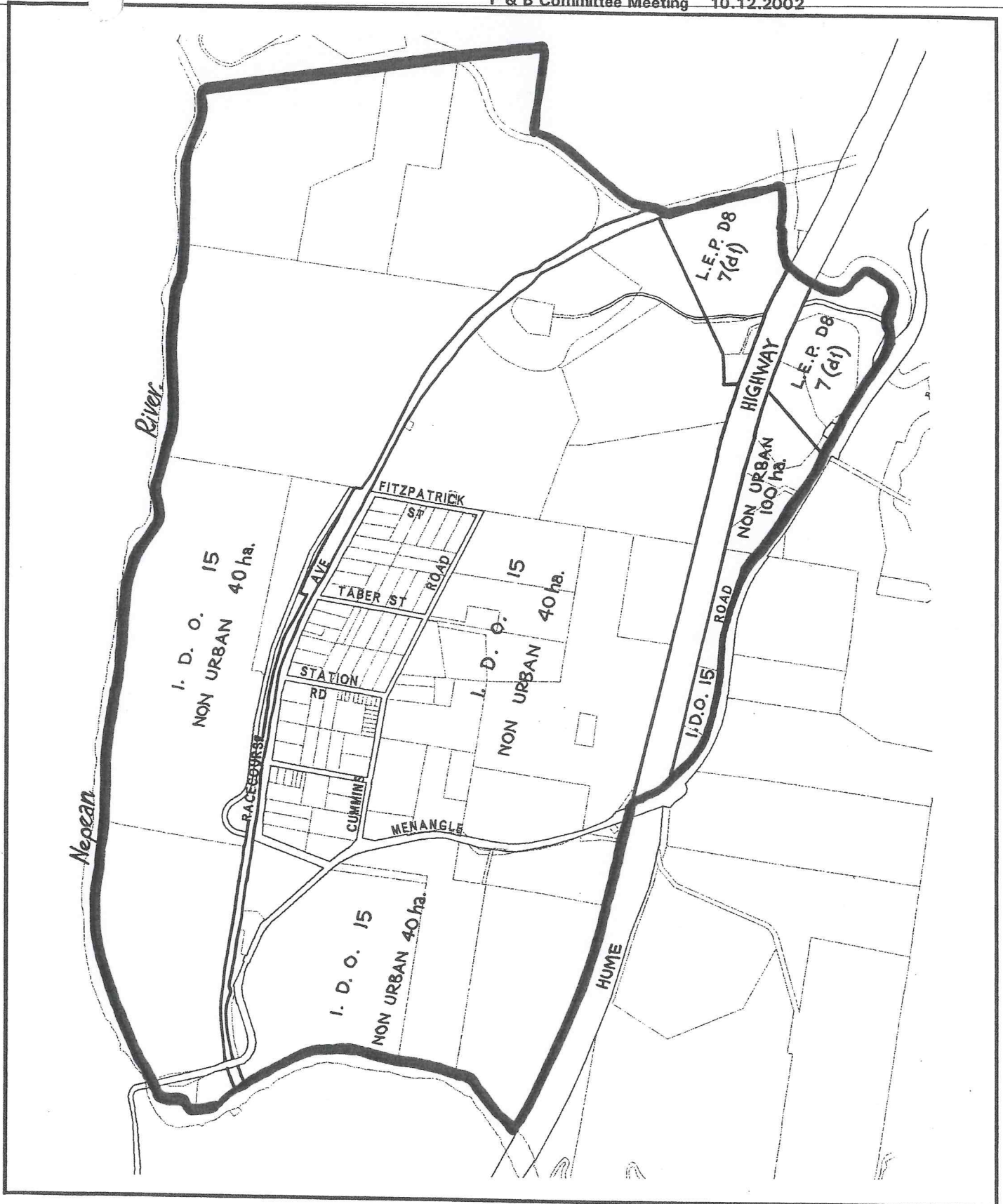
F106950

Committee's Recommendation: (Kremmer/Matheson)

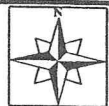
1. That Council call tenders for a Project Manager for the Menangle Park planning exercise for a period ending at public exhibition of the draft planning package.
2. That Council establish a Menangle Park Steering Group to guide the development and delivery of the Menangle Park release area and the Technical Working Group to assist with detailed planning.
3. That Council agree to the indicative study area shown in Attachment 1 for the planning exercise.
4. That Council prepare a local environmental plan and local environmental study for Menangle Park, under Sections 54 and 57, respectively of the Environmental Planning and Assessment Act, 1979.

CARRIED





LOCALITY PLAN



SUBJECT:

MENANGLE PARK URBAN RELEASE AREA.

APPENDIX 2

Letter from Planning NSW dated 15/1/2003

planningnsw

Henry Deane Building
20 Lee Street Sydney NSW 2000
GPO Box 3927 Sydney NSW 2001
T 02 9762 8000
www.planning.nsw.gov.au

Sydney Region West
Level 8, Signature Tower
2-10 Wentworth St,
Parramatta NSW 2150
PO Box 404, Parramatta 2141

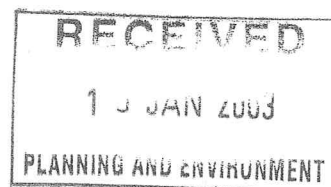
T 02 9895 7633
F 02 9895 6270
sydneywest@planning.nsw.gov.au

Contact: David Holden
Our ref: P02/00714
Your ref:

Mr Paul Tosi
General Manager
Campbelltown City Council
PO Box 57
Campbelltown NSW 2560

Attn: Fay Steward

RE: Draft Menangle Park Local Environmental Plan



Dear Mr Tosi,

I am writing in regards to Council's letter dated 24 December 2002, and to the Department's response dated 6 January 2003, outlining Council's request to prepare a draft Local Environmental Plan and Environmental Study for the Menangle Park urban release area.

In relation to the Environmental Study, Council has outlined a list of issues to be addressed. The Department would like to ensure that the following matters are addressed in the LES.

- Transport and access to and from the Macarthur and Campbelltown centres;
- The impact of development of the study area on the development of land to the east of Menangle Road, and between the study area and the urban areas of Campbelltown; and
- Links to Camden and the new urban growth west of the site.

I trust that Council will ensure these issues are considered in the preparation of the LES and look forward to working with Council to achieve a sustainable outcome for the Menangle Park site.

Yours sincerely,

for Stephen Driscoll
Stephen Driscoll
Regional Coordinator
Sydney Region West
15/1/03

② file

Bridge

FILE	109512
DOC	1065.03
LOCATION	F. Steward
FOLIO	3
ENT'D	✓

APPENDIX 3

Letter from Dept of Planning dated 23/2/2007



NSW GOVERNMENT
Department of Planning

Office of the Director General

Contact: Amar Saini
 Phone: (02) 9895 7633
 Fax: (02) 9895 6270
 Email: Amar.Saini@planning.nsw.gov.au
 Postal: PO Box 404, Parramatta 2124

Mr Paul Tosi
 General Manager
 Campbelltown City Council
 PO Box 57
 CAMPBELLTOWN NSW 2560

Our ref: P02/00187-8
 Your ref: F106950

Dear Mr Tosi

MAR05'07 08:57:03 RCV/D

Re: Section 54(4) Notification – Draft Menangle Park LEP

I am writing in response to Council's letter dated 24 December 2006 advising, pursuant to section 54(4) of the *Environmental Planning and Assessment Act 1979* ('EP&A Act'), of the Council's decision to prepare a draft local environmental plan ('LEP') for the Menangle Park Release Area.

The Council May now continue with the preparation of the draft LEP.

Pursuant to section 74(2)(b) of the EP&A Act, Council is directed to comply with sections 57 and 61 of the EP&A Act in respect of the draft LEP. While no formal specifications have been issued for the environmental study, Council should ensure that the study addresses the following matters:

- The recommendations of the Working Group set up to investigate potential conflicts between urban development and coal mining in the Menangle Park area, as described in the Department's letter to Council of 4 May 2006;
- A structure plan for the release area including staging of development, taking into consideration any need for access to coal resources;
- Provision of infrastructure and appropriate funding mechanisms for that provision;
- The issues raised in the Department's letter to Council of 15 January 2003, viz:
 - Transport and access to and from the Macarthur and Campbelltown centres;
 - The impact of development of the study area on the development of land to the east of the Menangle River, and between the study area and the urban areas of Campbelltown; and
 - Links to Camden and the new urban growth west of the site;
- Incorporation of the environmental study work undertaken for the Glenlee Industrial Precinct, as set out in the Department's letter to Council of 27 January 2007.

Council's letter of 24 December 2002 refers to use of a 2(b) Residential zone and other existing zones for use in the release area, although the actual resolution of Council is quite broad. Given the time that has elapsed since the resolution Council should now look to how this release area should be zoned using the Standard Instrument gazetted on 30 March 2006.

Consultation pursuant to section 62 of the EP&A Act should be undertaken with the Department of Primary Industries, BHPBilliton and with the Heritage Council, pursuant to section 83 of the *Heritage Act 1977* with regard to listings on the State Heritage Register.

As an Authorisation enabling use of my delegated powers is not being issued on this occasion, Council should submit the draft LEP to the Department seeking a section 65 certificate.

Where any applicable section 117 direction requires the Director General to form an opinion or be satisfied as to certain matters, you need to ensure that this issue is addressed in submitting the draft LEP under section 64.

Council is encouraged to continue working closely with the Department's Regional team to ensure the draft LEP delivers appropriate outcomes for this important release area.

Please forward a copy of the draft plan and any other information to be publicly exhibited in respect of the draft LEP to the Regional Office with advice to the Department as required under section 64 of the Act when seeking a section 65 certificate.

Should you have any queries in regard to this matter please contact the Regional Office of the Department.

Yours sincerely



Sam Haddad
Director General

23/2/2007.

APPENDIX 4

Letter from Dept of Planning dated 4/5/2006



NSW GOVERNMENT
Department of Planning

Contact: Name Laurel Cheetham
Phone: 02 9895 7682
Fax: 029895 6270
Email: laurel.cheetham@planning.nsw.gov.au

Our ref: P02/00187-5
Your ref:
File:

Mr Paul Tosi
General Manager
Campbelltown City Council
PO Box 57
CAMPBELLTOWN 2560

MAY09'06 AM 9:31 PM

5 May 2006

Dear Mr Tosi

Attention Geoff Lawrence

Subject: **MENANGLE PARK**

I refer to Council's request for the Department to undertake the necessary investigations and consultations to enable a decision to be made about whether urban development or coal mining should be allowed to proceed at Menangle Park.

At the request of Cabinet, a Working Group was established in 2005 to investigate ways to resolve this conflict. The Working Group reached an agreed position which has now been agreed to by the Minister for Planning, Frank Sartor MP.

The agreed position is that

1. mining of coal resources beneath Menangle Park should be restricted to enable urban development to occur at the scale and form necessary to make that development viable. This is because of the importance of Menangle Park's contribution to land supply in the Sydney Metropolitan Region.
2. the design parameters for the Campbelltown Mine Subsidence District should be modified to allow development around the Narellan town centre at a scale appropriate for the area, and, in the future, the design parameters for other parts of the South Campbelltown Mine Subsidence District (such as around the Mt Annan and Ambervale centres) should be able to be varied if there is agreement between the Department of Primary Industries and Planning that the development is desirable, and mining can be limited to minimise subsidence in these specific areas.

This solution will enable higher density development in appropriate locations and permit mining first workings, and tunnels for access to other areas where this does not cause subsidence, and future extraction (second workings) where technologies can be used which will reduce subsidence to the levels set by the MSB.

3. the impact from the extraction of coal seam methane before, during and after urban development can be managed. The Department will closely monitor the location, drilling and installation of the reticulated gas gathering system across Menangle Park to minimise any potential impacts.

Sydney Gas has been requested to liaise with your council to ensure its proposals are compatible with urban development proposals for Menangle Park.

The Minister noted that the Metropolitan Strategy acknowledged the importance of the State's coal resources in the Southern Coalfield. This acknowledgement was a requirement for the Department of Primary Industries (DPI) and BHPBilliton to agree not to oppose the urban development of Menangle Park. The DPI and BHPBilliton also required an assurance that further urban development would not be allowed to sterilise the resources covered by BHP's mining titles.

The South West Subregional Strategy will identify mining title areas as significant resource lands and include actions to protect the coal resource in these areas over the next 25 years. Council's new principle LEP will need to reflect this commitment.

The Department looks forward to working with Campbelltown Council to finalise the Menangle Park Release Area LEP.

Yours sincerely

Andrew Watson
Regional Director
Sydney South West

A. Watson 4.5.06.

APPENDIX 5

Letter from Dept of Planning dated 29/10/2008



NSW GOVERNMENT
Department of Planning

Contact: Daniel Cutler
Phone: 02 9873 8523
Fax: 02 9873 8599
Email: Daniel.Cutler@dnr.nsw.gov.au
Our ref: P02/00187-9

Mr Paul Tosi
General Manager
Campbelltown City Council
PO Box 57
Campbelltown NSW 2560

NOV03'08 09:32:32 RCVD

Dear Mr Tosi

Subject: MENANGLE PARK RELEASE AREA

I refer to your letter dated 9 October 2008 regarding the above subject.

In your letter, you request that the Department make comment as to whether it would support planning for the Menangle Park Release Area proceeding, given the lot yield will be reduced from 4,200 lots to 3,600 lots due to environmental constraints.

The Department agrees in principle with Council's plans for Menangle Park proceeding as proposed.

It is important that, in planning for the Menangle Park Release Area, Council pay detailed consideration to flooding and other environmental constraints when identifying land for residential development.

Once developable land has been identified reference should be made, in order to meet State Government metropolitan objectives, to the Growth Centres Commission Development Code for new release areas. The Code is available on the Growth Centres Commission website. In particular, reference should be made to the Code's directions with regard to densities in centres and areas serviced by public transport.

In regard to the broader issue of achieving housing lot yields, the Metropolitan Strategy suggests that planning for higher densities should focus on large centres that are well serviced by public transport. Centres such as Macarthur/Campbelltown and Glenfield which are located in close proximity to the heavy rail network are better suited to be the focus for higher density residential development than centres that do not have a major bus route or rail line nearby.

I trust that this information has been of assistance to you. If you have any further queries on this matter please contact Daniel Cutler on 02 9873 8523.

Yours sincerely

A handwritten signature in dark ink, appearing to read 'Peter Goth'.

Peter Goth
Regional Director
Sydney West

29-10-08

Sydney West Office 3 Marist Place Parramatta Locked Bag 5020, Parramatta NSW 2124
9873 8500 Fax 02 9873 8599 Website planning.nsw.gov.au

Phone 02