GAT & Associates Pty Ltd

Planning Proposal

February 2018

71 St Andrews Road, Varroville

Proposed Amendment to the Campbelltown Local Environmental Plan 2015 To Rezone Land from E3 Environmental Management to Part R2 Residential Low Density and to retain Part E3 Environmental Management

TOWN PLANNERS

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1. INTRODUCTION

1.1 Preamble

This Report has been prepared to explain the intended effect of, and justification for, a Revised Planning Proposal in relation to 71 St Andrews Road, Varroville (Lot 71 in Deposited Plan 706546).

The subject site is located on the north-eastern side of St Andrews Road, along the boundary shared by Campbelltown City Council and Camden Council.

At present, the majority of the site is cleared and used primarily for the purposes of cattle grazing. A single storey dwelling is currently located on the property, as well as several small sheds, a nursery and the like.

The subject site is currently zoned E3 Environmental Management under the provisions of the Campbelltown Local Environmental Plan 2015.

GAT & Associates have been engaged by the owners of the property, Mr. Dario and Mrs. Angelina Petrin, to prepare a Planning Proposal to amend the current Local Environmental Plan to:

1. Rezone the site to part R2 Low Density Residential and to retain in part E3 Environmental Management; and
2. Seek a height limit of 9m; and
3. A minimum lot size of $300m^2$; and
4. Residential dwelling density: 15 dwellings/hectare.

These controls reflect the controls that exist to our adjoining neighbours to our north and west, with which we share a boundary.

The proposal is accompanied by a concept plan which divides the subject site into three separate categories. The western component of the site provides for 98 lots for residential use while 8.005 hectares of land is proposed to the eastern component of the site for environmental purposes. This includes an area of 1.493 hectares that is subject to easements for water supply, pipeline, transmission lines and water services.

This Planning Proposal is supported by the following plans and reports:

- Bushfire Report prepared by Travers Ecology;
- Concept Plan of Drainage/Services prepared by Lean Lackenby and Hayward;
- Concept Plan of Subdivision prepared by Lean Lackenby and Hayward;
- Contamination Report prepared by SLR Consulting;
- Ecological Report prepared by Travers Ecology; and
- Traffic Report prepared by Varga Traffic Planning Pty. Ltd.

This application follows an earlier Planning Proposal over the subject site and follows several discussions with Campbelltown Council, its Councillors and the Department of Planning. A detailed history of previous applications and the history of the site is provided under Section 3.1 of this report.

The current Proposal is in keeping with the feedback and advice received from the relevant authorities and is expanded upon under Section 4 of this report.

All reports have been updated except for the contamination report as the amended planning proposal does not affect the conclusions of that report.

1.2 Purpose

This Report has been prepared pursuant to the provisions of the Environmental Planning & Assessment Act 1979 and accompanying Regulation. To that end, it:

- identifies the site and describes the surrounding locality;
- describes the nature and purpose of the proposed Local Environmental Plan amendment;
- identifies the relevant planning controls and land use strategies; and
- provides a preliminary assessment of the proposed Local Environmental Plan amendment against the provisions of Section 55(2) of the Environmental Planning & Assessment Act 1979 to assist in the preparation of a formal Planning Proposal.

2. SITE CONTEXT

2.1 Site Details

The subject site is located on the north-eastern side of St Andrews Road, Varroville. The site is commonly referred to as 71 St Andrews Road, Varroville and is legally described as Lot 71 in Deposited Plan 706546. The site is located on the border shared by Campbelltown City Council and Camden Council.

St Andrews Road is broken into two sections by the Sydney Water Catchment Canal, meaning that the subject site is the last property located on this stretch of St Andrews Road. The subject site therefore has no vehicle or pedestrian access to development to the south east of the site, acknowledging that posted signs prohibit unauthorised entry with a maximum penalty of $10,000.

The site is irregular in its shape, being almost L shaped. In terms of its topography, the site is generally flat and level, although the central portion of the site is slightly lower when compared to the boundaries.

The site has an overall area of 13.5 hectares.

The majority of the site is cleared, with trees scattered across the area of the site. Two dams are located near the north-eastern boundary.

The northern undeveloped section of the site is currently being used for the purposes of cattle grazing with water troughs placed intermittently. A shipping container containing hay is also located in the northern section of the site.

A Sydney Water supply channel is located to the south east of the site. There are also three ponds on the site which supply water for irrigation.

Development at the site consists of:

- A single storey brick dwelling with a tiled roof;
- An aluminium and steel frame barn/large shed used as a garage and store room containing a car, trailer, motorcycle, ride-on mower, bicycles, old furniture, spare parts and other miscellaneous equipment;
- A power transmission corridor;
- A cattle pen near the northern corner of the site;
- A smaller aluminium and wood farm shed (with chicken coop), nursery enclosure, built pond, in-ground concrete septic tank and vehicle driveway in the south-western portion of the site; and;
- A shipping container, used as workshop and containing a work bench, tools, tins of paint, adhesive etc.

A series of photographs of the subject site follows on the next page.



Photo 1: Looking north, an existing dam on the property



Photo 2: Existing vegetation on the property, looking south-east



Photo 3: The existing dwelling on the site



Photo 4: Existing vegetation on the property, looking south-west

Figure 1 Photographs of site and surrounds - past and present context

The subject site is currently zoned E3 Environmental Management under the Campbelltown Local Environmental Plan 2015. Refer to Figure 2 below.

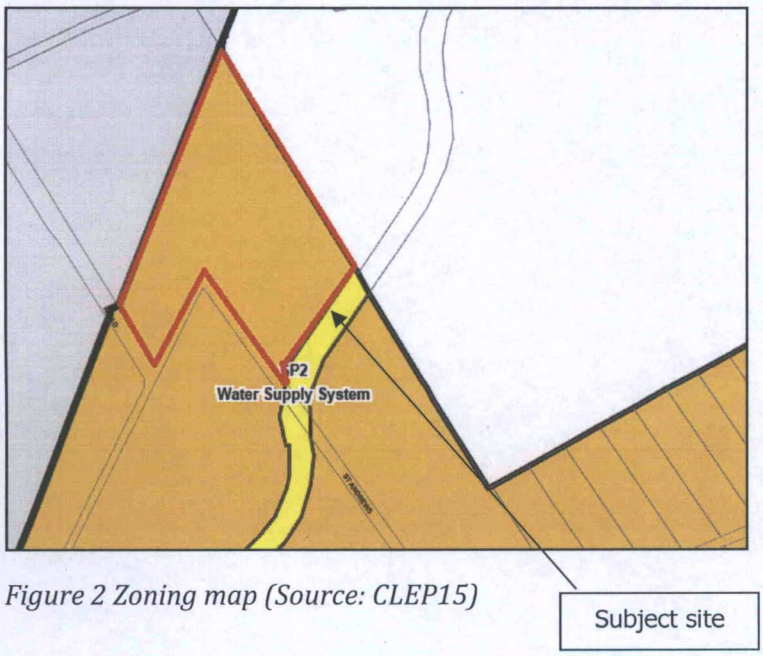


Figure 2 Zoning map (Source: CLEP15)

As per the Section 149 Certificate obtained for the site, the subject site does not include or comprise of a critical habitat.

The subject site has not been identified within a conservation area, nor is there any item of environmental heritage situated on the land.

The subject site is not within a proclaimed Mine Subsidence District within the meaning of section 15 of the Mine Subsidence Compensation Act 1961.

The subject site is not affected by any road widening or road realignment under Division 2 of Part 3 of the Roads Act 1993, any environmental planning instrument or any resolution of Council.

The site has been classified as bushfire prone land as demonstrated in Figure 3 of this report. Accordingly, a bushfire report has been undertaken by Travers Ecology and should be read in conjunction with this report. This report is attached as Appendix A.

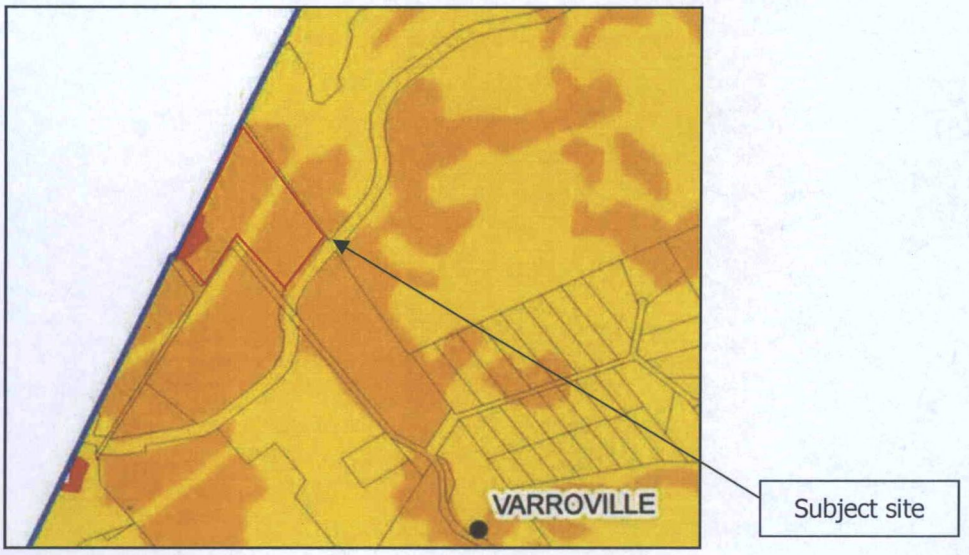


Figure 3 Bushfire prone land map (Source: CLEP15)

The site is not affected by acid sulphate soils.

The site has been identified, in part, as being affected flood prone land.

The subject site has not been identified as biodiversity certified land.

2.2 Site Context

In assessing the development potential of the subject site, it is important to first consider its context both past and present. The subject site is located within land known as the Scenic Hills and was first identified as such under the 1973 City Structure Plan prepared by Campbelltown Council.

Since this time, the subject site has been zoned 7(d1) Scenic Protection under the Campbelltown Local Environmental Plan – District 8 (Central Hills Lands) and E3 Environmental Management under the Campbelltown Local Environmental Plan 2015.

However, the landscape of the region has significantly changed since 1973 and this has not been reflected in subsequent legislative updates as they apply to the subject site.

In this respect, we acknowledge the profound impact of SEPP (Sydney Region Growth Centres) 2006 which introduced priority growth precincts to south western Sydney, the rezoning of East Leppington which was once part of the Scenic Hills and new urban development which now abuts the boundaries of the subject site.

Figures 4 and 5 clearly demonstrate the evolution of the region and depict the immediate and rapid impact of these planning changes to the area in just a 10-year period.

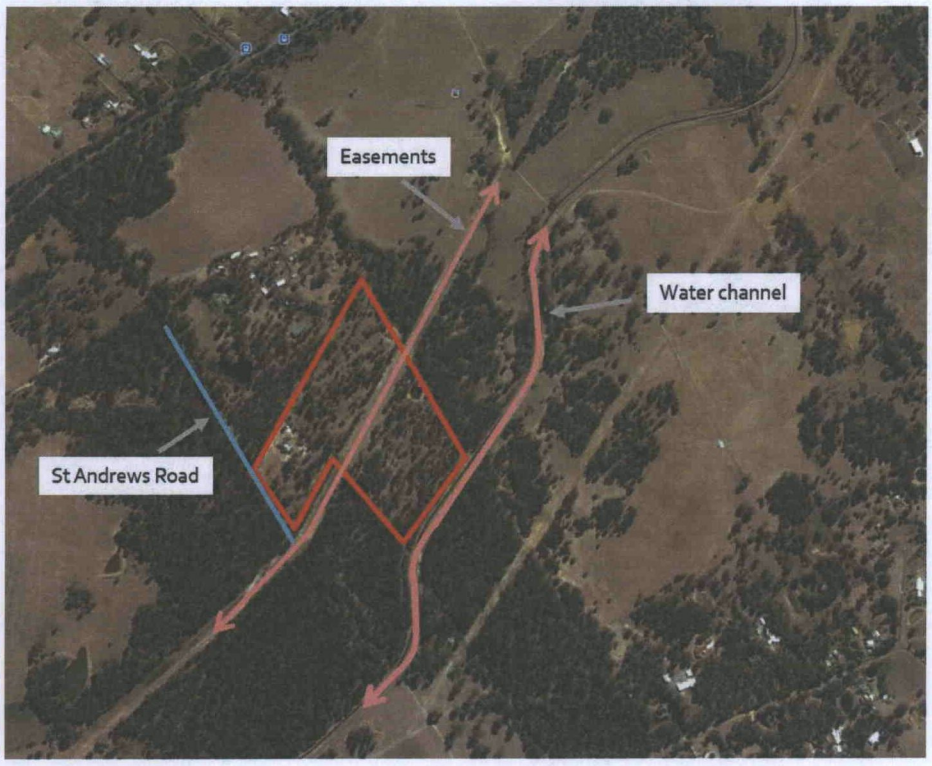


Figure 4 Subject site as at April 2006 (Source: Google Earth)

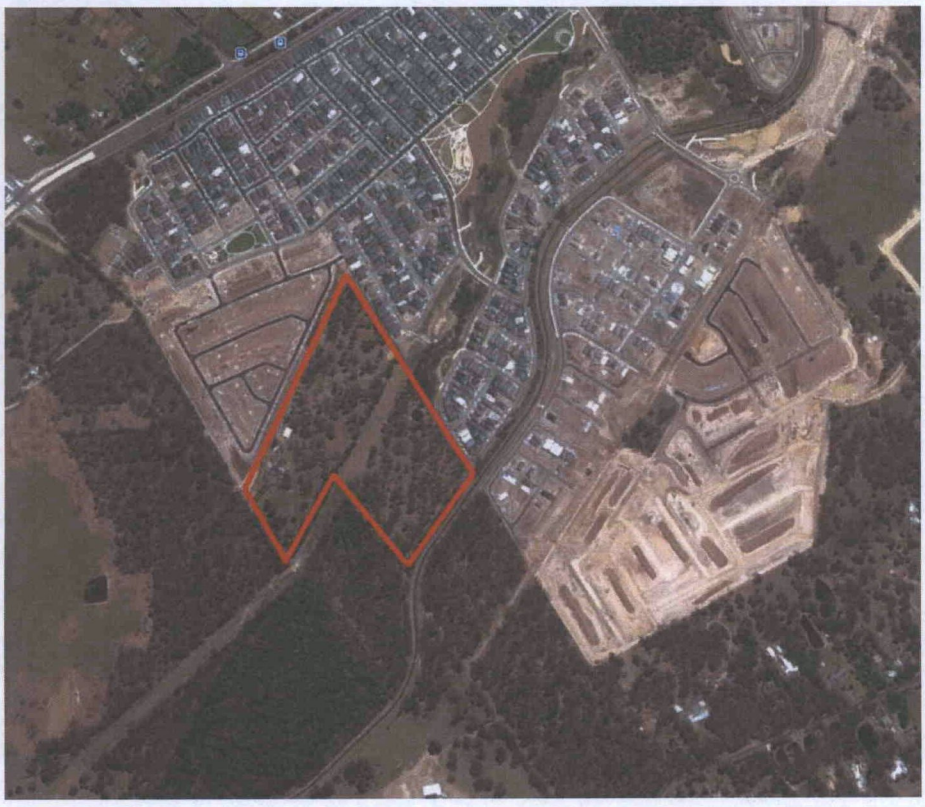


Figure 5 Subject site as at December 2016 (Source: Google Earth)

As part of earlier discussions, Council has maintained a strong view that the Scenic Hills needs to be preserved and have expressed concerns relating to the loss of land that has been identified as Scenic Hills. While we appreciate Council's position in a broader sense, it is important to acknowledge that the subject site is not in the middle of the Scenic Hills. The site is in fact on the fringe of the Scenic Hills Precinct and geographically is within a valley. The site, as agreed by Council Staff and the Department is located west of the ridgeline and therefore will not impact on the visual presentation of the ridgeline.

Figures 6 and 7 below illustrate the changed environment in the context of the Scenic Hills.

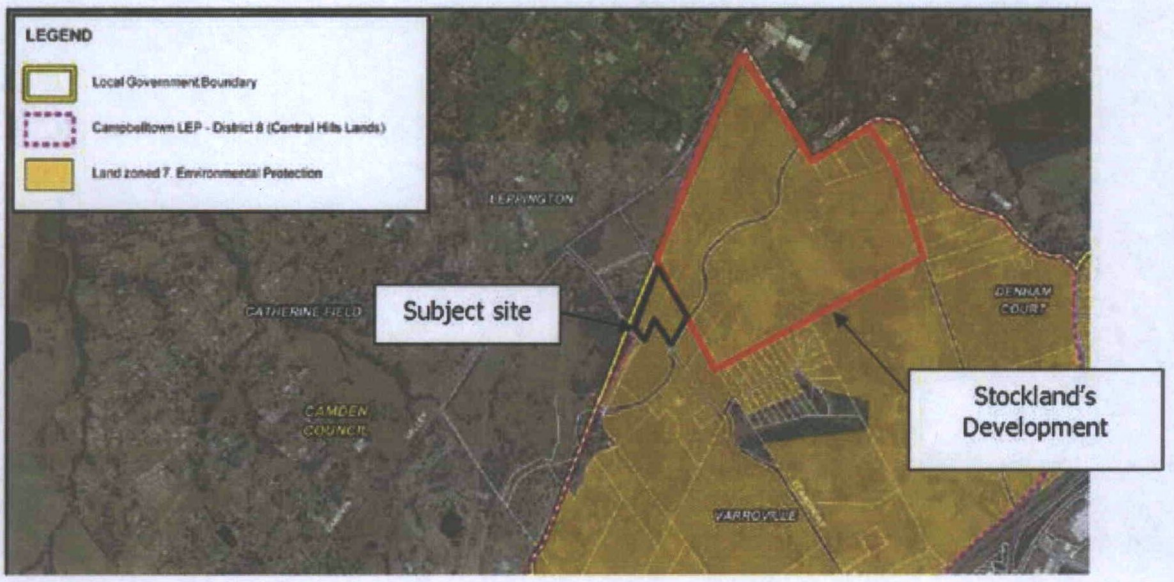


Figure 6 Scenic Hills site context - Based on the 1973 City Structure Plan

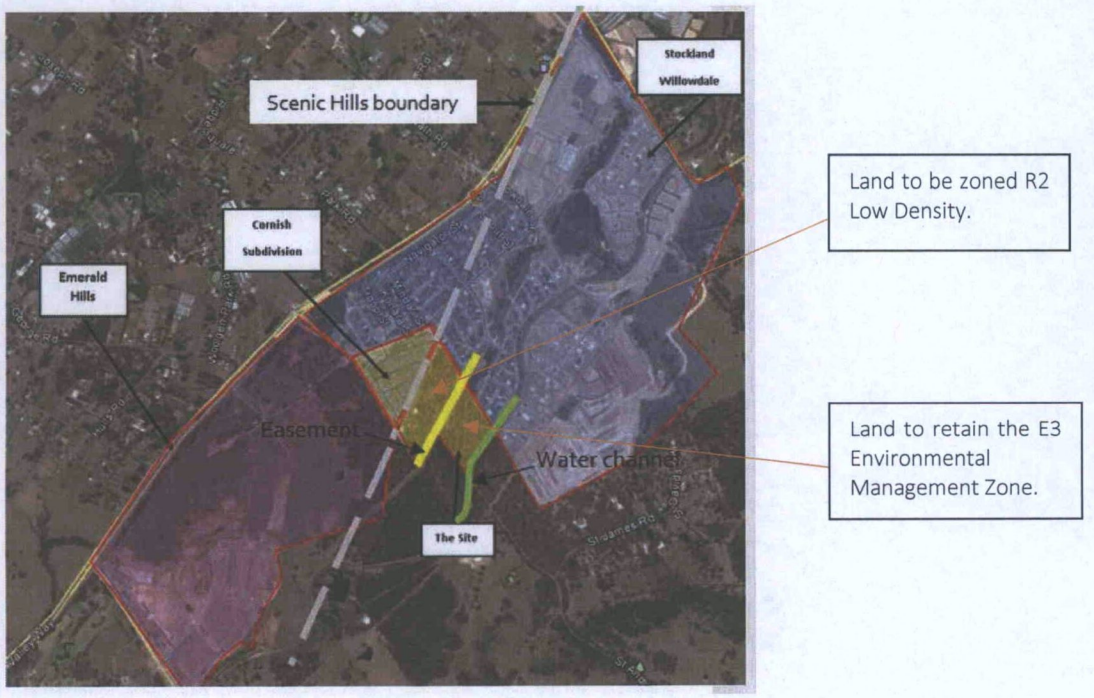


Figure 7 Scenic Hills site context - Based on current development patterns/legislation

The images below further demonstrate the past and current context of the subject site in relation to its neighbours.



Photo 1: Pre-development interface



Photo 2: Pre-development interface – St Andrews Road looking west (Google street view)



Photo 3: Interface – post development, approximately 12 months ago. Dwellings are now built in this area.







Photos 4 – 6: Current interface – prior to dwellings being built.







Photos 7 – 9: Current interface – post development, noting dwellings are being constructed, significantly altering the character of the area from bushland to urban development.



Photo 10: Current interface – post development.

Figure 8 Photos demonstrating pre and post development context

Reference should also be made to Figure 9 below which depicts the location of approved subdivisions in proximity to the subject site and further reinforces the evolving landscape.

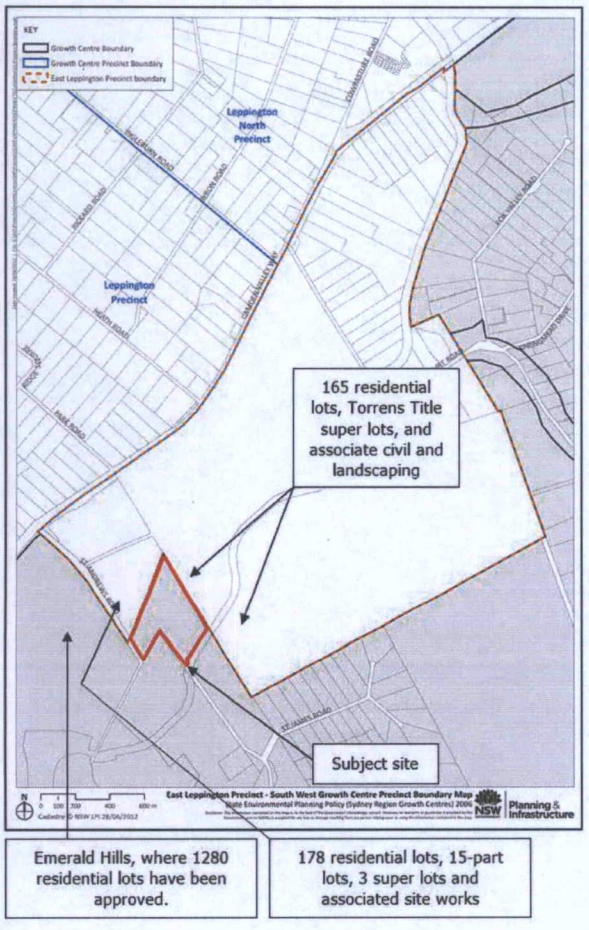


Figure 9 Location of approved subdivisions in proximity to the subject site

As depicted above, land to the north west of the subject site, known as Lot 72 in Deposited Plan 706546 which falls under the local government area of Camden Council has been granted development consent for a subdivision to create 178 residential lots, 15 part lots, 3 super lots and associated site works. The site is contained within the East Leppington Precinct.

To the north east of the subject site, development consent (DA101/2014/1) has been granted for the subdivision of land to create 165 Torrens tile residential allotments, 2 Torrens Title super lots and associated civil and landscaping works to part of Lot 5 in Deposited Plan 1193006 (Baden Powell Avenue, Denham Court).

A separate development consent exists for another part of Lot 5 in Deposited Plan 1193006 (Camden Valley Way, Denham Court) for the subdivision of 109 Torrens title allotments and associated civil works.

The subject site is also located in the vicinity of the Emerald Hills estate which comprises of 151 hectares of land at No. 1100 – 1150 Camden Valley Way, Leppington. The Emerald Hills estate was recently up zoned from a rural landscape to part low density residential, allowing for an additional 1,280 lots.

As part of the earlier Planning Proposal submitted over the subject site, two key issues were raised during the assessment process by both Campbelltown Council and the Department of Planning:

- Loss of land within the Scenic Hills
- Loss of Cumberland Plains Woodland

The Council's officers report of February 2016 stated:

- Council has long promoted the strategic importance of the Scenic Hills stemming from the 1973 Three City Structure Plan, and the role that this landscape unit plays in providing:
    i. a buffer to the urban development areas of the Campbelltown, Camden and Liverpool Local Government Areas.
    ii. a rural landscape backdrop to urban areas of Campbelltown.

It is our view that the current Planning Proposal is acceptable given the interface of adjoining low density residential developments and the location of the subject site on the fringe of the Scenic Hills precinct. The proposed rezoning is considered to reflect the planning controls which apply to the neighbouring site however maintains and respects the original principles of the 1973 City Structure Plan being:

- A buffer to urban development using the easements as the logical boundary and
- A rural landscape backdrop to urban areas will be provided, as it retains a significant area of bushland that aligns with OEH comments to the east of the easements.

This has been achieved through the retention of the eastern component of the subject site as biodiversity land.

As part of the preparation of the original Planning Proposal, discussions were held with Stockland Corporation Ltd. in relation to the development of Willowdale Estate (East Leppington) which shares a boundary with the subject site. Stockland Corporation Ltd. have expressed their support of the proposed rezoning, acknowledging the similar densities sought between the two sites with respect to the residential component of the site.

3. PROPOSAL

3.1 Site History

By way of background, the Department of Planning held an information session in August 2012 where my clients were advised that their land was not included as part of the South West Growth Centre. This is demonstrated in Figure 10 below which highlights the position of the subject site on the fringe of the Growth Centre, its boundaries shared with the East Leppington Precinct. My clients processed to prepare a submission to the Precinct Plan and appealed to have their land included as part of the Growth Centre on the basis that the overall character of the area would significantly change through the loss of bushland to accommodate future housing estates.

In September 2012, our clients were advised by the Department that the subject site fell outside of land pre-identified as the South West Growth Centre and could not be included at this late stage of the process.

In view of the above, the Department suggested that our clients commence discussions with Council.

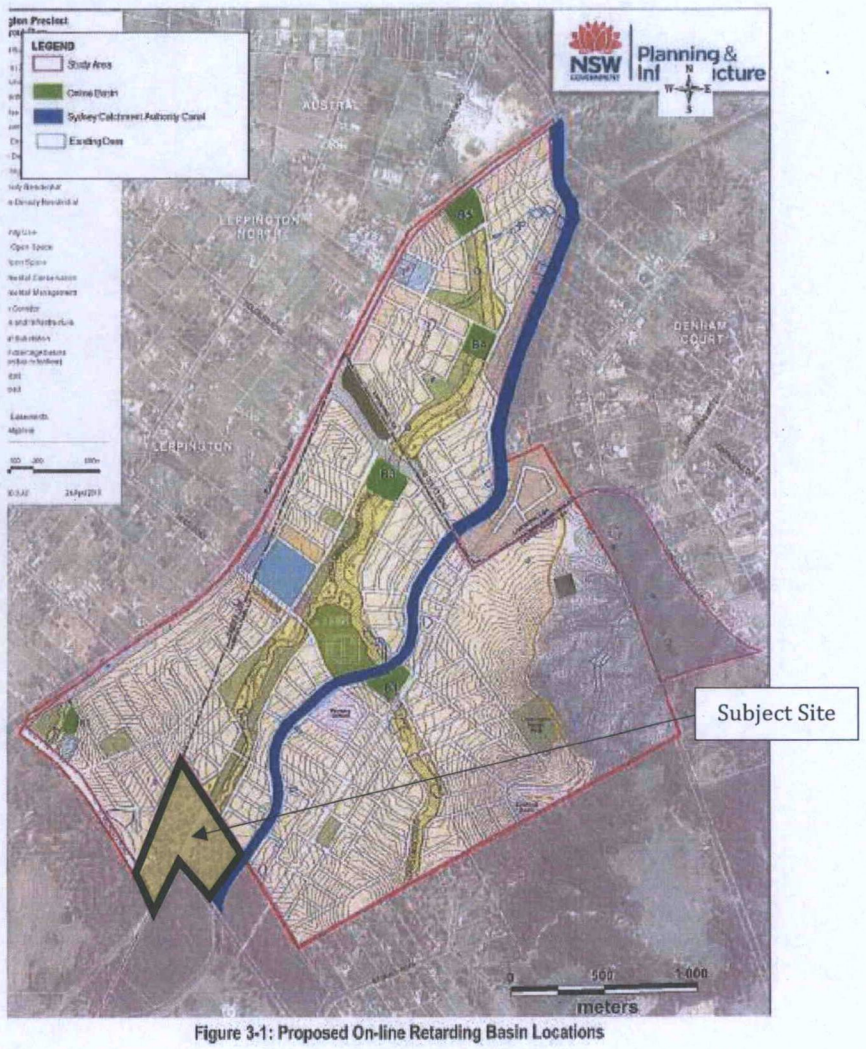


Figure 3-1: Proposed On-line Retarding Basin Locations

Figure 10 Subject site in relation to the East Leppington Precinct

In these circumstances, the purpose of the Planning Proposal is to remedy the zoning of the land which is unnecessarily restricting the redevelopment potential of the site having regard to its current land use and available services.

The proposal also provides, in our submission, a more appropriate transition between urban land and environmental land as the boundaries are contained within our site, meaning the adjoin property boundaries have the same zonings. That is, residential with residential land and environmental land with environmental land.

Between early to mid-June 2013, Campbelltown Council considered a rezoning proposal prepared by the neighbouring property (on the opposite side of the Water Channel) which included my client's land. Council sought clarification from my client as to whether they were willing to proceeded with the proposal given it included their site. Our clients confirmed to Council that they were willing to proceed with the proposal as prepared by the land owners of No. 366 St Andrews Road.

During September and October 2013, Council staff prepared reports to Council on the Planning Proposal and separated my clients site from the planning proposal and the properties were considered as separate applications. Council resolved they would consider a rural residential zone/large lots over my client's site on the basis that the site fell within the Scenic Hills.

> *"The proponents' desire for the site to be developed as low density suburban residential is not considered appropriate. With further study of the constraints of the property, it is felt that there may be some potential to develop a number of larger rural residential/environmental living allotments".*

The assessing officer and the Planning and Environment Committee recommended;

> *"That Council resolve to invite the proponents to submit a formal planning proposal request for No. 71 St Andrews Road, Varroville that would consider the potential development of a number of rural residential/environmental living allotments, noting that such a proposal would need to be supported by a range of technical investigations...".*

However, by November 2013, the Stockland subdivision was well underway. There was a meeting with Council staff where the Cornish proposal was discussed and concern that the character of the area has changed. From my client's perspective, the immediate interface was no longer that of a bushland setting but that of an urban context. A rural residential zone therefore did not make any sense in regards to the surrounding approved developments and proposed developments to our immediate boundaries.

In December 2013, GAT & Associates were engaged to investigate the rezoning opportunities to the site. Reports were commissioned to map out potential constraints/issues.

A submission was later prepared by GAT & Associates to the draft Campbelltown Local Environmental Plan in June 2014 to have the subject site rezoned residential in keeping with the pattern of adjoining development.

A Development Application for residential subdivision by the Cornish Group on land immediately adjoining the site was approved by the JRPP on August 2015 and further reinforced the changing landscape and character of the immediate area.

In October 2015, GAT & Associates lodged a Planning Proposal over the subject site. Based on our expert's advice, the original plan submitted zoned the land R2 Low Density Residential with an extension of riparian corridor as demonstrated in Figure 11 on the following page.

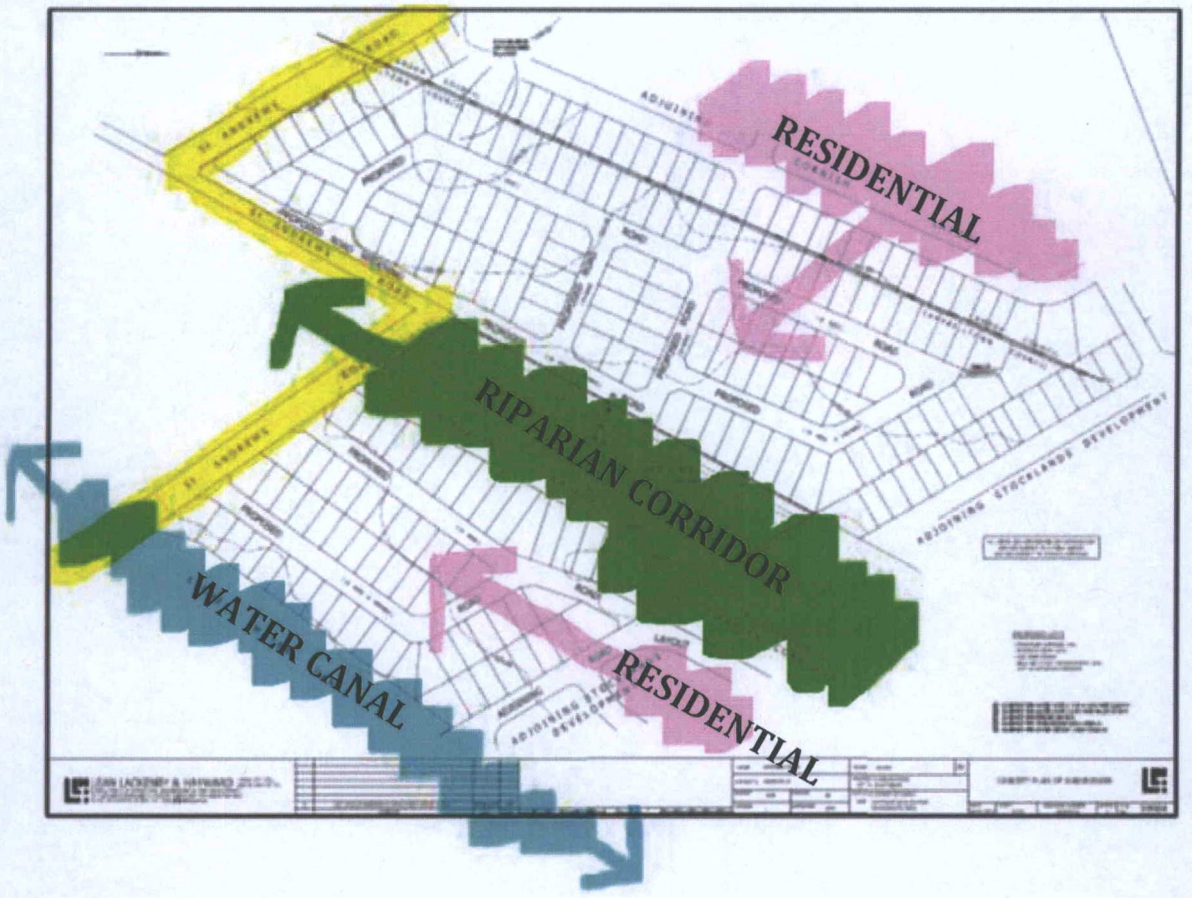


Figure 11 Original concept plan

Two key issues were raised during the assessment process by Campbelltown Council and the Department of Planning:

- Loss of land within the Scenic Hills
- Loss of Cumberland Plains Woodland

Council resolved in February 2016 not to support our planning proposal due to the concerns related to loss of land within the Scenic Hills and loss of Cumberland Plain Woodland.

The Department of Planning, as part of its review of the planning proposal, and after Council's resolution of February 2016, advised that the Department of Office and Environment and Heritage (OEH) was concerned about the loss of Cumberland Plain Woodlands and there was no significant offset. The key concern by the Department was the lack of offset.

Based on the comments of OEH, we provided an alternative option to the Department of Planning with approximately 15% of the land set aside for Biodiversity. Refer to Figure 12 on the following page.

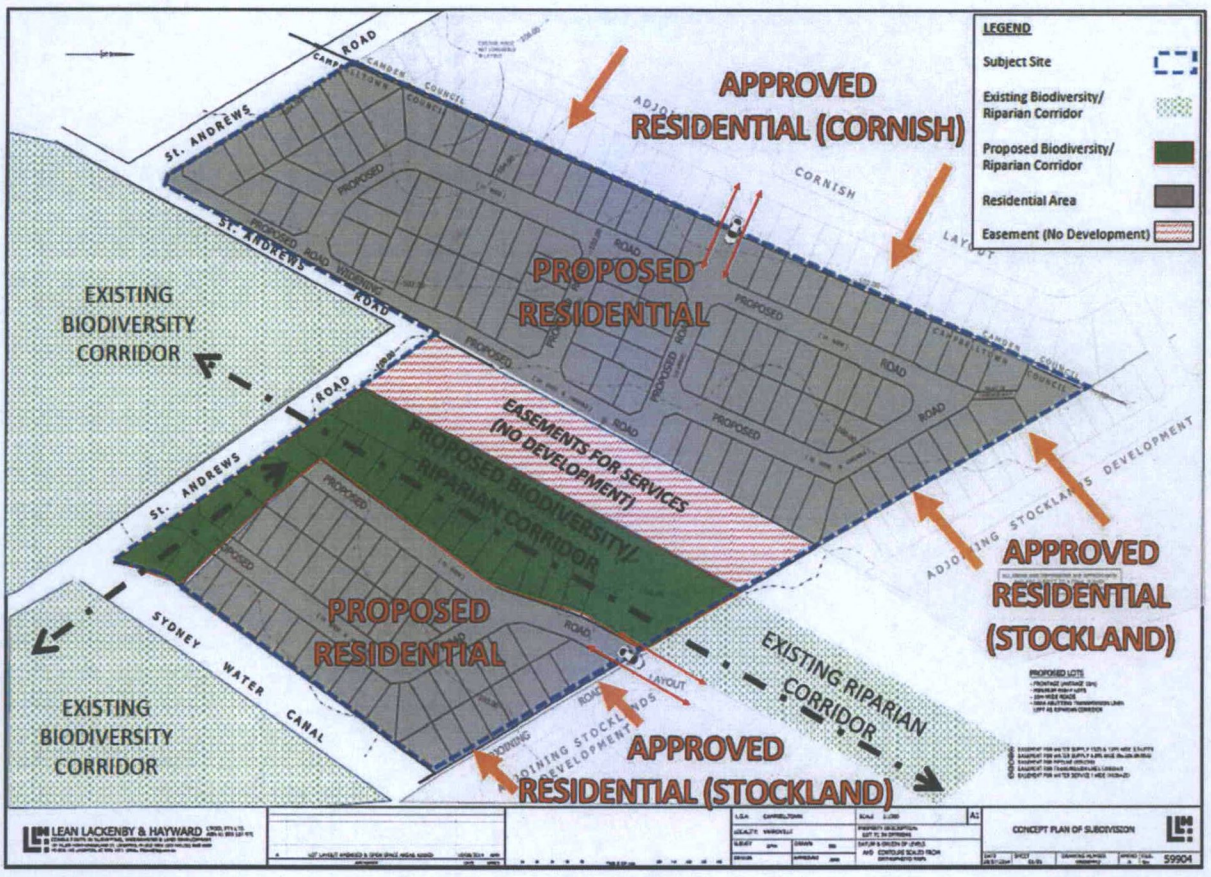


Figure 12 Revised concept plan having regard to OEH advice

OEH offered the following comments on the revised plan:

> *"OEH agrees that conversation of biodiversity should be focused on the part of the site to the east of the services easement as the Ecological Assessment Report (EAR) identifies this CPW as being in better condition that the land to the west which contains the existing dwelling. Further, the land to the west of the easement is already surrounded on two sides by approved residential development within the East Leppington Growth Centre Precinct;*
>
> *The E4 zone is primarily a residential zone, not a conservation zone. If the intent of the offset area is for biodiversity conservation then the land use zoning should reflect this intended use;*
>
> *OEH supports the desire to connect the vegetation on the site to existing biodiversity corridors, however concern is raised about the viability of the corridor adjacent to St Andrews Road due to its narrow width and further assessment is required to determine an appropriate width; and*
>
> *It is unlikely that the authorities which benefit from the easement will allow the planting of grasses/vegetation within the easement".*

Travers Bushfire & Ecology was engaged and undertook a peer review of our submission. Having regard to OEH comments, an alternative option was set aside with a significant area of land for biodiversity. Refer to Figure 13 on the following page.

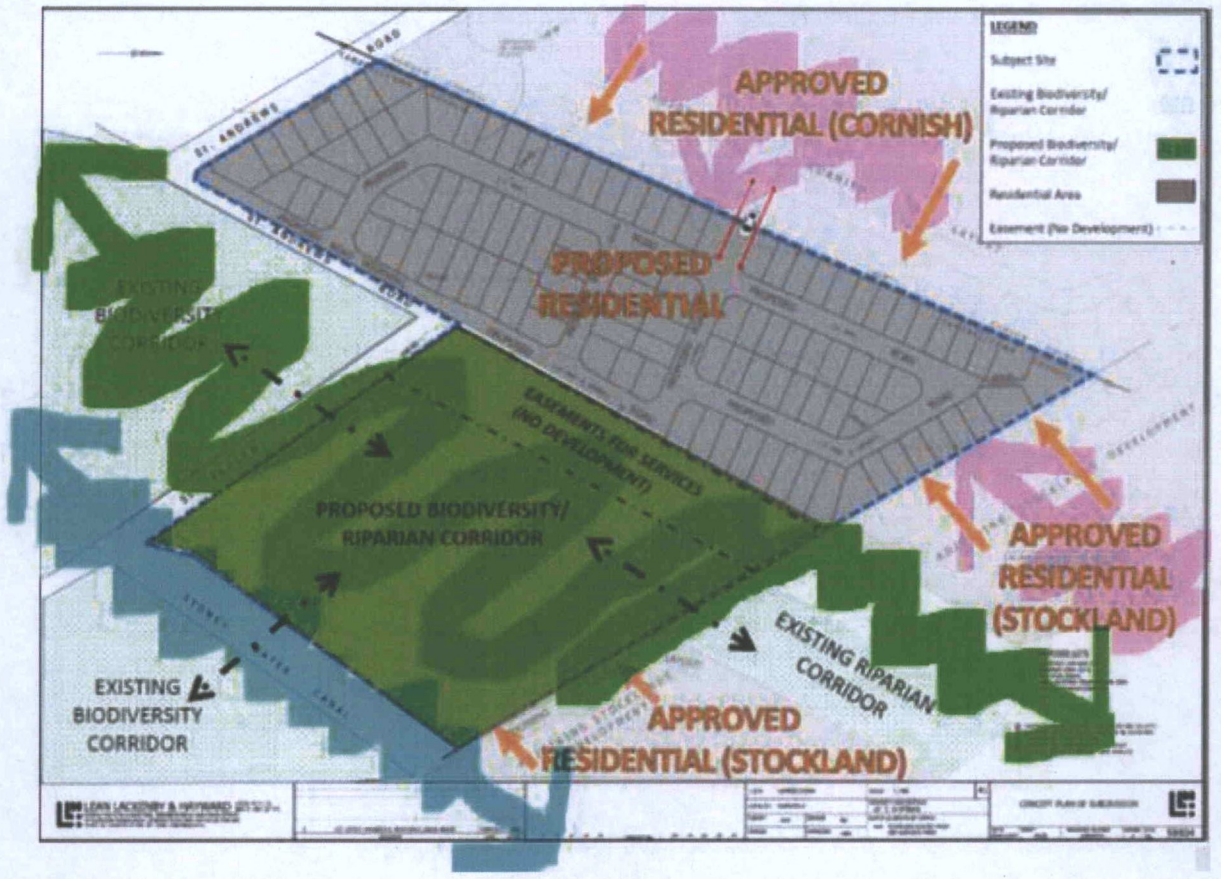


Figure 13 Revised concept plan with an emphasis to biodiversity retention/regeneration

Although the above scheme (amended option) was presented to the Sydney South West Planning Panel (SSWPP), the panel did not have regard to it as it was not considered by Council nor the Department of Planning prior to the report being prepared for the Panel. Accordingly, SSWPP refused the Planning Proposal in April 2017 based on the original scheme that zoned the land to residential as per figure 11 of this report.

Subsequent to the refusal of the original Planning Proposal, the above scheme was submitted to Campbelltown Council as part of a meeting with both the Councillors and Council staff where a future Planning Proposal over the subject site was discussed. The draft concept was received more favourably than the original proposal as it aligned with feedback received from the relevant authorities and the Councillors noted through there site inspection that the character of this area has changed to an urban context. There was also acknowledgement that a significant portion of land was being set aside for biodiversity.

The revised Planning Proposal now seeks to preserve the bushland between the service easements and the water channel which therefore creates a clear buffer within our site to adjoining lands. It prevents in our submission, any future expansion of the residential zoning by our neighbours.

In addition, as a result of residential subdivisions being carried out in the vicinity of the subject site, there is significant increase in the availability of infrastructure and services that can be used to the advantage of the subject site.

Concurrent to the above site history, on 7 August 2015 the Joint Regional Planning Panel (JRPP) resolved to approve DA No. 842/2014 over the adjoining land to the west, as a deferred

commencement consent. The development application sought the demolition of the existing dwelling and structures, remediation of contaminated land, bulk earthworks, residential subdivision of the land, with associated site works, road and drainage.

Condition 1.1C of the deferred commencement consent provides for a road connection to Lot 71 DP 706546 (71 St Andrews Road, Varroville) and reads as follows:

> *"1.1C Road Connection to Lot 71 DP 706546, 71 St Andrews Road – The applicant must cause part of proposed Lot 5016, being such part that is of a sufficient width (for a maximum 16-metre-wide road reserve) and length to extend proposed Road 6 through to the adjoining land known as Lot 71 DP 706546, to be transferred to Camden Council upon payment by the Council of an amount of $1.00 if within three years of the date of the grant of this development consent:*
>
> *a) The whole or a significant part of Lot 71 DP 706546 that adjoins the subject site is rezoned and there is a development standard imposed by a environmental planning instrument that allows the size of any lot which can be used for residential accommodation resulting from a subdivision of the said land to be a minimum of 1 hectare or less; or*
> *b) That the rezoning and a draft planning proposal has been approved and adopted by the relevant planning authority and has been forwarded to the Department of Planning & Environment to be made; and*
> *c) Camden Council gives the owner of proposed Lot 5016 written notice that the whole or a significant part of Lot 71 DP 706546 that adjoins the subject site has or will be rezoned and Council thus requires part of proposed Lot 5016 for the purpose of extending proposed Road 6 through to Lot 71 DP 706546".*

In keeping with the above condition, the submitted concept plan makes provision for a road connection through to the adjoining property at No. 51 – 61 St Andrews Road, Varroville.

3.2 Proposal

Reference should be made to the concept plan of subdivision prepared by Lean Lackenby and Hayward and attached as Appendix C to this report. The plan demonstrates the potential of the site for low density residential subdivision inclusive of a road network that acknowledges and provides links to the adjoining sites where residential subdivision applications have been previously determined.

The proposal comprises of 98 lots .

The proposed lots have been designed generally as 450m^2 or greater in area with an average frontage of 15 metres. The proposed lot sizes are reflective of evolving market preferences which indicate greater acceptance of larger lots in this area. A proposed lot width of 15 metres will permit a frontage capable of accommodating a double garage without compromising the amenity of any proposed dwelling.

Notwithstanding the above, it is acknowledged that a minimum lot size of 300m^2 is permissible on adjoining sites in the Growth Centre. Hence, it would make planning sense to maintain this standard across the subject site as well.

Lots have been clustered together where possible and arranged with the front yards of properties overlooking the front yards of properties across the road, reinforcing the urban character evident in adjoining subdivisions.

The proposed internal road widths of 16 metres have been adopted to reflect that of adjoining sites, ensuring consistency in design and connectivity to adjoining subdivisions ensuring a continuation of the road network.

Road layouts have also been designed to connect to the Cornish development to the west of the site, allowing traffic to flow through to St Andrews Road.

The infrastructure corridor established on eastern lots has also been continued across the subject site with easements indicated for stormwater and the like.

The existing house on the site has not been considered as a part of the layout.

Given proposed changes to the Biodiversity Act, we will be lodging a DA for land clearing that will only be linked to the proposed Residential zoning. We accept that the DA can not be approved until the rezoning is gazetted but due to transitional provisions. This DA will be assessed separate to the planning proposal although linked.

3.3 Planning for the Site

A number of consultants have been engaged to determine whether the rezoning of the subject site to a residential use is appropriate.

3.3.1 Contamination

A Preliminary Site Investigation Report has been prepared by SLR Consulting to determine the potential for contamination to be present at the site, as a result of past and present land use activities. A copy of the report has been attached as Appendix D to this report. As part of the preparation of their report, a desktop review and site walkover was undertaken.

The report reflected the original scheme which was recently refused. There were no contamination issues raised under the original scheme by either the Council nor the Department. Given nothing has changed on site, since the preparation of this revised Planning Proposal, it is considered that the findings of that report are still valid.

During the site walkover it was found that the following indicate potential for land contamination on the site:

> *"Uncontrolled filling in the south west portion of the site; and*
>
> *Storage of a wrecked car and disused equipment along the site boundary, and stockpile of building material in central portion of site. However, no visual or olfactory signs of contamination were observed on the ground beneath and immediately around these items, nor were there signs of plant stress".*

The areas of environmental concern are demonstrated in Figure 14 below. The area hatched in red is indicative of fill on the site, while the areas marked in yellow represent point two as detailed above.

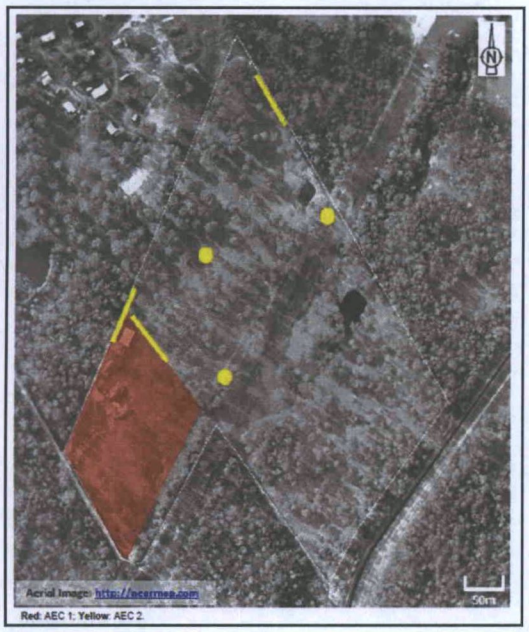


Figure 14 Areas of environmental concern (Source: SLR Consulting)

Notwithstanding the above, the report concludes that the site history does not provide for any indications of land use activities typically associated with significant contamination, for example industrial manufacturing or service stations.

> *"There was no evidence of significant contamination observed in the area containing the fill layer (e.g. stressed/dying vegetation, unusual odours and stains, slicks/sheen in water within the pond), or in adjacent areas of the site, which suggests that contamination associated with the fill, if any, is unlikely to be presenting a significant risk of harm to the environment.*
>
> *If contamination is present in the fill, there are well-established means of remediation and/or management that could be implemented (if needed) to allow for future low density residential development to proceed, regardless of the findings of a Stage 2 detailed site investigation. On this basis, it is considered reasonable to anticipate that remediation and/or management of the fill material could be a condition on the subsequent application for subdivision development consent".*

Based on the above, it is considered likelihood of contamination is low or in the event that contamination is found on the site, that full remediation is achievable.

On this basis, it is reasonable to assume that the subject site is capable of being subdivided for low density residential purposes. As part of any future application to subdivide the site, further testing may be completed as part of a Stage 2 detailed site investigation with regards to the remediation/management of the fill material.

3.3.2 Bushfire

A Bushfire Assessment Report has been prepared by Travers Ecology and submitted as Appendix A to this report.

The subject site has been identified as comprising of both Category 1 bushfire prone vegetation and Category 2 Bushfire Prone Vegetation.

The bushfire report found:

> *A bushfire protection assessment has been undertaken for the proposed rezoning and future residential subdivision of Lot 71 DP 706546, 71 St Andrews Rd, Varroville. The proposal seeks to rezone land to the west of the internal easement as R2 Low Density Residential as well as the land that includes the easement to the water channel to be zoned as E3 Environmental Management.*
>
> *Our assessment found that bushfire can potentially affect the site from the woodland vegetation located beyond St Andrew Road to the south-west and the potential short heath associated with the electrical services easement adjoining the proposed R2 zoned land to the south-east resulting in possible ember attack, radiant heat and potentially flame attack.*
>
> *The bushfire risk posed to the rezoning proposal however can be mitigated if appropriate bushfire protection measures (including APZs) are put in place and managed in perpetuity.*
>
> *Future development on site is to comply with the following planning principles.*

Table 4.1 - Planning principles

Planning principles	*Recommendations*
Provision of a perimeter road with two way access which delineates the extent of the intended development.	*In this circumstance a perimeter road has not been provided within the concept plan. The concept plan follows a similar subdivision design as the recently approved land to the west where St Andrews Road provides firefighting access to adjoining woodland vegetation.*
Provision, at the urban interface, for the establishment of adequate APZs for future housing.	*APZs have been recommended in compliance with BAL 29 (AS3959, 2009).*
Specifying minimum residential lot depths to accommodate APZs for lots on perimeter roads.	*Future subdivision design is to allow for the minimum APZs as recommended within Table 2.1 and as depicted within Schedule 1 attached.*
Minimising the perimeter of the area of land interfacing the hazard, which may be developed.	*Compliant.*
Introduction of controls which avoid placing inappropriate developments in hazardous areas.	*Future development consists of residential dwellings and is appropriate for the level of bushfire risk.*
Introduction of controls on the placement of combustible materials in APZs.	*Compliant – can be made a condition of consent.*

> *The following recommendations are provided to ensure that future residential development is in accordance with, or greater than, the requirements of PBP.*
>
> ***Recommendation 1** - APZs are to be provided to the future residential development. APZs are to be measured from the exposed wall of any dwelling toward the hazardous vegetation.*

The minimum APZ must be achievable within all lots fronting the bushfire hazard as nominated in Table 2.1 and also as generally depicted in Schedule 1.

***Recommendation 2** - Fuel management within the APZs is to be maintained by regular maintenance of the landscaped areas, mowing of lawns in accordance with the guidelines provided in Appendix 1, and as advised by the RFS in their publications.*

***Recommendation 3** – Public access roads are to comply with the acceptable solutions provided within Section 4.1.3 (1) of PBP (refer Section 3.4 of this report) for internal roads. The private road within the E3 allotment is to comply Section 4.1.3 (2) of PBP.*

***Recommendation 4** – Water, electricity and gas supply is to comply with the acceptable solutions as provided within Section 4.1.3 of PBP (refer Sections 3.5, 3.6 and 3.7 of this report).*

3.3.3 Ecology

Reference should be made to the submitted Ecological Assessment Report prepared by Travers Ecology. This can be found at Appendix E.

The report supports the proposed rezoning application and the associated removal of vegetation to accommodate such development. The report states,

In respect of matters required to be considered under the Environmental Planning and Assessment Act 1979 and relating to the species / provisions of the Threatened Species Conservation Act 1995, four (4) threatened fauna species including Greater Broad-nosed Bat (Scoteanax rueppellii), Large-footed Myotis (Myotis macropus), Eastern Bentwing-bat (Miniopterus orianae oceanensis) and Yellow-bellied Sheathtail-bat (Saccolaimus flaviventris), no threatened flora species and one (1) EEC, Cumberland Plain Woodland, were recorded within the study area.

The Yellow-bellied Sheathtail-bat was recorded only to a 'probable' level of certainty however this species as well as the Eastern Bentwing-bat and the East-coast Freetail Bat (Micronomus norfolkensis) were recorded during previous site surveys by Gunninah (2015).

In accordance with Section 5A of the Environmental Planning and Assessment Act 1979, the 7 part test of significance concluded that the planning proposal will not have a significant impact on any threatened species, populations or EECs provided that further survey to identify potential bat roosting is undertaken and recorded threatened bat roosts are retained in-situ. In this case, a Species Impact Statement should not be required for the proposal.

In respect of matters required to be considered under the Environment Protection and Biodiversity Conservation Act 1999, no threatened fauna species, no protected migratory bird species, no threatened flora species, and no EEC under this Act were recorded within the study area. The planning proposal was not considered to have a significant impact on matters of national environmental significance as the vegetation present and being impacted is not considered to meet the condition criteria to be commensurate with Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest. Offsetting of the biodiversity impacts is recommended to ensure a maintain or improve outcome is achieved. As such a referral to Department of Environment and Energy is not required.

In respect of matters relative to the Fisheries Management Act 1994, no suitable habitat for threatened marine or aquatic species was observed within the subject site and there are no matters requiring further consideration under this Act.

The direct, indirect and cumulative ecological impacts have been considered in respect to recorded biodiversity, threatening processes and extent of impact as a result of the proposed works:-

The direct impacts of the proposal within the subject site area is considered as:

- *Removal/modification of 2.57 ha of Cumberland Plain Woodland within the proposed R2 lands*
- *Potential removal of 0.2 ha of Cumberland Plain Woodland for a dwelling within the proposed E3 lands*
- *Potential removal of vegetation for stormwater detention devices*
- *Subsequent removal of threatened fauna species foraging habitat*
- *Reduction in local connectivity and patch size of remnant bushland areas*
- *Removal of small and medium sized hollows suitable for recorded threatened species*

The potential indirect impacts of the proposal are considered as:

- *Edge effects such as weed incursions into the adjacent remaining natural habitat areas*
- *Reduced cross-site movements by small bird species such as passerines.*
- *Increased presence of pet cats and dogs in the locality and subsequent resultant impacts on native wildlife.*
- *Increased spill-over from noise, activity, scent and lighting effects into the adjacent quality natural habitat areas.*

The potential cumulative impacts (combined results of past, current and future activities) of the proposal are considered as:

- *Cumulative loss of Cumberland Plain Woodland*
- *Cumulative loss of winter flowering resources and threatened species habitat*
- *Further reduction of the connective remnant*
- *Increased varied human presence and activity within the remaining natural habitat areas of the adjacent bushland remnant.*
- *Edge effects from inappropriate use of remaining native vegetation areas such as additional clearing, dumping of materials, dumping of faecal, food or general waste and building refuse.*

The following recommendations are made to avoid, minimise or ameliorate the above potential ecological impacts, address threatening processes and to create a positive ecological outcome for threatened species and their associated habitats.

- *Locate the potential dwelling and stormwater devices within cleared or degraded lands and to minimise the loss of vegetation.*

- *Residual impacts of the proposed residential and associated works are to be offset through the NSW Biobanking or Biodiversity offsetting scheme.*

- *It is recommended that a Biodiversity Stewardship Assessment Report be undertaken on the eastern remnant proposed for future retention and protection of the Cumberland Plain Woodland remnant, its connective values and local patch size.*

- *Where they adjoin the development areas, the boundaries of the conservation areas shall be clearly marked out on-site to ensure their protection. All areas of natural vegetation retention shall be protected by fencing, prior to construction, to ensure that these areas are not damaged during the construction phase.*

- *Construction activities will be intermittently supervised on-site and monitored by a project ecologist to ensure that the recommendations of this report are implemented.*

- *Where possible revegetation using locally occurring native plant species is to be re-established within the proposed E3 lands.*

- *Target weed control is to be undertaken across all proposed E3 lands to improve the condition of the ground layer and assist in natural regeneration as well as reduce completion against planted native understorey species..*

- *Standard Phytophthora cinnamomi protocol applies to the cleaning of all plant, equipment, hand tools and work boots prior to delivery onsite to ensure that there is no loose soil or vegetation material caught under or on the equipment and within the tread of vehicle tyres. Any equipment onsite found to contain soil or vegetation material is to be cleaned in a quarantined work area or wash station and treated with anti-fungal herbicides.*

- *Erosion control measures are to be in place to reduce temporary erosion and sedimentation risks to adjacent vegetation and any nearby drainage channel.*

- *All areas containing natural habitat features which have been identified for retention are to be protected with fencing prior to construction*

- *Hollows present within the proposed R2 Residential landscape should be inspected for the presence of roosting by recorded threatened microbat species. If any of these hollows are found to contain such a roost (which is not expected) then this tree is to be retained with appropriate buffers from the development landscape. The same inspections and protections are required for any hollow-bearing trees located within a proposed building footprint located within the proposed E3 area.*

- *According to DEC (2004) survey Guidelines, stag-watching of all trees should be undertaken during warmer months (October - March). Outside of this period microbats may become dormant during cooler months therefore tree climbing inspections with use of a videoscope should be undertaken at this time to effectively determine presence and use of hollows.*

- *Where the felling of hollow-bearing trees is required, this is to be conducted under the supervision of a fauna ecologist to ensure appropriate animal welfare procedures are*

taken, particularly for threatened species not previously recorded within these hollows. Hollows of high quality or with fauna recorded residing within should be sectionally dismantled for relocation and all hollows should be inspected for occupation, signs of previous activity and potential for reuse.

- *Subsequent hollows of retention value are to be relocated to E3 conservation area. Nest boxes may be constructed to replace a removed hollow however a relocated/refurbish natural hollow is preferred for use by threatened microbat species. Constructed boxes should be constructed all of weatherproof timber (marine ply), fasteners and external paint and appropriately affixed to a recipient tree under the guidance of a fauna ecologist.*

- *If a threatened species is found to be occupying the hollow then the hollow section is to be reattached to a recipient tree within the nearby conservation areas as selected and directed by the fauna ecologist. The welfare and temporary holding of the residing animal(s) is at the discretion of the fauna ecologist. The hollow section should be well secured in the recipient tree in a manner that will not compromise the current or future health of that tree.*

- *If any fauna species, a nest or roost is located during development works, then works should cease until safe relocation can be advised by a contact fauna ecologist.*

3.3.4 Traffic

A revised Traffic and Parking Assessment report has been prepared by Varga Traffic Planning Pty. Ltd. in relation to the concept plan of subdivision.

The report provides for a review of the road network in the vicinity of the site, and the traffic conditions on that road network; estimates the traffic generation potential of the subdivision proposed; assesses the traffic implication of the subdivision proposal in terms of road network capacity; reviews the geometric design features of the proposed new road network; and assesses the off-street parking implications of the proposal based on a potential 98 residential allotments.

The report goes on to state that the proposed 16m wide road reservation to internal local roads is consistent with the East Leppington precinct hierarchy and that the indicative allotments are of a size capable of accommodating sufficient off-street parking, acknowledging that such considerations would be subject to future development applications relating to dwelling houses.

The report concludes;

- *"The planning proposal seeks approval to permit the subdivision of the site into 98 residential allotments with a new internal road network*

- *The planning proposal could not be expected to have any unacceptable traffic implications in terms of road network capacity*

- *Based on the modelling results in Cardno's report there is significant spare capacity in Camden Valley Way where it intersects with St Andrews Road, Willowdale Drive and Denham Court Road, and no further improvements are needed to accommodate the additional traffic flows generated as a consequence of the planning proposal*

- *The future car parking facilities will be provided and designed in accordance with Council's requirements and the relevant Australian Standards*
- *The proposed internal/local road layout is consistent with the requirements of the East Leppington Precinct road network hierarchy.*

Refer to Appendix F of this report.

3.3.5 Concept Drainage Plan

A Concept Drainage and Services Plan has been prepared by Lean Lackenby and Hayward and is submitted as part of this report.

Refer to Appendix B of this report.

3.3.6 Planning Considerations

Population forecasts have been published for Campbelltown Council at website www.forecast.id.com.au/campbelltown. The Campbelltown City population in 2017 is equivalent to 162,902 persons and is forecast to grow to 273,541 by 2036. This represents a 67.92% change between 2017 and 2036.

Between 2011 and 2036, the population growth forecast for the Rural Residential area (in which the subject site is located) is an increase from 2,445 people (2011) to 36,274 people (2036), requiring an increase in dwellings from 756 (2011) to 11,768 (2036).

Based on these figures, there is clearly an identified growth expected for the area in terms of population and development. The subject site can assist in meeting these growth targets by creating opportunities for, and additional supply of, affordable housing in South West Sydney.

Current area:
Rural Residential
reset

Forecast population, households and dwellings

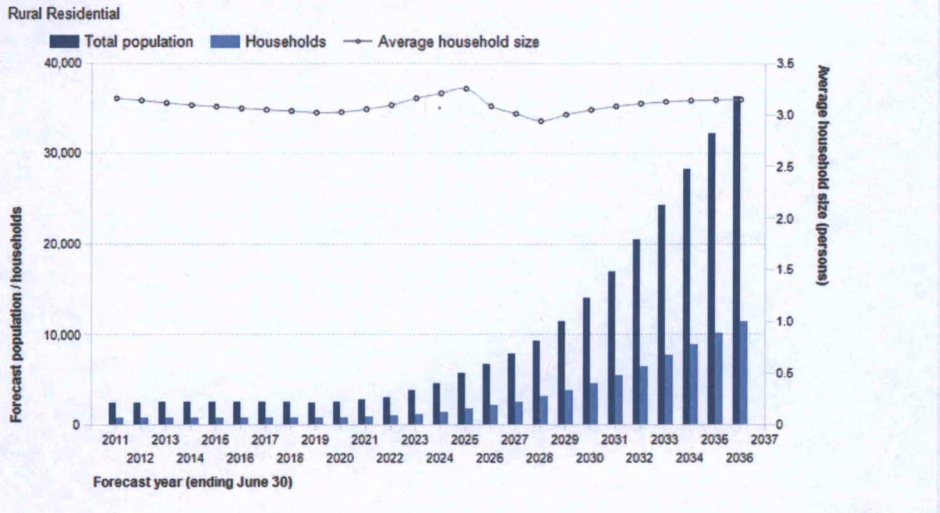
export

Rural Residential	Forecast year					
Summary	2011	2016	2021	2026	2031	2036
Population	2,445	2,482	2,725	6,672	16,958	36,274
Change in population (5yrs)	–	37	243	3,947	10,286	19,316
Average annual change	–	0.30%	1.88%	19.62%	20.51%	16.42%
Households	729	764	847	2,117	5,455	11,476
Average household size	3.16	3.06	3.05	3.08	3.08	3.15
Population in non private dwellings	141	141	141	141	141	141
Dwellings	756	776	859	2,153	5,575	11,768
Dwelling occupancy rate	96.43	98.45	98.60	98.33	97.85	97.52

Population and household forecasts, 2011 to 2036, prepared by .id , the population experts, January 2017.

Forecast population, households and average household size

export



Population and household forecasts, 2011 to 2036, prepared by .id the population experts, January 2017.

.id the population experts

Figure 15 Forecast population, household and dwellings (Source: forecast.id)

In view of the above, it is considered that to develop the site for residential use, in part, would provide opportunities for increased choice and diversify the housing stock within the immediate and surrounding area. The increase in housing stock will encourage affordable housing in the area.

The proposed R2 Low Density Residential zoning would also be conducive to detached dwelling types with are typical of the region, evident in the pattern of surrounding development and newer subdivisions such as those by the Cornish Group and Stockland.

Reference is made to the Draft Greater Sydney Region Plan which seeks to create three metropolitan cities to govern future growth and opportunities across Sydney. The three distinct cities created by the Plan are described as the Western Parkland City, Central River City and Eastern Harbour City.

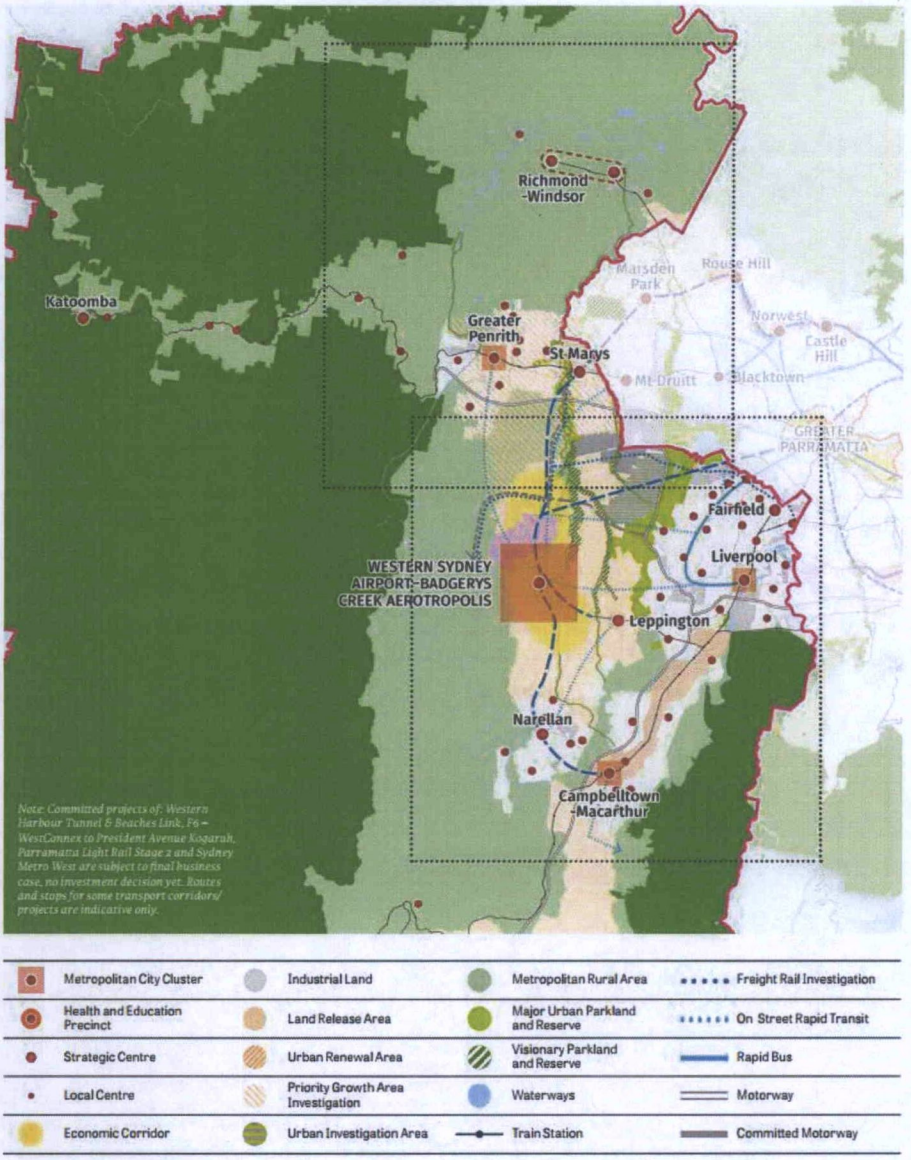


Figure 16 Western City District

The subject site is located within the area described as the Western City as illustrated in the image above.

The Draft Western City District Plan endeavours to *"guide the transition of the District within the context of Greater Sydney's three cities to improve the District's social, economic and environmental assets".*

The Plan nominates a total of twenty (20) planning priorities for the precinct with regards to Infrastructure and collaboration, Liveability, Productivity and Sustainability.

The Plan also identifies existing and projected dwelling targets for the precinct overall and based on local government areas as demonstrated in the images below:

Housing

Existing and projected dwellings	2016	2036
Western City District	388,000	572,500

Figure 17 Existing and projected dwellings

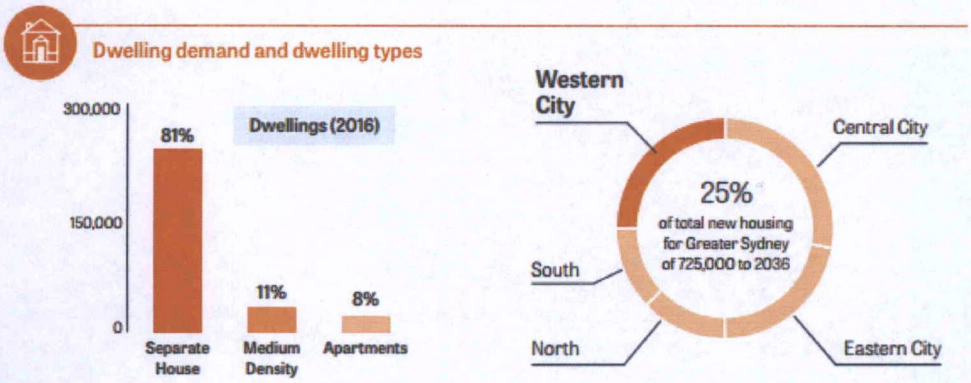


Figure 18 Dwelling demand and types

LGA	0–5 year housing supply targets: 2016–2021
Blue Mountains	650
Camden	11,800
Campbelltown	6,800
Fairfield	3,050
Hawkesbury	1,150
Liverpool	8,250
Penrith	6,600
Wollondilly	1,550
Western City District Total	**39,850**

Figure 19 Western City District housing targets by local government area

Accordingly, there is a significant unmet demand for new housing in the Western City Area.

Based on these figures, there is clearly an identified growth expected for the area in terms of population and development. The subject site can assist in meeting these growth targets by creating opportunities for, and additional supply of, affordable housing in Sydney.

The subject site is located within the suburb of Varroville and although located outside of, immediately adjoins the South West Growth Centre. The site accordingly is well serviced by local infrastructure and amenities planned as part of SEPP (Sydney Region Growth Centres) 2006 and as identified in the Draft Western City District Plan. The site is notably located in proximity to Strategic Centres including Leppington and Edmondson Park as identified in the image below.

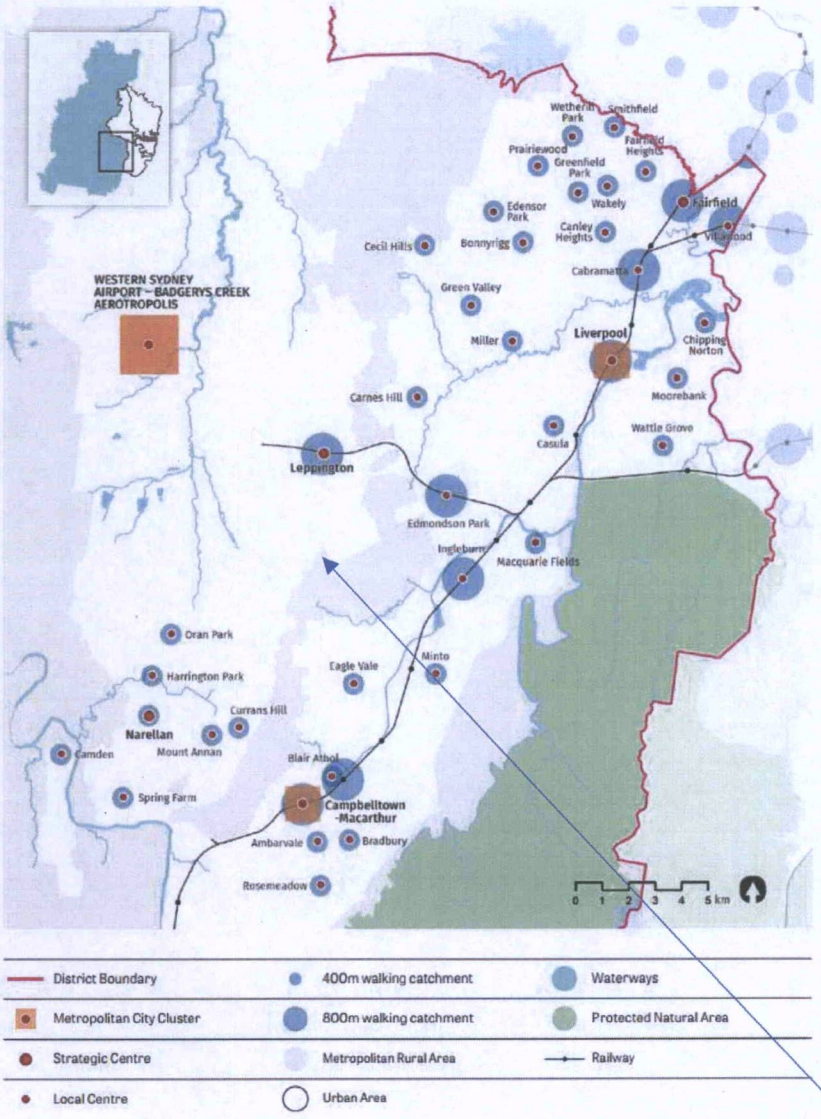


Figure 20 Strategic and local centres

The site therefore has the benefit of being able to utilise existing and proposed public infrastructure created as part of the adjoining subdivisions, which will assist in reducing the cost

of housing across the whole region. It is the cost of infrastructure generally which is placing greater pressure on the cost of housing within the NSW housing market.

In view of the above, given that the adjoining land is located within a residential precinct, rezoning part of the subject site to provide for additional housing would provide for a logical expansion of the approved residential land. It is considered that the use of roads and environmental features as boundaries rather than allotment boundaries will ensure that built form objectives and environmental outcomes can be achieved holistically.

In this context, the current environmental zoning of the property can be debated. The zoning is clearly not the highest and best use of the land as identified in this report and the submitted consultant reports.

It is considered that to extend the residential uses would provide opportunities for increased choice and diversify the housing stock within the immediate and surrounding area. The increase in housing stock will encourage affordable housing in the area.

The proposed R2 Low Density Residential zoning would also be conducive to detached dwelling types with are typical of the region, particularly in new land estates emerging along St Andrews Road including Emerald Estate. The proposal is therefore reflective of market preferences.

The proposal seeks to rezone a large portion of the site as E3 Environmental Management. This arrangement maintains a predominantly environmental landscape on the site having regard to its current zoning and condition whilst enabling limited built form on the land to support its management and regeneration.

The Draft Greater Sydney Region Plan and the Draft Western City District Plan both recognise that an adequate supply of land for residential purposes is required to meet Sydney's growth. Sites for new homes should be accessible to employment noting that close to half of Sydney's jobs are generated in strategic centres.

In this respect, Leppington which is located to the north of the subject site has been identified as a designated Priority Precinct. The District Plan identifies that an estimated 400 jobs were available within Leppington as at 2016 with an expected baseline target of 7,000 employments opportunities by 2036 demonstrating that the area is capable of supporting higher densities.

The site can also be easily serviced by existing and proposed bus based public transport and is located within 3 kilometres of the new Leppington Train Station which opened in February 2015. Refer to the image on the following page.

The construction of the upgrading of Camden Valley Way from a two-lane rural road to a four-lane highway has improved road access and provides a new bus based public transport corridor in proximity to the site.

To the north of the site is the planned Leppington Major Centre and the South West rail link and transport interchange linking the subject site to the established Sydney Train and road network.

With its unique location, elevation and distinctive landscape character, the site will not only increase supply of housing but also increase the choice in housing types and living environments available to households in South West Sydney.

With these foundations it presents a new opportunity to supplement the supply of housing in South West Sydney. It also provides a new opportunity to assist in the funding of infrastructure and income via rates to contribute to ongoing maintenance of community assets.

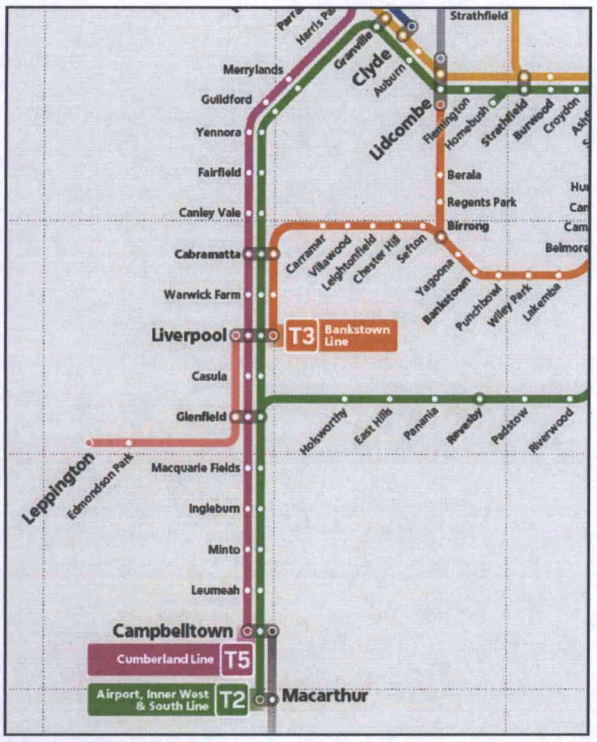


Figure 21 South West Rail Link, (Source: NSW Transport)

The Campbelltown Local Environmental Plan District 8 (Central Hills Lands), which established the zoning of the subject site as 7(d1) Environmental Protection (Scenic) was created in 1988. It can be said that with the implementation of SEPP (Sydney Region Growth Centres) 2006, the context of the subject site is vastly different. The once previously rural lands to the north, east and north west of the site are now being transformed into urban landscapes as part of the South West Growth Centres. The nature of such dense urban growth at the immediate boundaries of the subject site, diminishes the scenic value of the area.

We submit that the proposed rezoning of the site for residential purposes will complement the character of the surrounding development given its proximity to planned residential zones.

The figures below demonstrate how the proposed rezoning of the subject site will fit within the context of the surrounding area.

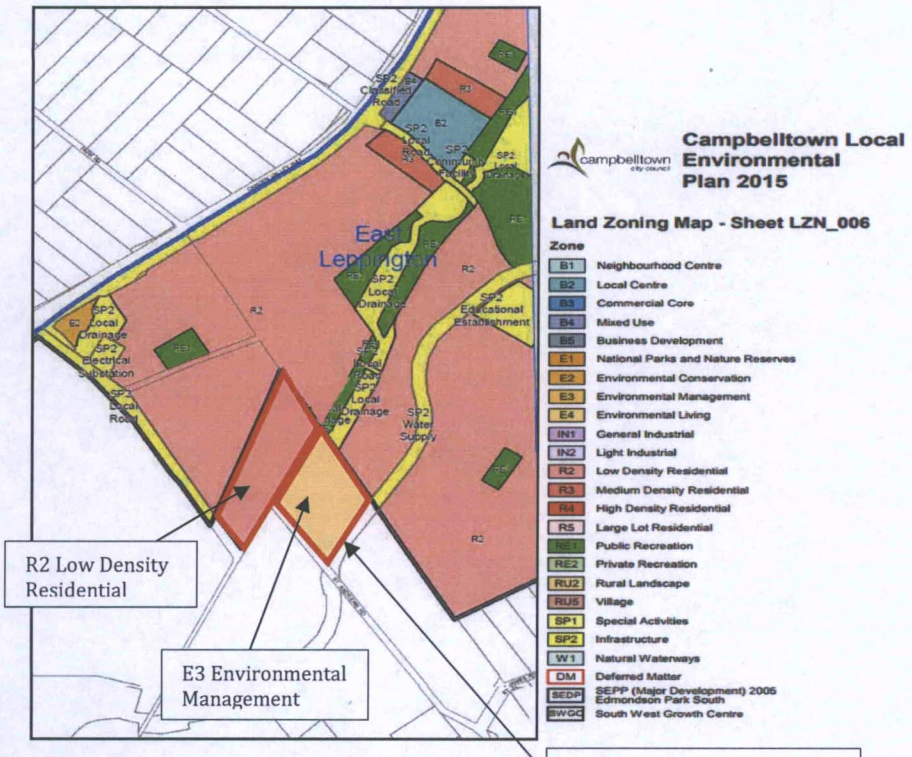


Figure 23: Proposed Land Zoning Map

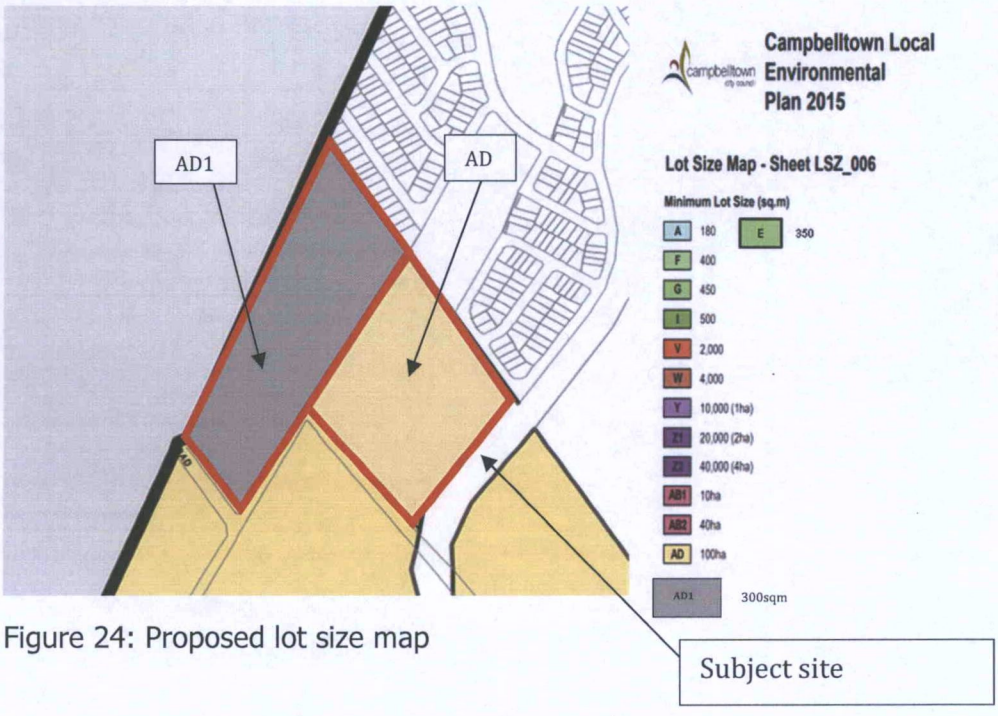


Figure 24: Proposed lot size map

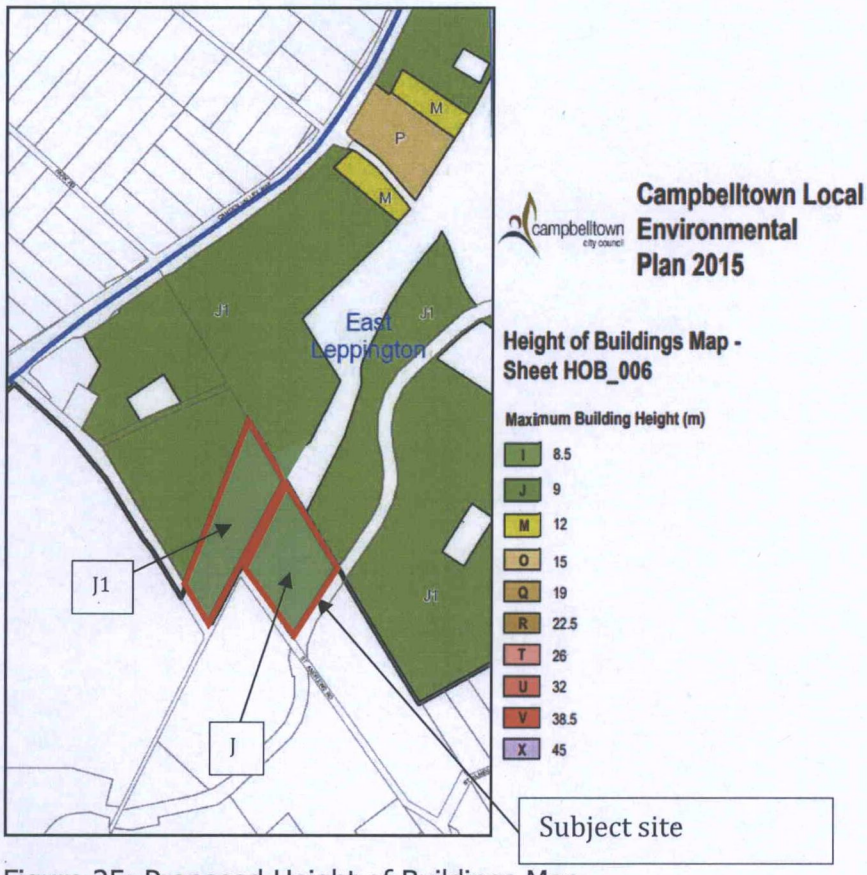


Figure 25: Proposed Height of Buildings Map

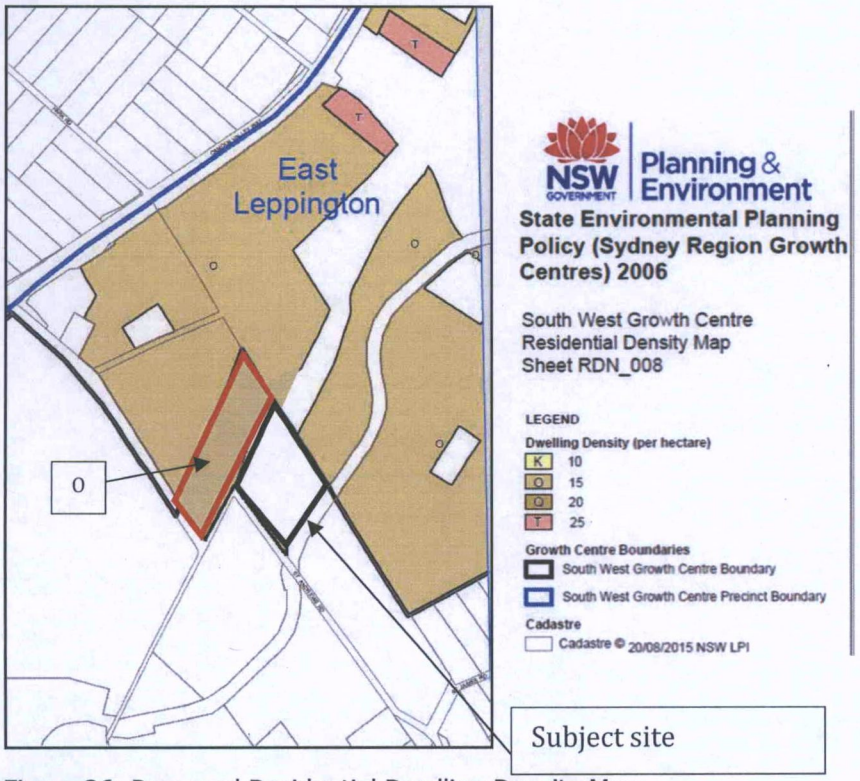


Figure 26: Proposed Residential Dwelling Density Map

4. LEGISLATIVE CONTEXT

Section 55(1) of the Environmental Planning & Assessment Act, 1979 specifies that before an environmental planning instrument is made, the relevant planning authority is required to prepare a document that explains the intended effect of the proposed instrument and sets out the justification for its making ("the Planning Proposal").

Section 55(2) specifies that the Planning Proposal is to include a statement of objectives and intended outcomes of the proposed instrument; an explanation of the provisions that are to be included in the proposed instrument; the justification for those objectives, outcomes and provisions; maps to be adopted by the proposed instrument and details of the community consultation that is to be undertaken before consideration is given to the making of the proposed instrument.

The Department of Planning has published "A Guide to Preparing Planning Proposals" (October 2012), to explain the format and content of a Planning Proposal to be prepared by the relevant planning authority. The Department of Planning's guideline is issued under Section 55(3) of the Environmental Planning & Assessment Act 1979 and provides guidance and information on the process for preparing planning proposals.

4.1 Objectives and Intended Outcomes

In general terms, the objective of the proposed Local Environmental Plan amendment is to zone the subject site to R2 Low Density, for residential use.

The intended outcome of the Planning Proposal is to zone the land for part residential use, to be consistent with the adjoining R2 land to the north east and north west and part environmental living in keeping with the ecological significance of the land.

The site is currently zoned as E3 Environmental Management under the provisions of the Campbelltown Local Environmental Plan 2015 and 8.005 hectares will remain as E3 Environmental Management.

4.2 Explanation of Provisions

The proposed outcome will be achieved by:

- Rezone the site to part R2 Low Density Residential and part E3 Environmental Management; and
- Seek a height limit of 9m; and
- A minimum lot size of $300m^2$; and
- Residential dwelling density: 15 dwellings/hectare.

4.3 Justification of Provisions

Section A – Need for the planning proposal

1. Is the planning proposal a result of any strategic study or report?

As detailed under Section 3.1 of this report, an earlier Planning Proposal was submitted over the subject site in October 2015. Based on our expert's advice, the original plan submitted zoned the land R2 Low Density Residential with an extension of the riparian corridor.

Two key issues were raised during the assessment process by Campbelltown Council and the Department of Planning:

- Loss of land within the Scenic Hills
- Loss of Cumberland Plains Woodland

Council resolved in February 2016 not to support our planning proposal due to the concerns related to loss of land within the Scenic Hills and loss of Cumberland Plain Woodland.

The Department of Planning, as part of its review of the planning proposal, and after Council's resolution of February 2016, advised that the Department of Office and Environment and Heritage (OEH) was concerned about the loss of Cumberland Plain Woodlands and there was no significant offset.

Based on the comment of OEH, we provided an alternative option to the Department of Planning with approximately 15% of the land set aside for Biodiversity. Refer to Figure 12 of this report.

OEH offered the following comments on the revised plan:

> *"OEH agrees that conversation of biodiversity should be focused on the part of the site to the east of the services easement as the Ecological Assessment Report (EAR) identifies this CPW as being in better condition that the land to the west which contains the existing dwelling. Further, the land to the west of the easement is already surrounded on two sides by approved residential development within the East Leppington Growth Centre Precinct;*
>
> *The E4 zone is primarily a residential zone, not a conservation zone. If the intent of the offset area is for biodiversity conservation then the land use zoning should reflect this intended use;*
>
> *OEH supports the desire to connect the vegetation on the site to existing biodiversity corridors, however concern is raised about the viability of the corridor adjacent to St Andrews Road due to its narrow width and further assessment is required to determine an appropriate width; and*
>
> *It is unlikely that the authorities which benefit from the easement will allow the planting of grasses/vegetation within the easement".*

Travers Bushfire & Ecology was engaged and undertook a peer review of our submission. Having regard to OEH comments, an alternative option was set aside with a significant area of land for biodiversity. Refer to Figure 13 of this report.

The above scheme was also submitted to Campbelltown Council as part of a meeting with both the Councillors and Council staff where a future Planning Proposal over the subject site was

discussed. The draft concept was generally received favourably and is considered to align with feedback received from the relevant authorities.

This Report has therefore been prepared to accompany a formal request that Council consider a Planning Proposal to amend the current Campbelltown Local Environmental 2015 to have the site (Lot 71 in Deposited Plan 706546) rezoned to part R2 Low Density Residential and part E3 Environmental Management.

This submission incorporates relevant studies to show that there are no constraints. We also submit that the rezoning aligns with the Metropolitan Strategy and takes advantage of services and its context with its neighbours being either R2 Low Density Residential and St Andrews Road.

As detailed within this report, the proposal also aligns with key strategies contained within the Draft District Plan by providing additional residential land which is currently serviced and therefore reduces ongoing cost for infrastructure as well as providing significant biodiversity land linked to green corridors as part of a broader strategy with development on either side of the site.

2. *Is the planning proposal the best means of achieving the objectives or intended outcomes, or is there a better way?*

The Planning Proposal is considered to be the most appropriate means of achieving the objective or intended outcome.

We submit that this site is geographically separated from the remainder of Varroville by virtue of the Sydney Water Canal. St Andrews Road is a no through road, and the subject property is the last one on that road that is attached to the East Leppington precinct. The subject property does not share any vehicular or pedestrian access with the suburb of Varroville and so is physically separated from the suburb. Given that the northern and eastern boundaries of the site immediately adjoin the East Leppington precinct, rezoning the subject site to match that of the East Leppington precinct would provide for better connectivity and planning sense.

In addition, the site does not act as a physical link to adjoining environmental management land and bushfire affectation do not prohibit development over to the site.

Our ecologist has prepared a comprehensive assessment of the site and formed the following view as to the suitability of the proposed zones:

> *The proposed zones R2 is considered suitable for proposed residential subdivision area given the conservation of Cumberland Plain Woodland in the adjoining E3 Environmental management lands and the offsetting of the residual impacts through the NSW Biobanking Scheme. The existing understorey is highly modified with improved pasture species. The R2 lands are boundary by residential development and an electrical easement and hence is an extension to the existing residential subdivision areas.*
>
> *The proposed E3 zoning for the environmentally sensitive lands provides security of protection for the critically endangered ecological community under the planning scheme but also provides the opportunity for the conservation lands to be established as a biobanking site to provide a long-term protection and biodiversity conservation outcome. Restoration of the CPW as part of the proposed E3 lands provides a consolidated restoration outcome that will be bound on three sides by a road, electrical easements and Sydney Water supply upper canal hence providing boundary protection.*

Ongoing protection can be established via a conservation agreement and or offered as a biobanking site or a biodiversity stewardship site under the Biodiversity Conservation Act 2016.

It is also a more appropriate manner to manage the transition from urban land to environmental as existing services to the centre of the site provides the buffer rather than the current abrupt interface of R2 land with the existing E3 land. This has been reinforced in the suite of photographs provided in this report.

The subject site should therefore be considered as a separate matter to the broader environmental management land.

Section B – Relationship to strategic planning framework

3. *Is the planning proposal consistent with the objectives and actions of the applicable regional or sub-regional strategy (including the Sydney Metropolitan Strategy and exhibited draft strategies)?*

The New South Wales State Government released *A Plan for Growing Sydney* in December 2014 which sets out a new plan for the city's future over the next two decades which replaces the Sydney Metropolitan Plan. It provides direction for Sydney's productivity, environmental management and liveability; and for the location of housing, employment, infrastructure and open space.

A Plan for Growing Sydney includes six subregions, noting that the site will be located within the "Metropolitan Rural Area".

As detailed under Section 2.2 of this report, Council has maintained a strong view that the Scenic Hills needs to be preserved and have expressed concerns relating to the loss of land that has been identified as Scenic Hills. While we appreciate Council's position in a broader sense, it is important to acknowledge that the subject site is not in the middle of the Scenic Hills. The site is in fact on the fringe of the Scenic Hills Precinct and geographically is within a valley. The site, as agreed by Council Staff and the Department is located west of the ridgeline and therefore will not impact on the visual presentation of the ridgeline.

The New South Wales Government also has a NSW 2021 Plan, which is a 10-year plan to rebuild the economy, return quality services, renovate infrastructure, restore accountability to Government, and strengthen our local environment and communities. It replaces the State Plan as the NSW Government's strategic business plan. The Plan establishes 32 goals, with the following goal being relevant to this Planning Proposal.

Goal	Statement of Consistency
5. Place downward pressure on the cost of living	The Planning Proposal will allow for additional housing supply within the Campbelltown LGA which will also encourage diversity in housing stock and choice.

4. Is this planning proposal consistent with a council's local strategy or other local strategic plan?

Campbelltown 2027 is Campbelltown City Council's highest level, strategic planning document. It outlines the aspirations of the city's people, and details how Council and other key stakeholders will achieve those goals over the next 10 years.

The Plan describes the local government area as,

"Campbelltown is a priority urban growth area – The NSW State Government has identified Campbelltown City as a priority urban growth area. This means that there are expectations on Council to plan for growth targets outlined by the NSW State Government. We need to ensure that the quality and character of our city is not diminished in our planning for this growth. New development will pose challenges for the planning of new infrastructure, while infill development will require plans to rejuvenate old infrastructure".

Campbelltown 2027 has been structured to address 4 key outcomes that Council and other stakeholders will work to achieve. The outcomes are:
Outcome 1: A vibrant, liveable city
Outcome 2: A respected and protected natural environment
Outcome 3: A thriving, attractive city
Outcome 4: A successful city

These outcomes will be achieved through the implementation of 27 strategies, with the following outcome being relevant to this Planning Proposal.

Goal	Statement of Consistency
4.3- Responsibly manage growth and development, with respect for the environment, heritage and character of our city	The Planning Proposal will maintain a balance of residential and environmental land on the site. The proposal therefore caters to the demand for additional housing supply however respects the established green corridor and seeks to preserve the bushland between the easements to the water channel and therefore creates a clear buffer within our site to adjoining lands. It prevents in our submission, any future expansion of the residential zoning by our neighbours.

5. Is the planning proposal consistent with applicable State Environmental Planning Policies?

The following table lists the current State Environmental Planning Policies and Sydney Regional Environmental Plans (being deemed SEPPs):

State Environmental Planning Policy	Statement of Consistency
No.1 – Development Standards	Not applicable.
No. 14 – Coastal Wetlands	Not applicable.
No 19—Bushland in Urban Areas	Not applicable.

State Environmental Planning Policy	Statement of Consistency
No 21—Caravan Parks	Not applicable.
No 26—Littoral Rainforests	Not applicable.
No 30—Intensive Agriculture	Not applicable.
No 33—Hazardous and Offensive Development	Not applicable.
No 36—Manufactured Home Estates	Not applicable.
No 44—Koala Habitat Protection	As detailed in the submitted Ecological Assessment Report prepared by Travers Bushfire and Ecology, requires Koala Plan of Management. It is however noted, an earlier report prepared by Gunninah confirmed that: *"There are no recent records of Koalas on the subject land or in the immediate vicinity. There is no 'resident population' of Koalas at Picton, and the subject site does not constitute 'core koala habitat'.*
No 47—Moore Park Showground	Not applicable.
No 50—Canal Estate Development	Not applicable.
No 52—Farm Dams and Other Works in Land and Water Management Plan Areas	Not applicable.
No 55—Remediation of Land	A contamination report has been prepared by SLR Consulting with regards to the site and provides recommendations for remediation to the affected areas of environmental concern. Refer to Section 3 of this report and the submitted report prepared by SLR Consulting.
No 62—Sustainable Aquaculture	Not applicable.
No 64—Advertising and Signage	Not applicable.
No 65—Design Quality of Residential Apartment Development	Not applicable.
No 70—Affordable Housing (Revised Schemes)	Not applicable.
No 71—Coastal Protection	Not applicable.
State Environmental Planning Policy (Affordable Rental Housing) 2009	Not applicable.
State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004	Not applicable.
State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017	Not applicable.
State Environmental Planning Policy (Exempt and Complying Development Codes) 2008	Not applicable.
State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004	Not applicable.

State Environmental Planning Policy	Statement of Consistency
State Environmental Planning Policy (Infrastructure) 2007	Not applicable.
State Environmental Planning Policy (Integration and Repeals) 2016	Not applicable.
State Environmental Planning Policy (Kosciuszko National Park—Alpine Resorts) 2007	Not applicable.
State Environmental Planning Policy (Kurnell Peninsula) 1989	Not applicable.
State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007	Not applicable.
State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007	Not applicable.
State Environmental Planning Policy (Penrith Lakes Scheme) 1989	Not applicable.
State Environmental Planning Policy (Rural Lands) 2008	Not applicable.
State Environmental Planning Policy (State and Regional Development) 2011	Not applicable.
State Environmental Planning Policy (State Significant Precincts) 2005	Not applicable.
State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011	A Sydney Water supply channel is located to the south east of the site. The proposed works would be limited within the boundaries of the subject site and are not considered to pose an impact to the channel as the channel is on the high side of the property.
State Environmental Planning Policy (Sydney Region Growth Centres) 2006	Not applicable.
State Environmental Planning Policy (Three Ports) 2013	Not applicable.
State Environmental Planning Policy (Urban Renewal) 2010	Not applicable.
State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017	Not applicable.
State Environmental Planning Policy (Western Sydney Employment Area) 2009	Not applicable.
State Environmental Planning Policy (Western Sydney Parklands) 2009	Not applicable.

In addition, the following Sydney Regional Environmental Plans are not relevant to the Planning Proposal:

- Sydney Regional Environmental Plan No 8 (Central Coast Plateau Areas);
- Sydney Regional Environmental Plan No 9—Extractive Industry (No 2—1995);
- Sydney Regional Environmental Plan No 16—Walsh Bay;

- Sydney Regional Environmental Plan No 20—Hawkesbury-Nepean River (No 2—1997);
- Sydney Regional Environmental Plan No 24—Homebush Bay Area;
- Sydney Regional Environmental Plan No 26—City West;
- Sydney Regional Environmental Plan No 30—St Marys;
- Sydney Regional Environmental Plan No 33—Cooks Cove; and
- Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005.

6. *Is the planning proposal consistent with applicable Ministerial Directions (s.117 Directions)?*

The following tables outline the Ministerial Directions under s.117 of the Environmental Planning and Assessment Act, 1979.

No.	Title	Comment
1. Employment and Resources		
1.1	Business and Industrial Zones	Not applicable.
1.2	Rural zones	Not applicable.
1.3	Mining, Petroleum Production and Extractive Industries	Not applicable.
1.4	Oyster Aquaculture	Not applicable.
1.5	Rural Lands	Not applicable.
2. Environment and Heritage		
2.1	Environmental Protection Zones	The objective of this Direction is to protect and conserve environmentally sensitive areas. The retention of the E3 zoning in part provides security of protection for the critically endangered ecological community and provides the opportunity for the conservation of lands as a biobanking site to provide long term protection and biodiversity conservation outcomes.
2.2	Coastal Conservation	Not applicable.
2.3	Heritage Conservation	Not applicable.
2.4	Recreational Vehicle Areas	Not applicable.
2.5	Application of E2 and E3 Zones and Environmental Overlays in Far North Coast LEPs	Not applicable.
3. Housing, Infrastructure and Urban Development		
3.1	Residential Zones	The objectives of this direction are: (a) to encourage a variety and choice of housing types to provide for existing and future housing needs, (b) to make efficient use of existing infrastructure and services and ensure that new housing has

No.	Title	Comment
		appropriate access to infrastructure and services, and (c) to minimise the impact of residential development on the environment and resource lands. The rezoning of the subject site will provide additional land that can be used to meet the housing targets set by the State Government and Council. The land has access to existing infrastructure and services within nearby Leppington which will minimise cost to the overall redevelopment of the site. The proposed R2 is considered suitable for residential development given the conservation of Cumberland Plain Woodland in the E3 Environmental Management land and the offsetting of the residual impacts through the NSW Biobanking Scheme.
3.2	Caravan Parks and Manufactured Home Estates	Not applicable.
3.3	Home Occupants	Not applicable.
3.4	Integrating Land Use and Transport	Not applicable.
3.5	Development Near Licenced Aerodromes	Not applicable.
3.6	Shooting Ranges	Not applicable.
4. Hazard and Risk		
4.1	Acid Sulfate Soils	Not applicable.
4.2	Mine Subsidence and Unstable Land	Not applicable.
4.3	Flood Prone Land	The objectives of this direction are: (a) to ensure that development of flood prone land is consistent with the NSW Government's Flood Prone Land Policy and the principles of the Floodplain Development Manual 2005, and (b) to ensure that the provisions of an LEP on flood prone land is commensurate with flood hazard and includes consideration of the potential flood impacts both on and off the subject land. The site has been identified as flood prone land. Appropriate design measures can be incorporated as part of any future applications for housing developments.
4.4	Planning for Bushfire Protection	The objectives of this direction are: (a) to protect life, property and the environment from bush fire hazards, by discouraging the

No.	Title	Comment
		establishment of incompatible land uses in bush fire prone areas, and (b) to encourage sound management of bush fire prone areas. The submitted bushfire report acknowledges that substantial amounts of bushfire prone vegetation will be removed from surrounding area to allow for the development of the East Leppington Precinct. Consequently, the bushfire hazard to any future residential development is reduced. The report therefore concludes that should the land be rezoned to R2 Low Density Residential, compliance with the requirements for residential subdivision can be achieved subject to certain development constraints. The report concluded: Our assessment found that bushfire can potentially affect the site from the woodland vegetation located beyond St Andrew Road to the south-west and the potential short heath associated with the electrical services easement adjoining the proposed R2 zoned land to the south-east resulting in possible ember attack, radiant heat and potentially flame attack. The bushfire risk posed to the rezoning proposal however can be mitigated if appropriate bushfire protection measures (including APZs) are put in place and managed in perpetuity.
5. Regional Planning		
5.1	Implementation of Regional Strategies	Not applicable.
5.2	Sydney Drinking Water Catchments	A Sydney Water supply channel is located to the south east of the site. The proposed works would be limited within the boundaries of the subject site and are not considered to pose an impact to the channel.
5.3	Farmland of State and Regional Significance on the NSW Far North Coast	Not applicable.
5.4	Commercial and Retail Development	Not applicable.

No.	Title	Comment
	along the Pacific Highway, North Coast	
5.5	Development in the vicinity of Ellalong Paxton and Millfield (Cessnock LGA) (Revoked 18 June 2010)	Revoked 18 June 2010.
5.6	Sydney to Canberra Corridor (Revoked 10 July 2008. See amendment Direction 5.1)	Revoked 10 July 2008.
5.7	Central Coast	Revoked 10 July 2008. See amended Direction 5.1.
5.8	Second Sydney Airport: Badgerys Creek	Not applicable.
5.9	North West Rail Link Corridor Strategy	Not applicable.
5.10	Implementation of Regional Plans	Not applicable.
6. Local Plan Making		
6.1	Approval and Referral Requirements	The objective of this direction is to ensure that LEP provisions encourage the efficient and appropriate assessment of development. This Planning Proposal will not alter this.
6.2	Reserving Land for Public Purposes	Not applicable.
6.3	Site Specific Provisions	The objective of this direction is to discourage unnecessarily restrictive site-specific planning controls. This Proposal does not place further restrictions on the site or the broader area.
7. Metropolitan Planning		
7.1	Implementation of the Metropolitan Plan for Sydney 2036	*The objective of this direction is to give legal effect to the vision, transport and land use strategy, policies, outcomes and actions contained in the Metropolitan Plan for Sydney 2036.* The Planning Proposal is consistent with the Metropolitan Plan for Sydney 2036 as detailed within this report.
7.2	Implementation of Greater Macarthur Land Release Investigation	Not applicable.

No.	Title	Comment
7.3	Parramatta Road Corridor Urban Transformation Strategy	Not applicable.
7.4	Implementation of North West Priority Growth Area Land Use and Infrastructure Implementation Plan	Not applicable.
7.5	Implementation of Greater Parramatta Priority Growth Area Interim Land Use and Infrastructure Implementation Plan	Not Applicable.
7.6	Implementation of Wilton Priority Growth Area Interim Land Use and Infrastructure Implementation Plan	Not Applicable.

Section C – Environmental, social and economic impact

7. *Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the proposal?*

Travers Bushfire and Ecology has undertaken a Flora and Fauna Assessment for the site. The assessment has been detailed within Section 3.3.3 of this report. Also refer to Appendix E.

8. *Are there any other likely environmental effects as a result of the planning proposal and how are they proposed to be managed?*

Travers Bushfire and Ecology has undertaken a Bushfire Protection Assessment. The assessment has been detailed in Section 3.3.2 of this report. Also refer to Appendix A.

9. *Has the planning proposal adequately addressed any social and economic effects?*

The Planning Proposal will reasonably contribute to sub-regional housing and employment targets, and facilitate the implementation of Council's vision regarding the strategic direction for the site and immediate surrounds.

The proposal will provide convenient access to public transport within the planned major centre of Leppington, thereby reducing dependence on private vehicles, providing opportunities for healthy lifestyles and enhance and provide improved access by the community to public open space and recreation facilities.

The rezoning of the subject site will assist in meeting these targets.

The site also benefits from having access to nearby infrastructure and services.

Section D – State and Commonwealth interests

10. Is there adequate public infrastructure for the planning proposal?

The adjoining land has been approved for residential subdivision with allowances made for all necessary public infrastructure. Appropriate allowances have been made to ensure appropriate connection points through the Cornish development have been achieved. This is illustrated in the plan submitted with this proposal and via conditions of approval issued over the Cornish site that protects connection as part of this Planning Proposal.

In addition, given the large-scale development proposed at Emerald Hills, new infrastructure and services will be created that can be easily accessed by the subject site.

This would be confirmed as part of any subsequent development application for the subdivision and development of the site.

In terms of existing public transport services, these services are underutilised and the level of service is attributable to low patronage. However, as the South West Growth Centre continues to advance with the release of new land areas and employment zones, public transport networks servicing the Camden LGA will improve to meet the new demands placed upon them by new residents and activities. This will be further aided by the development of the Leppington Town Centre and Railway Station to the north of the site.

11. What are the views of State and Commonwealth public authorities consulted in accordance with the Gateway determination?

Any comments from State and Commonwealth public authorities received during the Gateway process can be responded to as required.

In addition, a Planning System Circular (PS 16-004) was issued by the Department of Planning in August 2016 for the purpose of advising Council's and the public about changes to the independent review processes as they relate to plan-making decisions under Part 3 of the Environmental Planning and Assessment Act 1979. As part of this circular it is highlighted that the key factor in determining whether a proposal should proceed to Gateway determination is its strategic merit.

This Strategic Merit Test has been strengthened and proposals will now be assessed to determine if they are in accordance with the following:

5. *Consistent with the relevant regional plan outside of the Greater Sydney Region, the relevant district plan or Corridor/precinct plans applying to the site, including any draft regional district or corridor/precinct plans released for public comment; or*

Refer to Section 3.2.8 of this report.

6. *Consistent with a relevant local strategy that has been endorsed by the department; or*

Campbelltown 2027 is Campbelltown City Council's highest level, strategic planning document. It outlines the aspirations of the city's people, and details how Council and other key stakeholders will achieve those goals over the next 10 years.

The Plan describes the local government area as,

> *"Campbelltown is a priority urban growth area – The NSW State Government has identified Campbelltown City as a priority urban growth area. This means that there are expectations on Council to plan for growth targets outlined by the NSW State Government. We need to ensure that the quality and character of our city is not diminished in our planning for this growth. New development will pose challenges for the planning of new infrastructure, while infill development will require plans to rejuvenate old infrastructure".*

Campbelltown 2027 has been structured to address 4 key outcomes that Council and other stakeholders will work to achieve. The outcomes are:

Outcome 1: A vibrant, liveable city
Outcome 2: A respected and protected natural environment
Outcome 3: A thriving, attractive city
Outcome 4: A successful city

These outcomes will be achieved through the implementation of 27 strategies, with the following outcome being relevant to this Planning Proposal.

Goal	Statement of Consistency
4.3- Responsibly manage growth and development, with respect for the environment, heritage and character of our city	The Planning Proposal will maintain a balance of residential and environmental land on the site. The proposal therefore caters to the demand for additional housing supply however respects the established green corridor and seeks to preserve the bushland between the easements to the water channel and therefore creates a clear buffer within our site to adjoining lands. It prevents in our submission, any future expansion of the residential zoning by our neighbours.

7. *Responding to a change in circumstances, such as investing in new infrastructure or changing demographic trends that have not been recognised by existing planning controls.*

The Policies and Strategic Plans described above identify a need for additional housing supply as well as housing diversity.

It is strongly considered that the proposed LEP amendments would assist Council in responding to these pressures and identified issues. The proposed extension of the R2 Low Density

Residential Zone and the retention of E3 Environmental Management at the site would not only allow for increased rates of residential accommodation to house an increased population, but would diversify housing choice and affordability, hence assisting with the nature of demographic change.

5. MAPPING

As the Planning Proposal is to amend the permissible zoning, the relevant map under the As the Planning Proposal is to change the zoning of the subject site, the relevant maps under

Campbelltown Local Environmental Plan 2015:

8. LZN_005: Land Zoning Map
9. LSZ_005: Lot Size Map
10. HOB_005: Height of Buildings Map

These maps will need to be changed, to show the subject site as being zoned part R2 Low Density Residential part E3 Environmental Management and to have the same lot size, height and lot size as the adjoining R2 zone.

6. COMMUNITY CONSULTATION

As part of any formal Planning Proposal, the community consultation process will be implemented in accordance with Section 57 of the Environmental Planning and Assessment Act, 1979.

7. CONCLUSION

This Report has been prepared to explain the intended effect of, and justification for, a Planning Proposal in relation to 71 St Andrews Road, Varroville.

This Planning Proposal seeks to have the subject site rezoned to part R2 Low Density Residential and part E3 Environmental Management under the Campbelltown Local Environmental Plan 2015.

The subject site is geographically separated from the remainder of Varroville by virtue of the Sydney Water Canal. St Andrews Road is a no through road, and the subject property is the last one on that road that is attached to the East Leppington precinct.

The subject property does not share any vehicular or pedestrian access with the suburb of Varroville and so is physically separated from the suburb. Given that the northern and eastern boundaries of the site immediately adjoin the East Leppington precinct, rezoning the subject site to match that of the East Leppington precinct would provide for better connectivity and planning sense. Changing the zoning of the site to part residential and part environmental is appropriate, in view of the context of adjoining development as detailed in this report.

The Planning Proposal is consistent with the relevant strategic documents as they relate to the subject site as justified within this report. A concept plan has been provided for the subject site for the purposes of subdivision. This highlights the redevelopment potential of this unique site which offers a seamless transition from a residential zone to an environmental setting, in the context of established development controls within the adjoining South West Growth Centre.

Appendix A Bushfire Report prepared by Travers Ecology



Travers

bushfire & ecology

bushfire protection assessment

Planning Proposal
(Rezoning for residential subdivision)
Lot 71 DP 706546
71 St Andrews Rd, Varroville

Under Section 117(2) Direction No 4.4
of the *EP&A Act*

February 2018
(REF: A17179B)

Travers

bushfire & ecology

Bushfire Protection Assessment

Planning Proposal
(Rezoning for residential subdivision)
Lot 71 DP 706546
71 St Andrews Rd, Varroville

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File:	A17179B

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BPAD Bushfire Planning & Design Accredited Practitioner Level 3

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

Disclaimer:

This report has been prepared to provide advice to the client on matters pertaining to the particular and specific development proposal as advised by the client and / or their authorised representatives. This report can be used by the client only for its intended purpose and for that purpose only. Should any other use of the advice be made by any person including the client then this firm advises that the advice should not be relied upon. The report and its attachments should be read as a whole and no individual part of the report or its attachments should be relied upon as meaning it reflects any advice by this firm. The report does not suggest or guarantee that a bush or grass fire will not occur and or impact the development. This report advises on matters published by the *NSW Rural Fire Service* in their guideline *Planning for Bush Fire Protection 2006* and other advice available from that organisation.

The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features are to be confirmed by a registered surveyor.

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EXECUTIVE SUMMARY

A bushfire protection assessment has been undertaken for the proposed rezoning and future residential subdivision of Lot 71 DP 706546, 71 St Andrews Rd, Varroville. The proposal seeks to rezone land to the west of the internal easement as R2 Low Density Residential and retain the current E3 zoning (with a single dwelling entitlement) to include the easement and extending to the water channel in the east.

This report identifies matters for consideration for the planning proposal and highlights the required bushfire protection measures, including asset protection zones (APZs), for future development under the *Environmental Planning and Assessment Act 1979 (EP&A Act), Section 117 Direction 4.4* and in accordance *Planning for Bush Fire Protection 2006* (*PBP*) and *Community Resilience Practice Note 2/12 Planning Instruments and Policies*.

The key principle for the proposal is to ensure that future development is capable of complying with *PBP*. Planning principles for the proposal include the provision of adequate access including perimeter roads, establishment of adequate APZs for future housing, specifying minimum lot depths to accommodate APZs and the introduction of controls which avoid placing inappropriate developments in hazardous areas and placement of combustible material in APZs.

Our assessment found that bushfire can potentially affect the site from the woodland located beyond St Andrew Road to the south-west and the potential short heath associated with the electrical services easement adjoining the proposed R2 zoned land to the south-east resulting in possible ember attack, radiant heat and potentially flame attack.

The bushfire risk posed to the rezoning proposal however can be mitigated if appropriate bushfire protection measures (including APZs) are put in place and managed in perpetuity.

The assessment has concluded that future development on site will provide compliance with the planning principles of *PBP* and *Community Resilience Practice Note 2/12 – Planning Instruments and Policies*.

GLOSSARY OF TERMS

AHIMS	Aboriginal Heritage Information System
APZ	Asset protection zone
AS1596	*Australian Standard – The storage and handling of LP Gas*
AS2419	*Australian Standard – Fire hydrant installations*
AS3745	*Australian Standard – Planning for emergencies in facilities*
AS3959	*Australian Standard – Construction of buildings in bushfire-prone areas 2009*
BAL	*Bushfire attack level*
BCA	*Building Code of Australia*
BSA	Bushfire safety authority
EEC	Endangered ecological community
FDI	Fire danger index
IPA	Inner protection area
LEP	*Local environmental plan*
OPA	Outer protection area
PBP	*Planning for bush fire protection 2006*
RFS	NSW Rural Fire Service

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Introduction 1

Travers bushfire & ecology has been requested by *GAT & Associates* to undertake a bushfire protection assessment for the proposed rezoning and future residential subdivision of Lot 71 DP 706546, 71 St Andrews Rd, Varroville.

The proposal is located on land mapped by *Campbelltown Council* as being bushfire prone. *Direction 4.4, Planning for Bush Fire Protection 2006 (PBP)* identifies matters for consideration for planning proposals that will affect, or are in proximity to land mapped as bushfire prone.

As such, the proposal is subject to the requirements of Section 117(2) of *the Environmental Planning and Assessment Act 1979 (EP&A Act)* which requires Council to consult with the Commissioner of the NSW Rural Fire Service (RFS) and to take into account any comments by the Commissioner.

1.1 Aims of the assessment

The aims of the bushfire protection assessment are to:

- Review the bushfire threat to the landscape
- Undertake a bushfire attack assessment in accordance with *PBP*
- Provide advice on planning principles, including the provision of perimeter roads, asset protection zones (APZs) and other specific fire management issues
- Review the potential to carry out hazard management over the landscape, taking into consideration the proposed retention of trees within the final development plans.

1.2 Project synopsis

The proposal seeks to rezone the western extent of Lot 71 DP 706546 from E3 Environmental Management to R2 Low Density Residential (minimum lot size 700sq/m) (refer Figure 1.1). The eastern portion extending from the existing internal services easement to the water channel will retain the current E3 zone.

The majority of the Cumberland Plain Woodland (CPW) vegetation, identified within the Flora and Fauna Assessment compiled by *Travers bushfire & ecology* (December, 2017) to the east of the easement will be retained as a biodiversity / riparian corridor with a single dwelling entitlement. An indicative dwelling footprint has been identified within Schedule 1 attached.

In accordance with the Concept Services Plan prepared by *Lean Lackenby & Hayward* (refer Figure 1.2), the future residential subdivision will provide future access from Aqueduct Street in the west.

This report has highlighted the bushfire constraints, minimum APZs as well as recommendations for future road design, building construction, water supply and utilities. Based on the current design one lot will be constrained by the APZ (refer Figure 1.2 & Schedule 1 attached).



Figure 1.1 – Rezoning planning proposal
(Source: Nearmap)

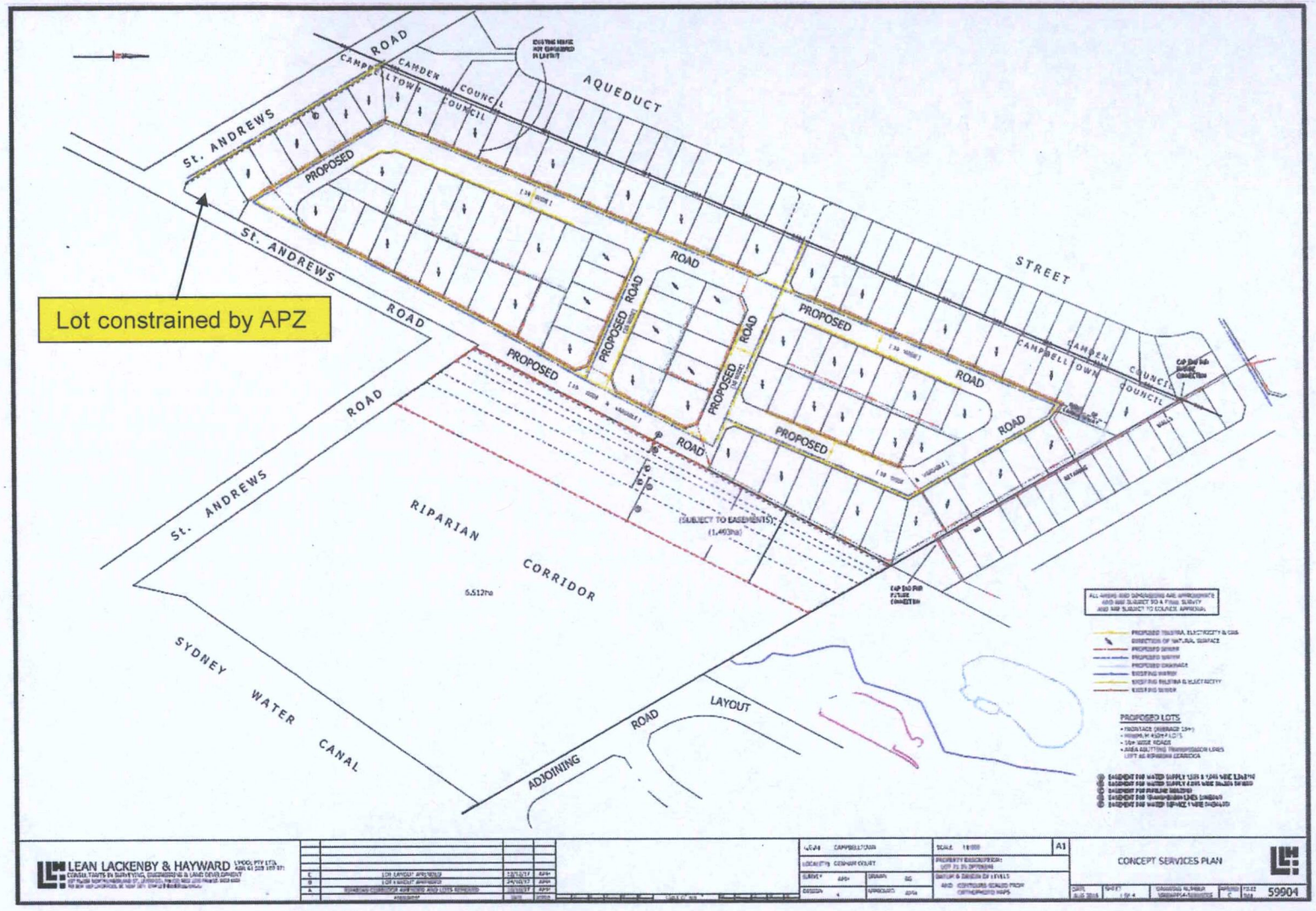


Figure 1.2 – Concept services plan

1.3 Information collation

To achieve the aims of this report, a review of the information relevant to the property was undertaken prior to the initiation of field surveys. Information sources reviewed include the following:

- Concept services plan prepared by *Lean Lackenby & Hayward* dated 12/12/2017
- Campbelltown Local Environmental Plan 2015
- Flora and Fauna Assessment, 2017 prepared by *Travers bushfire & ecology*
- *Nearmap* aerial photography
- Topographical maps *DLPI of NSW* 1:25,000
- *Australian Standard 3959 Construction of buildings in bushfire-prone areas*
- *Planning for Bush Fire Protection 2006 (PBP)*
- *Community Resilience Practice Notes 2/12 Planning Instruments and Policies.*

A site inspection was undertaken by Nicole van Dorst on 11th November 2017 to assess the topography, slopes, aspect, drainage, vegetation and adjoining land use. The identification of existing bushfire measures and a visual appraisal of bushfire hazard and risk were also undertaken.

1.4 Site description

The site is located at Lot 71 DP 706546, 71 St Andrews Rd, Varroville (refer Figure 1.3). It is situated to the north-east of the exiting St Andrews Road and to the west of Sydney Water Canal within the local government area (LGA) of Campbelltown.

The surrounding land to the north and west has been recently subdivided forming part of an urban release area.

Table 1.1 provides a summary of the planning, cadastral, topographical, and disturbance details of the subject site.

Table 1.1 – Site features

Location	71 St Andrews Road, Varroville
Local government area	Campbelltown
Grid reference	297400E 6237200N
Topography	Situated on a mostly flat landscape with a very gentle rise to the south-east of the site along Andrews Road.
Vegetation	Where present, native vegetation has an open woodland structure. Trees are around 15-25m tall in most areas, there is a limited mid-storey or nil, and a ground layer of grasses and forbs. The vegetation is modified throughout the study area due to previous clearing and continued grazing and cultivation processes.
Existing land use	Cattle grazing/managed
Clearing	The understorey has been previously cleared for indicated land uses.

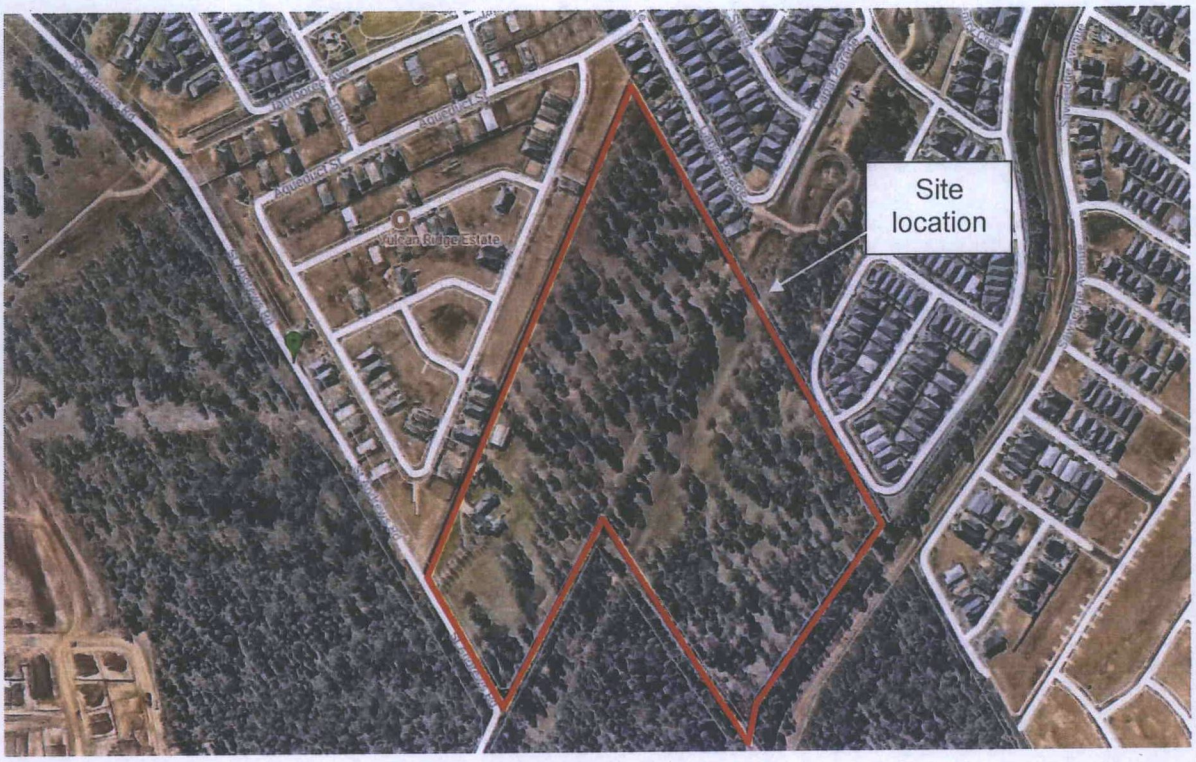


Figure 1.3 – Aerial appraisal

1.5 Legislation and planning instruments

1.5.1 Environmental Planning and Assessment Act 1979 (EP&A Act) and bushfire prone land

The *EP&A Act* governs environmental and land use planning and assessment within New South Wales. It provides for the establishment of environmental planning instruments, development controls and the operation of construction controls through the *Building Code of Australia (BCA)*. The identification of bushfire prone land is required under Section 146 of the *EP&A Act*.

Bushfire prone land maps provide a trigger for the development assessment provisions. The proposed rezoning is located on land that is mapped by *Campbelltown Council* as being bushfire prone (refer Figure 1.4).

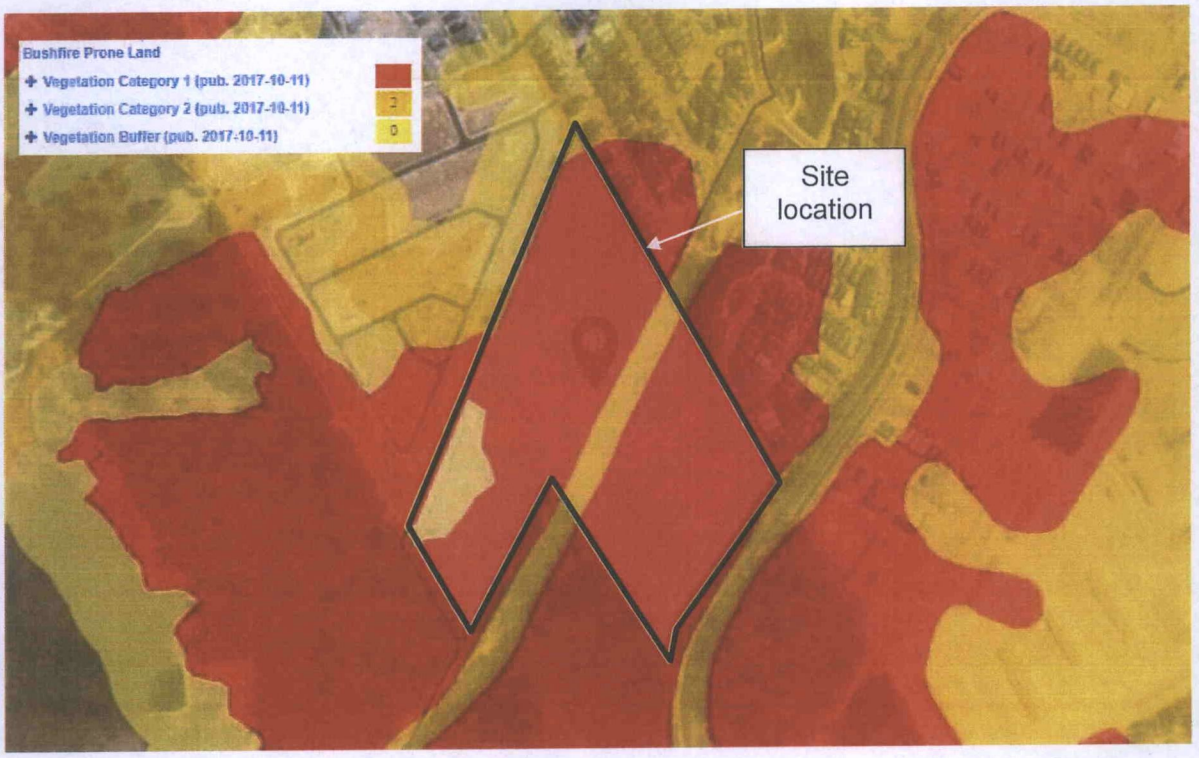


Figure 1.4 – Bushfire prone land map
(Source: Campbelltown Council)

PBP (pg 4) stipulates that if a proposed amendment to land use zoning or land use affects a designated bushfire prone area then the Section 117(2) Direction No 4.4 of the *EP&A Act* must be applied. This requires Council to consult with the Commissioner of the RFS and to take into account any comments by the Commissioner and to have regard to the planning principles of *PBP* (detailed within Section 1.5.3).

1.5.2 Local Environmental Plan (LEP)

A LEP provides for a range of zonings which list development that is permissible or not permissible, as well as the objectives for development within a zone.

The proposal is to proceed as an amendment to the current *Campbelltown LEP 2015* as outlined below.

Campbelltown Local Environmental Plan 2015

The site is zoned under the current *Campbelltown_LEP 2015* as E3 Environmental Management, R2 (refer Figure 1.5). The land surrounding the property to the north and east supports the proposed R2 Low Density Residential as part of the greater East Leppington Precinct Plan.

The proposal seeks to amend the LEP and rezone land to the west of the internal easement as R2 Low Density Residential and to retain the E3 zone within the easement to the water channel in the east.

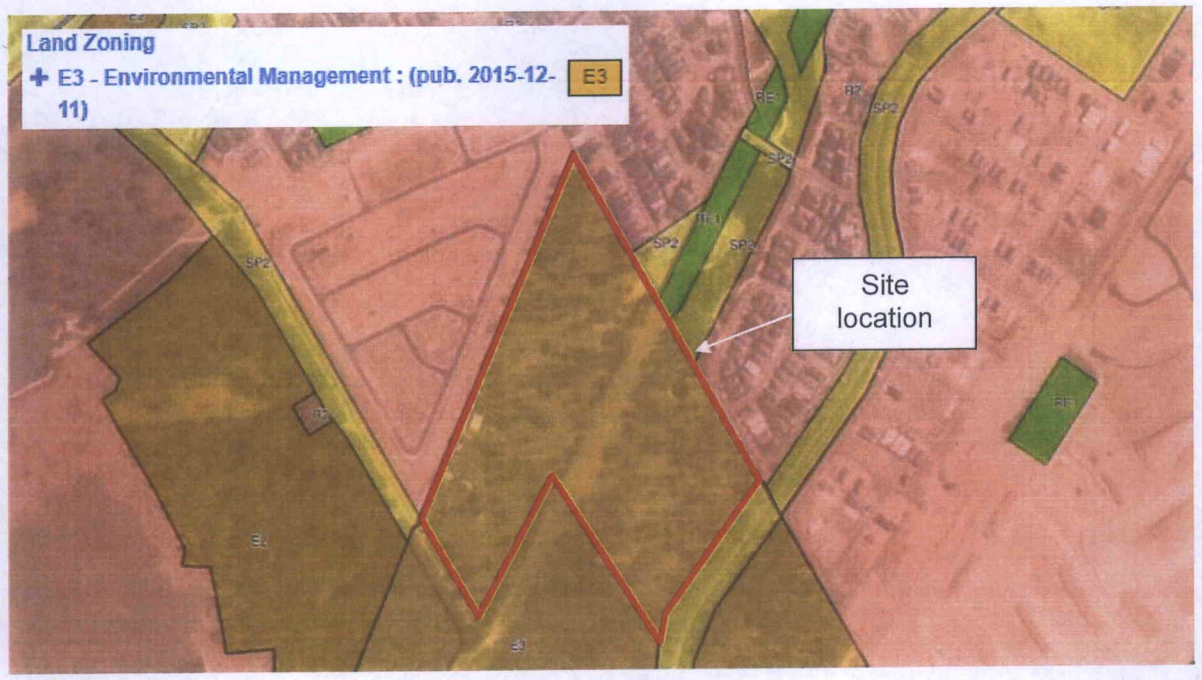


Figure 1.5 – Campbelltown LEP 2015
(Source: Planning Portal website)

The proposal, including the provision of APZs within the proposed R2 & E3 zone would seek to comply with the objectives of the rezoning.

1.5.3 Planning for Bush Fire Protection 2006 (PBP)

Bushfire protection planning requires the consideration of the RFS planning document entitled *PBP. PBP* provides planning principles for rezoning to residential land as well as guidance on effective bushfire protection measures.

The policy aims to provide for the protection of human life (including fire fighters) and to minimise impacts on property and the environment from the threat of bushfire, while having due regard to development potential, on site amenity and protection of the environment.

PBP outlines the following planning principles that must be achieved for all rezoning proposals:

1. Provision of a perimeter road with two way access which delineates the extent of the intended development.

2. Provision, at the urban interface, for the establishment of adequate APZs for future housing.

3. Specifying minimum residential lot depths to accommodate APZs for lots on perimeter roads.

4. Minimising the perimeter of the area of land interfacing the hazard, which may be developed.

5. Introduction of controls which avoid placing inappropriate developments in hazardous areas, and

6. Introduction of controls on the placement of combustible materials in APZs.

In addition to the above, *PBP* outlines the bushfire protection measures required to be assessed for new development in bushfire prone areas.

The proposed rezoning has been assessed in compliance with the following measures to ensure that future development is capable of complying with *PBP*:

- asset protection zones
- building construction and design
- access arrangements
- water supply and utilities
- landscaping
- emergency arrangements

1.5.4 Building Code of Australia (BCA) and the Australian Standard AS3959 Construction in bushfire-prone areas 2009 (AS3959)

The *BCA* is given effect through the *EP&A Act* and forms part of the regulatory environment of construction standards and building controls. The *BCA* outlines objectives, functional statements, performance requirements and deemed to satisfy provisions. For residential dwellings these include Classes 1, 2 and 3 buildings. The construction manual for the deemed to satisfy requirements is *AS3959.*

Although consideration of *AS3959* is not specifically required in a rezoning proposal, this report (Section 3.2) provides the indicative minimum setbacks for each dwelling construction level and can be used in future planning for master plans and / or subdivision proposals.

1.6 Environmental constraints

A flora & fauna report has also been prepared by *Travers bushfire & ecology* (December, 2017). The report outlines that the planning proposal is unlikely to result in a significant impact on any threatened species, populations or EECs or their habitats. The indicative dwelling footprint and associated APZ has been placed to minimise impact on the EEC vegetation.



Bushfire Threat Assessment 2

To assess the bushfire threat and to determine the required width of an APZ for a development, a review of the elements that comprise the overall threat needs to be completed.

PBP provides a methodology to determine the size of any APZ that may be required to offset possible bushfire attack. These elements include the potential hazardous landscape that may affect the site and the effective slope within that hazardous vegetation.

2.1 Hazardous fuels

PBP guidelines require the identification of the predominant vegetation formation in accordance with David Keith (2004) to determine APZ distances for subdivision developments. The hazardous vegetation is calculated for a distance of at least 140m from a proposed building envelope.

The vegetation posing a bushfire threat to the proposed R2 zoned land includes:

- Woodland vegetation located 6m beyond the site boundary (beyond St Andrews Road) to the west.

- An electrical easement runs parallel within and adjacent to the south-eastern boundary of the proposed R2 zoned land. A portion of this area (within the site currently consists of cleared / managed land (photo 2). For the purposes of this report a 'short heath' threat has been used based on the *TransGrid* - Easements and Access Track Maintenance Policy. The document specifies minimum standards for easement maintenance in order to maintain safe clearances from conductors to vegetation to eliminate the risk of lines causing a bushfire. Vegetation which has a mature height of less than 4m can be left insitu.

  Although the vegetation within the easement is currently managed and/or grassland with remnant trees a worst case scenario has been adopted and a 'short heath' vegetation has been used (based on a potential vegetation height <4m).

Cumberland Plain Woodland has been identified within the Flora and Fauna Assessment compiled by *Travers bushfire & ecology* (December, 2017) as occurring beyond the existing electrical easement and within the retained E3 zone in the east. It is envisioned that this vegetation will be retained as part of a Biodiversity Riparian Corridor. This vegetation is not considered the 'predominant' hazardous vegetation to the R2 zoned land as it is located 50m from the proposed subdivision.

A single dwelling entitlement is proposed with the E3 zoned land. An indicative dwelling footprint has been identified within Schedule 1 attached. The bushfire threat posed to the dwelling includes the surrounding woodland vegetation.

The following photographs depict the hazardous vegetation surrounding the site.



Photo 1 – Woodland vegetation to the south-west (beyond St Andrews Road)



Photo 2 – Cleared internal service easement (eastern aspect)



Photo 3 – Electrical easement to the south-east of the property boundary (photo taken looking north from southern corner of R2 zoned land)



Photo 4 – Woodland vegetation within the E3 zone surrounding the proposed single dwelling.

2.2 Effective slope

The effective slope is determined by reviewing the slopes within 100m of the development boundary. Effective slope refers to that slope which provides the most effect upon likely fire behaviour. A mean average slope may not in all cases provide sufficient information such that an appropriate assessment can be determined.

The effective slope within the hazardous vegetation is:

- Level to upslope within the woodland to the south-west
- Level within the 'short heath' associated within the electrical easement in the south-west
- Level to 2 degree downslope surrounding the indicative dwelling footprint within the E3 zone.

2.3 Bushfire attack assessment

A fire danger index (FDI) of 100 has been used to calculate bushfire behaviour on the site using forest vegetation located within the Greater Sydney region.

Table 2.1 below provides a summary of the bushfire attack assessment and the minimum required APZs (equivalent to BAL 29 construction) in compliance with the Appendix 2 of PBP 2006, AS3959 (2009) and the Draft PBP 2017

Table 2.1 – Bushfire attack assessment

Aspect	Vegetation formation within 140m of development	Effective slope of land	Minimum APZ (PBP 2006)	Minimum APZ (AS3959) (refer Note 1)	Minimum APZ Draft PBP 2017
Proposed R2 zoned land					
North & west	Managed land & land subject to future development	N/A	N/A	**N/A**	N/A
South-east (within electrical services easement)	Short heath	Level	10	**13**	10
South-west	Woodland	Level to upslope	10	**16 (includes St Andrews Road)**	13
Single dwelling entitlement (E3 zoned land)					
East, west and south	Woodland	Level to upslope	10	**16**	13
North	Woodland	2^0 downslope	15	**18 (refer Note 2)**	16

Note 1: The APZ depicted in Schedule 1 is based on the worst case scenario utilising Method 1 of AS3959 (2009). Using this APZ for future subdivision design will allow for dwelling construction to occur under a complying development application.

Please note that future subdivision design should consider the legislation at the time of the application.

The draft PBP (2017) was placed on public exhibition between 15th May 2017 and 14th July 2017 and is currently with the NSW RFS to review submissions and make any required amendments before it is approved and released. It has been anticipated that the release of final publication will be mid next year.

There will be transition period before the new version of PBP takes effect in legislation. This transition period has not been confirmed, however all development applications which are lodged following the date at which the legislation takes effect will be determined under the new document. As a result any application for subdivision development which occurs after the adoption of the Draft PBP may require minimum APZ's as outlined in Column 6 above.

Note 2: A performance based assessment using Appendix B of *AS3959* was undertaken to determine the required APZ (equivalent to BAL 29 construction) based on woodland vegetation on a downslope of 2°. The results of the assessment, provided below, was prepared using the bushfire attack assessor (BFAA) developed by *Newcastle Bushfire Consulting.*

NBC Bushfire Attack Assessment Report V2.1

AS3959 (2009) Appendix B - Detailed Method 2

Printed: 21/12/2017 **Assessment Date:** 20/12/2017

Site Street Address:	71 St Andrews Road, Varroville		
Assessor:	Mr Admin; admin		
Local Government Area:	Campbelltown	**Alpine Area:**	No

Equations Used

Transmissivity: Fuss and Hammins, 2002
Flame Length: RFS PBP, 2001
Rate of Fire Spread: Noble et al., 1980
Radiant Heat: Drysdale, 1985; Sullivan et al., 2003; Tan et al., 2005
Peak Elevation of Receiver: Tan et al., 2005
Peak Flame Angle: Tan et al., 2005

Run Description: North

Vegetation Information

Vegetation Type:	Woodland	**Vegetation Group:**	Forest and Woodland
Vegetation Slope:	2 Degrees	**Vegetation Slope Type:**	Downslope
Surface Fuel Load(t/ha):	15	**Overall Fuel Load(t/ha):**	25

Site Information

Site Slope	2 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m)	Default	**APZ/Separation(m):**	18

Fire Inputs

Veg./Flame Width(m):	100	**Flame Temp(K)**	1090

Calculation Parameters

Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	100

Program Outputs

Category of Attack:	HIGH	**Peak Elevation of Receiver(m):**	6.76
Level of Construction:	BAL 29	**Fire Intensity(kW/m):**	26690
Radiant Heat(kW/m2):	28.75	**Flame Angle (degrees):**	64
Flame Length(m):	16.43	**Maximum View Factor:**	0.446
Rate Of Spread (km/h):	2.07	**Inner Protection Area(m):**	18
Transmissivity:	0.849	**Outer Protection Area(m):**	0

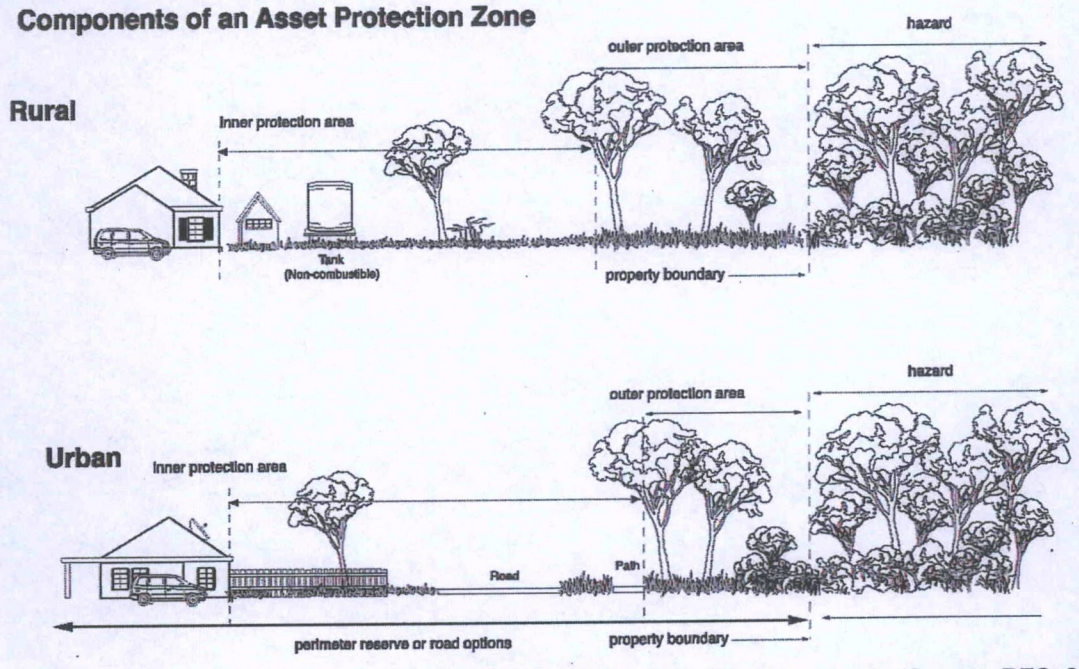


Specific Protection Issues

3

3.1 Asset protection zones (APZs)

APZs are areas of defendable space separating hazardous vegetation from buildings. The APZ generally consists of two subordinate areas, an inner protection area (IPA) and an outer protection area (OPA). The OPA is closest to the bush and the IPA is closest to the dwellings. The IPA cannot be used for habitable dwellings but can be used for all external non-habitable structures such as pools, sheds, non-attached garages, cabanas, etc. A typical APZ and therefore defendable space is graphically represented below:



APZs and progressive reduction in fuel loads (Source: RFS, 2006)

Note: Vegetation management as shown is for illustrative purposes only. Specific advice is to be sought in regard to vegetation removal and retention from a qualified and experienced expert to ensure APZs comply with the *RFS* performance criteria.

PBP dictates that the subsequent extent of bushfire attack that can potentially emanate from a bushfire must not exceed a radiant heat flux of $29kW/m^2$ for residential subdivision developments. This rating assists in determining the size of the APZ in compliance with *PBP* to provide the necessary defendable space between hazardous vegetation and a building. Table 3.1 outlines the proposals compliance with the performance criteria for APZs.

Table 3.1 – Performance criteria for asset protection zones (*PBP* guidelines pg. 19)

Performance criteria	Acceptable solutions	Complies
Radiant heat levels at any point on a proposed building will not exceed 29kW/m^2.	APZs are provided in accordance with Appendix 2. APZs are wholly within the boundary of the development site.	Yes - refer Table 2.1.
APZs are managed and maintained to prevent the spread of fire towards the building.	In accordance with the requirements of *Standards for Asset Protection Zones* (*NSW RFS* 2005).	Yes - to be made a condition of consent.
APZ maintenance is practical , soil stability is not compromised and the potential for crown fires is negated.	The APZ is located on lands with a slope of less than 18°.	Yes - Slopes are less than 18°.

3.2 Building protection

Although not required in terms of rezoning, the following advice in relation to building construction levels can be used for future planning and subdivision design.

The construction classification system is based on five (5) bushfire attack levels (BAL). These are BAL – Flame Zone (FZ), BAL 40, BAL 29, BAL 19 and BAL 12.5 AS3959 – *Construction of buildings in bushfire-prone areas*. The lowest level, BAL 12.5, has the longest APZ distance while BAL – FZ has the shortest APZ distance. These allow for varying levels of building design and use of appropriate materials.

Table 3.2 provides an indication of the BALs that are likely to apply for future building construction. These BAL levels are based on Method 1 AS3959 (2009) and can be used to for dwelling construction under complying development (for the proposed R2 portion of the property only). Future dwelling construction within the E3 zone is subject to section 79BSA of the EP&A Act and will need a full bushfire protection assessment report.

As outlined in Section 2.3 draft PBP (2017) is currently with the NSW RFS to review submissions and make any required amendments before it is approved and released. It has been anticipated that the release of final publication will be mid next year.

As a result any application for subdivision development which occurs after the adoption of the Draft PBP may require minimum APZ's as outlined in Table 2.1 (Column 5). The APZ and BAL level applicable under the Draft PBP are less than those depicted in Schedule 1 attached and Table 3.1 below. As a result BAL levels will be assessed / confirmed prior to building construction stage.

Table 3.2 – Determination of bushfire attack level (BAL)

Aspect	Vegetation formation within 140m of development	Effective slope of land	Minimum APZ (AS3959)	Construction standards
Proposed R2 zoned land				
North & west	Managed land & land subject to future development	N/A	N/A	N/A
South-east (within electrical services easement)	Short heath	Level	13	BAL 29 (13–<19m) BAL 19 (19-<27m) BAL 12.5 (27-<100m)
South-west	Woodland	Level to upslope	16	BAL 29 (16–<24m) BAL 19 (24-<33m) BAL 12.5 (33-<100m)
Single dwelling entitlement (E3 zoned land)				
North South, west and east	Woodland	Level to upslope	16	BAL 29
North	Woodland	2^0 downslope	18	

3.3 Hazard management

Should the development be approved, the owner or occupier of each lot will be required to manage the APZ in accordance with RFS guidelines *Standards for Asset Protection Zones* (RFS, 2005), with landscaping to comply with Appendix 5 of *PBP*.

In terms of implementing and / or maintaining APZs, there is no physical reason that would constrain hazard management from being successfully carried out by normal means (e.g. mowing / slashing).

A summary of the guidelines for managing APZs is attached as Appendix 1 to this report.

3.4 Access for fire fighting operations

Access to the proposed R2 portion of land will be provided via the recently constructed Aqueduct Street in the west. The concept plan has been designed to provide for a series of internal public access roads. All roads are through roads.

Perimeter roads have not been provided following a similar subdivision design as the adjoining recently approved subdivision to the west. Firefighting access to the adjoining vegetation can be provided via the existing St Andrew Road in the south-west and via the existing access tracks under TransGRID maintenance.

Table 3.3 outlines the performance criteria and acceptable solutions for future public roads within future subdivision design.

Future access to the proposed single dwelling entitlement within the E3 zoned land will be gained via the Stockland development in the north. This private road is to be 4m wide and is to be provided with a turning circle in compliance with Table 3.5.

Table 3.3 – Performance criteria for public roads (*PBP* guidelines pg. 20)

Performance criteria	Acceptable solutions
Fire fighters are provided with safe all weather access to structures (thus allowing more efficient use of fire fighting resources).	Public roads are two-wheel drive, all weather roads.
Public road widths and design that allow safe access for fire fighters while residents are evacuating an area.	Urban perimeter roads are two way, that is, at least two traffic lane widths (carriageway 8m minimum kerb to kerb) allowing traffic to pass in opposite directions. Non perimeter roads comply with Table 3.4 below. Perimeter road is linked with the internal road system at an interval of no greater than 500m in urban areas. Traffic management devices are constructed to facilitate access by emergency services. Public roads have a cross fall not exceeding 3°. All roads are through roads. If unavoidable, dead end roads are not more than 200m in length, incorporate a minimum 12m outer radius turning circle, sign posted dead end and direct traffic away from the hazard. Curves of roads (other than perimeter) have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress. The minimum distance between inner and outer curves is 6m. Maximum grades for sealed roads do not exceed 15° and an average grade of not more than 10°. Minimum vertical clearance of 4m above the road at all times.
The capacity of road surfaces and bridges is sufficient to carry fully loaded fire fighting vehicles.	The capacity of road surfaces and bridges is sufficient to carry fully loaded fire fighting vehicles (15 tonnes for reticulated water and 28 tonnes for all other areas). Bridges clearly indicate load rating.
Roads that are clearly sign posted (with easily distinguishable names) and buildings / properties that are clearly numbered.	Public roads >6.5m wide to locate hydrants outside of parking reserves to ensure accessibility to reticulated water. Public roads 6.5-8m wide are No Parking on one side with the hydrant located on this side to ensure accessibility to reticulated water. Public roads <6.5m wide provide parking within parking bays and locate services outside of parking bays to ensure accessibility to reticulated water. One way only public access are no less than 3.5m wide and provide parking within parking bays and locate services outside of parking bays to ensure accessibility to reticulated water.
There is clear access to reticulated water supply. Parking does not obstruct the minimum paved width	Parking bays are a minimum of 2.6m wide from kerb edge to road pavement. No services or hydrants are located within parking bays. Public roads directly interfacing the bushfire hazard are to provide roll top kerbing to the hazard side of the road.

Table 3.4 – Minimum widths for public roads that are not perimeter roads

Curve radius (inside edge) (metres width)	Swept path (metres width)	Single lane (metres width)	Two way (metres width)
<40	3.5	4.5	8.0
40-69	3.0	3.9	7.5
70-100	2.7	3.6	6.9
>100	2.5	3.5	6.5

Table 3.5 – Performance criteria for property access (*PBP* guidelines pg. 22)

Performance criteria	Acceptable solutions
Access to properties is provided in recognition of the risk to fire fighters and / or evacuating occupants.	At least one alternative property access road is provided for individual dwellings (or groups of dwellings) that are located more than 200m from a public through road.
The capacity of road surfaces and bridges is sufficient to carry fully loaded fire fighting vehicles. All weather access is provided.	Bridges clearly indicate load rating and pavements and bridges are capable of carrying a load of 15 tonnes. Roads do not traverse a wetland or other land potentially subject to periodic inundation (other than a flood or storm surge).
Road widths and design enable safe access for vehicles.	A minimum carriageway width of 4m for dwellings with a distance of greater than 70m from the nearest hydrant point to the most external part of a proposed building. *Note: No specific access requirements apply in a urban area where a 70m unobstructed path can be demonstrated between the most distant external part of a dwelling and the nearest part of the public access road that supports the operational use of fire fighting vehicles (road speed limit <70kph).* In forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long x 2m wide (min. width 6m). A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches. Internal roads for rural properties provide a loop road around any dwelling or incorporate a turning circle with a minimum outer radius of 12m. Curves have a minimum inner radius of 6m and are minimal in number to allow rapid access/egress. The minimum distance between inner and outer curves is 6m. The cross fall is not more than 10°. Maximum grades for sealed roads do not exceed 15° and not more than 10° for unsealed roads.

The following figure provides options for turning head arrangements for private access within the E3 zoned land.

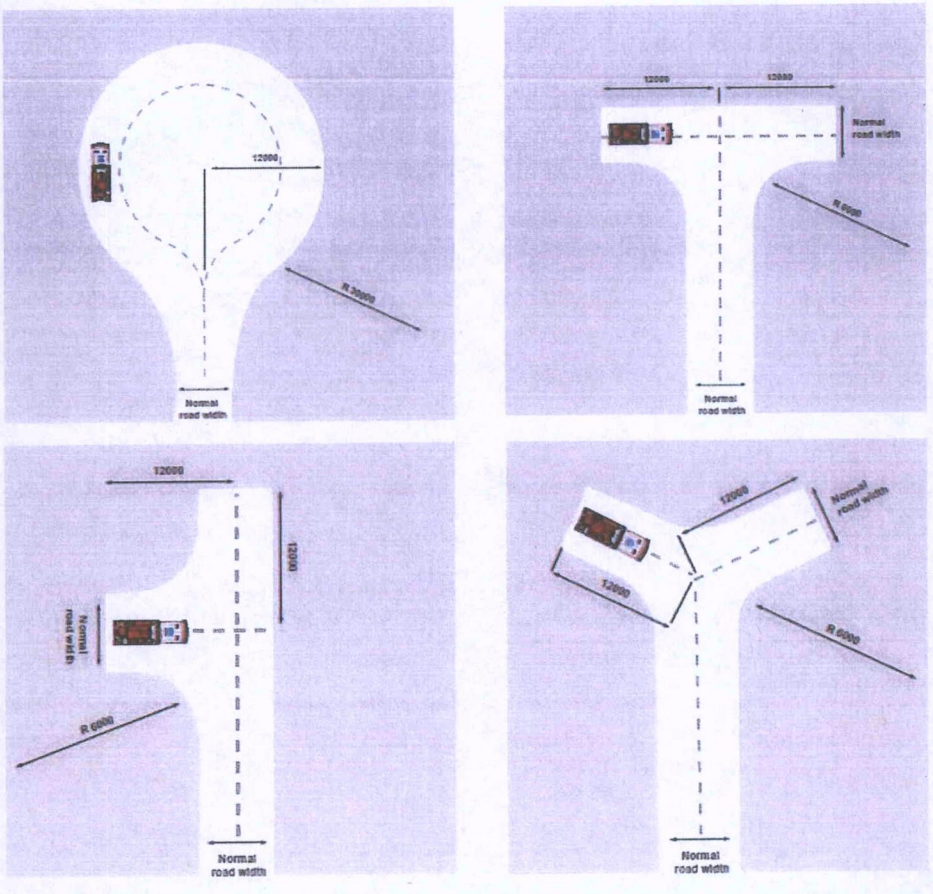


Figure 3.1 – Turning head options

3.5 Water supplies

Town reticulated water supply is available to the property in the form of an underground reticulated water system.

Table 3.6 outlines the performance criteria and acceptable solutions for reticulated water supply.

Table 3.6 – Performance criteria for reticulated water supplies (*PBP* guidelines pg. 27)

Performance criteria	Acceptable solutions
Water supplies are easily accessible and located at regular intervals.	Reticulated water supply to urban subdivision uses a ring main system for areas with perimeter roads. Fire hydrant spacing, sizing and pressures comply with AS2419.1 - 2005. Where this cannot be met, the RFS will require a test report of the water pressures anticipated by the relevant water supply authority. In such cases, the location, number and sizing of hydrants shall be determined using fire engineering principles. Hydrants are not placed within any road carriageway. All above ground water and gas pipes external to the building are metal, including and up to taps. The provisions of parking on public roads are met.

3.6 Gas

Table 3.7 outlines the required performance criteria for the gas supply.

Table 3.7 – Performance criteria for reticulated water supplies (*PBP* guidelines pg. 27)

Performance criteria	Acceptable solutions
Location of gas services will not lead to the ignition of surrounding bushland land or the fabric of buildings	Reticulated or bottled gas bottles are to be installed and maintained in accordance with AS1596 (2002) and the requirements of relevant authorities. Metal piping is to be used. All fixed gas cylinders are to be kept clear of flammable materials to a distance of 10m and shielded on the hazard side of the installation. If gas cylinders are to be kept close to the building the release valves must be directed away from the building and at least 2m away from any combustible material, so that they do not act as a catalyst to combustion. Connections to and from gas cylinders are metal. Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.

3.7 Electricity

Table 3.8 outlines the required performance criteria for electricity supply.

Table 3.8 – Performance criteria for electricity services (*PBP* guidelines pg. 27)

Performance criteria	Acceptable solutions
Location of electricity services limit the possibility of ignition of surrounding bushland or the fabric of buildings Regular inspection of lines in undertaken to ensure they are not fouled by branches.	Where practicable, electrical transmission lines are underground Where overhead electrical transmission lines are proposed: • Lines are installed with short pole spacing (30m), unless crossing gullies, gorges or riparian areas: and • No part of a tree is closer to a power line than the distance set out in accordance with the specification in *Vegetation Safety Clearances* issued by *Energy Australia* (NS179, April 2002).



Conclusion & Recommendations 4

4.1 Conclusion

A bushfire protection assessment has been undertaken for the proposed rezoning and future residential subdivision of Lot 71 DP 706546, 71 St Andrews Rd, Varroville. The proposal seeks to rezone land to the west of the internal easement as R2 Low Density Residential as well as the land that includes the easement to the water channel to be zoned as E3 Environmental Living.

Our assessment found that bushfire can potentially affect the site from the woodland vegetation located beyond St Andrew Road to the south-west and the potential short heath associated with the electrical services easement adjoining the proposed R2 zoned land to the south-east resulting in possible ember attack, radiant heat and potentially flame attack.

The bushfire risk posed to the rezoning proposal however can be mitigated if appropriate bushfire protection measures (including APZs) are put in place and managed in perpetuity.

Future development on site is to comply with the following planning principles.

Table 4.1 – Planning principles

Planning principles	Recommendations
Provision of a perimeter road with two way access which delineates the extent of the intended development.	In this circumstance a perimeter road has not been provided within the concept plan. The concept plan follows a similar subdivision design as the recently approved land to the west where St Andrews Road provides firefighting access to adjoining woodland vegetation.
Provision, at the urban interface, for the establishment of adequate APZs for future housing.	APZs have been recommended in compliance with BAL 29 (AS3959, 2009).
Specifying minimum residential lot depths to accommodate APZs for lots on perimeter roads.	Future subdivision design is to allow for the minimum APZs as recommended within Table 2.1 and as depicted within Schedule 1 attached.
Minimising the perimeter of the area of land interfacing the hazard, which may be developed.	Compliant.
Introduction of controls which avoid placing inappropriate developments in hazardous areas.	Future development consists of residential dwellings and is appropriate for the level of bushfire risk.
Introduction of controls on the placement of combustible materials in APZs.	Compliant – can be made a condition of consent.

The following recommendations are provided to ensure that future residential development is in accordance with, or greater than, the requirements of *PBP*.

4.2 Recommendations

Recommendation 1 - APZs are to be provided to the future residential development. APZs are to be measured from the exposed wall of any dwelling toward the hazardous vegetation. The minimum APZ must be achievable within all lots fronting the bushfire hazard as nominated in Table 2.1 and also as generally depicted in Schedule 1.

Recommendation 2 - Fuel management within the APZs is to be maintained by regular maintenance of the landscaped areas, mowing of lawns in accordance with the guidelines provided in Appendix 1, and as advised by the RFS in their publications.

Recommendation 3 – Public access roads are to comply with the acceptable solutions provided within Section 4.1.3 (1) of *PBP* (refer Section 3.4 of this report) for internal roads. The private road within the E3 allotment is to comply Section 4.1.3 (2) of *PBP*.

Recommendation 4 – Water, electricity and gas supply is to comply with the acceptable solutions as provided within Section 4.1.3 of *PBP* (refer Sections 3.5, 3.6 and 3.7 of this report).

REFERENCES

Australian Building Codes Board (2010) – *Building Code of Australia*, Class 1 and Class 10 Buildings Housing Provisions Volume 2.

Chan, K.W. (2001) – *The suitability of the use of various treated timbers for building constructions in bushfire prone areas*. Warrington Fire Research.

Councils of Standards Australia AS3959 (2009) – *Australian Standard Construction of buildings in bush fire-prone areas.*

Hon Brad Hazzard (7 June 2012) – *Planning proposal to rezone land at Boundary Road, Medowie from 1 (c1) Rural Small Holdings Zone to 1(c5) Rural Small Holdings, 1(c4) Rural Small Holdings and 7(a) Environmental Protection.*

Keith, David (2004) – *Ocean Shores to Desert Dunes – The Native Vegetation of New South Wales and the ACT*. The Department of Environment and Climate Change.

Rural Fire Service (2006) - *Planning for bushfire protection– a guide for councils, planners, fire authorities and developers*. NSW Rural Fire Service.

Rural Fire Service (2006) - Bushfire Attack Software on RFS Web site.

Tan, B., Midgley, S., Douglas, G. and Short (2004) - *A methodology for assessing bushfire attack.* RFS Development Control Service.

Travers, J. (2003) *The Ecological Management of Asset Protection Zones at Wallarah Peninsula – A Case Study.*

Umwelt, 2012. *Ecological Assessment for Rezoning Application Lots 93 – 96 Boundary Road, Medowie.*



Plan of Bushfire Protection Measures

S1



Legend

- Lot boundary (source: LPI)
- Contours 1m (source: LiDAR)
- Biodiversity corridor
- Easement
- Edge of vegetation
- Exisiting external access
- Indicative dwelling footprint (20x30m)
- Indicative driveway
- Asset Protection Zone (APZ)

Aerial source: Nearmap

Travers bushfire & ecology

PROJECT & MXD REFERENCE	DATE & ISSUE NUMBER	SCALE & COORDINATE SYSTEM
71 St Andrews Road, Varroville A17179_BF001	21/12/2017 Issue 1	1:2,500 @ A3 GDA 1994 MGA Zone 56

0 50 100 m

TITLE

Schedule 1 - Bushfire Protection Measures

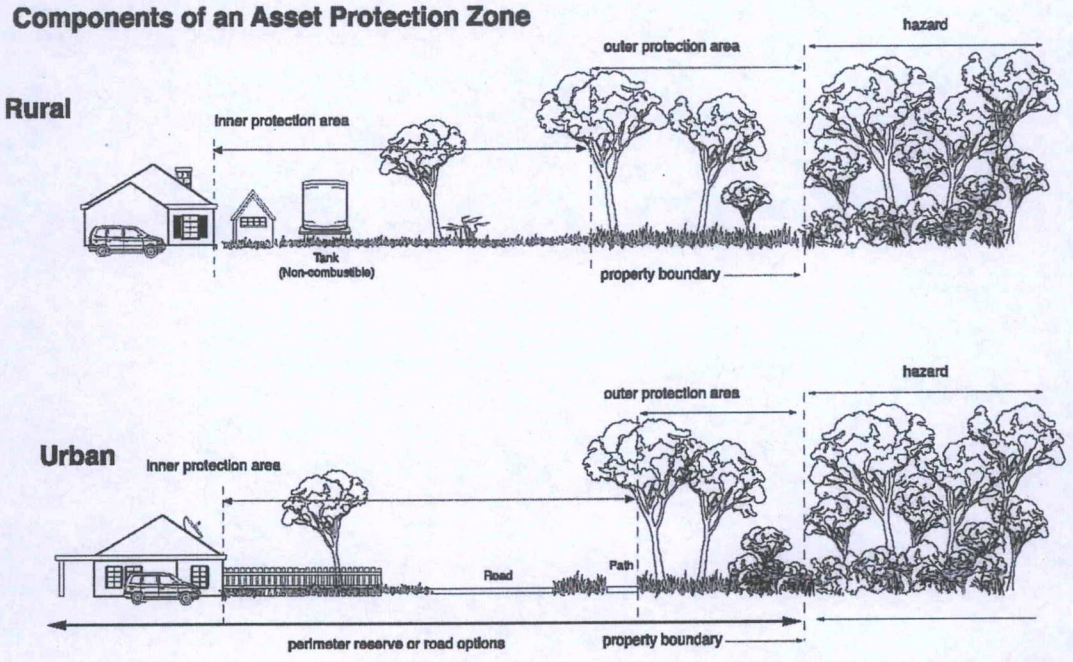
Disclaimer: The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features are to be confirmed by a registered surveyor.



Management of Asset Protection Zones A1

The RFS provides basic advice in respect of managing APZs through documents such as, *Standards for Asset Protection Zones* (RFS, 2005), with landscaping to comply with Appendix 5 of *PBP*.

The APZ generally consists of two subordinate areas, an inner protection area (IPA) and an outer protection area (OPA). The OPA is closest to the bush and the IPA is closest to the dwellings. The property is to be managed to IPA standards only. A typical APZ is graphically represented below:



APZs and progressive reduction in fuel loads (Source: RFS, 2006)

Note: Vegetation management as shown is for illustrative purposes only. Specific advice is to be sought in regard to vegetation removal and retention from a qualified and experienced expert to ensure APZs comply with the RFS performance criteria.

The following provides maintenance advice for vegetation within the IPA.

Inner Protection Area (IPA)
Fuel loads within the IPA are to be maintained so it does not exceed 4t/ha.

Trees are to be maintained to ensure;

- Canopy cover does not exceed 15% (at maturity)
- Trees (at maturity) do not touch or overhang the building

- Tree canopies (at maturity) should be well spread out and not form a continuous canopy
- Lower limbs should be removed up to a height of 2m above ground
- Preference should be given to smooth barked and evergreen trees

Shrubs are to be maintained to ensure;

- Large discontinuities or gaps in vegetation
- Shrubs should not be located under trees
- Shrubs should be in clumps no greater than $5m^2$
- Shrubs should not form more than 10% of ground cover
- Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

Grass is to be maintained to ensure:

- A height of 10cm or less
- Leaves and debris is removed.

Landscaping to the site is to comply with the principles of Appendix 5 of PBP. In this regard the following landscaping principles are to be incorporated into the development:

- Suitable impervious areas being provided immediately surrounding the building such as courtyards, paths and driveways;
- Restrict planting in the immediate vicinity of the building which may over time and if not properly maintained come in contact with the building;
- When considering landscape species consideration needs to be given to estimated size of the plant at maturity;
- Avoid species with rough fibrous bark, or which retain/shed bark in long strips or retain dead material in their canopies;
- Use smooth bark species of trees species which generally do not carry a fire up the bark into the crown;
- Avoid planting of deciduous species that may increase fuel at surface/ ground level (i.e. leaf litter);
- Avoid climbing species to walls and pergolas;
- Locate combustible materials such as woodchips/mulch, flammable fuel stores away from the building;
- Locate combustible structures such as garden sheds, pergolas and materials such timber garden furniture way from the building; and
- Use of low flammability vegetation species.

Appendix B Concept Plan of Drainage/Services prepared by Lean Lackenby and Hayward

ALL AREAS AND DIMENSIONS ARE APPROXIMATE AND ARE SUBJECT TO A FINAL SURVEY AND ARE SUBJECT TO COUNCIL APPROVAL

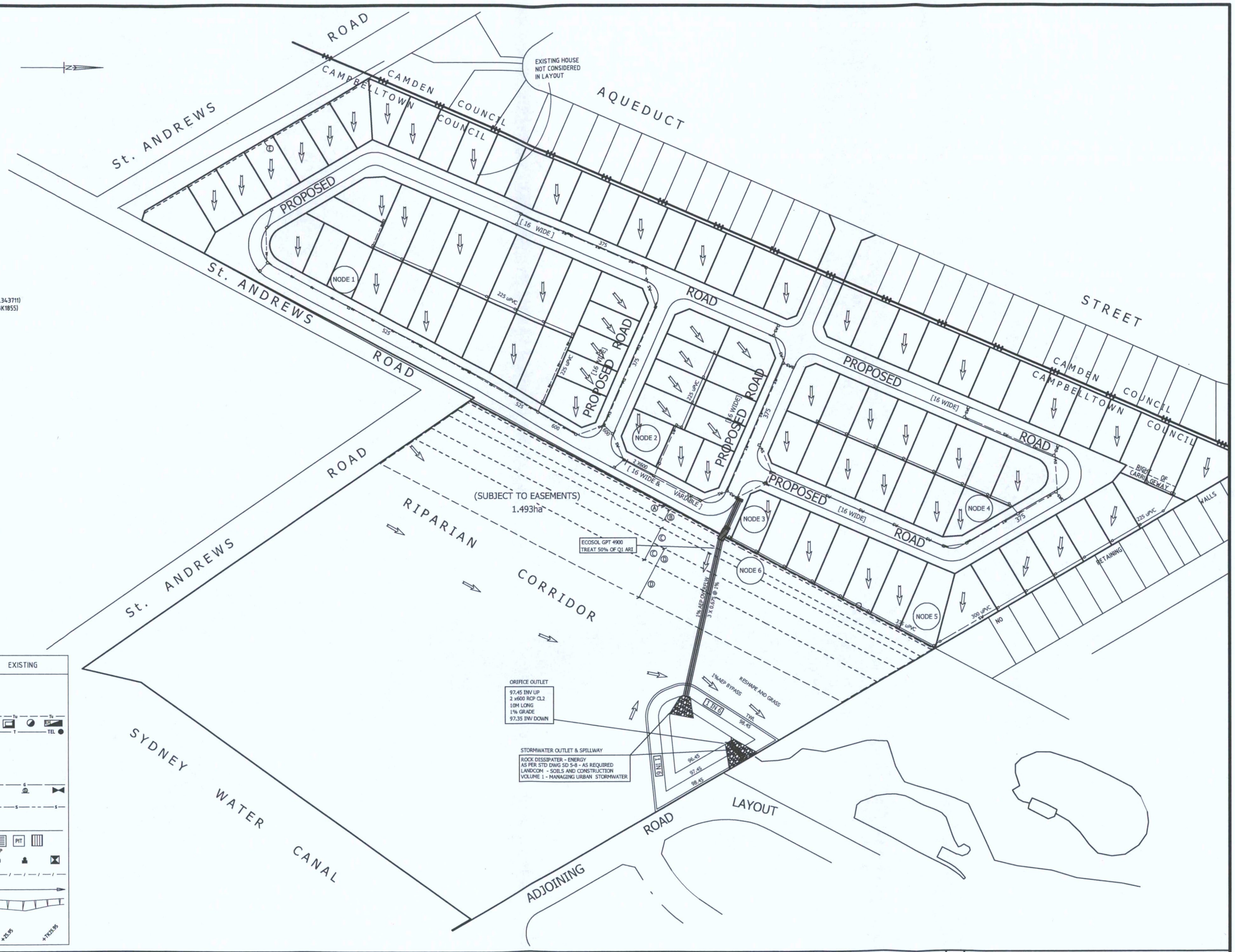
DIRECTION OF NATURAL SURFACE

SW PROPOSED DRAINAGE

PROPOSED LOTS

- FRONTAGE (AVERAGE 15m)
- MINIMUM 450m² LOTS
- 16m WIDE ROADS
- AREA ABUTTING TRANSMISSION LINES LEFT AS RIPARIAN CORRIDOR

Ⓐ EASEMENT FOR WATER SUPPLY 1.525 & 1.095 WIDE (L343711)
Ⓑ EASEMENT FOR WATER SUPPLY 6.095 WIDE (No.326 BK1855)
Ⓒ EASEMENT FOR PIPELINE (8352310)
Ⓓ EASEMENT FOR TRANSMISSION LINES (J983241)
Ⓔ EASEMENT FOR WATER SERVICE 1 WIDE (V636425)



LEGEND

DESCRIPTION	EXISTING
ELECTRICITY (AERIAL), POWER POLE, POWER POLE & LIGHT, LIGHT POLE ELECTRICITY (UNDERGROUND), PILLAR, PIT	
TELECOMMUNICATION CABLE (UNDERGROUND), PIT, ACCESS PIT, PILLAR, EQUIPMENT HOUSING TELECOMMUNICATION CABLE (AERIAL), POLE	Tu, Tu, T, TEL
SHARED TELECOMMUNICATION/ELECTRICITY	
WATER MAIN, METER, HYDRANT, STOP VALVE	
GAS MAIN, METER, MARKER, VALVE	G
SEWER MAIN, ACCESS CHAMBER, INSPECTION POINT, LAMP HOLE	S
DRAINAGE PIPE KERB INLET PIT, SEALED PIT, GRATED PIT, DOWN PIPE, GUTTER OVERFLOW	PIT, DP
SIGN (GENERAL), TRAFFIC LIGHT, TRAFFIC LIGHT CONTROL BOX	SIGN
FENCE	
WATERCOURSE/TABLE DRAIN	
EMBANKMENT/BATTER	
CONTOURS	
LEVELS, TOP OF KERB LEVEL	+25.95, +TK25.95

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PO BOX 160 LIVERPOOL BC NSW 1871 EMAIL: llhlpool@tpg.com.au

	AMENDMENT	DATE	APPR'D
D	RESHAPING AND RELOCATION OF OSD AND POND	22/1/18	AMH
C	LOT LAYOUT AMENDED	12/12/17	AMH
B	LOT LAYOUT AMENDED	24/10/17	AMH
A	ISSUE TO COUNCIL AND CLIENT FOR REZONING	12/10/17	AMH

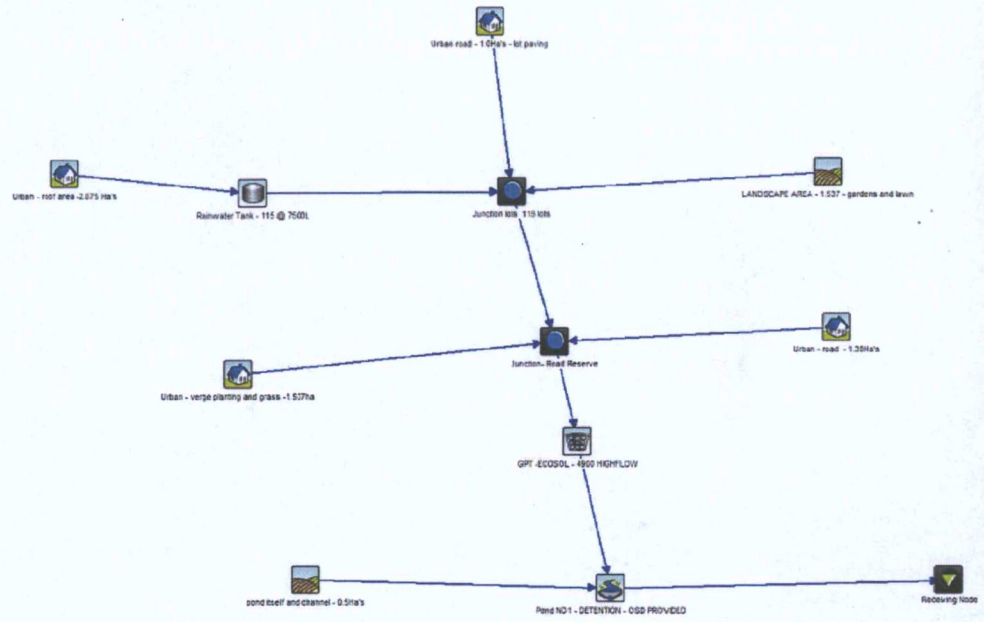
TABLE OF mm

L.G.A: CAMPBELLTOWN		SCALE 1:1000	A1
LOCALITY: DENHAM COURT		PROPERTY DESCRIPTION: LOT 71 IN DP706546	
SURVEY NA	DRAWN BG	DATUM & ORIGIN OF LEVELS AHD CONTOURS SCALED FROM ORTHOPHOTO MAPS	
DESIGN KB	APPROVED AMH		

CONCEPT DRAINAGE & ON SITE DETENTION/WSUD

DATE	SHEET	DRAWING NUMBER	AMEND	FILE:
OCT 2017	2 of 4	59904PPS4-DR	D	No: 59904

59904_DA_REZONING



MUSIC - POST DEVELOPMENT TREATMENT TRAIN MODELLING

POST DEVELOPMENT - TOTAL SITE CATCH INPUTS			
CA TYPE	IMPERVIOUS	PERVIOUS	TOTAL CA
BLOCKS			
ROOF ZONES	2.875 Ha		
SITE IMPERVIOUS	1.00 Ha		
GARDENS		1.537Ha	5.412 Ha
ROAD RESERVE			
PAVEMENT	1.39 Ha		
VERGE GRASS		0.923Ha	2.313 Ha
BYPASS			
TO POND	0.5Ha		0.50Ha
	5.7650	2.46 Ha	8.225 Ha

OVERALL % IMPERVIOUS = 70%

POST DEVELOPMENT - TARGETS		
POLLUTANT	TARGET	OUTPUT
OILS /GREASE	90	90%
TSS	80	93.40%
TP	45%	70.90%
TN	45%	59%
GROSS LITTER	90%	99%

Pollutant	Removal Rate (%)	Entered Input Value	Entered Output Value
Total Suspended Solids (20 – 2000µm)	55	1000	450
Total Phosphorus	40	1000	600
Total Nitrogen	40	1000	600
Gross Pollutants (>2000µm)	99	1000	10
Heavy Metals	25	n/a	n/a
Total Petroleum/ Hydrocarbon (Dry weather spill situation)	99	n/a	n/a

Table 1 - Ecosol™ Gross Pollutant Trap – High Flow, input and output values

Pollutant	Removal Rate (%)	Entered Input Value	Entered Output Value
Total Suspended Solids (20 – 2000µm)	80	1000	200
Total Phosphorus	45	1000	550
Total Nitrogen	45	1000	550
Gross Pollutants (>2000µm)	99	1000	10
Heavy Metals	25	n/a	n/a
Total Petroleum/ Hydrocarbon (Dry weather spill situation)	99	n/a	n/a

Table 2 - Ecosol™ Gross Pollutant Trap – Low Flow, input and output values

Ecosol GPT Model	Dimensions Length x Width (mm)	Low Flow Treatable Flow Rate (L/s)	High Flow Treatable Flow Rate (L/s)
Ecosol GPT 4200	2,200 x 900	15	51
Ecosol GPT 4300	2,700 x 1,350	36	120
Ecosol GPT 4450	3,600 x 1,650	78	260
Ecosol GPT 4600	4,500 x 1,950	141	470
Ecosol GPT 4750	5,600 x 2,300	219	730
Ecosol GPT 4900	6,500 x 2,600	315	1,050
Ecosol GPT 41050	7,450 x 2,950	429	1,430
Ecosol GPT 41200	8,630 x 3,300	561	1,870
Ecosol GPT 41350	9,700 x 3,700	674	2,370
Ecosol GPT 41500	10,680 x 4,000	803	2,930
Ecosol GPT 41800	12,730 x 4,700	1,076	4,210

Table 3 - Ecosol™ Gross Pollutant Trap – Dimensions and Treatable Flow Rates

Once the transfer functions have been defined for each of the pollutants the node has been fully defined. When completed the properties window can be closed by clicking the "Finish" button.

ECOSOL GPT DESIGN AND DOCUMENTATION

Receiving Node 11/10/2017 3:10:22 PM

Treatment Train Effectiveness

	Flow (ML/yr)	Peak Flow (m3/yr)	TSS (kg/yr)	TP (kg/yr)	TN (kg/yr)	Gross Pollutants (kg/yr)
Sources	45.8	51.6E-3	7.2263	15.4	110	1.2283
Residual Load	32.6	0.143	473	4.54	45.0	0.00
% Reduction	31.2	-214.1	93.4	70.9	59.0	100.0

TREATMENT TRAIN MUSIC OUTCOME

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PO BOX 160 LIVERPOOL BC NSW 1871 EMAIL: llhlpool@tpg.com.au

NO	AMENDMENT	DATE	APP'D
A	ISSUE TO COUNCIL AND CLIENT FOR REZONING	12/10/17	AMH

TABLE OF mm

L.G.A: CAMPBELLTOWN
LOCALITY: DENHAM COURT
SURVEY NA | DRAWN BG
DESIGN KB | APPROVED AMH

SCALE 1:1000 | A1
PROPERTY DESCRIPTION: LOT 71 IN DP706546
DATUM & ORIGIN OF LEVELS AHD CONTOURS SCALED FROM ORTHOPHOTO MAPS

WATER QUALITY MUSIC MODELLING CALCULATIONS

DATE	SHEET	DRAWING NUMBER	AMEND	FILE:
OCT 2017	3 of 4	59904WSUD	A	No: 59904

NETWORK NO 1

AR&R 1987 - CHAPTER 14 ANALYSIS - CHECK ONLY

NODE TYPE	CATCHMENT Ha's	% IMPER	C -PERV.	C -IMP PERV.	Q 5 ARI cumsecs	Q 100ARI cumsecs	GAP FLOW cumsecs	Q5 P/WORK	COMMENT	
1 - Q5 P	0.29		0.44		0.029					
1 - Q5 IMP	1.15	80		0.9	0.369					
1 - Q5 TOT	1.44	80			0.400			525 @ 1%	OK	
1 - Q100 P	0.29		0.56			0.061				
1 - Q100 IMP	1.15	80		1.0		0.673				
1 - Q100 TOT	1.44	80				0.734	0.450	525 @ 1%	OK	
2 - Q5 P	0.412		0.04		0.064					
2 - Q5 IMP	1.618	80		0.90	0.528					
2 - Q5 TOT	2.06	80			0.567			600 @ 1%	OK	
2 - Q100 P	0.412		0.56			0.087				
2 - Q100 IMP	1.618	80		1.0		0.962				
2 - Q100 TOT	2.06	80				1.049				
SUMMARY SUB					0.967	1.783	1.106	2 X600 RCP	OK	OVERFLOW TO ROAD LOW POINT
3 - Q5 P	0.246		0.44		0.024					
3 - Q5 IMP	1.00	80		0.90	0.320					
3 - Q5 TOT	3.272	80			0.344					
3 - Q100 P	0.654		0.56			0.052				
3 - Q100 IMP	0.246	80		1.0		0.584				
3 - Q100 TOT	1.246	80				0.636				
SUMMARY SUB					1.311	2.419	1.501	2 X 675	OK	OVERFLOW TO ROAD LOW POINT
4 - Q5 P	0.47		0.44		0.046					
4 - Q5 IMP	1.90	80		0.90	0.608					
4 - Q5 TOT	2.370	80			0.655					
4 - Q100 P	0.47		0.56			0.100				
4 - Q100 IMP	1.900	80		1.0		1.109				
4- Q100 TOT	2.370	80				1.210				
SUMMARY SUB					1.966	3.629	2.253	3 X 675	OK	OVERFLOW TO ROAD LOW POINT
5 - Q5 P	0.122		0.44		0.013					
5 - Q5 IMP	0.488	80		0.90	0.165					
5 - Q5 TOT	0.610	80			0.180			375 @ 1%	NIL	
5 - Q100 P	0.122		0.56			0.027			BYPASS	
5 - Q100 IMP	0.488	80		1.0		0.292			BYPASS	
5- Q100 TOT	0.610	80				0.320			BYPASS	
SUMMARY SUB					0.180	BYPASS		375 @ 1%	BYPASS	OVERFLOW BYPASS TO OSD POND- LOW POINT
N1 TO N4					1.966	3.629				
6 - Q5 TOT	0.610	80			0.180				NIL	
SUMMARY SUB					2.146	3.629		3 X675		OVERFLOW TO ROAD LOW POINT

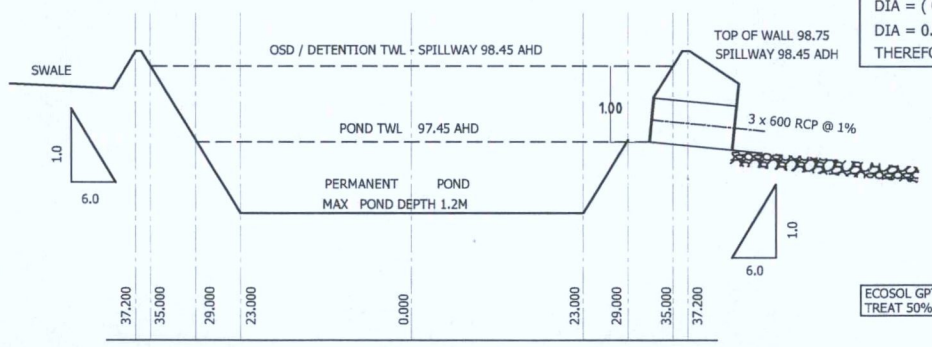
OSD MODELLING

OSD - ILSAXS - STORAGE TO OUTFLOW AMALYSIS						
NO	RL - AHD	DEPTH	STORAGE	LOW FLOW	HIGH FLOW	TOTAL
1	97.4500	0.0000	0.0000	0.0000	0	0
2	97.8500	0.4000	1013	0.8820	0	0.8820
3	98.0500	0.6000	1519	1.3240	0	1.3240
4	98.1500	0.7000	1772	1.5430	0	1.5430
5	98.2500	0.8000	2026	1.7630	0	1.7630
6	98.3500	0.9000	2279	1.9840	0	1.9840
7	98.4500	1.0000	2532	2.2040	0	2.2040
8	98.5500	1.1000	2750	2.2300	4.0000	6.2300

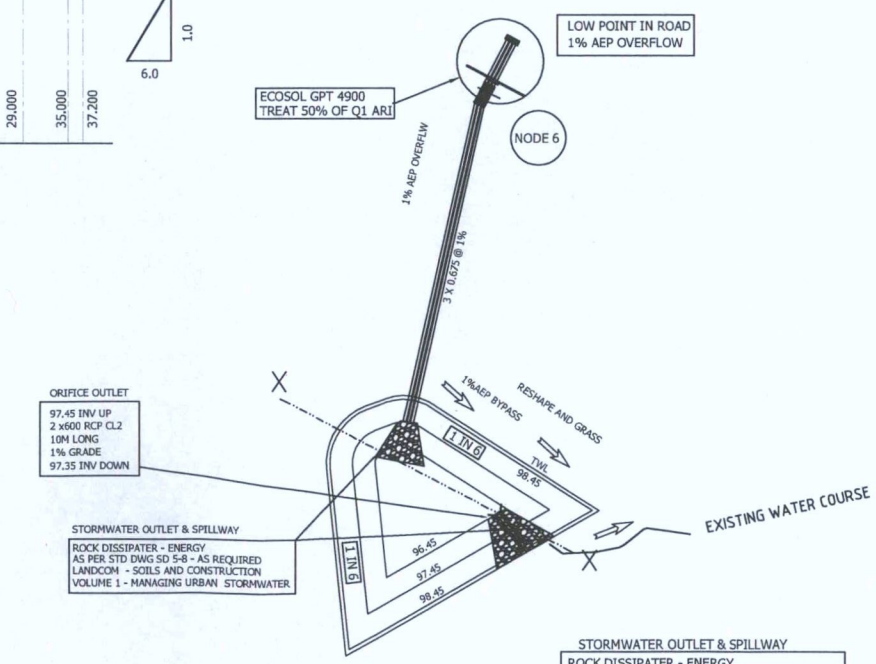
OUTFLOW 2.075 CUMSECS 1% AEP
PRE TO POST
DEPTH IN BASIN 0.95M
VOLUME : 2405.5 CUBIC METRES

OUTLET ORIFACE

2.204 / 3 (TWIN PIPES) = 0.735 CUMSECS PER PIPE
DIA = (0.48 X Q (0.735) / H (1.0) 0.5) 0.5
DIA = (0.353/ 1) 0.5
DIA = 0.594mm or 600 RCP CL2
THEREFORE 3 X 600 RCP CL2



SECTION X ---- X



ADOPTED FOR OSD MODELLING

SRORMWATER SUMMARY TO OSD POND -ILSAX'S HYDROLOGY				
SITE ZONE	DESCRIPTON	CATCHMENT	PRE 1% AEP	POST 1% AEP
NODE 1 TO 2	URBAN	3.489 Ha		
NODE 3	URBAN	1.246 Ha		
NODE 4 -5	URBAN	2.98 Hap		
TO POND	POND ONLY	0.5000		
TOTAL		8.825 Ha	2.2040	3.387 cumsecs

OVERALL IMPERRVIOUS AREA ADOPTED 72.5%

1% AEP PERMISSIBLE SITE DISCHARGE 2.204 CUMSECS

1% AEP CATCHMENT SET AS WET PRIOR TO THE STORM EVENT

GENERAL NOTES

THIS DESIGN MASTER PLAN IS BASED ON AR & R 1987 - CHAPTER 14 ANALYSIS AND IFD INTENSITIES SOURCED FROM CAMPBELLTOWN CITY COUNCIL

ALL EXISTING STORMWATER UPSTREAM OF ST ANDREWS ROAD SHALL BE DESIGNED TO BY PASS THE PROPOSED OSD BASIN FOR THE SITE - THIS INCLUDES THE EXISTING ST ANDREWS ROAD CATCHMENT .

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B	RESHAPING AND RELOCATION OF OSD AND POND	22/1/18	AMH
A	ISSUE TO COUNCIL AND CLIENT FOR REZONING	12/10/17	AMH
	AMENDMENT	DATE	APP'D

TABLE OF mm

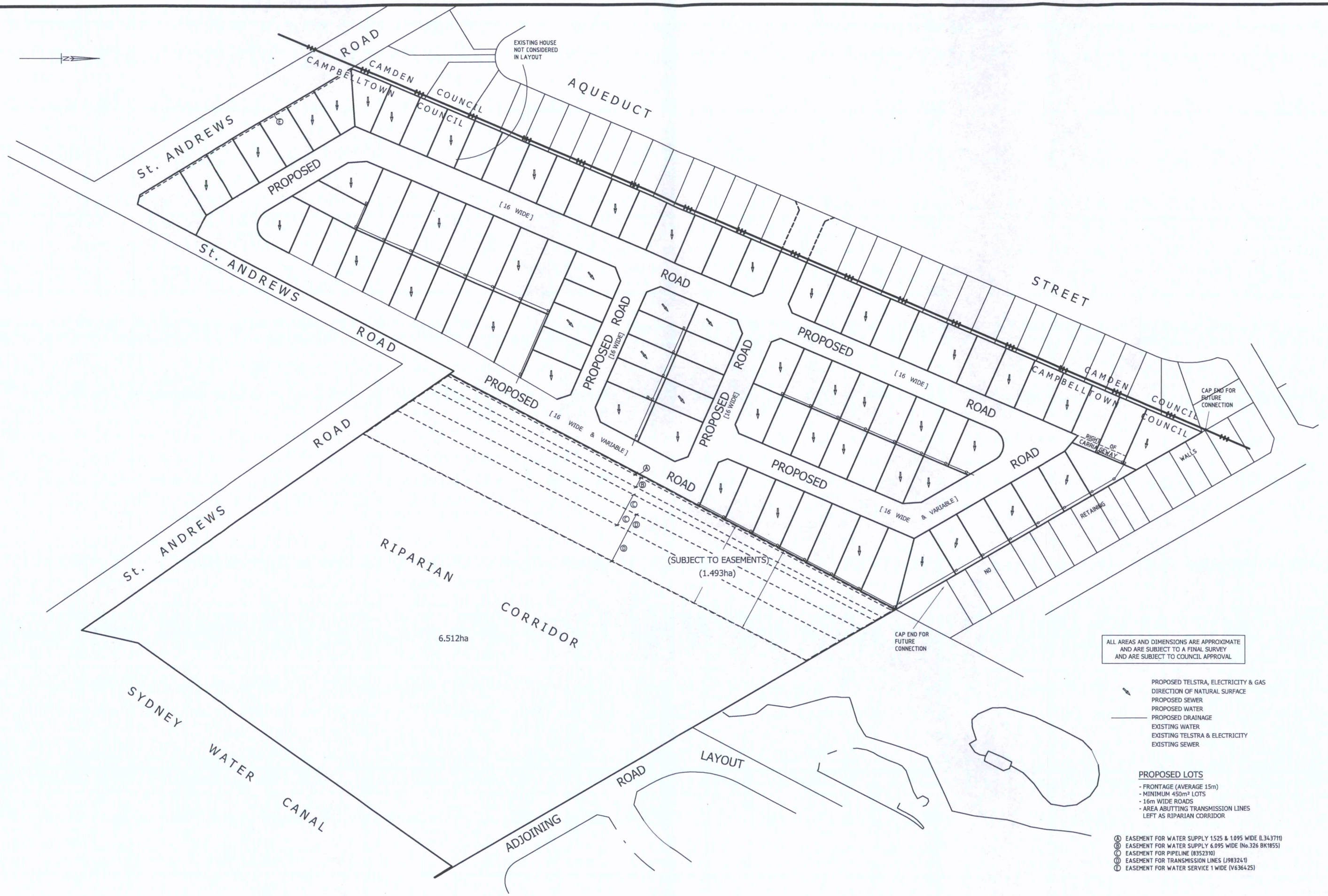
L.G.A: CAMPBELLTOWN
LOCALITY: DENHAM COURT
SURVEY NA | DRAWN BG
DESIGN KB | APPROVED AMH

SCALE 1:1000 | A1
PROPERTY DESCRIPTION: LOT 71 IN DP706546
DATUM & ORIGIN OF LEVELS AHD CONTOURS SCALED FROM ORTHOPHOTO MAPS

DRAINAGE NETWORK 1 & 2 CALCULATIONS & SUMMARY

DATE	SHEET	DRAWING NUMBER	AMEND	FILE: No:
OCT 2017	4 of 4	59904OSD	B	59904

Appendix C Concept Plan of Subdivision prepared by Lean Lackenby and Hayward



ALL AREAS AND DIMENSIONS ARE APPROXIMATE AND ARE SUBJECT TO A FINAL SURVEY AND ARE SUBJECT TO COUNCIL APPROVAL

PROPOSED TELSTRA, ELECTRICITY & GAS
DIRECTION OF NATURAL SURFACE
PROPOSED SEWER
PROPOSED WATER
PROPOSED DRAINAGE
EXISTING WATER
EXISTING TELSTRA & ELECTRICITY
EXISTING SEWER

PROPOSED LOTS

- FRONTAGE (AVERAGE 15m)
- MINIMUM 450m² LOTS
- 16m WIDE ROADS
- AREA ABUTTING TRANSMISSION LINES LEFT AS RIPARIAN CORRIDOR

(A) EASEMENT FOR WATER SUPPLY 1.525 & 1.095 WIDE (L343711)
(B) EASEMENT FOR WATER SUPPLY 6.095 WIDE (No.326 BK1855)
(C) EASEMENT FOR PIPELINE (8352310)
(D) EASEMENT FOR TRANSMISSION LINES (J983241)
(E) EASEMENT FOR WATER SERVICE 1 WIDE (V636425)

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PO BOX 160 LIVERPOOL BC NSW 1871 EMAIL: lhlpool@tpg.com.au

	AMENDMENT	DATE	APP'D
C	LOT LAYOUT AMENDED	12/12/17	AMH
B	LOT LAYOUT AMENDED	24/10/17	AMH
A	RIPARIAN CORRIDOR AMENDED AND LOTS REMOVED	10/10/17	AMH

TABLE OF mm 10 20 30 40 50 100 110 120 130 140

L.G.A: CAMPBELLTOWN
LOCALITY: DENHAM COURT
SURVEY AMH
DRAWN BG
DESIGN .
APPROVED AMH
SCALE 1:1000
A1
PROPERTY DESCRIPTION: LOT 71 IN DP706546
DATUM & ORIGIN OF LEVELS AHD CONTOURS SCALED FROM ORTHOPHOTO MAPS

CONCEPT SERVICES PLAN

DATE	SHEET	DRAWING NUMBER	AMEND	FILE: No:
AUG 2015	1 OF 4	59904PPS4-SERVICES	C	59904

Appendix D Contamination Report prepared by SLR Consulting

SLR

global environmental solutions

Preliminary Site Investigation Report

71 St Andrews Road

Denham Court NSW

Report Number 610.14018-R1R1

2 September 2015

Dario and Angelina Petrin
c/- GAT & Associates Pty Ltd
PO Box 96
Haberfield NSW 2045

Version: Revision 1

Preliminary Site Investigation Report

71 St Andrews Road

Denham Court NSW

PREPARED BY:

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ABN 29 001 584 612
2 Lincoln Street Lane Cove NSW 2066 Australia

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This report has been prepared by SLR Consulting Australia Pty Ltd with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with the Client. Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of Dario and Angelina Petrin. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR Consulting.

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DOCUMENT CONTROL

Reference	Status	Date	Prepared	Checked	Authorised
610.14018-R1R1	Revision 1	2 September 2015	I-hui Waung / Abanish Nepal[1]	Craig Cowper	Craig Cowper
610.14018-R1	Revision 0	22 August 2014	I-hui Waung	Craig Cowper	Craig Cowper

[1] Report updated by Abanish Nepal to address potential changes in site condition since release of Revision 0.

Executive Summary

SLR Consulting Australia Pty Ltd (SLR) was commissioned by Dario and Angelina Petrin (the Client) to undertake a stage 1 preliminary site investigation (PSI) of the property located at 71 St Andrews Road, Denham Court NSW (the site).

It is understood that:

- The Client is proposing to redevelop the site for low density residential subdivision; and
- The Client requires a Preliminary Site Investigation (PSI) for inclusion with a development application to Council.

The objectives of this PSI were to:

- Make an assessment of the potential for contamination to be present at the site, as a result of past and present land use activities;
- Provide advice on the suitability of the land (with respect to contamination) for the proposed low density residential subdivision; and
- Provide recommendations on further investigations (if required).

SLR undertook the following scope of works to address the project objectives:

- A desktop review;
- Site walkover; and
- Data assessment and reporting.

Two areas of environmental concern (AEC) were identified from the site walkover:

- Fill materials, used to create a raised and level surface across the south-western portion of the site; and
- Stockpiles of disused farming machinery, equipment and building materials along site fences and a derelict motor vehicle near the northern end of the power transmission corridor.

There was no evidence of contamination observed in the area containing the fill material layer (e.g. stressed/dying vegetation, unusual odours and stains, slicks/sheen in water within the pond), or in the adjacent areas of the site, which suggests that contamination associated with the fill, if any, is unlikely to be significant.

Based on the results of the site history review and observations made during the site walkover, SLR makes the following conclusions:

- The potential for contamination to be present at the site as a result of past and present land use activities, is considered to be low to moderate;
- It is considered that the site could be made suitable for the proposed subdivision, subject to the undertaking of a stage 2 detailed site investigation, and associated remedial/management works (if warranted). Based on the nature of the contaminants of potential concern identified for the site, there are well established means of remediation and/or management that could be implemented to allow the proposed subdivision to proceed, regardless of the findings of a stage 2 detailed site investigation. On this basis, it is considered reasonable that further investigation and subsequent remediation and/or management contamination (if identified) could be a condition of consent for the proposed subdivision; and

Executive Summary

- Further contamination assessment works should be undertaken by a suitably experienced environmental consultant.

This report must be read in conjunction with the limitations set out in Section 8 of this report.

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1 INTRODUCTION

1.1 Background

SLR Consulting Australia Pty Ltd (SLR) was commissioned by Dario and Angelina Petrin (the Client) to undertake a Stage 1 Preliminary Site Investigation (PSI) of the property located at 71 St Andrews Road, Denham Court NSW (the site).

This PSI was undertaken in accordance with SLR's proposal *Offer of Services Preliminary Site Investigation 71 St Andrews Road Denham Court*, NSW dated 30 April 2014 (ref: 610.14018 Offer of Services 20140430) and as varied on 26 August 2015

It is understood that:

- The Client is proposing to redevelop the site for low density residential subdivision; and
- The Client requires a Preliminary Site Investigation (PSI) for inclusion with a development application to Council.

1.2 Objectives

The objectives of this PSI were to:

- Make an assessment of the potential for contamination to be present at the site, as a result of past and present land use activities;
- Provide advice on the suitability of the land (with respect to contamination) for the proposed low density residential subdivision; and
- Provide recommendations on further investigations (if required).

1.3 Scope of Works

SLR undertook the following scope of works to address the project objectives:

- A desktop review;
- Two site walkovers; and
- Data assessment and reporting.

2 SITE IDENTIFICATION

The site is located at 71 St Andrews Road, Denham Court NSW (**Figure 1**) and comprises the real property title Lot 71 in DP 706546. The site is irregular in shape and occupies an area of approximately 13.5 hectares.

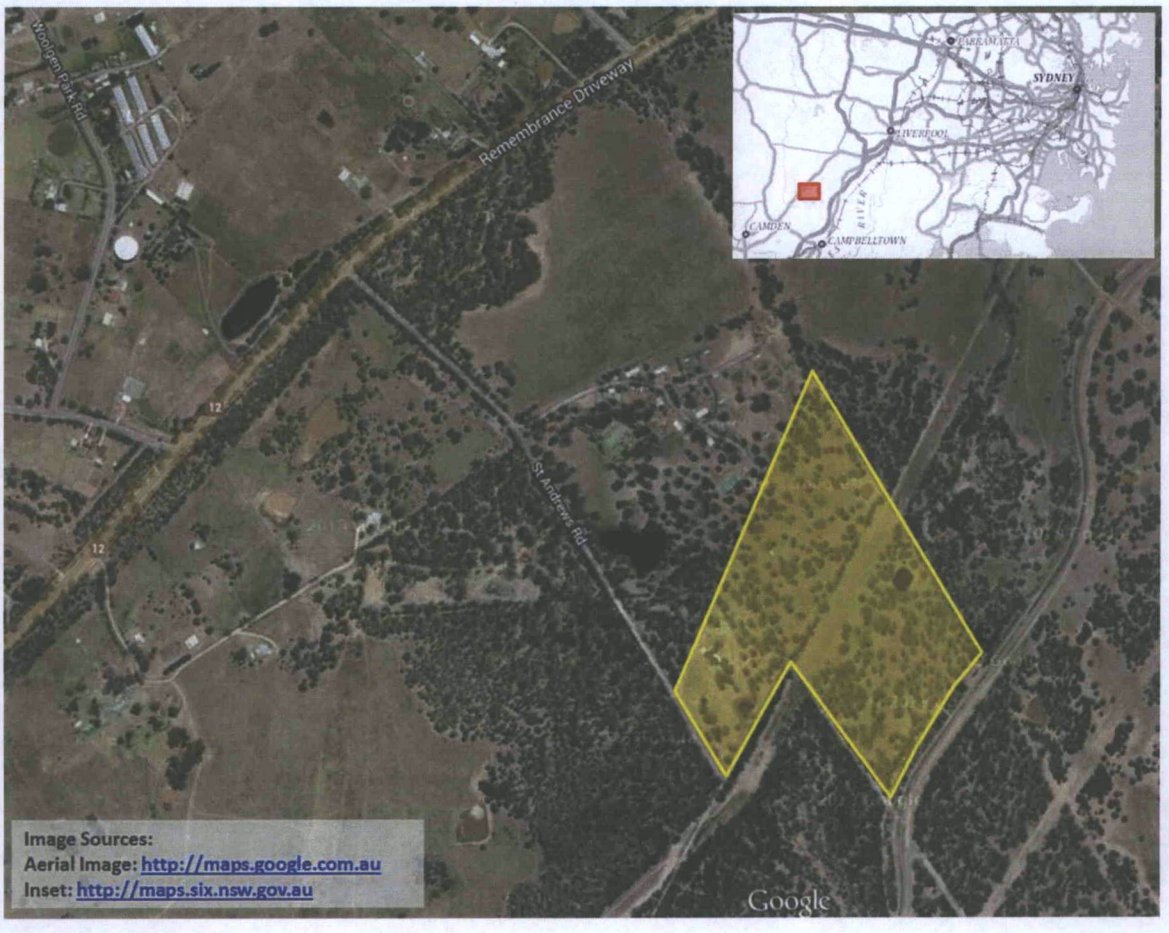


Figure 1 Site location and study area

3 SITE SETTING AND HISTORY REVIEW

3.1 Soil Landscape, Geology, Topography, Hydrology and Acid Sulfate Soils

3.1.1 Soil Landscape and Geology

According to the Penrith 1:100 000 Sheet[2] (Hazelton et al. 1989), the site is located within the area characterised predominantly as the Blacktown Soil Landscape. The Soil Landscapes of the Penrith 1:100 000 Sheet[3] (Bannerman & Hazelton 1990) describes the Blacktown Soil Landscape as having gently undulating rises, with local relief to 30m and slopes usually <5%. Dominant soils include friable brownish black loams overlying hard-setting brown clay loams. The loams are underlain by strongly pedal clay (Bannerman & Hazelton 1990).

Bedrock at the site and surrounds comprise Wianamatta Group Shales, which include Ashfield and Bringelly Shales, as well as Minchinbury Sandstone (Bannerman & Hazelton 1990).

3.1.2 Topography and Hydrology

The site is generally flat and level. The central portion of the site is slightly lower compared to the boundaries, creating shallow gradients (typically of 1 to 3 %) sloping down from the edges of the site towards the centre.

Review of elevation data provided on Google Earth indicates the local area has a shallow downward slope (less than 3%) towards the northeast, north and northwest.

The nearest waterway is a Sydney Water supply channel, which is located on the south-eastern site boundary. There are three ponds on the site which supply water for irrigation. The majority of surface water on the site would be expected to infiltrate into surface soils (where permeability permits).

3.1.3 Hydrogeology

A search of the on-line NSW Natural Resource Atlas on 26 June 2014 showed a number of groundwater bores within a 1 km radius of the site. However, no information was available from the on-line service for any of the groundwater bores. A copy of the bore map is included in **Appendix A**.

A second search of the NSW Department of Primary Industries – Office of Water Groundwater Map (http://waterinfo.nsw.gov.au/gw/) conducted on 1 September 2015 located the following groundwater features within 1km from the site:

- A groundwater monitoring bore (Well ID # GW113118) located approximately 800m to the north from the northern boundary of the site within a lot identified as Lot 1 in DP 1185269 in a residential subdivision (Northing 6238066 and Easting 297792). The well was constructed in 2012. No other information (such as depth, screen interval or geology) was available for this well;
- A groundwater monitoring bore (Well ID # GW113117) located approximately 900m to the northeast from the northern boundary of the site within a lot identified as Lot 1 in DP 1185269 in a residential subdivision (Northing 6238135 and Easting 298285). The well was constructed in 2012. No other information (such as depth, screen interval or geology) was available for this well;

[2] Hazelton, P.A., Bannerman, S.M. & Tille, P.J. (1989) *Penrith Soil Landscape Series Sheet 9030.*
[3] Bannerman, S.M. & Hazelton, P.A.(1990) *Soil Landscapes of the Penrith 1:100 000 Sheet.* Soil Conservation Service of NSW, Sydney.

- A groundwater monitoring bore (Well ID # GW112433) located approximately 1000m to the east from the eastern boundary of the site within a vacant lot identified as Lot 41 in DP 1174145 (Northing 6237461 and Easting 298645). The well was constructed in 2012 to a final depth of 8.9m with PVC Class 18 – 4mm horizontal slots screen from 5.9m to 8.9m. The geology surround the well consisted of natural clay underlain by shale bedrock encountered at 5m below ground level;
- A domestic bore (Well ID # GW1090508) located approximately 800m to the southeast from the eastern boundary of the site within a vacant lot identified as Lot 7 in DP 29019 (Northing 6236794 and Easting 298451). The well was constructed in 2008 and no other information (such as screen depth or the geology) was available for this well.

A copy of the second groundwater bore search plan and the groundwater summary reports are provided in **Appendix B**.

3.1.4 Acid Sulfate Soils

A review of acid sulfate risk maps provided by the Australian Soil Resource Information System on 26 June 2014 indicated the site is located within an area with no known occurrence of acid sulfate soils. A copy of the acid sulfate soil risk map is included in **Appendix C**.

3.2 Local Council Section 149(2) Planning Certificate

A planning certificate for the site, issued on 6 June 2014 by Campbelltown City Council under Section 149 (2) of the Environmental Planning and Assessment Act 1979 states that, as of the date of certification:

- There are no items of environmental heritage on the site;
- Development of the land is subject to flood-related controls;
- The land has not been declared by the NSW Environmental Protection Authority (NSW EPA) to be significantly contaminated land as defined under the Contaminated Land Management Act 1979;
- Council considers the information about previous use of the land is insufficient to determine whether the land is contaminated;
- Council records do not indicate the land is subject to a management order;
- Council records do not indicate the land is subject to an approved voluntary management proposal;
- Council records do not indicate the land is subject to an ongoing maintenance order; and
- Council records do not indicate the land is the subject of a site audit statement.

A copy of the planning certificate is presented in **Appendix D**.

SLR notes the planning certificate designates the site as within Varroville, which is a neighbouring suburb of Denham Court. This is inconsistent with the site being designated in Denham Court, according to Land & Property Information NSW (http://maps.six.nsw.gov.au).

3.3 WorkCover NSW Records

SLR requested a search of the NSW WorkCover Stored Chemical Information Database for records of dangerous substances, dangerous goods, underground storage tanks and licences pertaining to the site.

NSW WorkCover reported that no records pertaining to the site were found in the database. A copy of the letter received from WorkCover regarding the search is included in **Appendix E**.

3.4 NSW EPA Records

Records and Notices issued for a site under the *Protection of the Environment Operations (POEO) Act 1997* are held by the Office of Environment and Heritage (OEH) in the POEO Public Register. SLR undertook an on-line search of the POEO Public Register on 26 June 2014 for all records listed within Denham Court. A second on-line search of the POEO Public Register was undertaken on 1 September 2015 for records listed within Denham Court and Varroville. No records or notices were found for the site, Denham Court or Varroville, in the POEO Public Register.

SLR undertook a search of the on-line EPA Contaminated Land Public Record database (CLM Record) for any entries containing the text "Denham Court" or "Varroville" on 4 July 2014. A second search of the on-line CLM Record for both texts was conducted on 31 August 2015. No entries were found containing "Denham Court" or "Varroville" in the CLM Record.

No entries with "Denham Court" or "Varroville" were found in the *NSW contaminated sites notified to the EPA* on-line list, maintained by the NSW EPA and current as of 26 May 2014 (http://www.epa.nsw.gov.au/clm/publiclist.htm). A second search of the on-line list, current as of 30 June 2015, was also conducted on 1 September 2015. No entries were found for both suburbs.

Results of both searches of the POEO Public Register and CLM Record are presented in **Appendices F & G** respectively.

3.5 Land Title Ownership Records

Historical land titles ownership records were obtained from Service First Registration Pty Ltd (**Appendix H**) and are summarised in **Table 1**.

Table 1 Summary of Historical Land Title Ownership Records

Years	Owner (Occupation)
1857 – 1929	R. Thomson (Gentleman)
1929 – 1947	P. Thomson (Farmer)
1947 – 1953	R.S. Thomson (Dairy Farmer)
1953 – 1972	E.M. & I.M. Philpott (Merchant)
1972 – 1987	Campbelltown City Council
1987 – 1988	Glensaugh Pty Ltd
1988 – 1998	E.G. & E.C. Morgan (occupation unknown)
1998 – Present	D. & A. Petrin

The site has been privately owned since 1857 primarily by private citizens, with the exceptions of a period of ownership by Campbelltown City Council from 1972 to 1987 and by a company (Glensaugh Pty Ltd) from 1987 to 1988.

The site may have been used for pastoral purposes from 1929 to 1953.

The water supply easement has been registered on the site since 1939 (and is now registered as Lot 1 in DP610.145), and an easement for power transmission lines has been registered on the site since 1965.

3.6 Historical Aerial Photographs

A review of a selection of historical and recent aerial photographs was undertaken. Key observations made during the review are presented in **Table 2**. Copies of aerial photographs reviewed are presented in **Appendix I**.

Apart from construction of the power transmission corridor and the adjacent water supply channel, the site appears to have remained largely undeveloped until sometime between 1994 and 2005, after which development of the site, apparently for mixed residential and semi-rural land use, has occurred at a relatively faster rate.

Table 2 Historical Aerial Photograph Review

Year of Photograph	Site Land Use Observations	Surrounding Land Use Observations
1947	Partially cleared, with narrow trails visible between trees. Water supply channel has been established.	Land has been cleared, likely for rural land use. St Andrews Road and Hume Highway have been established.
1965	As for 1947 image, with the addition of the power transmission easement.	More dwellings/houses have been built in the surrounding areas. Otherwise similar to the 1947 image.
1982	Vegetation cover appears to have increased on the site. Narrow trails are still visible between trees. With the exception of the easements for the water supply and power transmission, no other development appears on the site.	More dwellings/houses have been built in the surrounding areas, particularly on the northern side of the Hume Highway. Otherwise similar to the 1965 image.
1989	As for 1982 image.	Property immediately north-west of the site has been partially cleared, with several small buildings and pathways (potentially covered by hardstand) visible in the northern portion. Increased semi-rural development of the local surrounding area.
1994	As for the 1989 image.	Similar to the 1989 image albeit with more semi-rural development of the local area. A large dwelling, sealed roads/paths and numerous smaller buildings (sheds?) aligned along the roads/paths are now visible in the property immediately north-west of the site.
2005	Partial vegetation clearing has been carried out on the site, and one large building and nearby infrastructure (unclear in image) are visible in the south-western portion of the site. A pond has been constructed near the north-eastern site boundary.	As for 1994 image, although the sealed roads/paths in the property to the north-west no longer appear to be maintained.

Year of Photograph	Site Land Use Observations	Surrounding Land Use Observations
2009	Considerable vegetation clearance, or pruning of trees, has occurred on the site as much of the ground surface is visible in the image. A second, smaller pond has been constructed along the north-eastern site boundary and a third pond has been constructed in the south-western portion of the site, south-east of the house. A driveway leading from St Andrews Road to the house has been constructed. The surface of the ground over the south-western portion of the site has a significantly more heterogeneous appearance than ground over other portions of the site, and miscellaneous items appear to be placed along the north-western site boundary.	General increase in semi-rural and residential development in the local area. The sealed roads/paths appear to have been improved in the property to the north-west of the site.
2014	Additional development has occurred in the south-western portion of the site, namely the construction of a large barn/shed, a smaller shed and a nursery area to the north-west of the house. Some light-coloured materials appear to have been stockpiled in the central portion of the site.	Major residential subdivision developments are occurring immediately north of the site.

3.7 Site History Review Summary

The review of site history materials indicates development of the site has been limited until sometime between 1994 and 2005, after which rapid development for likely semi-rural and residential land use occurred. There are no indications showing land use activities typically associated with significant site contamination (e.g. industrial manufacturing, service stations), or multiple cycles of building construction and demolition, have occurred on site. However, the aerial images indicate a substantial amount of ground disturbance has occurred across the south-western portion of the site at some time between 2005 and 2009, as well as some stockpiling activity in the northern/central portions of the site, which is potentially associated with the residential development at the site.

4 SITE WALKOVER

A site walkover was undertaken on 10 June 2014 by a suitably experienced SLR environmental consultant (I-hui Waung). The purpose of the site walkover was to make observations of the site and adjacent land uses (relevant to land contamination). A discussion of the observations made is presented in Section 4.1.

Photographs taken by SLR during the walkover are presented in **Appendix J**.

A second site walkover was undertaken on 31 August 2015 by a suitably experienced SLR environmental consultant (Abanish Nepal) to compare the observations made during the site walkover on 10 June 2014, with current site conditions. The observations from the second site walkover indicated that the condition and features on site were similar to the features observed during the first site walkover.

4.1 Site Features and Condition

The following features were observed during the walkover:

- The majority of the site is partially cleared but otherwise undeveloped. Cows were observed on the northern portion of the site and several bathtubs / steel sinks have been placed around the site as water troughs;
- Trees and grasses at the site appeared healthy and no obvious signs of localised or widespread plant stress were observed at the site;
- A shipping container containing hay was located near the northern corner of the site;
- Development at the site consists of:
  - A power transmission corridor;
  - Two ponds, excavated into residual soils, near the north-eastern site boundary. Evidence of floating algae, discolouration or sheen was not observed on the water surface in both ponds;
  - A cattle pen near the northern corner of the site;
  - A single-storey brick-and-tile house, an aluminium-and-steel frame barn/large shed, a smaller aluminium-and-wood frame shed (with chicken coop), nursery enclosure, built pond, in-ground concrete septic tank (appeared to be relatively new) and vehicle driveway, in the south-western portion of the site.
- No floating algae, suspect discolouration or slicks were observed in water in the ponds;
- Effluent from the septic tank is used for local surface irrigation. No obvious signs of stressed vegetation (e.g. thinned or dying vegetation) were observed in the area irrigated using the effluent;
- The site generally appeared well-drained and without large damp / flooded areas (aside from the ponds);
- The barn/large shed is used as a garage and store-room, and contains a car, trailer, motorcycle, ride-on mower, bicycles, old furniture, spare parts and other miscellaneous equipment. The building has a concrete floor which was observed to be in good condition;
- A shipping container, used as a workshop and containing work-bench, tools, tins of paint, adhesives etc. near the nursery enclosure;
- The nursery enclosure contains plants in several above-ground planting beds. SLR were advised by the land owner that only commercially-available pesticides and herbicides are used and evidence of the use of banned chemicals (e.g. DDT) was not observed by SLR;

- Excess/refuse building materials, farming machinery and equipment were stored along the northern-western site boundary and also along the fence separating the south-western 'residential' portion of the site and the northern 'pastoral' portion of the site;
- A small stockpile of waste building materials (pieces of brick, tile, concrete and a sheet of aluminium siding) was observed at the base of a tree in the central portion of the site (**Photograph B22**). No potential asbestos containing materials were observed in the stockpile;
- A layer of fill material has been placed over the south-western portion of the site, covering an area of approximately 2.4 ha (**Figure 2**). The thickness of the fill is unknown, although the top of the fill was observed to be approximately 30cm higher than the adjacent, apparent natural ground along the site boundaries. The surface of the fill material appeared to comprise brown clayey soils containing up to 50% building rubble (fragments of tiles and bricks), fine crushed grey rock (i.e. construction aggregate), metal and plastic. No fragments of potential asbestos containing materials were observed on the surface of the filled area;
- No obvious odours were observed from the fill material, and there were no obvious signs of plant stress in vegetation on, or around, the filled area;
- No visual evidence of underground or above-ground fuel storage tanks (USTs and ASTs, respectively) was observed in the filled area, or in other areas of the site;
- SLR was advised by the site owner that the layer of fill was already present when they purchased the property and that the source of the fill was not known to them.

The observed features on the site suggest the following potential land contaminating activities on the site:

- Uncontrolled filling in the south west portion of the site; and
- Storage of a wrecked car and disused equipment along the site boundary, and stockpile of building material in central portion of site. However, no visual or olfactory signs of contamination were observed on the ground beneath and immediately around these items, nor were there signs of plant stress.

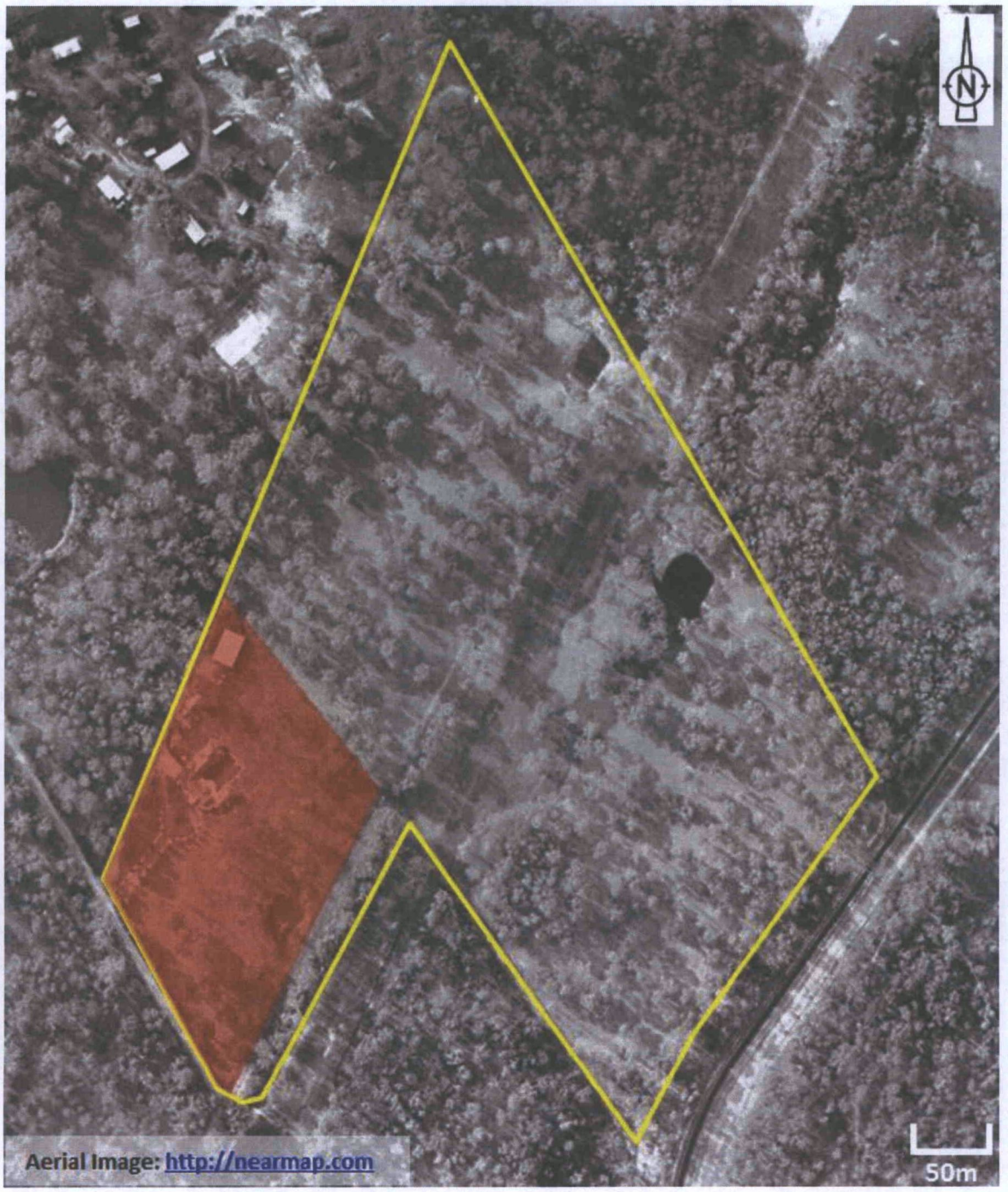


Figure 2 Location of fill layer (in red) in south-western portion of site

4.2 Adjacent Land Uses

Adjacent land uses observed by SLR during the site walkover included:

North of site

- Residential sub-division development to the north-east, and residential land use to the north-west. The residential property immediately north-west of the site also contains a number of shed-like structures. There were no visual / olfactory indications of potential land contaminating activities occurring on the land to the north west (as observed from the site boundary) or visual / olfactory indications of potential contamination migrating onto the site across the surface. Residential sub-division development was observed further to the north-west, followed by a highway (Remembrance Driveway).

East of Site

- Residential sub-division development to the north-east. Water supply channel to the south-east, with semi-rural properties beyond.

South of Site

- Remnant bushland, water supply channel and semi-rural properties beyond.

West of Site

- Remnant bushland and semi-rural properties beyond.

The surrounding land uses did not indicate a potential for significant contamination of the site.

5 AREAS OF ENVIRONMENTAL CONCERN AND CONTAMINANTS OF CONCERN

Based on the site history review and site walkover, SLR identified three areas of environmental concern (AEC) for the site (and associated contaminants of potential concern (COPC) (**Table 3**).

The identified AECs are also shown in **Figure 3**.

Table 3 Areas of Environmental Concern Identified at site

AEC Number	Potentially Contaminating Activity	Potential Contaminants of Concern
1	Placement of uncontrolled fill materials on site.	Heavy metals, TPH, BTEX, PAH, Asbestos, aesthetic impacts.
2	Wrecked car, old machinery and building materials placed on ground surface.	Heavy metals, TPH, BTEX, PAH, aesthetic impacts.

TPH: Total petroleum hydrocarbons; BTEX: Benzene, Toluene, Ethylbenzene, Xylene; PAH: Polycyclic Aromatic Hydrocarbons; OCP: Organochlorine pesticides; OPP: Organophosphate pesticides.



Red: AEC 1; **Yellow**: AEC 2.

Figure 3 Areas of environmental concern

6 DISCUSSION

6.1 Potential for Contamination at Site

6.1.1 AEC 1 – Uncontrolled Fill Materials

Potentially uncontrolled fill material has been used to create a raised, level area to facilitate construction of the house, barn/large shed, pond and other features in the residential portion of the site. The presence of building rubble, scrap metal and plastic on the surface indicates a potential for the fill to contain waste materials.

6.1.2 AEC 2 – Old machinery, car and building materials stockpile

The wrecked car, stockpile of building rubble, old machinery and equipment placed directly on the ground are potential sources for contamination. It is considered likely that such contamination would likely be limited to surface soils in the local vicinity of these items.

7 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the site history review and observations made during the site walkover, SLR makes the following conclusions:

- The potential for contamination to be present at the site as a result of past and present land use activities, is considered to be low to moderate;
- It is considered that the site could be made suitable for the proposed subdivision, subject to the undertaking of a stage 2 detailed site investigation, and associated remedial/management works (if warranted). Based on the nature of the contaminants of potential concern identified for the site, there are well established means of remediation and/or management that could be implemented to allow the proposed subdivision to proceed, regardless of the findings of a stage 2 detailed site investigation. On this basis, it is considered reasonable that further investigation and subsequent remediation and/or management contamination (if identified) could be a condition of consent for the proposed subdivision; and
- Further contamination assessment works should be undertaken by a suitably experienced environmental consultant.

This report must be read in conjunction with the limitations set out in Section 8 of this report.

8 LIMITATIONS

This report is for the exclusive use of Dario and Angelina Petrin. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR Consulting.

This report has been prepared based on the scope of services (see below). SLR Consulting cannot be held responsible to the Client and/or others for any matters outside the agreed scope of services. Other parties should not rely upon this report and should make their own enquiries and obtain independent advice in relation to such matters.

This report has been prepared by SLR Consulting with reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with the Client. Information reported herein is based on the interpretation of data collected (data, surveys, analyses, designs, plans and other information), which has been accepted in good faith as being accurate and valid.

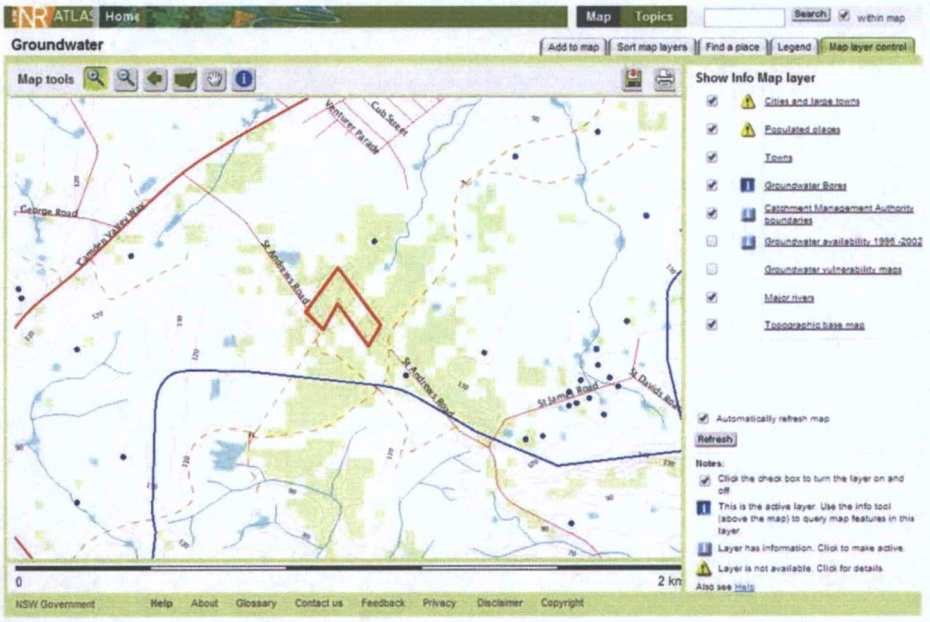
It should be noted that many investigations are based upon an assessment of potentially contaminating processes which may have occurred historically on the site. This assessment is based upon historical records associated with the site. Such records may be inaccurate, absent or contradictory. In addition documents may exist which are not readily available for public viewing.

Except where it has been stated in this report, SLR Consulting has not verified the accuracy or completeness of the data relied upon. Statements, opinions, facts, information, conclusions and/or recommendations made in this report ("conclusions") are based in whole or part on the data obtained, those conclusions are contingent upon the accuracy and completeness of the data. SLR Consulting cannot be held liable should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to SLR Consulting leading to incorrect conclusions.

Should the report be reviewed for any reason, the report must be reviewed in its entirety and in conjunction with the associated Scope of Services. It should be understood that where a report has been developed for a specific purpose, for example a due diligence report for a property vendor, it may not be suitable for other purposes such as satisfying the needs of a purchaser or assessing contamination risks for classifying the site. The report should not be applied for any purpose other than that originally specified at the time the report was issued.

Report logs, figures, laboratory data, drawings, etc. are generated for this report by SLR consultants (unless otherwise stated) based on their individual interpretation of the site conditions at the time the site visit was undertaken. Although SLR consultants undergo training to achieve a standard of field reporting, individual interpretation still varies slightly. Information should not under any circumstances be redrawn for inclusion in other documents or separated from this report in any way.

Groundwater Bore Search Plan – 2014



Search of registered groundwater bores within 2km of site (approximate outline shown in red) undertaken by SLR on 26 June 2014. Numerous bores (blue dots) are shown, although no information available for individual bores from online service.
http://www.nratlas.nsw.gov.au

Groundwater Bore Search Plan & Groundwater Summary Reports– 2015

Department of Primary Industries
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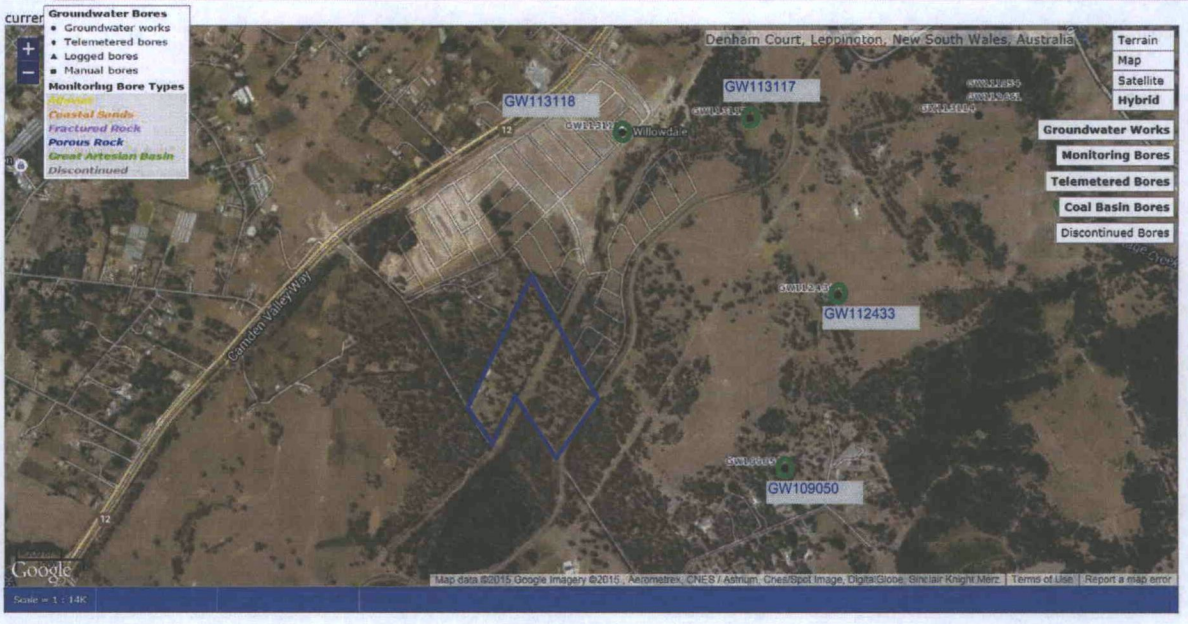
All Groundwater

All Groundwater Map

All data times are Eastern Standard Time

Map | Info



NSW Office of Water
Work Summary

GW113118

Licence: 10BL605098 **Licence Status:** ACTIVE

Authorised Purpose (s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 22/02/2012
Final Depth:
Drilled Depth:

Contractor Name: ROCKWELL DRILLING
Driller: Unkown Unknown
Assistant Driller:

Property: LEPPINGTON PARK PASTORAL 1230 CAMDEN VALLEY WAY & 128 - 130 DENHAM COURT RD LEPPINGTON 2179 NSW
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.33	1//1185269
Licensed:			

Region: 10 - Sydney South Coast
CMA Map:
River Basin: - Unknown
Area/District:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6238066.0
Easting: 297792.0
Latitude: 33°58'42.7"S
Longitude: 150°48'40.0"E

GS Map: -
MGA Zone: 0
Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

29/07/2014: Nat Carling, 29-July-2014; Added status, drill method, depth & work name.

***** End of GW113118 *****

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NSW Office of Water
Work Summary

GW113117

Licence: 10BL605098 **Licence Status:** ACTIVE

Authorised Purpose (s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date: **Final Depth:**
Completion Date: 24/02/2012 **Drilled Depth:**

Contractor Name: ROCKWELL DRILLING
Driller: Unkown Unknown
Assistant Driller:

Property: LEPPINGTON PARK PASTORAL 1230 CAMDEN VALLEY WAY & 128 - 130 DENHAM COURT RD LEPPINGTON 2179 NSW
Standing Water Level:
GWMA: **Salinity:**
GW Zone: **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.33	3//1185269
Licensed:			

Region: 10 - Sydney South Coast **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6238135.0 **Latitude:** 33°58'40.8"S
Elevation Source: Unknown **Easting:** 298285.0 **Longitude:** 150°48'59.3"E

GS Map: - **MGA Zone:** 0 **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

29/07/2014: Nat Carling, 29-July-2014; Added status, drill method, depth & work name.

***** End of GW113117 *****

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NSW Office of Water
Work Summary

GW112433

Licence: 10BL605098 **Licence Status:** ACTIVE

Authorised Purpose (s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Down Hole Hammer
Owner Type: Other Govt

Commenced Date:
Completion Date: 23/02/2012
Final Depth: 8.90 m
Drilled Depth: 8.90 m

Contractor Name: ROCKWELL DRILLING
Driller: William Joseph Smith
Assistant Driller: Carlo Antoniazzo

Property: LEPPINGTON PARK
PASTORAL 1230 CAMDEN
VALLEY WAY & 128 - 130
DENHAM COURT RD
LEPPINGTON 2179 NSW
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.33	41//1174145
Licensed:			

Region: 10 - Sydney South Coast
CMA Map: 9030-2S
River Basin: 212 - HAWKESBURY RIVER
Area/District:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6237461.0
Easting: 298645.0
Latitude: 33°59'02.9"S
Longitude: 150°49'12.7"E

GS Map: -
MGA Zone: 0
Coordinate Source: GPS - Global Positioning System

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	8.90	110			Down Hole Hammer
1		Annulus	Drill Cuttings	0.00	4.00	110	50		PL:Poured/Shovelled
1		Annulus	Bentonite	4.00	5.00	110	50		PL:Poured/Shovelled
1		Annulus	Waterworn/Rounded	5.00	8.90	110	50		Graded, PL:Poured/Shovelled
1	1	Casing	Pvc Class 18	-0.10	5.90	50	40		Seated on Bottom, Screwed
1	1	Opening	Slots - Horizontal	5.90	8.90	50		1	Mechanically Slotted, PVC Class 18, Screwed, SL: 35.0mm, A: 4.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.50	0.50	Clay, silty; brown, soft, wet, homogenous, medium plasticity	Clay	
0.50	1.20	0.70	Clay, silty; as above, orange to brown	Clay	
1.20	3.00	1.80	Clay, silty; as above, grey to orange, stiff, damp	Clay	
3.00	5.00	2.00	Shale; weathered & clay, grey, homogenous, dry to damp, stiff	Shale	
5.00	8.90	3.90	Shale; grey, homogenous, dry to damp	Shale	

Remarks

23/02/2012: Form A Remarks:
Nat Carling, 28-June-2013; GPS provided on consultants log.

***** End of GW112433 *****

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NSW Office of Water
Work Summary

GW109050

Licence: 10BL602182 **Licence Status:** CONVERTED

Authorised Purpose (s): DOMESTIC,STOCK
Intended Purpose(s): STOCK, DOMESTIC

Work Type: Bore
Work Status:
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 15/07/2008
Final Depth:
Drilled Depth:

Contractor Name: INTERTEC DRILLING SERVICES
Driller: Paul Sheehy
Assistant Driller:

Property: SKERRA 13 ST JAMES ROAD VARROVILLE 2566 NSW
GWMA:
GW Zone:
Standing Water Level:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.33	7//29019
Licensed:			

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6236794.0
Easting: 298451.0
Latitude: 33°59'24.4"S
Longitude: 150°49'04.6"E

GS Map: -
MGA Zone: 0
Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)

Geologists Log

Drillers Log

			Drillers Description	Geological Material	Comments

From (m)	To (m)	Thickness (m)			

Remarks

*** End of GW109050 ***

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Acid Sulfate Soil Map



Approximate site outline in red.

Source: Australian Soil Resource Information System http://www.asris.csiro.au/index_other.html

Local Council Section 149 (2) Planning Certificate

campbelltown
city council

Issue Date: 6 June 2014
Application Number: 201402147
Receipt Number: 2646305

RECEIVED
11 JUN 2014
SYDNEY

SLR Consulting Australia Ptd Ltd
2 Lincoln St
LANE COVE NSW 2066

Your Reference: 610.14018

PLANNING CERTIFICATE UNDER SECTION 149 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

Section 149 Planning Certificate phone enquiries: (02) 4645 4560.

Property Address: 71 St Andrews Road
VARROVILLE NSW 2566

Property Description: Lot 71 DP 706546

As at the date of issue, the following matters apply to the land subject of this certificate:

INFORMATION PROVIDED UNDER SECTION 149(2) OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979 (the Act)

PART 1 – Names of relevant planning instruments and DCPs

Planning Instrument: Campbelltown LEP District 8 (Central Hills Lands)
Effect: 7(d1) (Environmental Protection (Scenic))

(1) In addition to the environmental planning instrument(s) named above, the following planning instruments also apply to the carrying out of development on the land subject of this certificate:

Local environmental plans (LEPs) and deemed environmental planning instruments

Campbelltown LEP No.209 – Exempt Development

Campbelltown LEP No.197

For further information about these local environmental plans and deemed environmental planning instruments, contact Council's Environmental Planning Section on (02) 4645 4842.

State environmental planning policies (SEPPs)

SEPP No.1 – Development Standards

SEPP No.21 – Caravan Parks

SEPP No.30 – Intensive Agriculture

SEPP No.33 – Hazardous and Offensive Development

SEPP No.44 – Koala Habitat Protection

SEPP No.50 – Canal Estate Development

SEPP No.55 – Remediation of Land

SEPP No.64 – Advertising and Signage

SEPP No.65 – Design Quality of Residential Flat Buildings

SEPP No.70 – Affordable Housing (Revised Schemes)

SEPP No.19 - Bushland in Urban Areas

SEPP (Building Sustainability Index: BASIX) 2004

SEPP (Major Development) 2005

SEPP (Mining, Petroleum Production and Extractive Industries) 2007

SEPP (Miscellaneous Consent Provisions) 2007

SEPP (Infrastructure) 2007

SEPP (Exempt and Complying Development Codes) 2008

SEPP (Affordable Rental Housing) 2009

SEPP (State and Regional Development) 2011

Sydney REP No.20 - Hawkesbury-Nepean River (No.2 - 1997)

For further information about these State environmental planning policies, contact the Department of Planning (www.planning.nsw.gov.au).

(2) The following proposed environmental planning instruments, which are or have been the subject of community consultation or on public exhibition under the Act (unless the Director-General has notified Council that the making of the proposed instrument has been deferred indefinately or has not been approved), apply to the carrying out of development on the land subject of this certificate:

Draft local environmental plans (LEPs)

None

For further information about these draft local environmental plans, contact Council's Environmental Planning Section on (02) 4645 4842.

Draft State environmental planning policies (SEPPs)

None

For further information about these draft State environmental planning policies, contact the Department of Planning (www.planning.nsw.gov.au).

(3) The following development control plans (DCPs) apply to the carrying out of development on the land subject of this certificate:

DCP No.99 – Advertising Signs

Campbelltown DCP No.32 - Retail Plant Propagation Nurseries

Campbelltown DCP No.120 - Parking of Commercial Vehicles and Trucks Within Residential, Scenic Protection and Rural Areas

Campbelltown (Sustainable City) DCP 2012 Volume 3

Campbelltown (Sustainable City) DCP 2012 Volume 1 (Parts 1-13)

For further information about these development control plans, contact Council's Environmental Planning Section on (02) 4645 4842. Please note that the names of any draft development control plans that apply to the land subject of this certificate, that have been placed on exhibiton by Council but have not yet come into effect, are provided as advice under section 149(5) of the Act.

PART 2 – Zoning and land use under relevant LEPs

a) The following zone(s) apply to the land subject of this certificate:

7(d1) (Environmental Protection (Scenic))

b) The purposes for which the plan or instrument provides that development may be carried out without the need for development consent are detailed in the land use table for each zone. Reference should be made to either Attachment 1 to this certificate or the appropriate section of the attached copy of the plan or instrument.

In addition, SEPP (Exempt and Complying Development Codes) 2008 and Campbelltown LEP No.209 – Exempt Development allow certain types of development to be carried out as exempt development within the Campbelltown City local government area.

c) The purposes for which the plan or instrument provides that development may not be carried out except with development consent are detailed in the land use table for each zone. Reference should be made to either Attachment 1 to this certificate or the appropriate section of the attached copy of the plan or instrument.

In addition, SEPP (Exempt and Complying Development Codes) 2008 allows certain types of development to be carried out as complying development within the Campbelltown City local government area after a complying development certificate has been obtained from Council or from an accredited certifier.

d) The purposes for which the plan or instrument provides that development is prohibited are detailed in the land use table for each zone. Reference should be made to either Attachment 1 to this certificate or the appropriate section of the attached copy of the plan or instrument.

e) Any development standards applying to the land subject of this certificate that fix minimum land dimensions for the erection of a dwelling-house and, if so, the minimum land dimensions so fixed are detailed in the relevant section of the plan or instrument. Reference should be made to either Attachment 2 to this certificate or the appropriate section(s) of the attached copy of the plan or instrument. In addition, certain Council development control plans may

impose minimum development standards for the creation of allotments and/or minimum site area and dimensions for the erection of a dwelling-house.

For further information about items a), b), c), d) and e) above, contact Council's Environmental Planning Section on (02) 4645 4842.

f) The land subject of this certificate does not include or comprise critical habitat.

g) The land subject of this certificate is not in a conservation area (however described).

h) No item of environmental heritage (however described) is situated on the land subject of this certificate.

PART 2A – Zoning and land use under State Environmental Planning Policy (Sydney Region Growth Centres) 2006

None

PART 3 – Complying development

(1) Complying development may be carried out on the land subject of this certificate under each of the following codes for complying development, to the extent shown, because of the provisions of clauses 1.17A(1)(c) to (e), (2), (3) and (4), 1.18(1)(c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008:

General Housing Code – on all of the land

Housing Alterations Code – on all of the land

Commercial and Industrial Alterations Code – on all of the land

Subdivisions Code – on all of the land

Rural Housing Code – on all of the land

General Development Code – on all of the land

Demolition Code – on all of the land

Commercial and Industrial (New Buildings and Additions) Code – on all of the land

Fire Safety Code – on all of the land

Please note that reference should also be made to the relevant parts of this policy for the general requirements for complying development and to the relevant codes for complying development which may also include provisions relating to zoning, lot size etc.

(2) Complying development may not be carried out on the land subject of this certificate under each of the following codes for complying development, to the extent shown and for the reason(s) stated, because of the provisions of clauses 1.17A(1)(c) to (e), (2), (3) and (4), 1.18(1)(c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008:

Not applicable

PART 4 – Coastal protection

The land subject of this certificate is not affected by the operation of section 38 or 39 of the Coastal Protection Act 1979, but only to the extent that Council has been notified by the Department of Public Works.

PART 5 – Mine subsidence

The land subject of this certificate is not within a proclaimed Mine Subsidence District within the meaning of section 15 of the Mine Subsidence Compensation Act 1961.

PART 6 – Road widening and road realignment

The land subject of this certificate is not affected by any road widening or road realignment under Division 2 of Part 3 of the Roads Act 1993, any environmental planning instrument or any resolution of Council.

PART 7 – Council and other public authority policies on hazard risk restrictions

a) Council has adopted a policy with respect to all land within the Campbelltown City local government area with unusual site conditions. This policy restricts the development of land where extensive earthworks and/or filling has been carried out. Land, the development of which is restricted by this policy, has a restriction as to user placed on the title of the land stating the details of any restriction. Building lots can be affected by excessive land gradient, filling, reactive or dispersive soils, overland flow and/or mine subsidence. Buildings, structures or site works may require specific structural design to ensure proper building construction. Consequently, some applications may require the submission of structural design details and geotechnical reports. It is suggested that prior to lodging an application, enquiries be made to Council's Planning and Environment Division to ascertain any specific requirements.

b) Council has adopted by resolution the certified Campbelltown LGA Bush Fire Prone Land Map. This map identifies bush fire prone land within the Campbelltown City local government area as defined in section 4(1) of the Act. Where the land subject of this certificate is identified as bush fire prone land, the document entitled "Planning for Bush Fire Protection" prepared by the NSW Rural Fire Service in co-operation with the Department of Planning and dated December 2006 should be consulted with regards to possible restrictions on the development of the land because of the likelihood of bushfire.

c) The land subject of this certificate is not affected by a policy adopted by Council or adopted by any other public authority and notified to Council for reference in a planning certificate that restricts the development of the land because of the likelihood of tidal inundation.

d) The land subject of this certificate is not affected by a policy adopted by Council or adopted by any other public authority and notified to Council for reference in a planning certificate that restricts the development of the land because of the likelihood of acid sulphate soils.

e) Council has adopted by resolution a policy on contaminated land which may restrict the development of the land subject of this certificate. This policy is implemented when zoning or land use changes are proposed on lands which have previously been used for certain purposes. Council records do not have sufficient information about previous use of this land to determine whether the land is contaminated. Consideration of Council's adopted policy and

the application of provisions under relevant State legislation is warranted.

PART 7A – Flood related development controls information

(1) Development on all or part of the land subject of this certificate for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related controls.

(2) Development on all or part of the land subject of this certificate for any other purpose is subject to flood related development controls.

(3) Words and expressions in this clause have the same meanings as in the instrument set out in the Schedule to the Standard Instrument (Local Environmental Plans) Order 2006.

Please note that some additional information regarding flooding and flood related development controls may be provided as advice under section 149(5) of the Act.

PART 8 – Land reserved for acquisition

No environmental planning instrument, deemed environmental planning instrument or draft environmental planning instrument applying to the land subject of this certificate provides for the acquisition of this land by a public authority, as referred to in section 27 of the Act.

PART 9 – Contribution plans

The following contribution plan(s) apply to the land subject of this certificate:

Campbelltown City Council Section 94A Development Contributions Plan

For further information about these contribution plans, contact Council's Environmental Planning Section on (02) 4645 4196.

PART 9A – Biodiversity certified land

The land subject of this certificate is not biodiversity certified land (within the meaning of Part 7AA of the Threatened Species Conservation Act 1995).

PART 10 – Biobanking agreements

The land subject of this certificate is not land to which a biobanking agreement under Part 7A of the Threatened Species Conservation Act 1995 relates (but only in so far as Council has been notified of the existence of any such agreement by the Director-General of the Department of Environment, Climate Change and Water).

PART 11 – Bush fire prone land

All of the land subject of this certificate has been identified as bush fire prone land on the Campbelltown City Council - Bush Fire Prone Land Map that has been certified for the purposes of section 146(2) of the Act.

Please note that in accordance with section 66 of the Rural Fires Act 1997 and relevant regulations, a Bush Fire Hazard Reduction Notice may have been issued on this land. It is recommended that advice be obtained from the Macarthur Zone Rural Fire Service.

PART 12 – Property vegetation plans

No property vegetation plan applies to the land subject of this certificate as the whole of the Campbelltown City local government area is excluded from the operation of the Native Vegetation Act 2003.

PART 13 – Orders under Trees (Disputes Between Neighbours) Act 2006

No order has been made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land subject of this certificate (but only to the extent that Council has been notified of any such orders).

PART 14 – Directions under Part 3A

No direction, in force under section 75P(2)(c1) of the Act, that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land subject of this certificate under Part 4 of the Act does not have effect, has been issued by the Minister.

PART 15 – Site compatibility certificates and conditions for seniors housing

a) No current site compatibility certificate (seniors housing), of which Council is aware, exists in respect of proposed development on the land subject of this certificate.

b) No conditions of consent to a development application, granted after 11 October 2007, of the kind referred to in clause 18(2) of State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 have been imposed in respect of proposed development on the land subject of this certificate.

PART 16 – Site compatibility certificates for infrastructure

No valid site compatibitlity certificate (infrastructure), of which Council is aware, exisits in respect of proposed development on the land subject of this certificate.

PART 17 – Site compatibility certificates and conditions for affordable rental housing

(1) No current site compatibility certificate (affordable rental housing), of which Council is aware, exists in respect of proposed development on the land subject of this certificate.

(2) No conditions of consent to a development application of the kind referred to in clause 17(1) or 37(1) of State Environmental Planning Policy (Affordable Rental Housing) 2009 have been imposed in respect of proposed development on the land subject of this certificate.

Matters prescribed by section 59(2) of the Contaminated Land Management Act 1997

(a) The land subject of this certificate is not significantly contaminated land within the meaning of the Contaminated Land Management Act 1997.

(b) The land subject of this certificate is not subject to a management order within the meaning of the Contaminated Land Management Act 1997.

(c) The land subject of this certificate is not the subject of an approved voluntary management proposal within the meaning of the Contaminated Land Management Act 1997.

(d) The land subject of this certificate is not subject to an ongoing maintenance order within the meaning of the Contaminated Land Management Act 1997.

(e) The land subject of this certificate is not the subject of a site audit statement within the meaning of the Contaminated Land Management Act 1997 provided to Council.

Jeff Lawrence, per
Director Planning and Environment

New South Wales

Part 1 Preliminary

1 Name of plan

This plan may be cited as *Campbelltown Local Environmental Plan—District 8 (Central Hills Lands)*.

2 Aims, objectives etc

This plan aims to ensure that the Central Hills Lands District of the City of Campbelltown retains the rural character that was envisaged for it during the planning that preceded the urbanisation of that City.

3 Land to which plan applies

This plan applies to land in the Central Hills Lands District of the City of Campbelltown as shown on the map, with boundaries as indicated on the map, other than the land to which the following environmental planning instruments apply:

Campbelltown Local Environmental Plan No 93

4 Relationship to other environmental planning instruments

(1) This plan:

(a) repeals the environmental planning instruments referred to in subclause (2), and

(b) amends *Interim Development Order No 19—City of Campbelltown* in the manner set out in subclause (3).

(2) The following environmental planning instruments are repealed:

(a) *Interim Development Order No 14—City of Campbelltown*,

(b) such other deemed environmental planning instruments and local environmental plans as, immediately before the appointed day, applied to the land to which this plan applies, but to the extent only to which those instruments and plans so applied to that land.

(3) *Interim Development Order No 19—City of Campbelltown* is amended by omitting clause 1A and by inserting instead the following clause:

1A This Order does not apply to the land to which the following environmental planning instruments apply:

Campbelltown Local Environmental Plan No 62.

5 Interpretation

(1) In this plan, except in so far as the context or subject-matter otherwise indicates or requires:

appointed day means the day on and from which this plan takes effect.

Central Hills Lands means the land to which this plan applies.

Council means the Council of the City of Campbelltown.

demolition, in relation to a building or work, means the damaging, defacing, destruction, pulling down or removal of the building or work, in whole or in part.

dual occupancy building means a building containing 2 dwellings only.

freeway means land shown on the map by means of a broken black line in the breaks of which appears the letter "F".

hotel means any premises specified in a hotelier's licence granted under the *Liquor Act 1982*.

item of the environmental heritage means a building, work, relic or place that is identified or described in Schedule 1.

market gardening means the growing of vegetables for commercial purposes.

recreation area means:

(a) a children's playground,

(b) an area used for sporting activities or sporting facilities, or

(c) an area used to provide facilities for recreational activities which promote the physical, cultural or intellectual welfare of persons within the community, being facilities provided by:

(i) the Council, or

(ii) a body of persons associated for the purpose of the physical, cultural or intellectual welfare of persons within the community,

but does not include a racecourse or a showground.

relic means any deposit, object or material evidence relating to the settlement (including Aboriginal habitation), prior to 1 January 1900, of the Central Hills Lands.

renovation, in relation to a building or work, means:

(a) the making of structural changes to the inside or outside of the building or work, or

(b) the making of non-structural changes to the fabric or appearance of the outside of the building or work, including changes that involve the repair, or the painting, plastering or other decoration, of the building or work.

the map means the map marked "Campbelltown Local Environmental Plan—District 8 (Central Hills Lands)".

(2) In this plan, except in so far as the context or subject-matter otherwise indicates or requires:

(a) a reference to a building or place used for a purpose includes a reference to a building or place intended to be used for the purpose,

(b) a reference to a map is a reference to a map deposited in the office of the Council, and

(c) a reference to land within a zone specified in clause 9 is a reference to land shown on the map in the manner indicated in clause 8 as the means of identifying land of the zone so specified.

6 Adoption of 1980 Model Provisions

The *Environmental Planning and Assessment Model Provisions 1980*, except for:

(a) the definitions of ***agriculture***, ***hotel***, ***map*** and ***tavern*** in clause 4 (1), and

(b) clauses 7, 8, 15–28 and 31–33,

are adopted for the purposes of this plan.

7 Consent authority

The Council shall be the consent authority for the purposes of this plan.

Part 2 General restrictions on development of land

8 Zones indicated on the map

For the purposes of this plan, land to which this plan applies shall be within a zone specified hereunder if the land is shown on the map in the manner specified hereunder in relation to that zone:

Zone No 5 (a) (Special Uses "A")—stippled black and lettered "5 (a)".

Zone No 5 (c) (Proposed Local Roads and Local Roads Widening)—stippled black and lettered "5 (c)".

Zone No 5 (d) (Special Uses "D" (Railways))—stippled black and lettered "5 (d)".

Zone No 5 (g) (Special Uses "G" (Botanic Gardens))—lettered "5 (g)".

Zone No 6 (c) (Open Space (Regional))—lettered "6 (c)".

Zone No 7 (d1) (Environmental Protection (Scenic))—lettered "7 (d1)".

9 Zone objectives and development control table

(1) The objectives of a zone are set out in the Table to this clause under the heading "Objectives of zone" appearing in the matter relating to the zone.

(2) Except as otherwise provided by this plan, in relation to land with a zone specified in the Table to this clause, the purposes (if any) for which:

(a) development may be carried out without development consent,

(b) development may be carried out only with development consent, and

(c) development is prohibited,

are specified under the headings "Without development consent", "Only with development consent" and "Prohibited", respectively, appearing in the matter relating to the zone.

(3) Except as otherwise provided by this plan, the Council shall not grant consent to the carrying out of development on land to which this plan applies unless the Council is of the opinion that the carrying out of the development is consistent with the objectives of the zone within which the development is proposed to be carried out.

Table

Zone No 5 (a) (Special Uses "A")

1 Objectives of zone

The objective of this zone is to set aside certain land for community purposes.

2 Without development consent

Nil.

3 Only with development consent

The purpose indicated by the lettering on the map; drainage; roads.

4 Prohibited

Any purpose not included in Item 3.

Zone No 5 (c) (Proposed Local Roads and Local Roads Widening)

1 Objectives of zone

The objective of this zone is to set aside certain land for proposed local roads and local roads widening.

2 Without development consent

Drainage; roads, utility installations (other than gas holders or generating works).

3 Only with development consent

Nil.

4 Prohibited

Any purpose not included in Item 2.

Zone No 5 (d) (Special Uses "D" (Railways))

1 Objectives of zone

The objective of this zone is to set aside certain land for railway purposes.

2 Without development consent

Any purpose authorised under the *Government Railways Act 1912*; roads; utility installations (other than gas holders or generating works).

3 Only with development consent

Nil.

4 Prohibited

Any purpose not included in Item 2.

Zone No 5 (g) (Special Uses "G" (Botanic Gardens))

1 Objectives of zone

The objective of this zone is to set aside certain land for use as a Botanic Garden.

2 Without development consent

Agriculture; horticulture; works for the purpose of landscaping, gardening and bushfire hazard reduction.

3 Only with development consent

Purposes that, in the opinion of the Council, are ancillary to any of the purposes referred to in Item 2.

4 Prohibited

Any purpose not included in Item 2 or 3.

Zone No 6 (c) (Open Space (Regional))

1 Objectives of zone

The objective of this zone is to recognise the regional open space that has been identified by the Department of Environment and Planning.

2 Without development consent

Works for the purpose of landscaping, gardening and bushfire hazard reduction.

3 Only with development consent

Buildings which are used in connection with a purpose referred to in this Item and which are under the care, control and management of the Council; drainage; forestry; recreation areas; refreshment rooms; roads.

4 Prohibited

Any purpose not included in Item 2 or 3.

Zone No 7 (d1) (Environmental Protection (Scenic))

1 Objectives of zone

The objectives of this zone are:

(a) to set aside certain land as a protected scenic environment,

(b) to ensure that that land will remain a rural environment providing visual contrast to the urban areas of Campbelltown, Camden and Liverpool,

(c) to ensure that the inhabitants of Campbelltown will continue to have views of, and access to, a rural environment,

(d) to maintain a stock of land that is capable of being developed for the purpose of providing recreation establishments of the kind that require large areas of open space, and

(e) to preserve existing farming and agricultural research activities.

2 Without development consent

Nil.

3 Only with development consent

Any purpose not included in 4.

4 Prohibited

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.

Part 3 Special provisions

10 Subdivision

(1) Land to which this plan applies shall not be subdivided except with the consent of the Council.

(2) The council shall not consent to the subdivision of land within Zone No 7 (d1) unless each of the allotments to be created by the subdivision has an area of not less than 100 hectares.

11 Dwelling-houses

(1) The Council shall not consent to the erection of a dwelling-house on an allotment of land that has an area of less than 100 hectares.

(2) Subclause (1) does not prevent the Council from consenting to the erection of a dwelling-house on an allotment of land that has an area of less than 100 hectares, if the allotment:

(a) was in existence immediately before 20 September 1974, and was not then owned by any person who owned any other allotment of land adjacent to or adjoining that allotment, or

(b) is identified or described in Schedule 2.

(3) Not more than one dwelling-house may be erected on an allotment of land within Zone No 7 (d1).

(4) Notwithstanding subclause (3), one additional dwelling-house may, with the consent of the Council, be erected on an allotment of land within Zone No 7 (d1) for each 40 hectares of the land if the Council is satisfied that each such additional dwelling-house will be occupied by a person employed or engaged by the owner of the land in the use, for the purposes of agriculture (other than intensive animal or horticultural husbandry), of that land or of other land that belongs to that owner and that adjoins or is adjacent to that land.

(5) Notwithstanding subclause (3), one additional dwelling-house may, with the consent of the Council, be erected on an allotment of land within Zone No 7 (d1) if the Council is satisfied:

(a) that the allotment:

(i) was, immediately before the appointed day, being used, and

(ii) has, since the appointed day, been continually used,

for the purposes of market gardening, and

(b) that the additional dwelling-house will be occupied by a person employed or engaged by the owner of the land in the use, for the purposes of market gardening, of that land.

12 Dual occupancy buildings

(1) A person may, with the consent of the Council:

(a) erect a dual occupancy building, or

(b) alter or add to a dwelling-house so as to create a dual occupancy building,

on an allotment of land on which a dwelling-house may be erected pursuant to this plan.

(2) A reference in subclause (1) to a dwelling-house does not include a reference to an additional dwelling-house referred to in section 11 (4).

(3) The Council shall not consent to the erection or creation of a dual occupancy building on any allotment of land unless it is satisfied that appropriate arrangements have been made for the provision of water, sewerage and drainage services to that land.

(4) The Council may, as a condition of its consent to the erection of a dual occupancy building on any allotment of land, impose a condition to the effect that:

(a) the owner of the allotment shall occupy one of the dwellings in the building, or

(b) the dual occupancy building shall be so designed and constructed as to have the appearance of a single dwelling-house,

as may impose both of those conditions.

(5) For the purpose of enabling development to be carried out in accordance with this clause (as in force at the time the development is carried out) or in accordance with a consent granted under the Act, the operation of any agreement, covenant or instrument which purports to impose restrictions on the carrying out of development on land to which this plan applies, to the extent necessary to serve that purpose, shall not apply to any such development.

(6) Pursuant to section 28 of the Act, the Governor approved of subclause (5) before the making of this plan.

12A Refreshment rooms within existing dwelling-houses—Zone No 7 (d1)

A person may, with the consent of the Council, carry out development for the purposes of refreshment rooms within existing dwelling-houses within Zone No 7 (d1).

13 Escarpment Preservation Area

(1) In this clause:

Escarpment Preservation Area means land shown cross-hatched black on the map.

external surfaces, in relation to a building, includes the external walls of the building and any cladding thereon and any doors, door and window frames, columns, roofs, fences and any other surfaces of the building visible from the outside of the building.

prescribed materials means materials that are:

(a) dark-coloured and of low reflective quality, or

(b) painted or similarly treated with dark-coloured paint of low reflective quality,

and that blend with the landscape of the site of the building of which they form part.

(2) A person shall not:

(a) carry out development with an Escarpment Preservation Area, or

(b) clear vegetation from land within an Escarpment Preservation Area,

except with the consent of the Council.

(3) In determining whether to grant consent as referred to in subclause (2), the Council shall have regard to:

(a) the existing vegetation on the allotment concerned, and

(b) any provision made in the relevant development application for the planting of vegetation.

(4) A person shall not erect a building on an allotment of land within an Escarpment Preservation Area if the proposed building will have a maximum height above natural ground level of more than 7.6 metres.

(5) A person shall not erect a building on an allotment of land within an Escarpment Preservation Area unless the external surfaces of the building consist of prescribed materials.

14 Development on steep land

(1) This clause applies to land within Zone No 6 (c) or 7 (d1).

(2) A person shall not carry out any development on land having a gradient of more than 1 in 6 except with the consent of the Council.

(3) Subclause (2) does not require a person to obtain the consent of the Council for the excavation or filling of land if the level of the land to be excavated or filled is not likely, when the excavation or filling has been completed, to vary by more than 0.5 metre from the natural level of the land.

(4) In deciding whether or not to grant consent as referred to in subclause (2), the Council shall have regard to such details regarding:

(a) the proposed excavation or filling,

(b) the means whereby the stability of the land will be maintained, and

(c) the existing vegetation and any proposed plantings in and around the land to be excavated or filled,

as the Council may consider appropriate.

15 Tree preservation

A person shall not, on land within any zone other than Zone No 5 (g), ringbark, cut down, lop or wilfully destroy any tree except with the consent of the Council.

16 Advertising structures

(1) An advertising structure shall not be erected, and an advertisement shall not be displayed,

on land to which this plan applies except with the consent of the Council.

(2) The Council shall not grant consent as referred to in subclause (1) unless the advertisement appearing on the proposed advertising structure, or the advertisement proposed to be displayed, as the case may be:

(a) relates to the land upon which the advertising structure is proposed to be erected, or the advertisement is proposed to be displayed, as the case may be, and

(b) specifies one or more of the following particulars:

(i) the purposes for which the land is used,

(ii) the name of any person occupying, or carrying on business on, the land,

(iii) a description of the business carried on on the land,

(iv) a description of any goods or services supplied from premises on the land.

17 Retail plant nurseries in Zone No 7 (d1)

A person shall not, on land within Zone No 7 (d1), use a retail plant nursery for the purpose of selling goods other than plants grown on the land.

18 Items of the environmental heritage

(1) A person shall not, in respect of a building, work, relic or place that is an item of the environmental heritage:

(a) demolish, renovate or extend the building or work,

(b) damage or despoil the relic or place or any part of the relic or place,

(c) excavate any land for the purpose of exposing or removing the relic,

(d) erect a building on the land on which the building, work or relic is situated or on the land which comprises that place, or

(e) subdivide the land on which the building, work or relic is situated or the land which comprises that place,

except with the consent of the Council.

(2) The Council shall not grant consent as referred to in subclause (1) unless it has made an assessment of:

(a) the significance of the item as an item of the environmental heritage of the Central Hills Lands,

(b) the extend to which the carrying out of the development in accordance with the consent would affect the historic, scientific, cultural, social, archaeological, architectural, natural or aesthetic significance of the item and its site,

(c) whether the setting of the item, and in particular whether any stylistic, horticultural or archaeological features of the setting, should be retained, and

(d) whether the item constitutes a danger to the users or occupiers of the item or to the public.

Note. The website of the Heritage Branch of the Department of Planning has publications that provide guidance on assessing the impact of proposed development on the heritage

significance of items (for example, *Statements of Heritage Impact*).

19 Conservative incentive relating to items of the environmental heritage

Nothing in this plan prevents the Council from granting consent to the use for any purpose of a building that is an item of the environmental heritage, or of the land on which such a building is erected, where the Council is satisfied that:

(a) the use is not likely to have any adverse effect on the amenity of the area, and

(b) conservation of the building depends on the Council granting consent to that use.

20 (Repealed)

21 Advertising of applications concerning items of the environmental heritage

(1) Pursuant to section 30 (4) of the Act, the provisions of sections 84, 85, 86, 87 (1) and 90 of the Act apply to and in respect of:

(a) the demolition of a building or work that is an item of the environmental heritage, and

(b) the use of a building or land referred to in clause 19 for a purpose for which development would, but for that subclause, be prohibited under this plan,

in the same way as those provisions apply to and in respect of designated development.

(2) Subclause (1) does not apply to the partial demolition of a building or work where, in the opinion of the Council, the partial demolition is of a minor nature and does not adversely affect the significance of the building or work as an item of the environmental heritage of the Central Hills Lands.

22 Acquisition of reserved land

(1) The owner of any land:

(a) within Zone No 5 (c) or

(b) within Zone No 6 (c),

may be notice in writing require:

(c) the Council, or

(d) the corporation,

respectively, to acquire that land.

(2) On receipt of a notice referred to in subclause (1), the public authority concerned shall acquire the land to which the notice relates.

23 Use of reserved land pending acquisition

(1) Until land within Zone No 5 (c) or 6 (c) has been acquired pursuant to clause 22, development for any purpose may, with the consent of the Council, be carried out on that land.

(2) The Council shall not grant consent as referred to in subclause (1) to the development of land within Zone No 6 (c) except with the concurrence of the Director.

(3) In considering whether to grant concurrence under subclause (2), the Director shall take into consideration:

(a) the imminence of development of the land for the purpose for which it is zoned,

(b) whether the proposed development will render the land unfit for that purpose,

(c) the cost of reinstatement of the land for that purpose, and

(d) whether a refusal to grant concurrence will cause undue financial hardship to any owner, mortgagee or lessee of the land.

24 Advertising of applications concerning certain development

Pursuant to section 30 (4) of the Act, the provisions of sections 84, 85, 86, 87 (1) and 90 of the Act apply to and in respect of any development proposed to be carried out for the purposes of an educational establishment, a hospital, an institution, a place of public worship or a recreational establishment in the same way as those provisions apply to and in respect of designated development.

25 Agriculture, animal boarding or training establishments, intensive horticulture and intensive livestock keeping

(1) In this Plan:

agriculture means the use of land for horticulture and livestock keeping and breeding but does not include intensive horticulture, intensive livestock keeping or the use of land for an animal boarding or training establishment.

animal boarding or training establishment means a building or place used for commercial boarding, breeding, keeping, maintaining, receiving or training of dogs, cats, horses or birds.

intensive horticulture means the use of land to grow a commercial crop of plants, trees or fungi, whether under cover or in the open using any of the following:

(a) hydroponics,

(b) sprinkler systems,

(c) artificial housing,

(d) crop protection structures,

(e) market gardening,

(f) orcharding,

(g) the growing of field flowers,

but does not include the growing of produce solely for personal consumption or enjoyment by an owner or occupier of a dwelling on the land on which they are grown.

intensive livestock keeping means the use of land for keeping and nurturing cattle, sheep, goats, poultry, or other livestock by predominantly supplementary feeding methods and, without limiting the generality of the foregoing, includes the use of land for:

(a) feedlots,

(b) piggeries,

(c) poultry farms,

(d) the farming of fish (including crustaceans),

but does not include the use of land for an animal boarding or training establishment or the use of land for the keeping of livestock intended solely for personal consumption or enjoyment by an owner or occupier of a dwelling on the land.

(2) The Council in determining an application for consent required for any of the uses defined in this clause shall take into consideration the following matters:

(a) the need to protect the quality of downstream watercourses,

(b) the need to conserve native vegetation,

(c) the need to protect environmentally sensitive land, such as riparian land, land containing an endangered species, population or ecological community or a vulnerable species within the meaning of the *Threatened Species Conservation Act 1995*,

(d) the need to protect the amenity of the area from noise, spray drift, odour or any other potentially offensive consequences,

(e) the need to limit the impact of development on flood liable land,

(f) the cumulative impact of the proposed use of the land for the keeping of livestock or the growing of produce intended solely for personal consumption or enjoyment by an owner or occupier of a dwelling on the land.

Schedule 1 Items of the environmental heritage

(Clause 5 (1))

"Varro Ville", lot 21, DP 564065.

"Blairmount", lot 3, DP 527426.

"Campbelltown Reservoir", Lots A and B, DP 156085, Narellan Road, Kenny Hill.

"Ingleburn Dam", Part Lot 7, DP 596839, St Andrews Road, Varroville.

"Sydney Water Supply Upper Canal", generally following western boundary of local government area of the City of Campbelltown and south, in so far as it traverses land under this plan.

Schedule 2 Existing holdings

(Clause 11 (2))

Lot 502, DP 618380, Raby Road.

Lots 1, 2, 3, 5, 20, 22 and 23, DP 29019, St James Road.

Lot 2, DP 845124, St Andrews Road.

Lot 10, DP 739366, Raby Road.

Lot 71, DP 706546, St Andrews Road.

Lot 610, DP 825193, Columbia Street.

Lot 1002, DP 719093, Torrens Place.

Lots 3002, 3003 and 3004, DP 802845, Menangle Road.

Historical notes

The following abbreviations are used in the Historical notes:

Am	amended	LW	legislation website	Sch	Schedule
Cl	clause	No	number	Schs	Schedules
Cll	clauses	p	page	Sec	section
Div	Division	pp	pages	Secs	sections
Divs	Divisions	Reg	Regulation	Subdiv	Subdivision
GG	Government Gazette	Regs	Regulations	Subdivs	subdivisions
Ins	inserted	Rep	repealed	Subst	substituted

Table of amending instruments

Campbelltown Local Environmental Plan—District 8 (Central Hills Lands) published in Gazette No 18 of 29.1.1988, p 521 and amended in GGs No 170 of 11.11.1988, p 5932, No 134 of 3.12.1993, p 7099, No 18 of 14.2.1997, p 575, No 97 of 26.6.1998, p 4951 and as follows:

Campbelltown Local Environmental Plan No 216 (GG No 159 of 8.12.2000, p 12880)

2008 (571) State Environmental Planning Policy (Repeal of Concurrence and Referral Provisions) 2008. GG No 157 of 12.12.2008, p 11946.
Date of commencement, 15.12.2008, cl 3.

Table of amendments

Cl 3	Am 11.11.1988.
Cll 5, 6	Am 8.12.2000.
Cl 9, table	Am 8.12.2000.
Cl 11	Am 14.2.1997.
Cl 12A	Ins 3.12.1993.
Cl 18	Am 2008 (571), Sch 3.35 [1].
Cl 20	Rep 2008 (571), Sch 3.35 [2].
Cl 25	Ins 8.12.2000.
Sch 1	Am 26.6.1998.
Sch 2	Am 14.2.1997.

WorkCover NSW Records

NSW GOVERNMENT | WorkCover

WorkCover NSW
92–100 Donnison Street, Gosford, NSW 2250
Locked Bag 2906, Lisarow, NSW 2252
T 02 4321 5000 F 02 4325 4145
Customer Service Centre 13 10 50
DX 731 Sydney workcover.nsw.gov.au

Our Ref: D14/073454
Your Ref: I-Hui Waung

10 June 2014

RECEIVED
13 JUN 2014
SYDNEY

Attention: I – Hui Waung
SLR Consulting Australia Pty Ltd
2 Lincoln St
Lane Cove NSW 2066

Dear Mr I-Hui Waung,

RE SITE: 71 St Andrews Rd Denham Court NSW

I refer to your site search request received by WorkCover NSW on 3 June 2014 requesting information on licences to keep dangerous goods for the above site.

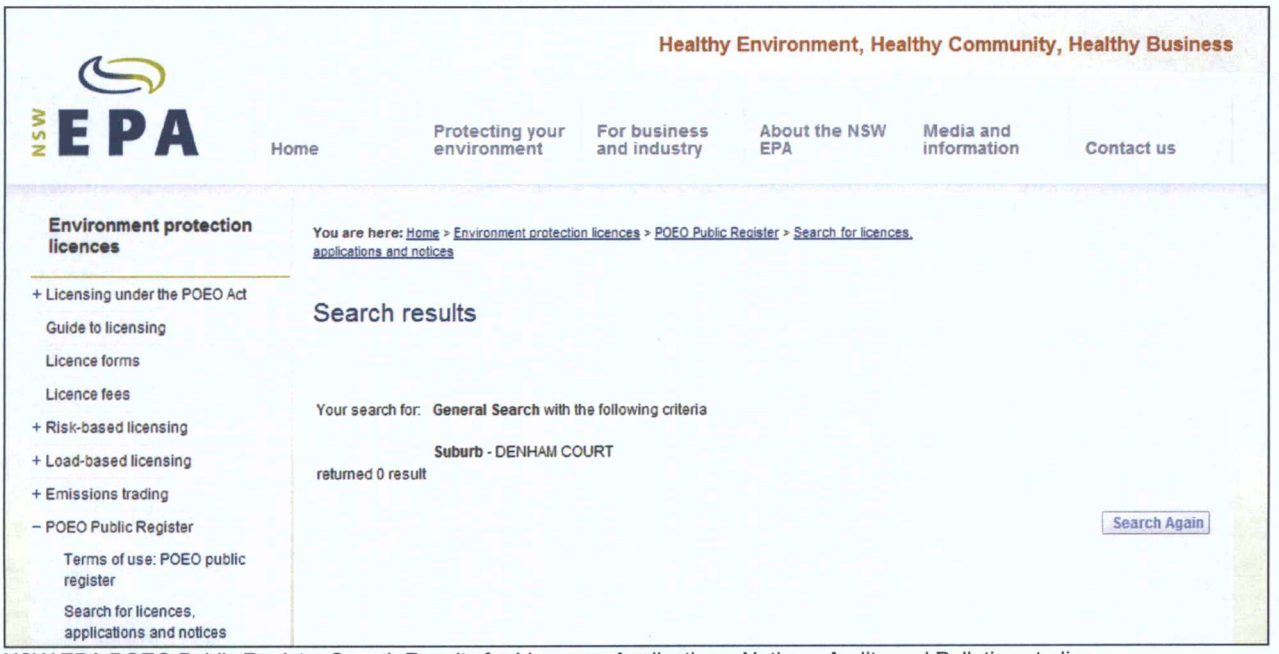
A search of the Stored Chemical Information Database (SCID) and the microfiche records held by WorkCover NSW has not located any records pertaining to the above mentioned premises.

If you have any further queries please contact the Dangerous Goods Licensing Team on (02) 4321 5500.

Yours Sincerely

Brent Jones
Senior Licensing Officer
Dangerous Goods Team

NSW EPA Records - 2014



NSW EPA POEO Public Register Search Results for Licences, Applications, Notices, Audits and Pollution studies and reduction programs for "Denham Court", undertaken by SLR on 26 June 2014.
http://www.epa.nsw.gov.au/prpoeoapp/

NSW WorkCover Records – 2015

Environment protection licences

+ Licensing under the POEO Act
Guide to licensing
Licence forms
Licence fees
+ Risk-based licensing
+ Load-based licensing
+ Emissions trading
– POEO Public Register
Terms of use: POEO public register
Search for licences, applications and notices
Search for penalty notices
Search for prosecutions and civil proceedings
Enforceable undertakings
Exemptions and approvals
Licensing FAQs
List of licences
Unlicensed premises still regulated by the EPA
National Pollutant Inventory
+ Compliance audit program
+ Reporting and managing incidents
+ Wind farm regulation
NSW Gas Plan Regulation
+ Gas industry in NSW
+ Native forest bio-fuel

Home > Environment protection licences > POEO Public Register > Search for licences, applications and notices

Search results

Your search for: **General Search** with the following criteria

Suburb - DENHAM COURT

returned 0 result

Search Again

Environment protection licences

+ Licensing under the POEO Act
Guide to licensing
Licence forms
Licence fees
+ Risk-based licensing
+ Load-based licensing
+ Emissions trading
– POEO Public Register
Terms of use: POEO public register
Search for licences, applications and notices
Search for penalty notices
Search for prosecutions and civil proceedings
Enforceable undertakings
Exemptions and approvals
Licensing FAQs
List of licences
Unlicensed premises still regulated by the EPA
National Pollutant Inventory
+ Compliance audit program
+ Reporting and managing incidents
+ Wind farm regulation
NSW Gas Plan Regulation
+ Gas industry in NSW

Home > Environment protection licences > POEO Public Register > Search for licences, applications and notices

Search results

Your search for: **General Search** with the following criteria

Suburb - VARROVILLE

returned 0 result

Search Again

Contaminated land

+ Management of contaminated land
+ Consultants and site auditor scheme
+ Underground petroleum storage systems
Guidelines under the CLM Act
NEPM amendment
+ Further guidance
– Record of notices
About the record
Search the record
Search tips
Disclaimer
List of NSW contaminated sites notified to EPA
Frequently asked questions
Forms
+ Other contamination issues

Home > Contaminated land > Record of notices

Search results

Your search for:LGA: Campbelltown City Council

Matched 3 notices relating to 1 site.

Search Again
Refine Search

Suburb	Address	Site Name	Notices related to this site
CAMPBELLTOWN	62 Blaxland ROAD	Chemical Storage	3 former

Page 1 of 1

1 September 2015

DAPTO	RailCorp Dapto 2-14 Hamilton Street (Rear of property) OTHER	Other Industry	Regulation under CLM Act not required
DARLINGHURST	Proposed Retail Unit 139-155 Palmer STREET	Unclassified	Regulation under CLM Act not required
DARLINGHURST	Cross City Tunnel Riley and William Streets OTHER	Service Station	Contamination being managed via the planning process (EP&A Act)
DEE WHY	Caltex Service Station 793-797 Pittwater ROAD	Service Station	Under assessment
DEE WHY	Dee Why Town Centre Pittwater ROAD	Other Industry	Under assessment
DENILIQUIN	Caltex Service Station 116-118 Hardinge STREET	Service Station	Under assessment
DENILIQUIN	Former Shell Depot 143-147 Napier STREET	Other Petroleum	Regulation under CLM Act not required
DENILIQUIN	Shell Coles Express Service Station 336 Victoria STREET	Service Station	Contamination currently regulated under CLM Act
DENILIQUIN	Deniliquin Gasworks 365 and 369 George St and 380 Charlotte Street OTHER	Gasworks	Under assessment
DENILIQUIN	Landmark Chemicals Storage 90-101 Davidson STREET	Chemical Industry	Under assessment
DENILIQUIN	BP Depot Corner Harding and Sloane Streets OTHER	Service Station	Under assessment
DENMAN	Former Industrial Site 10 Fontana WAY	Metal Industry	Regulation under CLM Act not required
DENMAN	Former Industrial Site 9 Fontana WAY	Metal Industry	Regulation under CLM Act not required
DOYALSON	Part Lot 3 DP 259306 Off David STREET	Other Industry	Regulation under CLM Act not required
DOYALSON	Mannering Colliery (formerly Wyee) Rutleys ROAD	Other Industry	Under assessment
DOYALSON	Munmorah Colliery Scenic DRIVE	Other Industry	Under assessment
DOYALSON	Munmorah Power Station Scenic Drive (Central Coast Highway) OTHER	Unclassified	Regulation under CLM Act not required
DOYALSON NORTH	Shell Coles Express Service Station 260-270 Pacific HIGHWAY	Service Station	Under assessment
DRUMMOYNE	Caltex Service Station 191-195 Lyons ROAD	Service Station	Under assessment

UNANDERRA	Caltex Service Station 86-98 Princes HIGHWAY	Service Station	Under assessment
UNANDERRA	Veolia Environmental Services 9 Waynote PLACE	Other Industry	Regulation under CLM Act not required
URALLA	Caltex Service Station 103 Bridge STREET	Service Station	Under assessment
URALLA	Phoenix Foundry 44 Duke STREET	Metal Industry	Regulation under CLM Act not required
URUNGA	Former Antimony Process plant Hillside DRIVE	Chemical Industry	Contamination currently regulated under CLM Act
VALENTINE	BP Express Service Station 855 Macquarie DRIVE	Service Station	Under assessment
VALENTINE	Valentine Public School Tallawalla ROAD	Unclassified	Regulation under CLM Act not required
VILLAWOOD	Toll Properties 110A Christina ROAD	Other Industry	Under assessment
VILLAWOOD	Former Orica Crop Care 2 Christina ROAD	Chemical Industry	Contamination currently regulated under CLM Act
VILLAWOOD	Former Defence Site 29 Biloela STREET	Landfill	Regulation under CLM Act not required
VILLAWOOD	Former Siemens/Westinghouse 49 Miowera ROAD	Other Industry	Contamination formerly regulated under the CLM Act
VILLAWOOD	Former Electrical Component Manufacturer 66 Christina ROAD	Other Industry	Contamination currently regulated under CLM Act
VILLAWOOD	PPG Industries 9 Birmingham AVENUE	Chemical Industry	Under assessment
VINEYARD	Shell Coles Express Service Station 731 Windsor ROAD	Service Station	Regulation under CLM Act not required
VINEYARD	Woolworths Petrol Corner of Windsor Road and Melbourne STREET	Service Station	Under assessment
WAGGA WAGGA	Mobil Service Station 106 Edward STREET	Service Station	Under assessment
WAGGA WAGGA	Former Shell Depot 11-15 Lake Albert ROAD	Other Petroleum	Under assessment

Land Title Ownership Records

ACN: 108 037 029
Ph: 02 8296 9000
Fax: 02 9279-2185

Service First Registration Pty Ltd
Suite 804, Level 8, 46 Market Street
Sydney 2000
PO Box 784 QVB Post Shop NSW 1230
DX 189 Sydney

Summary of Owners Report

LPI **Sydney**

Address: - 71 St Andrews Road, Denham Court

Description: - Lot 71 D.P. 706546

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
24.10.1857 (1857 to 1929)	Robert Thomson (Gentleman) (& His Deceased Estate)	Book 52 No. 353
23.10.1929 (1929 to 1947)	Peter Thomson (Farmer)	Book 1583 No. 987
09.12.1947 (1947 to 1953)	Robert Stanley Thomson (Dairy Farmer)	Book 2055 No. 20 Now Vol 6613 Fol 96
07.07.1953 (1953 to 1972)	Edward Morrish Philpott (Provision Merchant) Ivy Mahala Philpott (Married Woman)	Vol 6613 Fol 96 Now Vol 6835 Fol 210
14.06.1972 (1972 to 1987)	Campbelltown City Council	Vol 6835 Fol 210 Now 71/706546
07.12.1987 (1987 to 1988)	Glensaugh Pty Limited	71/706546
19.05.1988 (1988 to 1998)	Edward George Morgan Edna Carol Morgan	71/706546
03.08.1998 (1998 to date)	# Dario Petrin # Angelina Markovski Now # Angelina Petrin	71/706546

# Denotes current registered proprietors

Leases: - NIL

Easements: -

- 11.05.1939 Easement for Water Supply (Book 1855 No. 326)
- 13.07.1965 Easement for Transmission Line (J 983241)
- 20.11.1968 Easement for Water Supply (L 343711)
- 27.03.1985 Easement for Water Service (V 636425)
- 29.05.2002 Easement for Pipeline (D.P. 1016616 & 8352310)

Yours Sincerely
Mark Groll
4 June 2014
(Ph: 0412 199 304)

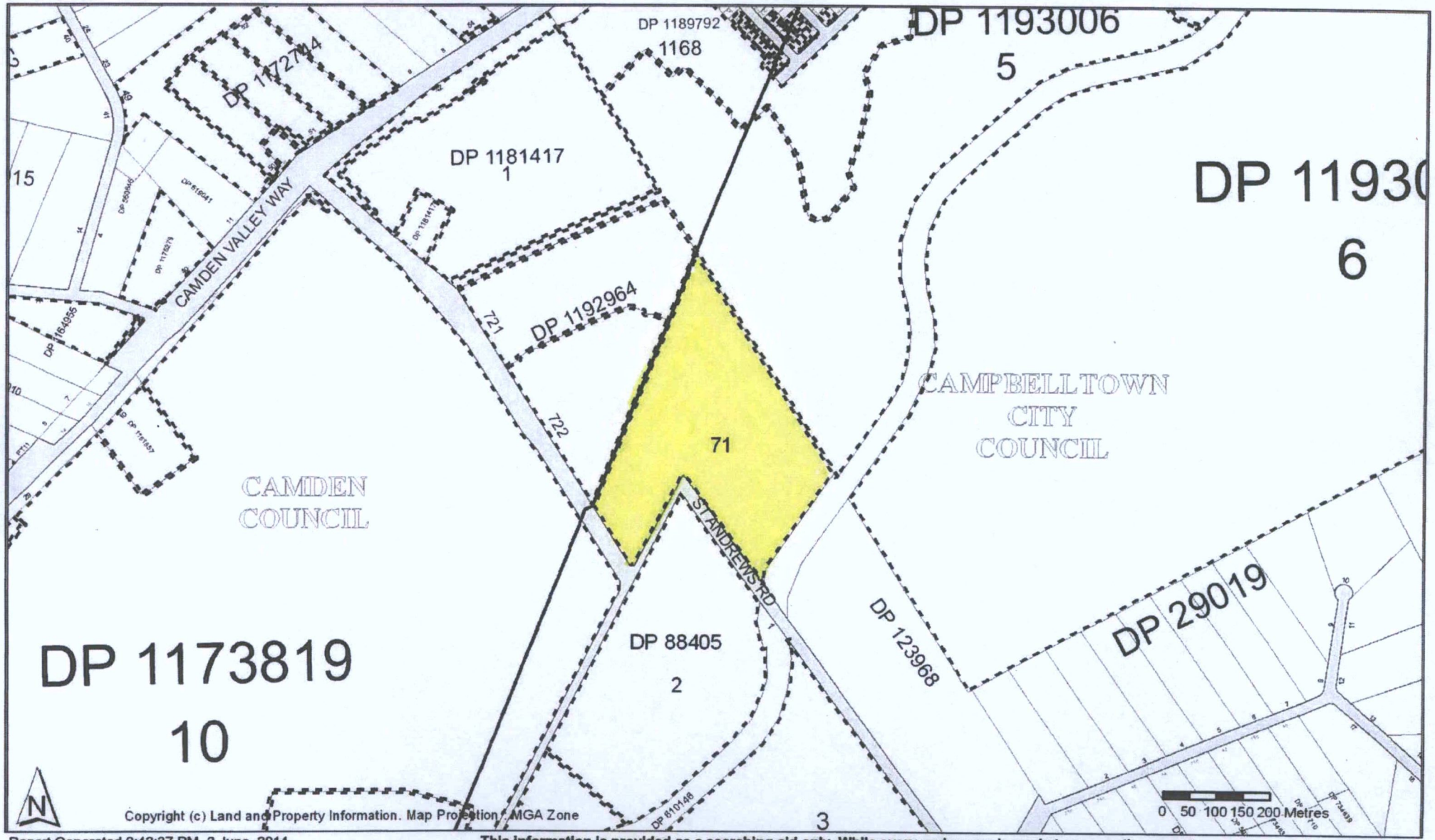
Land & Property Information
A division of the Department of Finance & Services

Cadastral Records Enquiry Report

Ref : surv:scim-grollm

Requested Parcel : Lot 71 DP 706546 **Identified Parcel** : Lot 71 DP 706546

Locality : DENHAM COURT **LGA** : CAMPBELLTOWN **Parish** : MINTO **County** : CUMBERLAND



Copyright (c) Land and Property Information. Map Projection : MGA Zone

Report Generated 2:42:37 PM, 3 June, 2014

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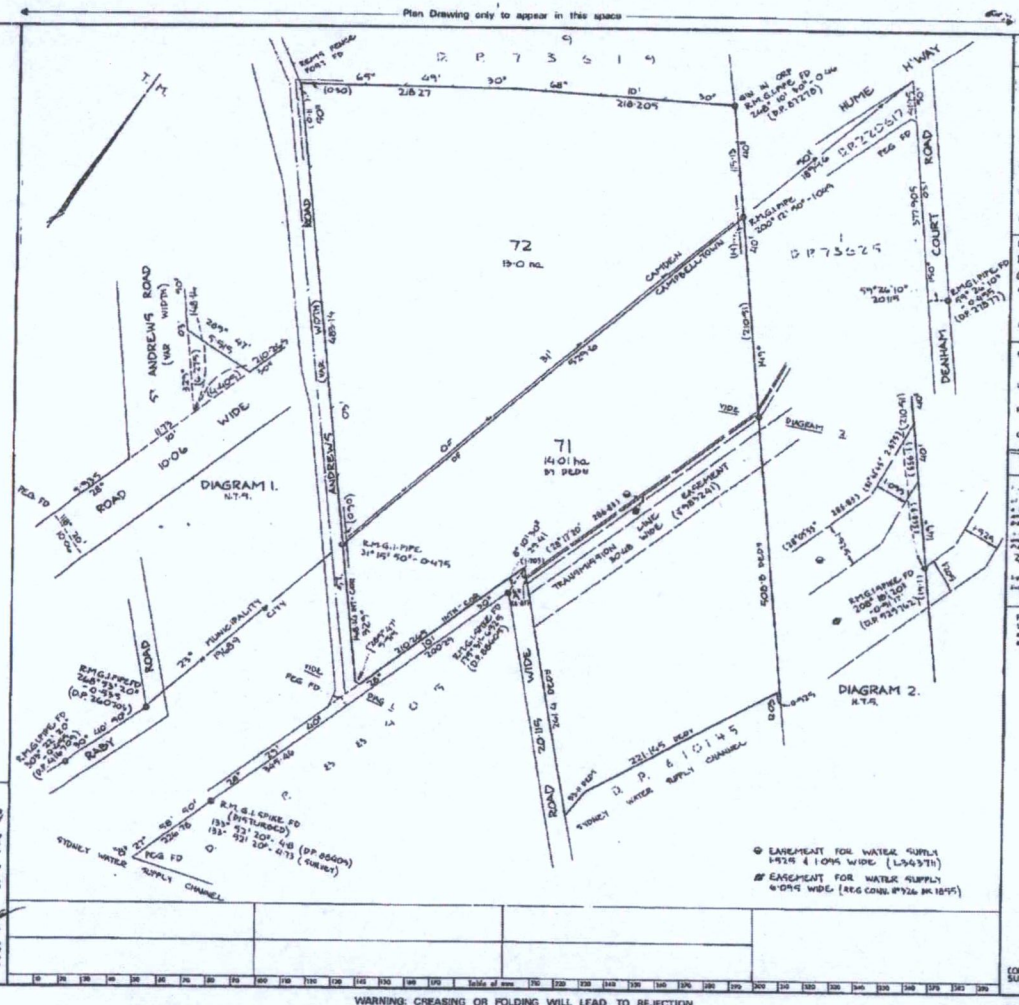
This information is provided as a searching aid only. While every endeavour is made to ensure the current cadastral pattern is accurately reflected, the Registrar General cannot guarantee the information provided. For all ACTIVITY PRIOR to SEPT 2002 you must refer to the RGs Charting and Reference Maps.

PLAN FORM 2

Plan Drawing only to appear in this space

*OFFICE USE ONLY

Signatures and seals only.



D. P. 706546

Registered: 16-8-1984

C.A.: No. 38/1984 OF 30-4-1984

Title System: TORRENS

Purpose: SUBDIVISION

Ref. Map: U8237-7 U7337-9

Last Plan: D.P. 386940

PLAN OF SUBDIVISION OF PART LOT 8 OF THE GLEDWOOD ESTATE AS SHOWN IN D.P. 386940

Reduction Ratio 1: 2500
Lengths are in metres

Mun./Bldg. Clay: CAMDEN CAMPBELLTOWN

Locality: LEPPINGTON DENHAM COURT

Parish: MINTO

County: CUMBERLAND

This is sheet 1 of the plan in sheets.
(Details if inapplicable)

RONALD JAMES RENGGER
CLEAN, CACKENBY & HAYWARD PHILIP
of St. WARDS ST. CAMPBELLTOWN

a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan is accurate and has been made *(1) by me (2) under my immediate supervision or accordance with the Survey Practice Regulations, 1933, and was completed on 1 21st SEPT 1983

Signature

Surveyor registered under Surveyors Act, 1929, as amended
Datum Line of Analysis
*Strike out either (1) or (2). Insert date of survey.

Panel for use only for statements of extinction to dedicate public roads or to create public reserves, drainage reserves, easements or restrictions as to user

CONNECTIONS AMENDED AND ADDED AT SURVEYOR'S REQUEST

SURVEYOR'S REFERENCE: 65590

The Common Seal of the Council of the City of Campbelltown was hereto affixed by virtue of a resolution passed by Council on the 9th day of JANUARY 1983.

Mayor

Town Clerk

Council Clerk's Certificate

I hereby certify that —

(a) the requirements of the Local Government Act, 1919, further than the requirements for the registration of plans; and

*(b) the requirements of section 349 of the Metropolitan Water, Sewerage and Drainage Act, 1924, as amended, Hunter District Water, Sewerage, and Drainage Act, 1938, as amended

have been complied with by the applicant in relation to the proposed SUBDIVISION

Subdivision No. 38/1984

Date 30th APRIL, 1984

Council Clerk

*This part of certificate to be deleted where the application is only for a consolidated lot or the opening of a new road or where the land to be subdivided is wholly outside the area of operations of the Metropolitan Water Sewerage and Drainage Board and the Hunter District Water Board.

*Delete if inapplicable.

M.P.D.

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

I, Bruce Richard Davies, Under Secretary for Lands and Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this day.

16th August, 1984

Req:R618460 /Doc:DP 0706546 P /Rev:17-Nov-1992 /Sts:OK.OK /Prt:03-Jun-2014 14:37 /Pgs:ALL /Seq:1 of 1
Ref:mg /Src:M

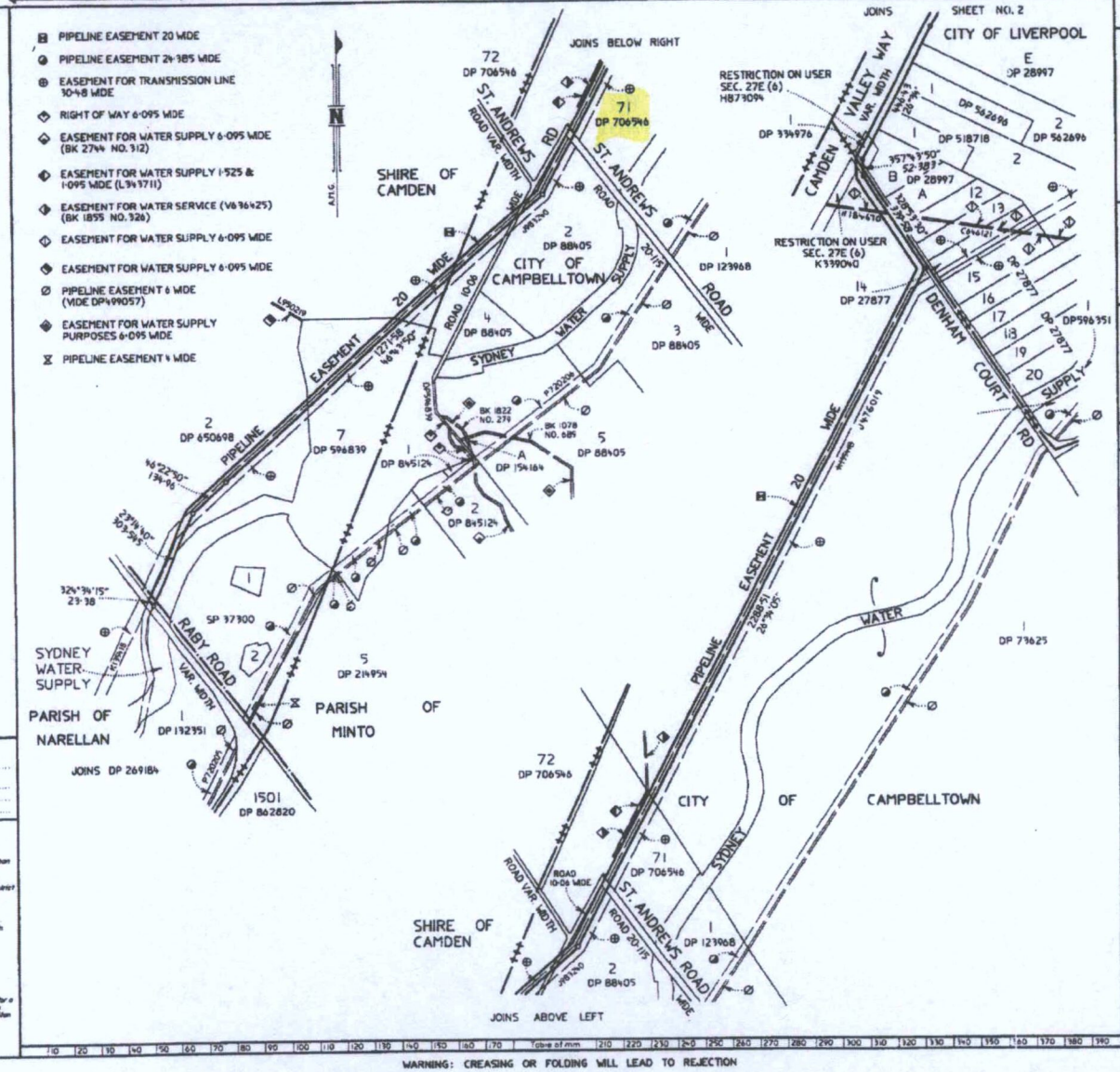
PLAN FORM 2

Plan Drawing only to appear in this space

*OFFICE USE ONLY

DP269185

SIGNATURE AND SEALS ONLY.



Crown Lands Office Approval

PLAN APPROVED ..... Authorised Officer

Land District .....

Paper No. .....

Field Book ..... pages .....

Council Clerk's Certificate

I hereby certify that –

(a) the requirements of the Local Government Act, 1919 (other than the requirements for the registration of plans), and

*(b) the requirements of section 742 of the Metropolitan Water, Sewerage and Drainage Act, 1924, as amended, Hunter District Water, Sewerage, and Drainage Act, 1938, as amended

have been complied with by the applicant in relation to the proposed ..... (Insert "new road", "subdivision" or "consolidated lot") set out hereon.

Subdivision No. .....

Date .....

(Signature) ..... Council Clerk

Council File No. .....

*This part of certificate is to be deleted where the application is only for a consolidated lot or the opening of a new road or where the land to be subdivided is wholly outside the areas of operations of the Metropolitan Water, Sewerage and Drainage Board and the Hunter District Water Board.

†Delete if inapplicable.

SURVEYOR'S REFERENCE: NO 0799–00/ CHECKLIST COUNTRY

Registered: 23-3-1999

C.A.: .....

Title System: TORRENS, CROWN LAND & OLD SYSTEM

Purpose: EASEMENT

Ref. Map: U7190–3, U8297–7, U8297–4, U8297–1, U8295–7

Last Plan: SEE LIST OF PLANS USED IN THE PREPARATION OF COMPILATION

PLAN

PROPOSED EASEMENT FOR PIPELINE FROM MINTO TO HOXTON

Lengths are in metres. Reduction Ratio 1: 8000

L.G.A.: CAMDEN, LIVERPOOL & CAMPBELLTOWN

Locality: MINTO TO HOXTON

Parish: NARELLAN, MINTO, COOK & CABRAMATTA

County: CUMBERLAND

This is sheet 1 of my plan in 2 sheets. (Delete if inapplicable).

I, Noel Reginald O'Brien

of Keller Fox & McGhie Pty. Ltd. ACN 010 142 197 15 Leichhardt Street, Spring Hill Q 4000

a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan .....

is accurate and has been made in accordance with the Survey Practice Regulations, 1933 and any special requirements of the Department of Lands, and was completed on

2nd August 1998

Signature .....

Surveyor registered under Surveyors Act, 1929, as amended.

Datum Line of Azimuth

& bearing

Plans used in preparation of survey/compilation.

SEE SHEET NO. 2

PANEL FOR USE ONLY for statements of intention to dedicate public roads, to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

PURSUANT TO THE NEW SOUTH WALES PIPELINES ACT 1967 IT IS INTENDED TO ACQUIRE A PIPELINE EASEMENT 20 METRES WIDE AND 15 METRES WIDE.

THIS COMPILED PLAN IS FOR LICENCE PURPOSES ONLY AND WILL BE REPLACED BY A SURVEY SHOWING FULL CONNECTIONS TO PARCEL BOUNDARIES PRIOR TO VESTING.

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 Tube of mm 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390

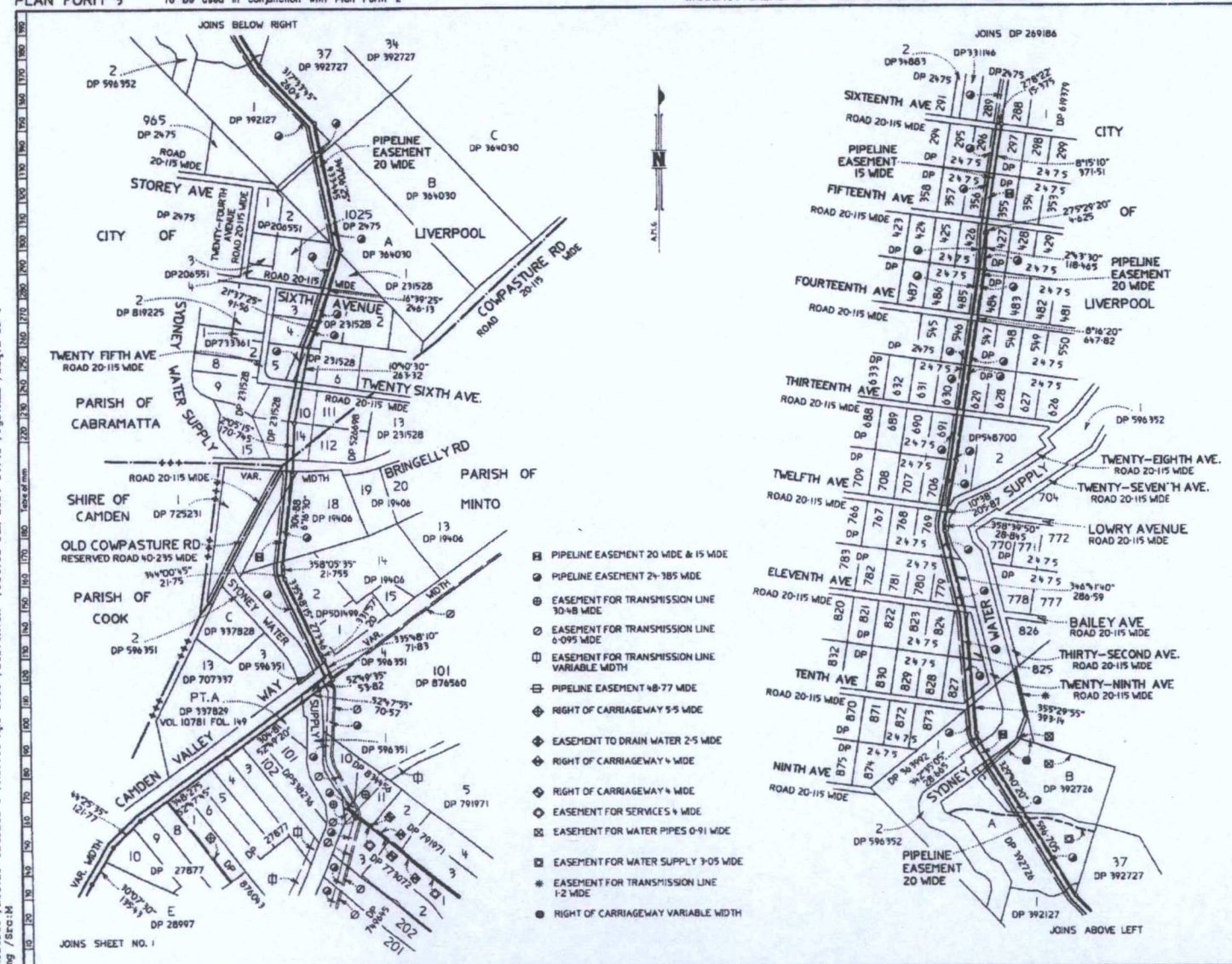
WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

Req:R618568 /Doc:DP 0269185 P /Rev:01-Apr-1999 /Sts:OK.OK /Prt:03-Jun-2014 14:41 /Pgs:ALL /Seq:1 of 4
Ref:mg /Src:M

PLAN FORM 3 To be used in conjunction with Plan Form 2

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

* OFFICE USE ONLY



DP269185

Registered: 23-3-1999

This is sheet 2 of my plan in 2 sheets dated 26 August 1998

Surveyor registered under Surveyors Act 1929.

This is sheet of the plan of Sheets covered by my Certificate No. of

Council Clerk

For use where space is insufficient in any panel on Plan Form 2.

PLANS USED IN PREPARATION OF COMPILATION:

DP650698, DP596839, DP88405, DP706546, DP501499, DP19406, DP231528, DP364030, DP392127, DP392726, DP363992, DP2475 DP499001, DP73625, DP334976, DP596351, DP123971, DP548706, DP499057, DP392727, DP596352, DP548700

THIS COMPILED PLAN IS FOR LICENCE PURPOSES ONLY AND WILL BE REPLACED BY A SURVEY SHOWING FULL CONNECTIONS TO PARCEL BOUNDARIES PRIOR TO VESTING.

Reduction Ratio 1: 8000

Plan Drawing only to appear in this space

SURVEYOR'S REFERENCE: NO 0795-00/ CHECKLIST COUNTRY

Req:R618568 /Doc:DP 0269185 P /Rev:01-Apr-1999 /Sts:OK.OK /Prt:03-Jun-2014 14:41 /Pgs:ALL /Seq:2 of 4
Ref:ing /Src:M

Req:R618568 /Doc:DP 0269185 P /Rev:01-Apr-1999 /Sts:OK.OK /Prt:03-Jun-2014 14:41 /Pgs:ALL /Seq:3 of 4
Ref:mg /Src:M

Pipelines Act 1967

Form 14

PART 1

Full name and address of Applicant for variation of licence in whose favor all lands and easements over lands have been acquired or are intended to be acquired.

Duke Eastern Gas Pipeline Pty Ltd (ACN 006 919 115)

and

DEI Eastern Gas Pipeline Pty Ltd (ACN 068 570 847)

Business Address: Duke Energy Eastern Gas Pipeline Project
Level 10
120 Collins Street
MELBOURNE, Victoria 3000

Pipelines Act 1967
Form 14

Instrument Pursuant to Schedule 3 of the Pipelines Regulation, 1993
This is Sheet 1 of a 6 Sheet Instrument
Plan No. DP269185
Plan of Pipeline from Wilton to Horsley Park containing 4 plans
with 12 plan sheets as certified on 24 August, 1998 by or on behalf of the applicant

SCHEDULE TO PART 2 OF THIS INSTRUMENT

Land or Easement (related to relevant Sheet No. of within mentioned plan)	Reference to Title and Land Description (including County, Parish and LGA) *(Highlighted Lots affected by proposed pipeline)*	Names of Interested Persons (State Nature of Interest)	Details (Registered No. or Description) of any Instrument referred to in Schedule 3 (10) (d) or (e) to Pipelines Regulation 1993
	County of Cumberland Parish of Minto LGA of Campbelltown & Camden		
81 Pipeline Easement shown in Sheet 1/2 of DP269185	Volume 9708 Folio 250 Lot 2 in Deposited Plan 580998 Easement for transmission line	The Uniting Church in Australia Property Trust (NSW) (Owner) D886183 (NSW Electricity Transmission Authority)	To be acquired under the Pipelines Act
82 Pipeline Easement shown in Sheet 1/2 of DP269185	7/588839 Lot 7 in Deposited Plan 588839	Sydney Water Corporation Ltd (Owner)	To be acquired under the Pipelines Act
83 Pipeline Easement shown in Sheet 1/2 of DP269185	County of Cumberland Parish of Minto LGA of Campbelltown Road Reserve	City of Campbelltown (Owner)	To be acquired under the Pipelines Act
84 Pipeline Easement shown in Sheet 1/2 of DP269185	Volume 7114 Folio 85 Lots 2, 3, 4 & 5 in Deposited Plan 88480 Easement for transmission line Mortgage Caveat Caveat Mortgage	Glenalagh Pty Limited (Owner) D886183 (NSW Electricity Transmission Authority) Z590269 (State Bank of New South Wales Limited) Z52550 (Edward George Morgan & Edna Carol Morgan) Z577706 (State Bank of New South Wales Limited) X340890 (St George Bank Limited)	To be acquired under the Pipelines Act
85 Pipeline Easement shown in Sheet 1/2 of DP269185	St Andrews Road	City of Campbelltown (Owner)	To be acquired under the Pipelines Act
86 Pipeline Easement shown in Sheet 1/2 of DP269185	71/706546 Lot 71 in Deposited Plan 706546 Easement for water supply Easement for transmission line Mortgage	Dario Pasko & Angelina Markowski (Owners) Bk 1858 No 326 D886183 (NSW Electricity Transmission Authority) 5170334 (Commonwealth Bank of Australia)	To be acquired under the Pipelines Act
87 Pipeline Easement shown in Sheet 1/2 of DP269185	1/73825 Lot 1 in Deposited Plan 73825 Easement for transmission line Mortgage Easement for water supply	Leppington Park Pastoral Pty Limited (Owner) D886183 (NSW Electricity Transmission Authority) 3744089 (J. Albert & Son Pty Limited) H184670	To be acquired under the Pipelines Act

Duke Eastern Gas Pipeline Pty Ltd ACN 006 919 115 — Signature of Applicant M.J. Sotak

DEI Eastern Gas Pipeline Pty Ltd ACN 068 570 847 — Signature of Applicant M.J. Sotak

LAND DISTRICT 23-3-1999

Pipelines Act 1967
Form 14

Instrument Pursuant to Schedule 3 of the Pipelines Regulation, 1993
This is Sheet 2 of a 6 Sheet Instrument
Plan No. DP269185
Plan of Pipeline from Wilton to Horsley Park containing 4 plans
with 12 plan sheets as certified on 24 August, 1998 by or on behalf of the applicant

SCHEDULE TO PART 2 OF THIS INSTRUMENT

Land or Easement (related to relevant Sheet No. of within mentioned plan)	Reference to Title and Land Description (including County, Parish and LGA) *(Highlighted Lots affected by proposed pipeline)*	Names of Interested Persons (State Nature of Interest)	Details (Registered No. or Description) of any Instrument referred to in Schedule 3 (10) (d) or (e) to Pipelines Regulation 1993
	County of Cumberland Parish of Minto LGA of Liverpool		
88 Pipeline Easement shown in Sheet 1/2 of DP269185	Denham Court Road	City of Liverpool (Owner)	To be acquired under the Pipelines Act
89 Pipeline Easement shown in Sheet 1/2 of DP269185	1/334976 Lot 1 in Deposited Plan 334976 Mortgage	Fortunato Domenico Raso, Rosaria Raso, Angela Agata Raso & Teresa Raso (Owners) 0444833 (Commonwealth Bank of Australia)	To be acquired under the Pipelines Act
90 Pipeline Easement shown in Sheet 1/2 & 2/2 of DP269185	Carnoon Valley Way	City of Liverpool (Owner)	To be acquired under the Pipelines Act
91	THIS LINE HAS BEEN INTENTIONALLY LEFT BLANK		
92 Pipeline Easement shown in Sheet 2/2 of DP269185	Gaz 13-10-1882 Fol 5439 Lot 4 in Deposited Plan 686361	Sydney Water Corporation Ltd (Owner)	To be acquired under the Pipelines Act
93 Pipeline Easement shown in Sheet 2/2 of DP269185	2/501499 Lot 2 in Deposited Plan 501499 Easement for pipeline	Minister Administering The Environmental Planning & Assessment Act, 1979 (Owner) P720206	To be acquired under the Pipelines Act
94 Pipeline Easement shown in Sheet 2/2 of DP269185	18/19406 Lot 18 in Deposited Plan 19406 Easement for pipeline	Minister Administering The Environmental Planning & Assessment Act, 1979 (Owner) P720206	To be acquired under the Pipelines Act
95 Pipeline Easement shown in Sheet 2/2 of DP269185	Old Cowpasture Road	City of Liverpool (Owner)	To be acquired under the Pipelines Act
96 Pipeline Easement shown in Sheet 2/2 of DP269185	Bringelly Road	City of Liverpool (Owner)	To be acquired under the Pipelines Act
97 Pipeline Easement shown in Sheet 2/2 of DP269185	County of Cumberland Parish of Cabramatta & Minto LGA of Liverpool 14/231528 Lot 14 in Deposited Plan 231528	AGL Gas Networks Limited (Owner)	To be acquired under the Pipelines Act
98 Pipeline Easement shown in Sheet 2/2 of DP269185	County of Cumberland Parish of Cabramatta LGA of Liverpool 10/231528 Lot 10 in Deposited Plan 231528	AGL Gas Networks Limited (Owner)	To be acquired under the Pipelines Act

LAND DISTRICT 23-3-1999

Duke Eastern Gas Pipeline Pty Ltd ACN 006 919 115 — Signature of Applicant M.J. Sotak

DEI Eastern Gas Pipeline Pty Ltd ACN 068 570 847 — Signature of Applicant M.J. Sotak

Pipelines Act 1967
Form 14

Instrument Pursuant to Schedule 3 of the Pipelines Regulation, 1993
This is Sheet 3 of a 6 Sheet Instrument
Plan No. DP269185
Plan of Pipeline from Wilton to Horsley Park containing 4 plans
with 12 plan sheets as certified on 24 August, 1998 by or on behalf of the applicant

SCHEDULE TO PART 2 OF THIS INSTRUMENT

Land or Easement (related to relevant Sheet No. of within mentioned plan)	Reference to Title and Land Description (including County, Parish and LGA) *(Highlighted Lots affected by proposed pipeline)*	Names of Interested Persons (State Nature of Interest)	Details (Registered No. or Description) of any Instrument referred to in Schedule 3 (10) (d) or (e) to Pipelines Regulation 1993
99 Pipeline Easement shown in Sheet 2/2 of DP269185	Twenty Sixth Avenue	City of Liverpool (Owner)	To be acquired under the Pipelines Act
100 Pipeline Easement shown in Sheet 2/2 of DP269185	5/231528 Lot 5 in Deposited Plan 231528 Covenant Easement for pipeline	Minister Administering The Environmental Planning & Assessment Act, 1979 (Owner) K661762 P720206	To be acquired under the Pipelines Act
101 Pipeline Easement shown in Sheet 2/2 of DP269185	4/231528 Lot 4 in Deposited Plan 231528 Covenant Easement for pipeline	Minister Administering The Environmental Planning & Assessment Act, 1979 (Owner) L305464 P720206	To be acquired under the Pipelines Act
102 Pipeline Easement shown in Sheet 2/2 of DP269185	3/231528 Lot 3 in Deposited Plan 231528 Covenant Easement for pipeline	Minister Administering The Environmental Planning & Assessment Act, 1979 (Owner) L225294 P720206	To be acquired under the Pipelines Act
103 Pipeline Easement shown in Sheet 2/2 of DP269185	Sixth Avenue	City of Liverpool (Owner)	To be acquired under the Pipelines Act
104 Pipeline Easement shown in Sheet 2/2 of DP269185	1/231528 Lot 1 in Deposited Plan 231528 Covenant Easement for pipeline	Minister Administering The Environmental Planning & Assessment Act, 1979 (Owner) K947737 P720206	To be acquired under the Pipelines Act
105 Pipeline Easement shown in Sheet 2/2 of DP269185	Volume 5183 Folio 125 Lot A in Deposited Plan 364030 Covenant Easement for pipeline	George Baulovich (Owner) D909483 P720206	To be acquired under the Pipelines Act
106 Pipeline Easement shown in Sheet 2/2 of DP269185	37/392727 Lot 37 in Deposited Plan 392727 Easement for pipeline	Minister Administering The Environmental Planning & Assessment Act, 1979 (Owner) P720206	To be acquired under the Pipelines Act
107 Pipeline Easement shown in Sheet 2/2 of DP269185	1/392127 Lot 1 in Deposited Plan 392127 Easement for pipeline	Minister Administering The Environmental Planning & Assessment Act, 1979 (Owner) P720206	To be acquired under the Pipelines Act

LAND DISTRICT 23-3-1999

Duke Eastern Gas Pipeline Pty Ltd ACN 006 919 115 — Signature of Applicant M.J. Sotak

DEI Eastern Gas Pipeline Pty Ltd ACN 068 570 847 — Signature of Applicant M.J. Sotak

Pipelines Act 1967
Form 14

Instrument Pursuant to Schedule 3 of the Pipelines Regulation 1993
This is Sheet 4 of a 6 Sheet Instrument
Plan No DP269185
Plan of Pipeline from Wilton to Horsley Park containing 4 plans
with 12 plan sheets as certified on 24 August, 1998 by or on behalf of the applicant

SCHEDULE TO PART 2 OF THIS INSTRUMENT

Land or Easement (related to relevant Sheet No. of within mentioned plan)	Reference to Title and Land Description (including County, Parish and LGA) *(Highlighted Lots affected by proposed pipeline)*	Names of Interested Persons (State Nature of Interest)	Details (Registered No. or Description) of any Instrument referred to in Schedule 3 (10) (d) or (e) to Pipelines Regulation 1993
108 Pipeline Easement shown in Sheet 2/2 of DP269185	A/392726 Lot A as Deposited Plan 392726 Easement for water supply Rights of carriageway Easement for pipeline Easement for water supply Easement for water pipes	Minister Administering The Environmental Planning & Assessment Act, 1979 (Owner) G280694 G299300 P720208 G280693 G299300	To be acquired under the Pipelines Act
109 Pipeline Easement shown in Sheet 2/2 of DP269185	B/392726 Lot B in Deposited Plan 392726 Easement for pipeline	Minister Administering The Environmental Planning & Assessment Act 1979 (Owner) P720208	To be acquired under the Pipelines Act
110 Pipeline Easement shown in Sheet 2/2 of DP269185	Volume 14035 Folio 240 Lot 2 in Deposited Plan 596352 Easement for pipeline	Sydney Water Corporation Ltd (Owner) DP499001	To be acquired under the Pipelines Act
111 Pipeline Easement shown in Sheet 2/2 of DP269185	1/363892 Lot 1 in Deposited Plan 363892 Easement for pipeline	Minister Administering The Environmental Planning & Assessment Act, 1979 (Owner) Q163797	To be acquired under the Pipelines Act
112 Pipeline Easement shown in Sheet 2/2 of DP269185	Twenty Ninth Avenue	City of Liverpool (Owner)	To be acquired under the Pipelines Act
113 Pipeline Easement shown in Sheet 2/2 of DP269185	827/2475 Lot 827 in Deposited Plan 2475 Easement for pipeline	Sonja Matich and Marijo Matich (Owners) DP499001	To be acquired under the Pipelines Act
114 Pipeline Easement shown in Sheet 2/2 of DP269185	825/2475 Lot 825 in Deposited Plan 2475 Easement for pipeline	Pero Matich and Eliza Matich (Owners) DP499001	To be acquired under the Pipelines Act
115 Pipeline Easement shown in Sheet 2/2 of DP269185	Eleventh Avenue	City of Liverpool (Owner)	To be acquired under the Pipelines Act
116 Pipeline Easement shown in Sheet 2/2 of DP269185	Volume 13308 Folio 126 Lot 775 in Deposited Plan 2475 Easement for pipeline Mortgage	Mirko Josipovic and Ana Josipovic (Owners) P720208 S28556 (Australia and New Zealand Banking Group Limited)	To be acquired under the Pipelines Act
117 Pipeline Easement shown in Sheet 2/2 of DP269185	Volume 1368 Folio 94 Lot 780 in Deposited Plan 2475 Easement for pipeline	Douglas George Shoesmith (Owner) P720208	To be acquired under the Pipelines Act
118 Pipeline Easement shown in Sheet 2/2 of DP269185	Twelfth Avenue	City of Liverpool (Owner)	To be acquired under the Pipelines Act

REGISTERED 23-3-1999

Duke Eastern Gas Pipeline Pty Ltd ACN 006 919 115

DEI Eastern Gas Pipeline Pty Ltd ACN 068 570 847

Signature of Applicant M.J. Sotak

Signature of Applicant M.J. Sotak

Pipelines Act 1967
Form 14

Instrument Pursuant to Schedule 3 of the Pipelines Regulation, 1993
This is Sheet 5 of a 6 Sheet Instrument
Plan No. DP269185
Plan of Pipeline from Wilton to Horsley Park containing 4 plans
with 12 plan sheets as certified on 24 August, 1998 by or on behalf of the applicant

SCHEDULE TO PART 2 OF THIS INSTRUMENT

Land or Easement (related to relevant Sheet No. of within mentioned plan)	Reference to Title and Land Description (including County, Parish and LGA) *(Highlighted Lots affected by proposed pipeline)*	Names of Interested Persons (State Nature of Interest)	Details (Registered No. or Description) of any Instrument referred to in Schedule 3 (10) (d) or (e) to Pipelines Regulation 1993
119 Pipeline Easement shown in Sheet 2/2 of DP269185	Volume 11594 Folio 249 Lot 1 in Deposited Plan 548700 Covenant Easement for pipeline	Francesco Adattilni and Caterina Adattilni (Owners) AM28147 P720206	To be acquired under the Pipelines Act
120 Pipeline Easement shown in Sheet 2/2 of DP269185	Volume 7757 Folio 223 Lots 691 & 708 in Deposited Plan 2475 Easement for pipeline Mortgage	Anton Bauk and Lucija Bauk (Owners) P720208 V567030 (State Bank of New South Wales Limited)	To be acquired under the Pipelines Act
121 Pipeline Easement shown in Sheet 2/2 of DP269185	Thirteenth Avenue	City of Liverpool (Owner)	To be acquired under the Pipelines Act
122 Pipeline Easement shown in Sheet 2/2 of DP269185	Volume 7610 Folio 121 Lots 629 & 630 in Deposited Plan 2475 Easement for pipeline	Vito Rocco Polemise and Annunziata Petanza (Owners) P720208	To be acquired under the Pipelines Act
123 Pipeline Easement shown in Sheet 2/2 of DP269185	Volume 7776 Folio 28 Lot 547 in Deposited Plan 2475 Easement for pipeline	Barry Frances Mills (Owner) P720208	To be acquired under the Pipelines Act
124 Pipeline Easement shown in Sheet 2/2 of DP269185	546/2475 Lot 546 in Deposited Plan 2475 Easement for pipeline purposes Mortgage	Francesco Schintpa and Teresa Schintpa (Owners) P720206 Z187506 (State Bank of New South Wales Limited)	To be acquired under the Pipelines Act
125 Pipeline Easement shown in Sheet 2/2 of DP269185	Fourteenth Avenue	City of Liverpool (Owner)	To be acquired under the Pipelines Act
126 Pipeline Easement shown in Sheet 2/2 of DP269185	Volume 4994 Folio 98 Lot 494 in Deposited Plan 2475 Easement for pipeline	Julia Sramek and Mirko Sramek (Owners) P720208	To be acquired under the Pipelines Act
127 Pipeline Easement shown in Sheet 2/2 of DP269185	Volume 8990 Folio 245 Lot 485 in Deposited Plan 2475 Easement for pipeline	Zoran Kokulj and Danica Kokulj (Owners) P720208	To be acquired under the Pipelines Act
128 Pipeline Easement shown in Sheet 2/2 of DP269185	427/2475 Lot 427 in Deposited Plan 2475 Easement for pipeline Mortgage Mortgage	Vera Ligas (Owner) P720206 Z266534 (Westpac Banking Corporation) W2674 (Westpac Banking Corporation)	To be acquired under the Pipelines Act

REGISTERED 23-3-1999

Duke Eastern Gas Pipeline Pty Ltd ACN 006 919 115

DEI Eastern Gas Pipeline Pty Ltd ACN 068 570 847

Signature of Applicant M.J. Sotak

Signature of Applicant M.J. Sotak

Pipelines Act 1967
Form 14

Instrument Pursuant to Schedule 3 of the Pipelines Regulation, 1993
This is Sheet 6 of a 6 Sheet Instrument
Plan No. DP269185
Plan of Pipeline from Wilton to Horsley Park containing 4 plans
with 12 plan sheets as certified on 24 August, 1998 by or on behalf of the applicant

SCHEDULE TO PART 2 OF THIS INSTRUMENT

Land or Easement (related to relevant Sheet No. of within mentioned plan)	Reference to Title and Land Description (including County, Parish and LGA) *(Highlighted Lots affected by proposed pipeline)*	Names of Interested Persons (State Nature of Interest)	Details (Registered No. or Description) of any Instrument referred to in Schedule 3 (10) (d) or (e) to Pipelines Regulation 1993
129 Pipeline Easement shown in Sheet 2/2 of DP269185	426/2475 Lot 426 in Deposited Plan 2475 Easement for pipeline	Vincenza Sgro (Owner) P720206	To be acquired under the Pipelines Act
130 Pipeline Easement shown in Sheet 2/2 of DP269185	Fifteenth Avenue	City of Liverpool (Owner)	To be acquired under the Pipelines Act
131 Pipeline Easement shown in Sheet 2/2 of DP269185	356/2475 Lot 356 in Deposited Plan 2475 Easement for pipeline	Allen Robert Pasalich (Owner) P720206	To be acquired under the Pipelines Act
132 Pipeline Easement shown in Sheet 2/2 of DP269185	296/2475 Lot 296 in Deposited Plan 2475 Easement for pipeline	Allen Robert Pasalich and Frances Pasalich (Owners) P720206	To be acquired under the Pipelines Act
133 Pipeline Easement shown in Sheet 2/2 of DP269185	Sixteenth Avenue	City of Liverpool (Owner)	To be acquired under the Pipelines Act

REGISTERED 23-3-1999

Duke Eastern Gas Pipeline Pty Ltd ACN 006 919 115

DEI Eastern Gas Pipeline Pty Ltd ACN 068 570 847

Signature of Applicant M.J. Sotak

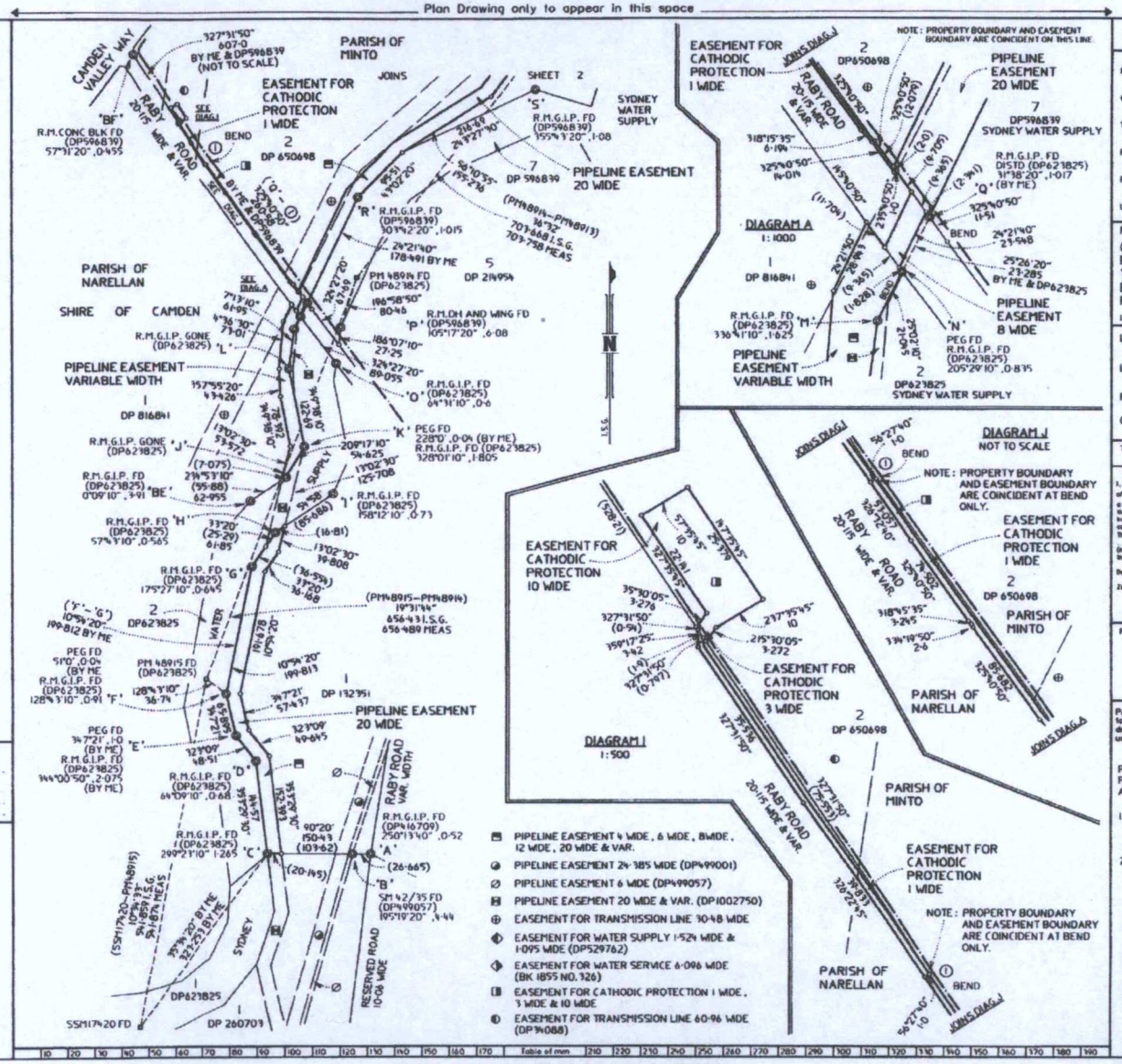
Signature of Applicant M.J. Sotak

PLAN FORM 2

Plan Drawing only to appear in this space

*OFFICE USE ONLY

SIGNATURE AND SEALS ONLY.



WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

DP1016616 (B)

Registered: JA 20-9-2001

C.A.:

Title System: TORRENS

Purpose: PIPELINES ACT 1967

Ref. Map: U7330-3, U7337-9, U8237-7, U8237-4

Last Plan: SEE LIST OF PLANS USED IN THE PREPARATION OF SURVEY

PLAN

OF PROPOSED EASEMENT FOR PIPELINE FROM CATHERINE FIELD TO LEPPINGTON AND PROPOSED EASEMENT FOR CATHODIC PROTECTION

Lengths are in metres. Reduction Ratio 1: 4000

L.G.A.: CAMDEN, CAMPBELLTOWN & LIVERPOOL

Locality: CATHERINE FIELD TO LEPPINGTON

Parish: NARELLAN & MINTO

County: CUMBERLAND

This is sheet 1 of my plan in 4 sheets. (Delete if inapplicable).

Surveyors (Practice) Regulation 1996

I, RAYMOND MERVIN KEARLE

of KOLAP FOX & McGHIE PTY. LTD., ACN 010 162 197

a surveyor registered under the Surveyors Act 1929, hereby certify that the survey represented in this plan is accurate, has been made in accordance with the Surveyors (Practice) Regulation 1996 and was completed on 20/07/2000

The survey relates to: easement & pipeline easement survey

(here specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey)

Datum Line: SSM17420 – PM48915

Zone: Suburban/County

(Signature) R. Kearle

Surveyor registered under the Surveyors Act 1929

Plans used in preparation of survey/compilation.

SEE SHEET NO. 2

PANEL FOR USE ONLY for statements of intention to dedicate public roads, to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

PURSUANT TO THE NEW SOUTH WALES PIPELINE ACT 1967 IT IS INTENDED TO ACQUIRE :

1. A PIPELINE EASEMENT 4 METRES, 6 METRES, 8 METRES, 12 METRES, 20 METRES & VARIABLE WIDTH
2. A CATHODIC PROTECTION EASEMENT 1 METRE, 3 METRES & 10 METRES WIDE

I certify that this is Sheet 1 of a plan of 4 Sheets which have been prepared in accordance with the Pipelines Regulation 2000.

Signed: [signature]

Date: 30 May 2001

Crown Lands Office Approval

PLAN APPROVED ..... Authorised Officer

Land District .....

Paper No. .....

Field Book ..... pages .....

Subdivision Certificate

I certify that the provisions of s. 109J of the Environmental Planning and Assessment Act 1979 have been satisfied in relation to the proposed ..... set out herein

(insert 'subdivision' or 'new road')

..... Authorised Person/General Manager/Accredited Certifier

Consent Authority .....

Date of endorsement .....

Accreditation No .....

Subdivision Certificate No .....

File No .....

When the plan is to be lodged electronically in the Land Titles Office, it should include a signature in an electronic or digital format approved by the Registrar General.

*Delete whichever is inapplicable.

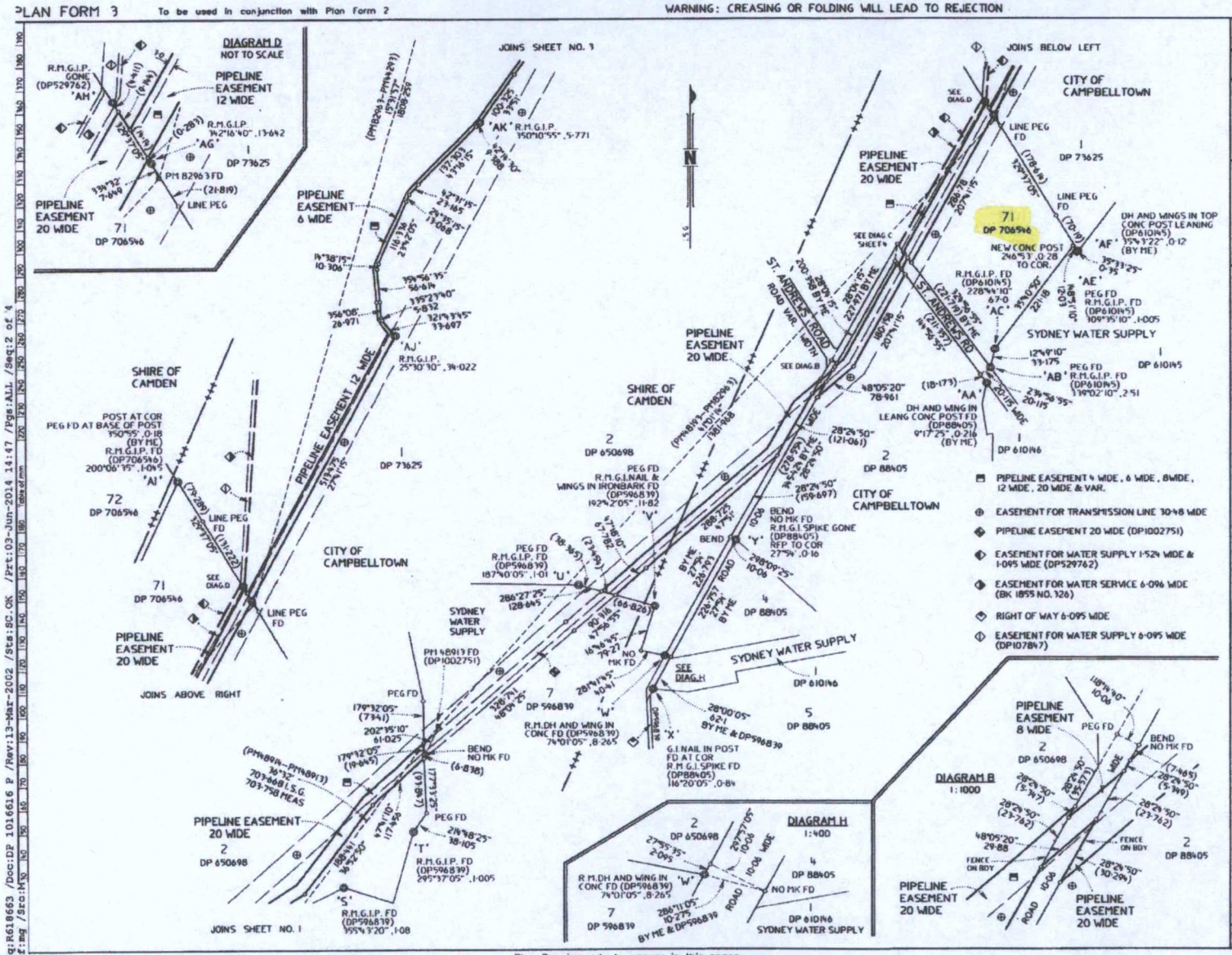
SURVEYOR'S REFERENCE: NO 0735-50/5 CHECKLIST COUNTRY

Req:R618663 /Doc:DP 1016616 P /Rev:13-Mar-2002 /Sts:SC.OK /Prt:03-Jun-2014 14:47 /Pgs:ALL /Seq:1 of 4
Ref:mg /Src:M

PLAN FORM 3 To be used in conjunction with Plan Form 2

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

* OFFICE USE ONLY



DP1016616

Registered: 20-9-2001

This is sheet 2 of my plan in 4 sheets dated 20/07/2000

Surveyor registered under Surveyors Act 1929

This is sheet 2 of the plan of 4 Sheets covered by my Certificate No. of

Council Clerk

For use where space is insufficient in any panel on Plan Form 2.

PLANS USED IN PREPARATION OF SURVEY:

DP132351, DP499057, DP416709, DP501499, DP621825, DP816841, DP650698, DP596839, DP88405, DP706546, DP610145, DP73625, DP27877, DP562696, DP876043, DP446480, DP596151, DP1002750, DP1002751, DP529762, DP34088, DP34084, DP446545, DP499001, DP610146, DP1078947, DP34976, DP1016618

I certify that this is Sheet 2 of a plan of 4 Sheets which have been prepared in accordance with the Pipelines Regulation 2000.

Signed
Date 30 May 2001

- PIPELINE EASEMENT 4 WIDE, 6 WIDE, 8 WIDE, 12 WIDE, 20 WIDE & VAR.
- EASEMENT FOR TRANSMISSION LINE 30.48 WIDE
- PIPELINE EASEMENT 20 WIDE (DP1002751)
- EASEMENT FOR WATER SUPPLY 1.524 WIDE & 1.095 WIDE (DP529762)
- EASEMENT FOR WATER SERVICE 6.096 WIDE (BK 1855 NO. 326)
- RIGHT OF WAY 8.095 WIDE
- EASEMENT FOR WATER SUPPLY 8.095 WIDE (DP1078947)

© VESTED IN DUKE EASTERN GAS PIPELINE PTY LTD & DEI EASTERN GAS PIPELINE PTY LTD GAZ. 21.12.2001 FOL. 10768

© ADDED IN LPI 20.2.2002

Reduction Ratio 1: 4000

SURVEYOR'S REFERENCE: NO 0715-50/5 CHECKLIST COUNTRY

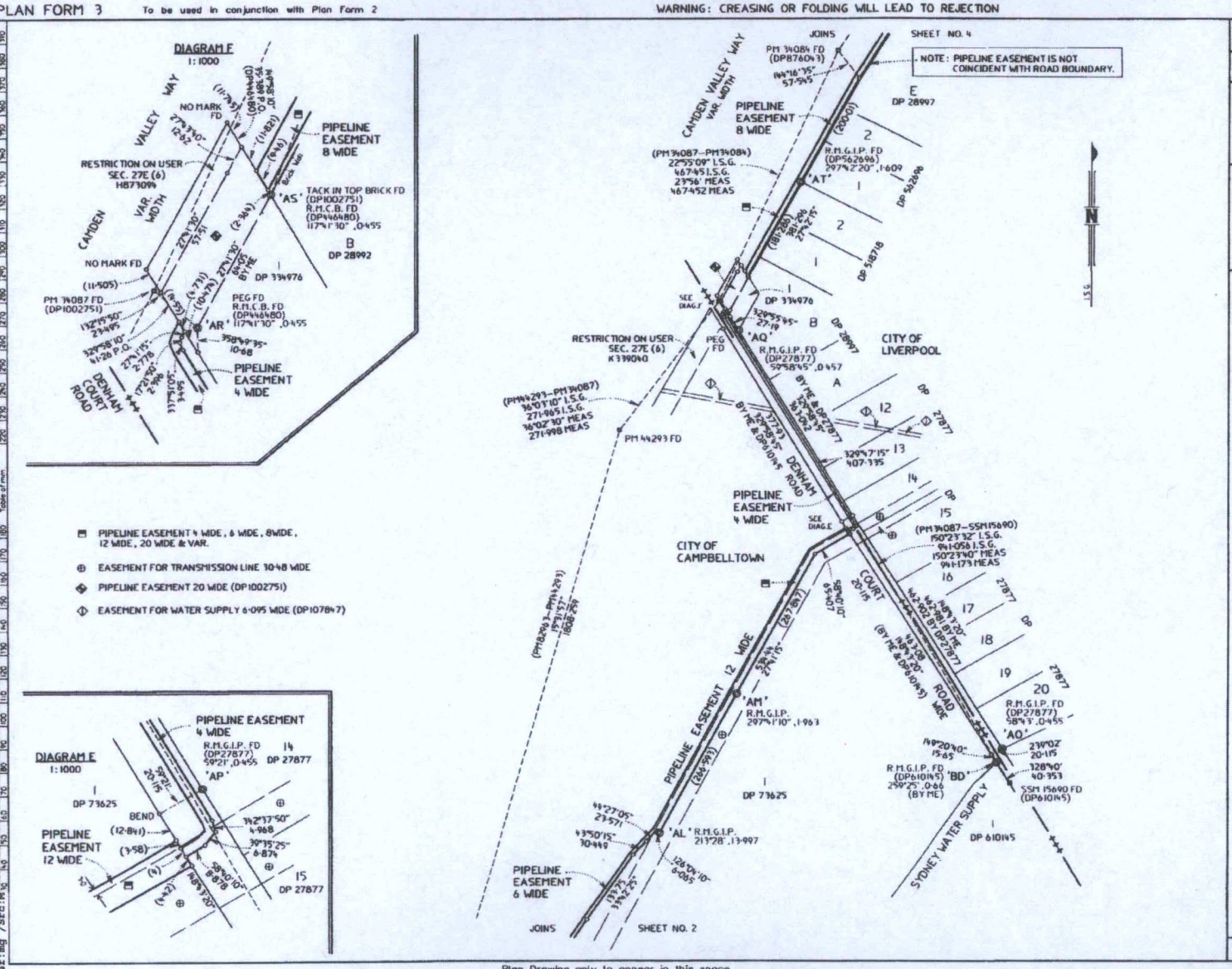
Plan Drawing only to appear in this space

Req:R618663 /Doc:DP 1016616 P /Rev:13-Mar-2002 /Sts:SC.OK /Prt:03-Jun-2014 14:47 /Pgs:ALL /Seq:2 of 4
Ref:Reg /Src:M

PLAN FORM 3 To be used in conjunction with Plan Form 2

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

* OFFICE USE ONLY



DP1016616

Registered: JA 20-9-2001

This is sheet 3 of my plan in 4 sheets dated 20/07/2000

Surveyor registered under Surveyors Act 1929.

This is sheet 3 of the plan of 4 Sheets covered by my Certificate No. of

Council Clerk

For use where space is insufficient in any panel on Plan Form 2.

I certify that this is Sheet 3 of a plan of 4 Sheets which have been prepared in accordance with the Pipelines Regulation 2000.

Signed

Date 30 May 2001

Reduction Ratio 1: 4000

Plan Drawing only to appear in this space

SURVEYOR'S REFERENCE: NO 0735-50/5 CHECKLIST COUNTRY

Req:R618663 /Doc:DP 1016616 P /Rev:13-Mar-2002 /Sts:SC.OK /Prt:03-Jun-2014 14:47 /Pgs:ALL /Seq:3 of 4

PLAN FORM 3 To be used in conjunction with Plan Form 2

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

* OFFICE USE ONLY

DP1016616

Registered 20-9-2001 *

This is sheet 4 of my plan in 4 sheets dated 20/07/2000

Surveyor registered under Surveyors Act 1929.

This is sheet 4 of the plan of 4 Sheets covered by my Certificate No. of

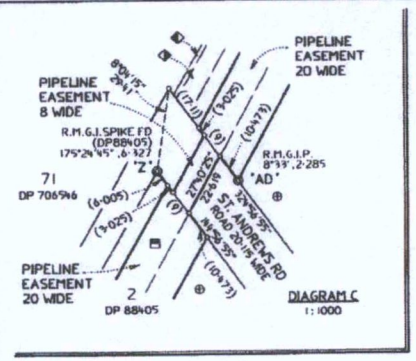
Council Clerk

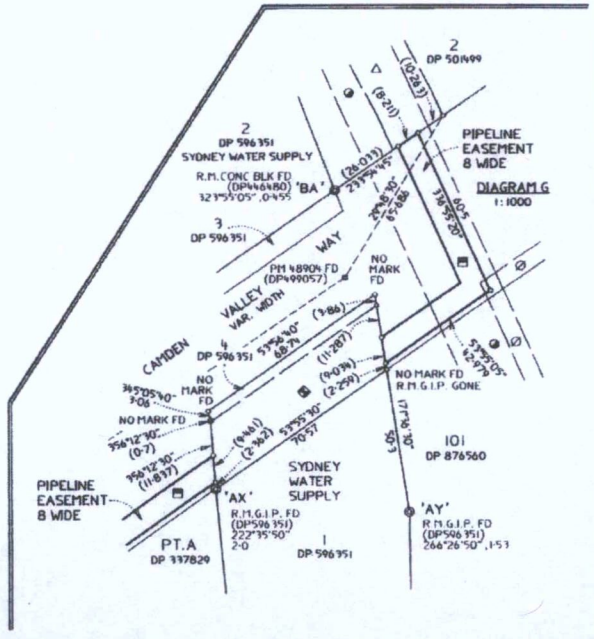
For use where space is insufficient in any panel on Plan Form 2.

I certify that this is Sheet 4 of a plan of 4 Sheets which have been prepared in accordance with the Pipelines Regulation 2000.

Signed

Date 30 May 2001





ISG CO-ORDINATES

SURVEY PRACTICE REGULATION 1998: CLAUSE 32 (2)				
MARK	EASTING	NORTHING	ZONE	ACC
PM 34089	283 011·052	1 240 351·466	56/1	2
PM 34087	282 821·526	1 239 924·161	56/1	2
PM 44293	282 661·467	1 239 704·289	56/1	2
PM 8904	283 774·747	1 240 963·152	56/1	2
PM 8913	281 270·386	1 236 919·566	56/1	2
PM 8914	280 851·51	1 236 354·16	56/1	2
PM 8915	280 632·077	1 235 735·493	56/1	3
SSM 15690	283 286·464	1 239 105·98	56/1	2
SSM 17420	280 532·626	1 235 202·839	56/1	2
SSM 36966	283 088·948	1 240 475·333	56/1	2
SOURCE: ISG COORDINATES ADOPTED FROM LIC SEPTEMBER 2000				
COMBINED SEA LEVEL AND SCALE FACTOR 0·99993				

PIPELINE EASEMENT 4 WIDE, 6 WIDE, 8 WIDE, 12 WIDE, 20 WIDE & VAR.

PIPELINE EASEMENT 24·185 WIDE (DP499001)

PIPELINE EASEMENT 6 WIDE (DP499057)

PIPELINE EASEMENT 20 WIDE (DP1002751)

RIGHT OF CARRIAGEWAY AND EASEMENT FOR SERVICES 5·5 WIDE (DP876043)

PIPELINE EASEMENT 20 WIDE (DP1016618)

Reduction Ratio 1: 4000

Plan Drawing only to appear in this space

SURVEYOR'S REFERENCE: NO 8735–50/5 CHECKLIST COUNTRY

Req:R618663 /Doc:DP 1016616 P /Rev:13-Mar-2002 /Sta:SC.OK /Prt:03-Jun-2014 14:47 /Pgs:ALL /Seq:4 of 4
Ref:ing /Src:M

SFR
Service First Registration

Historical Title

InfoTrack
An Approved LPI NSW
Information Broker

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

3/6/2014 2:37PM

FOLIO: 71/706546

First Title(s): OLD SYSTEM
Prior Title(s): VOL 6835 FOL 210

Recorded	Number	Type of Instrument	C.T. Issue
17/8/1984	DP706546	DEPOSITED PLAN	FOLIO CREATED EDITION 1
27/3/1985	V636425	TRANSFER GRANTING EASEMENT	EDITION 2
7/12/1987	X240689	TRANSFER	EDITION 3
19/5/1988	X565831	TRANSFER	EDITION 4
12/2/1996	O896183	REQUEST	
5/6/1998	5036772	CAVEAT	
14/7/1998	5124239	DEPARTMENTAL DEALING	
16/7/1998	5132236	APPLICATION FOR REPLACEMENT CERTIFICATE OF TITLE	EDITION 5
3/8/1998	5170332	WITHDRAWAL OF CAVEAT	
3/8/1998	5170333	TRANSFER	
3/8/1998	5170334	MORTGAGE	EDITION 6
23/3/1999	DP269185	DEPOSITED PLAN	
20/9/2001	DP1016616	DEPOSITED PLAN	
29/5/2002	8352310	REQUEST	
30/8/2002	8912612	DEPARTMENTAL DEALING	
4/1/2006	AC20396	DISCHARGE OF MORTGAGE	
4/1/2006	AC20397	CHANGE OF NAME	
4/1/2006	AC20398	MORTGAGE	EDITION 7
4/11/2008	AE305133	DISCHARGE OF MORTGAGE	
4/11/2008	AE305134	MORTGAGE	EDITION 8

*** END OF SEARCH ***

mg

PRINTED ON 3/6/2014

InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.

Req:R618563 /Doc:DL V636425 /Rev:14-Aug-1997 /Sts:OA.OK /Prt:03-Jun-2014 14:41 /Pgs:ALL /Seq:1 of 5
Ref:mg /Src:M

RP13B

STAMP DUTY

V636425

TRANSFER GRANTING EASEMENT

REAL PROPERTY ACT, 1900

(See Instructions for Completion on back of form)

TG A 1 of 1

$ 20

R1-1

Servient Tenement (Land burdened)	Dominant Tenement (Land benefited)
Torrens Title Reference	Torrens Title Reference
71/706546	72/706546

DESCRIPTION OF LAND
Note (a)

TRANSFEROR (registered proprietor of servient tenement)
Note (b)

CAMPBELLTOWN CITY COUNCIL of Civic Centre, Campbelltown

(the abovenamed TRANSFEROR) hereby acknowledges receipt of the consideration of $ 1-00 and TRANSFERS and GRANTS an easement for water service as shown in the plan marked "B" attached hereto ϕ

Note (c)

OFFICE USE ONLY

OVER

out of the servient tenement and appurtenant to the dominant tenement to the TRANSFEREE

TRANSFEREE (registered proprietor of dominant tenement)
Note (b)

SALVATORE FOTI of 46 Raymond Avenue, Campbelltown and
CARMELA MARIA FOTI of the same address, his wife

PRIOR ENCUMBRANCES
Note (d)

TAKE IN ANNEXURE "A"
subject to the following PRIOR ENCUMBRANCES: 1. Book 1855 No. 326 Easement
2. J983241 Easement 3. I343711 Easement
V388035 Mortgage

DATE 14th 3RD 85.

We hereby certify this dealing to be correct for the purposes of the Real Property Act, 1900.

EXECUTION
Note (e)

Signed in my presence by the transferor who is personally known to me

THE COMMON SEAL OF CAMPBELLTOWN CITY COUNCIL
Signature of Witness

was hereunto affixed by resolution passed
Name of Witness (BLOCK LETTERS)

on the 24 day of December, 1982.
Address and occupation of Witness

in the presence of:

Mayor

Signature of Transferor

Town Clerk

Note (e)

Signed in my presence by the transferee who is personally known to me

Signature of Witness

P J MYLOTT
Name of Witness (BLOCK LETTERS)

Campbelltown
Address and occupation of Witness

Solicitor

Signature of Transferee

TO BE COMPLETED BY LODGING PARTY
Notes (f) and (g)

LODGED BY MARSDENS. Solicitors

Delivery Box Number 570E.

LOCATION OF DOCUMENTS

CT	OTHER
2	

Herewith.

In R.G.O. with

Produced by

OFFICE USE ONLY

Checked	Passed	REGISTERED - -19
[illegible] A.	[illegible]	27 MAR 1985
Signed	Extra Fee	

OVER

ϕ ADDED IN REG GEN. OFFICE 26.3.85 pm EF9

This dealing should be marked by the Commissioner of Stamp Duties before lodgment by hand at the Registrar General's Office.

Typewriting and handwriting should be clear, legible and in permanent black non-copying ink.

Alterations are not to be made by erasure; the words rejected are to be ruled through and initialled by the parties to the dealing.

If the space provided is insufficient, additional sheets of the same size and quality of paper and having the same margins as this form should be used. Each additional sheet must be identified as an annexure and signed by the parties and the attesting witnesses.

Registered mortgagees, chargees and lessees of the servient tenement should consent to the grant of easement; otherwise, the mortgage, charge or lease should be noted in the memorandum of prior encumbrances.

Rule up all blanks.

The following instructions relate to the side notes on the form.

(a) Description of land. TORRENS TITLE REFERENCE.—Insert the current Folio Identifiers or Volume and Folios of the Certificates of Title/Crown Grants for both the dominant and servient tenements, e.g., 135/SP12345 or Vol. 8514 Fol. 126. Title references should be listed in numerical sequence.

(b) Show the full name, address and occupation or description.

(c) State the nature of the easement (see, e.g., section 181A of the Conveyancing Act, 1919), and accurately describe the site of the easement. The transfer and grant must comply with section 88 of the Conveyancing Act, 1919.

(d) In the memorandum of prior encumbrances state only the registered number of any mortgage, lease or charge (except where the consent of the mortgagee, lessee or chargee is furnished), and of any writ recorded in the Register.

(e) Execution.

GENERALLY (i) Should there be insufficient space for the execution of this dealing, use an annexure sheet.

(ii) The certificate of correctness under the Real Property Act, 1900 must be signed by all parties to the transfer, each party to execute the dealing in the presence of an adult witness, not being a party to the dealing, to whom he is personally known.

The solicitor for the transferee may sign the certificate on behalf of the transferee, the solicitor's name (not that of his firm) to be typewritten or printed adjacent to his signature. Any person falsely or negligently certifying is liable to the penalties provided by section 117 of the Real Property Act, 1900

ATTORNEY (iii) If the transfer is executed by an attorney for the transferee pursuant to a registered power of attorney, the form of attestation must set out the full name of the attorney, and the form of execution must indicate the source of his authority, e.g., "AB by his attorney (or receiver or delegate, as the case may be) XY pursuant to power of attorney registered Book No. , and I declare that I have no notice of the revocation of the said power of attorney".

AUTHORITY (iv) If the transfer is executed pursuant to an authority (other than specified in (iii)), the form of execution must indicate the statutory, judicial or other authority pursuant to which the transfer has been executed.

CORPORATION (v) If the transfer is executed by a corporation under seal, the form of execution should f do a statement that the seal has been properly affixed, e.g., in accordance with the Articles of Association of the corporation. Each person attesting the affixing of the seal mu ste his position (e.g., director, secretary) in the corporation

(f) Insert the name, postal address, Documen: Exchange reference, telephone number, and delivery box number of the lodging party.

(g) The lodging party is to complete the LOCATION OF DOCUMENTS panel. Place a tick in the appropriate box to indicate the whereabouts of the Certificate of Title. List in an abbreviated form, other documents lodged, e.g., stat. dec. for statutory declaration, pbte for probate, L/A for letters of administration.

OFFICE USE ONLY

FIRST SCHEDULE DIRECTIONS

DIRECTION: PROP
No. OF NAMES:

(A) FOLIO IDENTIFIER	(B) No.	(C) SHARE	(D) J	(E) NAME AND DESCRIPTION

SECOND SCHEDULE & OTHER DIRECTIONS

(F) FOLIO IDENTIFIER (OR REGD. DEALING & FOLIO IDENTIFIER)	(G) DIRECTION	(H) NOTFN TYPE	(I) DEALING NUMBER	(K) DETAILS
71/706546	ON	EA		Easement for water service affecting the land shown as proposed easement for water service in the plan with V636425.
72/706546	ON	EA		Appurtenant easement for water service affecting the land shown as proposed easement for water service in the plan with V636425.
71/706546 72/706546	C.T			5706

L.O. 880 D. WEST, GOVERNMENT PRINTER

THE COMMON SEAL of CAMPBELLTOWN)
CITY COUNCIL was hereunto affixed)
by resolution passed on the 24th)
day of December, 1982 in the)
presence of:)

.....
Mayor

.....
Town Clerk

SIGNED SEALED AND DELIVERED by)
the said SALVATORI FOTI and)
CARMELA MARIA FOTI in the)
presence of:)

.....

.....
Solicitor.

ANNEXURE "A"

an easement to make lay out and construct and forever use and maintain a pipe line at such depth beneath the soil surface and in accordance with such specifications and subject to such conditions (if any) as the Metropolitan Water Sewerage and Drainage Board may from time to time stipulate for the purpose of carrying and conveying water through and under ALL THAT piece or parcel of land shown as "Proposed Easement for Water Service 1 wide on the plan annexed hereto and marked "B" (being part of the land comprised in the servient tenement) to the dominant tenement WITH full and free right and liberty for the transferee from time to time and at all times hereafter by themselves or their servants workmen and agents to lay control examine relay renew cleanse repair maintain and use the said pipe line AND for the purposes aforesaid or any of them to enter upon pass and repass along and over the piece or parcel of land shown as aforesaid (hereinafter called "the said land") and make such excavations and cuttings in and through the said land and bring and place thereon and remove therefrom such materials machinery implements tools and things as the transferee may reasonably require for the aforesaid purposes or any of them AND the transferor HEREBY COVENANTS with the transferee that the transferor will not without the prior consent in writing of the transferee:-

(a) erect construct or place upon the said land, or any part thereof nor permit nor suffer to be erected, constructed or placed thereon any building; nor

(b) make nor permit nor suffer to be made any alteration to the existing surface levels of the said land or any part thereof;

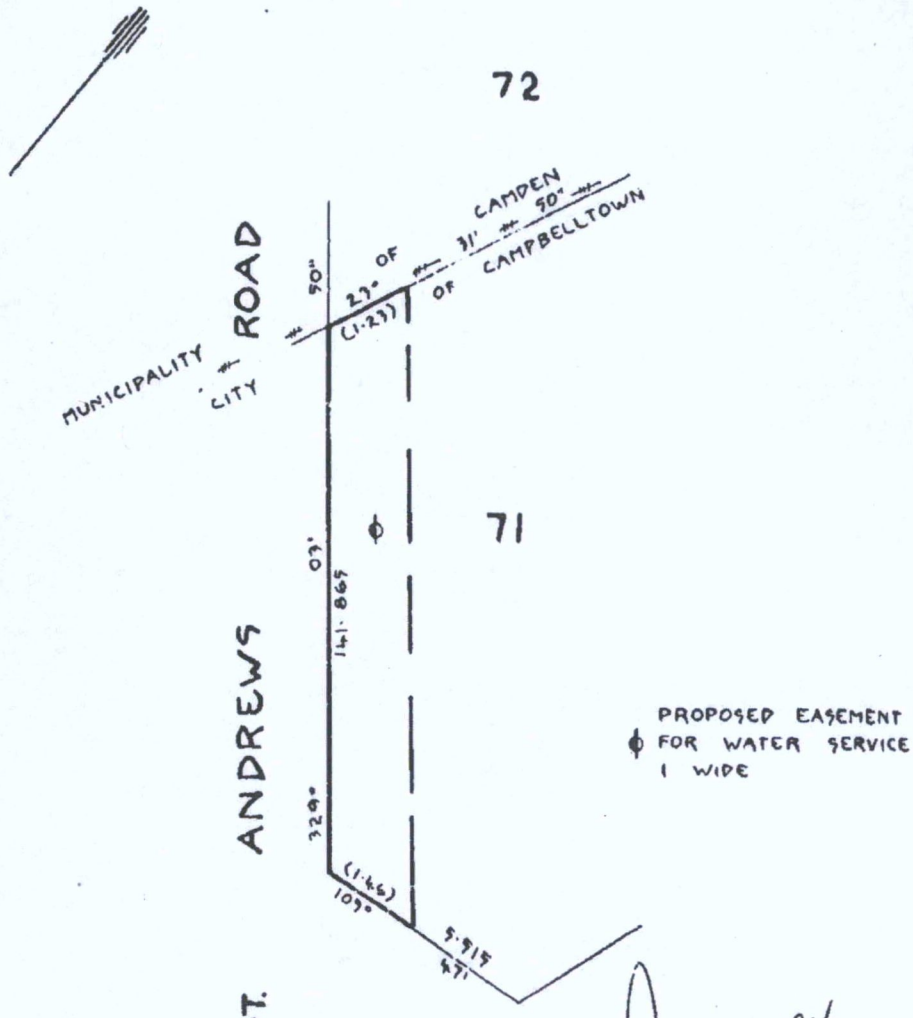
AND the transferee HEREBY COVENANTS with the transferor that whenever in exercise of any of the rights and powers hereinbefore granted the transferee shall open or break up the surface of the said land or damage any lawn garden and/or fencing of the transferor the transferee shall upon completion of such work promptly reinstate and restore such land lawn garden and/or fencing to its or their former state and condition so far as shall be reasonably practicable.

Req:R618563 /Doc:DL V636425 /Rev:14-Aug-1997 /Sts:QA.OK /Prt:03-Jun-2014 14:41 /Pgs:ALL /Seq:5 of 5
Ref:mg /Src:M

"B"

V636425

PLAN OF SITE OF PROPOSED EASEMENT FOR WATER SERVICE 1 WIDE OVER LOT 71 D.P. 706546	I RONALD JAMES RENGGER
MUN./~~SHIRE~~/CITY CAMPBELLTOWN	of Lean, Lackenby & Hayward, 6 Warby Street, CAMPBELLTOWN, N.S.W. 2560
TOWN or LOCALITY DENHAM COURT	a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that this plan has been compiled from information contained in
PARISH MINTO	D.P. 706546
COUNTY CUMBERLAND	and was completed on 17TH SEPTEMBER 1974
Reduction Ratio 1: (Lengths are in metres)	Signature [signature]



14 3 1985

Req:R618565 /Doc:DL X240689 /Rev:14-Sep-2010 /Sts:OK.SC /Prt:03-Jun-2014 14:41 /Pgs:ALL /Seq:1 of 1
Ref:mg /Src:M

RP 13 STAMP DUTY

X240689

(2)

$1 /

TRANSFER

REAL PROPERTY ACT, 1900

T

B 1 of 2 X

$ 37

R1/1

Torrens Title Reference	If Part Only, Delete Whole and Give Details	Location
FOLIO IDENTIFIER 71/706546 VOLUME 6835 FOLIO 211 VOLUME 7114 FOLIO 65	WHOLE	AT VARROVILLE

DESCRIPTION OF LAND Note (a)

TRANSFEROR Note (b)

CAMPBELLTOWN CITY COUNCIL

ESTATE Note (c)

(the abovenamed TRANSFEROR) hereby acknowledges receipt of the consideration of $480,000.00 and transfers an estate in fee simple in the land above described to the TRANSFEREE

TRANSFEREE Note (d)

GLENSAUGH PTY LIMITED of 12th Floor, 275 George Street, Sydney

OFFICE USE ONLY

S

TENANCY Note (e)

as joint tenants/tenants in common

PRIOR ENCUMBRANCES Note (f)

subject to the following PRIOR ENCUMBRANCES 1. ..... 2. ..... 3. .....

DATE 27TH NOVEMBER, 1987

We hereby certify this dealing to be correct for the purposes of the Real Property Act, 1900.

EXECUTION Note (g)

Signed in my presence by the transferor who is personally known to me

..... Signature of Witness

..... Name of Witness (BLOCK LETTERS)

..... Address and occupation of Witness

The Common Seal of the Council of the City of Campbelltown was hereto affixed by virtue of a resolution passed by Council on the 16th day of JUNE 1987

Peter Rimmer MAYOR

TOWN CLERK

..... Signature of Transferor

Note (g)

Signed in my presence by the transferee who is personally known to me

..... Signature of Witness

..... Name of Witness (BLOCK LETTERS)

344 ..... Address and occupation of Witness

Solicitor for ~~Transferee~~ Transferee 12.10.87

R.W. YANDELL

TO BE COMPLETED BY LODGING PARTY Notes (h) and (i)

LODGED BY

LEGGE MCLAUGHLIN & ANDREWS

[illegible] GEORGE STREET, SYDNEY

DX [illegible]

Delivery Box Number

LOCATION OF DOCUMENTS

CT	OTHER	
✓ (3)		Herewith.
		In L.T.O. with
		Produced by

OFFICE USE ONLY

Checked	Passed	REGISTERED - -19
EASQ		
Signed	Extra Fee	- 7 DEC 1987

Secondary Directions		
Delivery Directions	CT	LP

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RB25 RC Manual Regn 17 RB1

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Ref:mg /Src:M

RP 13 (SW)

STAMP DUTY [redacted]

OFFICE USE ONLY

X565831

$1-00.

TRANSFER

REAL PROPERTY ACT, 1900

T 1 of 1 X

$ 39

R1/1

Torrens Title Reference	If Part Only, Delete Whole and Give Details	Location
FOLIO IDENTIFIER 71/706546	WHOLE	MINTO

DESCRIPTION OF LAND Note (a)

TRANSFEROR Note (b)

GLENSAUGH PTY. LIMITED 12th Floor, 275 George Street, SYDNEY.

ESTATE Note (c)

(the abovenamed TRANSFEROR) hereby acknowledges receipt of the consideration of $ 167,500.00.
and transfers an estate in fee simple
in the land above described to the TRANSFEREE

TRANSFEREE Note (d)

EDWARD GEORGE MORGAN AND EDNA CAROL MORGAN
both of 181 Georges River Road, KENTLYN, 2560

OFFICE USE ONLY

JT2

TENANCY Note (e)

as joint tenants/~~tenants in common~~

PRIOR ENCUMBRANCES Note (f)

subject to the following PRIOR ENCUMBRANCES 1. ..... 2. ..... 3. .....

DATE

We hereby certify this dealing to be correct for the purposes of the Real Property Act, 1900.

EXECUTION Note (g)

Signed in my presence by the transferor who is personally known to me

GLENSAUGH PTY. LIMITED Common Seal

..... Signature of Witness

..... Name of Witness (BLOCK LETTERS)

..... Address and occupation of Witness

..... Signature of Transferor

Signed in my presence by the transferee who is personally known to me

Note (g)

..... Signature of Witness

..... Name of Witness (BLOCK LETTERS)

365

..... Address and occupation of Witness

SOLICITOR FOR Signature of Transferee

26.11.87

TO BE COMPLETED BY LODGING PARTY Notes (h) and (i)

LODGED BY Wallace James.

Delivery Box Number 950T

LOCATION OF DOCUMENTS

CT	OTHER	
✓		Herewith.
✓		In L.T.O. with XR40689.
		Produced by

OFFICE USE ONLY

39

Checked	Passed	REGISTERED - -19	Secondary Directions	
EA9 RJ				
Signed	Extra Fee	19 MAY 1988	Delivery Directions	C.T. 950T

Req:R618567 /Doc:DL 5170333 /Rev:06-Aug-1998 /Sts:NO.OK /Prt:03-Jun-2014 14:41 /Pgs:ALL /Seq:1 of 1
Ref:mg /Src:M

Form: 97-01T
Licence: AUS/0634/96

TRANSFER

New South Wales
Real Property Act 1900

5170333 R

Instructions for filling out this form are available from the Land Titles Office

Office of State Revenue use only

(A) **LAND TRANSFERRED**
If appropriate, specify the share or part transferred.

F.I. 71/706546

(B) **LODGED BY**

LTO Box	Name, Address or DX and Telephone
23L	CSB
	Reference (15 character maximum): 208721704

(C) **TRANSFEROR** Edward George MORGAN and Edna Carol MORGAN

(D) acknowledges receipt of the consideration of $520,000.00
and as regards the land specified above transfers to the transferee an estate in fee simple.

(E) Encumbrances (if applicable): 1. ..... 2. ..... 3. .....

(F) **TRANSFEREE**

T TS (s713 LGA) TW (Sheriff)	Dario PETRIN and Angelina MARKOVSKI
(G)	**TENANCY:** Tenants-in-Common in equal shares

N.S.W. STAMP DUTY $2.00
080798 1002 04 002303211/03

(H) We certify this dealing correct for the purposes of the Real Property Act 1900. **DATE** 27-7-98
Signed in my presence by the transferor who is personally known to me.

[signature]
Signature of Witness

MERILYN PULLIN
Name of Witness (BLOCK LETTERS)

180 Queen Street Campbelltown
Address of Witness

[signature]
Signature of Transferor

Signed in my presence by the transferee who is personally known to me.

.....
Signature of Witness

.....
Name of Witness (BLOCK LETTERS)

.....
Address of Witness

[signature]
~~Signature of~~ Transferee
Solicitor for G. Shelton

If signed on the transferee's behalf by a solicitor or licensed conveyancer, show the signatory's full name in block letters.

Checked by (LTO use) Reg68.

SFR
Service First Registration

Title Search

InfoTrack
An Approved LPI NSW
Information Broker

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 71/706546

SEARCH DATE	TIME	EDITION NO	DATE
3/6/2014	2:36 PM	8	4/11/2008

LAND

LOT 71 IN DEPOSITED PLAN 706546
AT LEPPINGTON
LOCAL GOVERNMENT AREA CAMPBELLTOWN
PARISH OF MINTO COUNTY OF CUMBERLAND
TITLE DIAGRAM DP706546

FIRST SCHEDULE

DARIO PETRIN
ANGELINA PETRIN
AS TENANTS IN COMMON IN EQUAL SHARES (CN AC20397)

SECOND SCHEDULE (7 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 BK 1855 NO 326 EASEMENT FOR WATER SUPPLY AFFECTING THE PART OF THE LAND ABOVE DESCRIBED SHOWN SO BURDENED IN THE TITLE DIAGRAM
3 J983241 EASEMENT FOR TRANSMISSION LINE AFFECTING THE PART OF THE LAND ABOVE DESCRIBED SHOWN SO BURDENED IN THE TITLE DIAGRAM
O896183 EASEMENT VESTED IN PROSPECT ELECTRICITY
4 L343711 EASEMENT FOR WATER SUPPLY AFFECTING THE PART OF THE LAND ABOVE DESCRIBED SHOWN SO BURDENED IN THE TITLE DIAGRAM
5 V636425 EASEMENT FOR WATER SERVICE AFFECTING THE LAND SHOWN AS PROPOSED EASEMENT FOR WATER SERVICE IN THE PLAN WITH V636425
6 8352310 EASEMENT FOR PIPELINE AFFECTING THE PART SHOWN IN DP1016616
7 AE305134 MORTGAGE TO NATIONAL AUSTRALIA BANK LIMITED

NOTATIONS

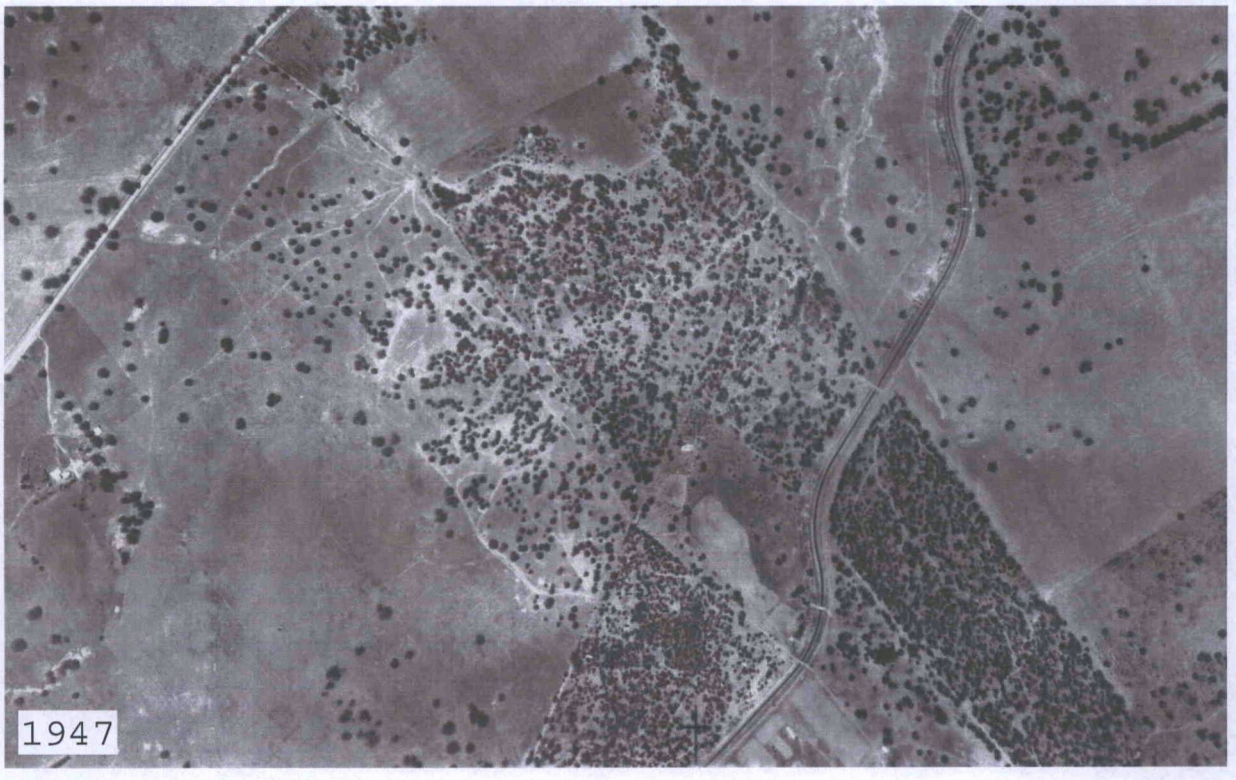
UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

mg PRINTED ON 3/6/2014

* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. InfoTrack an approved NSW Information Broker hereby certifies that the information

Historical Aerial Photographs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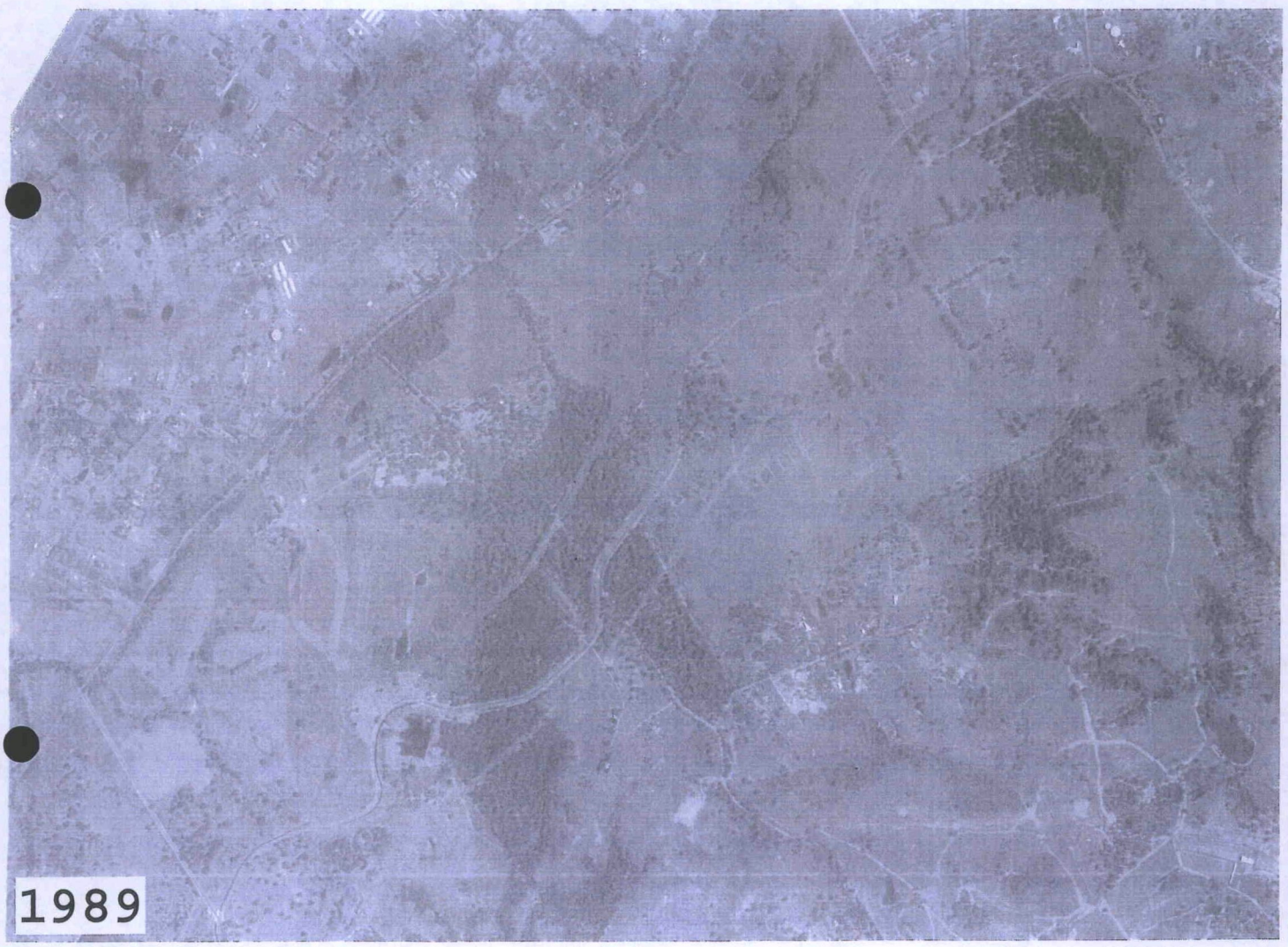
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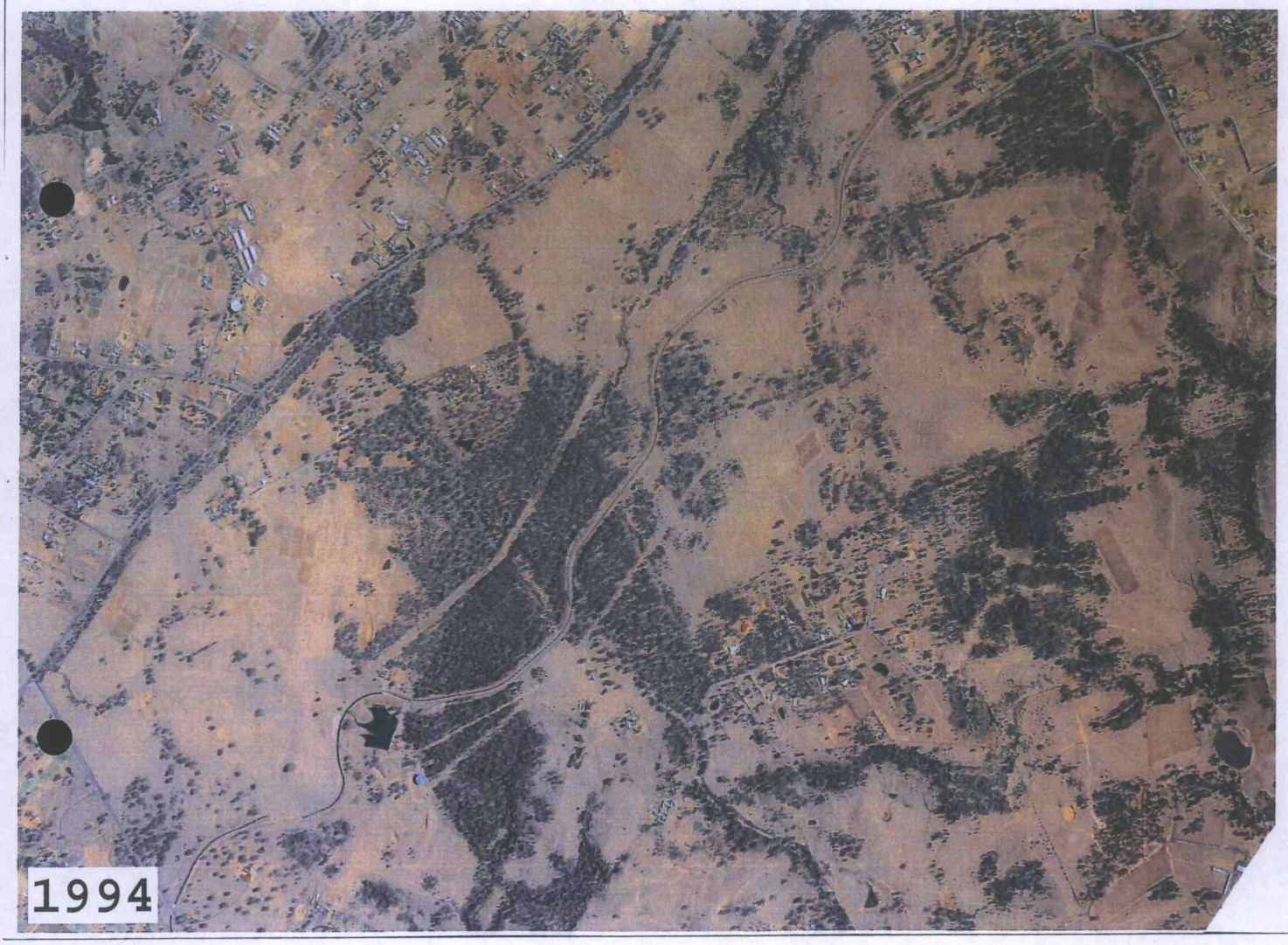
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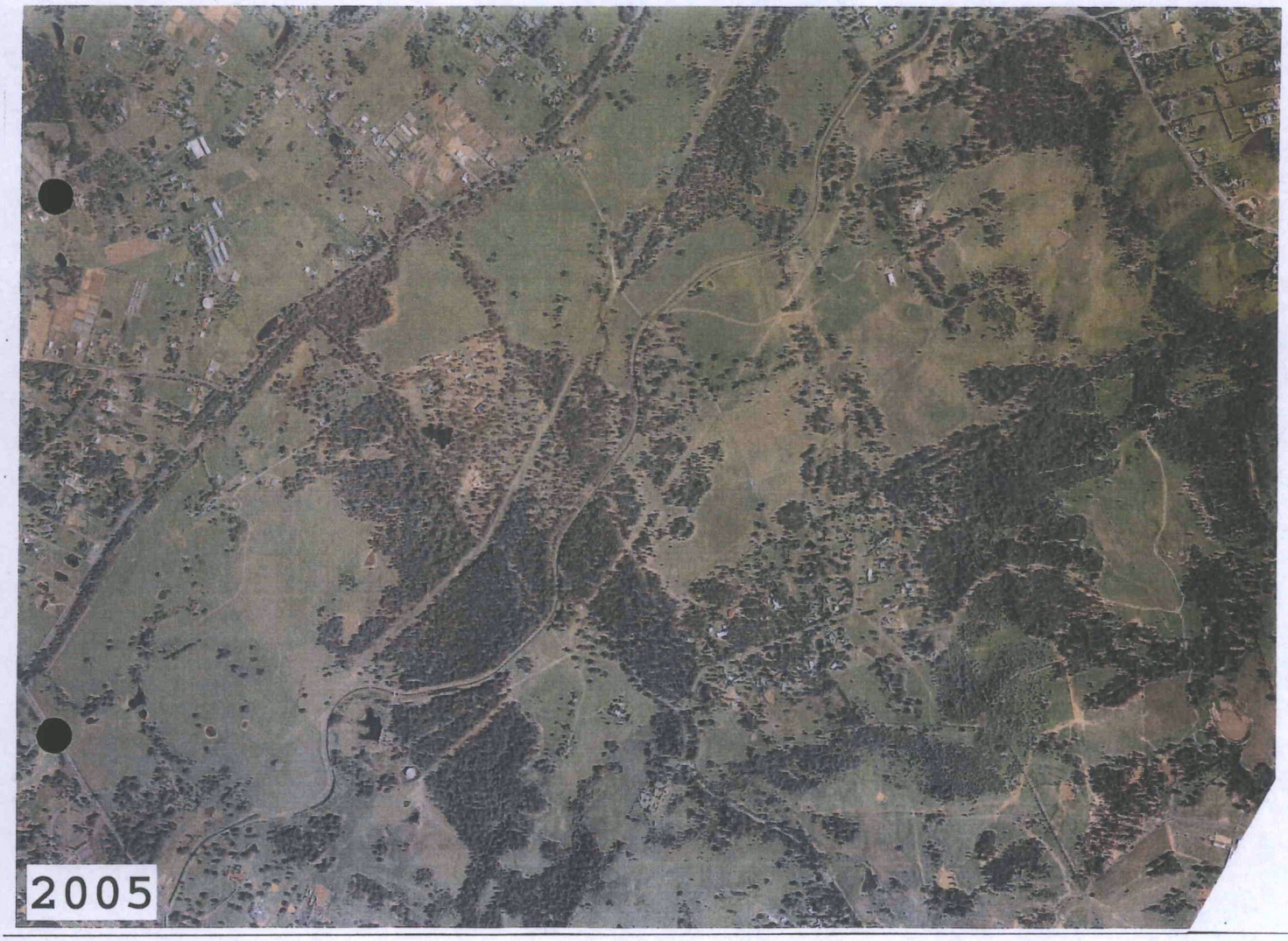
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Search
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2009
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MultiView
Terrain
Map
Street Map
Properties
2014
nearmap

SITE WALKOVER PHOTOGRAPHS

71 St Andrews Rd Denham Court NSW



Photograph B1 Edge of fill layer along property boundary. St Andrews Rd to left of photograph.



Photograph B2 Typical surface of fill layer.



Photograph B3 Edge of fill layer, near north-eastern site boundary, showing raised ground level due to filling.



Photograph B4 Inside barn / large shed.



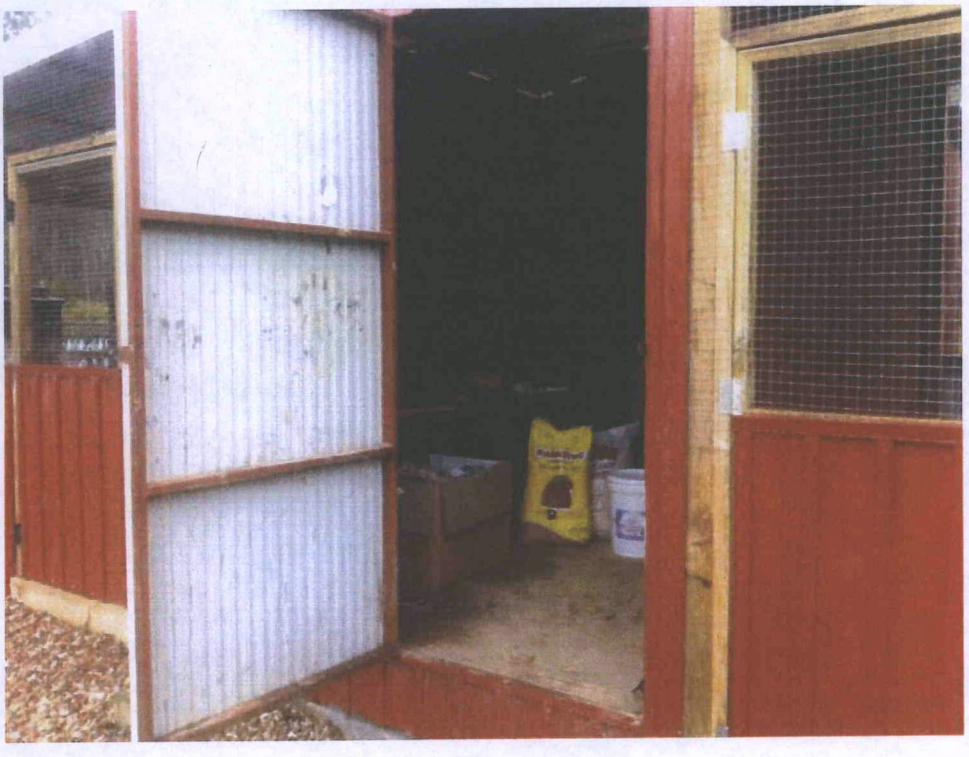
Photograph B5 Inside barn / large shed.



Photograph B6 Inside barn / large shed.



Photograph B7 Materials stored inside shipping container, near house.



Photograph B8 Interior of smaller shed / chicken coop.



Photograph B9 Chickens and ducks inside chicken coop / small shed.



Photograph B10 Nursery enclosure.



Photograph B11 Building materials stockpiled along north-western site boundary.



Photograph B12 Disused / spare equipment along northern boundary of Area A. Note filled, raised area to right of image.



Photograph B13 Excess / waste materials stored along north-western property boundary.



Photograph B14 Dam within Area A.



Photograph B15 Septic tank.



Photograph B16 Lawn sprinkler attached to effluent hose from septic tank.



Photograph B17 Dam in Area B.



Photograph B18 Wrecked car in power line corridor in Area B.



Photograph B19 Typical land-use in Area B.



Photograph B20 Power line corridor.



Photograph B21 Cattle pen in Area B.



Photograph B22 Stockpile of waste building materials in central portion of site.

Appendix E Ecological Report prepared by Travers Ecology



Travers

bushfire & ecology

Flora & fauna assessment

71 St Andrews Road
Varroville

February 2018
(REF: A17179)

Travers

bushfire & ecology

Flora & Fauna Assessment

71 St Andrews Road
Varroville

FEBRUARY 2018

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Checked by:	Michael Sheather-Reid – General Manager
Date:	6/2/18
File:	A17179

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Disclaimer:

This report has been prepared to provide advice to the client on matters pertaining to the particular and specific development proposal as advised by the client and / or their authorised representatives. This report can be used by the client only for its intended purpose and for that purpose only. Should any other use of the advice be made by any person including the client then this firm advises that the advice should not be relied upon. The report and its attachments should be read as a whole and no individual part of the report or its attachments should be interpreted without reference to the entire report.

The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features are to be confirmed by a registered surveyor.

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Executive Summary

Travers bushfire & ecology has been engaged to undertake a flora and fauna assessment for a planning proposal within Lot 71 DP 706546 accessed from St Andrews Road, Varroville. The entire area of this lot has been subject to varying survey effort and will hereafter be referred to as the 'study area'. In some circumstances survey has however extended slightly beyond this boundary.

Gunninah have undertaken a previous ecological assessment for the study area from site visits undertaken in 2014 and 2015 for a previous planning proposal. The species records have been considered and incorporated into this report where appropriate.

Planning Proposal

The study area is currently zoned E3 Environmental Management. As the site is located within the Campbelltown LGA this project is being assessed under the Threatened Species Conservation Act (1985) in accordance with the *Biodiversity Conservation (Savings and Transitional) Regulation 2017.*

Local developments in the following western Sydney local government areas will have 12 months from 25 August 2017 to submit an application under the previous legislation: the local government areas of Camden, City of Campbelltown, City of Fairfield, City of Hawkesbury, City of Liverpool, City of Penrith and Wollondilly. The NSW Government may identify (by 25 February 2018) additional areas where this transitional period until 25 August 2018 applies.

The planning proposal includes the rezoning of the western side of the powerline easement that runs through the site as R2 Low Density Residential and the remaining eastern side as E3 Environmental Management.

The E3 lands are likely to be securely conserved through a conservation agreement of some form imposed on the use of the land which may or may not include a Biodiversity Stewardship Agreement which can be established under the new Biodiversity Conservation Act 2016.

Recorded threatened flora, fauna & EECs

Ecological survey and assessment has been undertaken in accordance with relevant legislation including the *Environmental Planning and Assessment Act 1979*, the *Threatened Species Conservation Act 1995*, the *Environment Protection and Biodiversity Conservation Act 1999* and the *Fisheries Management Act 1994*.

In respect of matters required to be considered under the *Environmental Planning and Assessment Act 1979* and relating to the species / provisions of the *Threatened Species Conservation Act 1995*, four (4) threatened fauna species including Greater Broad-nosed Bat (*Scoteanax rueppellii*), Large-footed Myotis (*Myotis macropus*), Eastern Bentwing-bat (*Miniopterus orianae oceanensis*) and Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*), no threatened flora species and one (1) CEEC, Cumberland Plain Woodland, were recorded within the study area.

The Yellow-bellied Sheathtail-bat was recorded only to a 'probable' level of certainty however this species as well as the Eastern Bentwing-bat and the East-coast Freetail Bat (*Micronomus norfolkensis*) were recorded during previous site surveys by *Gunninah* (2015).

In accordance with Section 5A of the *Environmental Planning and Assessment Act 1979*, the 7-part test of significance concluded that the proposed subdivision development will not likely have a significant impact on any threatened species, populations or EECs. Therefore, a Species Impact Statement is not required for the proposal.

In respect of matters required to be considered under the *Environment Protection and Biodiversity Conservation Act 1999*, no threatened fauna species, no protected migratory bird species, no threatened flora species, and no EEC under this Act were recorded within the study area. The planning proposal was not considered to have a significant impact on matters of national environmental significance as the vegetation present and being impacted is not considered to meet the condition criteria to be commensurate with *Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest*. Offsetting of the biodiversity impacts is recommended to ensure a maintain or improve outcome is achieved. As such a referral to Department of Environment and Energy is not required.

In respect of matters relative to the *Fisheries Management Act 1994*, no suitable habitat for threatened marine or aquatic species was observed within the subject site and there are no matters requiring further consideration under this Act.

The direct, indirect and cumulative impacts of the proposal have been carefully considered in Section 5.2 of this report.

Recommended mitigation amelioration measures to the abovementioned impacts are, where applicable, addressed within Section 5.3 of this report. Biodiversity offsetting is recommended for all residual impacts estimated at 2.89 ha of Cumberland Plain Woodland.

Suitability of the proposed zones

The proposed zones R2 is considered suitable for proposed residential subdivision area given the conservation of Cumberland Plain Woodland in the adjoining E3 Environmental management lands and the offsetting of the residual impacts through the NSW Biobanking Scheme. The existing understorey is highly modified with improved pasture species. The R2 lands are boundary by residential development and an electrical easement and hence is an extension to the existing residential subdivision areas.

The proposed E3 zoning for the environmentally sensitive lands provides security of protection for the critically endangered ecological community under the planning scheme but also provides the opportunity for the conservation lands to be established as a biobanking site to provide a long-term protection and biodiversity conservation outcome. Restoration of the CPW as part of the proposed E3 lands provides a consolidated restoration outcome that will be bound on three sides by a road, electrical easements and Sydney Water supply upper canal hence providing boundary protection. Ongoing protection can be established via a conservation agreement and or offered as a biobanking site or a biodiversity stewardship site under the Biodiversity Conservation Act 2016.

Conclusion

It is concluded that the planning proposal within Lot 71 DP 706546 accessed from St Andrews Road, Varroville, is unlikely to result in a significant impact on any threatened species, populations or EECs or their habitats.

As such no further assessments are considered to be required under the *Environmental Planning and Assessment Act 1979*, the *Environment Protection and Biodiversity Conservation Act 1999* or the *Fisheries Management Act 1994*.

List of abbreviations

AOBV	Area of Outstanding Biodiversity Value
APZ	asset protection zone
BAAS	Biodiversity Assessors Accreditation System
BAM	Biodiversity Assessment Method
BAMC	Biodiversity Assessment Method Calculator
BAR	Biodiversity Assessment Report
BC Act	Biodiversity Conservation Act (2016)
BCAR	Biodiversity Certification Assessment Report
BCT	Biodiversity Conservation Trust
BDAR	Biodiversity Development Assessment Report
BOAMS	Biodiversity Offsets and Agreement Management System
BOPC	Biodiversity Offsets Payment Calculator
BOS	Biodiversity Offset Scheme
BOSET	Biodiversity Offsets Scheme Entry Tool
BPA	bushfire protection assessment
BSA	Biodiversity Stewardship site Agreement
BSSAR	Biodiversity Stewardship Site Assessment Report
CLUMP	conservation land use management plan
DCP	Development Control Plan
DEC	NSW Department of Environment and Conservation (superseded by DECC from April 2007)
DECC	NSW Department of Environment and Climate Change (superseded by DECCW from October 2009)
DECCW	NSW Department of Environment, Climate Change and Water (superseded by OEH from April 2011)
DEWHA	Commonwealth Department of Environment, Water, Heritage & the Arts (superseded by SEWPAC)
DOEE	Commonwealth Department of Environment & Energy (replaces SEWPAC)
EEC	endangered ecological community
EPA	Environmental Protection Agency
EP&A Act	*Environmental Planning and Assessment Act (1979)*
EPBC Act	*Environment Protection and Biodiversity Conservation Act (1999)*
ESMP	ecological site management plan
FF	flora and fauna assessment
FM Act	*Fisheries Management Act*
FMP	fuel management plan
HTA	habitat tree assessment
IBRA	Interim Biogeographic Regionalisation for Australia
IPA	inner protection area
LEP	Local Environment Plan
LGA	local government area
LLS Act	*Local Land Services Act (2013)*
NES	national environmental significance
NPW Act	*National Parks and Wildlife Act (1974)*

NPWS	NSW National Parks and Wildlife Service
NSW DPI	NSW Department of Industry and Investment
OEH	Office of Environment and Heritage
OPA	outer protection area
PBP	*Planning for bushfire protection 2006*
PCT	Plant Community Type
POM	plan of management
RF Act	*Rural Fires Act*
RFS	NSW Rural Fire Service
ROTAP	rare or threatened Australian plants
SAII	Serious and Irreversible Impacts
SEARs	*Secretary's Environmental Assessment Requirements*
SEPP	State Environmental Planning Policy
SEPP 44	*State Environmental Protection Policy No 44 – Koala Habitat Protection*
SEWPAC	Commonwealth Dept. of Sustainability, Environment, Water, Population & Communities (superseded by DOEE)
SIS	species impact statement
SULE	safe useful life expectancy
TEC	Threatened Ecological Community
TPO	tree preservation order
TPZ	tree preservation zone
TRRP	tree retention and removal plan
TSC Act	*Threatened Species Conservation Act (1995)– Now replaced by the Biodiversity Conservation Act (2016)*
VMP	vegetation management plan

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Appendix 3 – 7 part test of significance
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Introduction 1

Travers bushfire & ecology has been engaged to undertake a flora and fauna assessment for a planning proposal within Lot 71 DP 706546 accessed from St Andrews Road, Denham. The entire area of this lot has been subject to varying survey effort and will hereafter be referred to as the 'study area'. In some circumstances survey has however extended slightly beyond this boundary.

1.1 Aims of the assessment

The aims of the flora and fauna assessment are to:

- Carry out a botanical survey to describe the vegetation communities and their conditions
- Carry out a fauna survey for the detection and assessment of fauna and their habitats
- Complete target surveys for threatened species, populations and ecological communities
- Prepare a flora and fauna impact assessment in accordance with the requirements of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), the *Threatened Species Conservation Act 1995* (TSC Act), the *Fisheries Management Act 1994* (FM Act) and Threatened species assessment guidelines, the assessment of significance (DECC 2007)

1.2 Statutory requirements

1.2.1 Threatened Species Conservation Act 1995 (TSC Act)

The specific requirements of the *TSC Act* must be addressed in the assessment of impacts on threatened flora and fauna, populations and ecological communities. The factors to be taken into account in deciding whether there is a significant effect are set out in Section 5A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and are based on a 7 part test of significance. Where a proposed activity is located in an area identified as critical habitat, or such that it is likely to significantly affect threatened species, populations, ecological communities, or their habitats, a Species Impact Statement (SIS) is required to be prepared.

1.2.2 Fisheries Management Act 1994 (FM Act)

The *FM Act* provides a list of threatened aquatic species that require consideration when addressing the potential impacts of a proposed development. Where a proposed activity is located in an area identified as critical habitat, or such that it is likely to significantly affect threatened species, populations, ecological communities, or their habitats, an SIS is required to be prepared.

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

The *EPBC Act* requires that Commonwealth approval be obtained for certain actions. It provides an assessment and approvals system for actions that have a significant impact on matters of *national environmental significance* (NES). These may include:

- World Heritage Properties and National Heritage Places
- Wetlands of International Importance protected by international treaty
- Nationally listed threatened species and ecological communities
- Nationally listed migratory species
- Commonwealth marine environment

Actions are projects, developments, undertakings, activities, and series of activities or alteration of any of these. An action that needs Commonwealth approval is known as a controlled action. A controlled action needs approval where the Commonwealth decides the action would have a significant effect on an NES matter.

Where a proposed activity is located in an area identified to be of NES, or such that it is likely to significantly affect threatened species, ecological communities, migratory species or their habitats, then the matter needs to be referred to the Commonwealth Department of Environment and Energy (DoEE) for assessment. In the case where no listed federal species are located on site then no referral is required. The onus is on the proponent to make the application and not the Council to make any referral.

A threshold criterion apply to specific NES matters which may determine whether a referral is or is not required, such as for the EPBC listed ecological communities Cumberland Plain Woodland and Shale-Gravel transition Forest. Consultation with DOEE may be required to determine whether a referral is or is not required. If there is any doubt as to the significance of impact or whether a referral is required, a referral is generally recommended to provide a definite decision under the EPBC Act 1999 thereby removing any further obligations in the case of 'not controlled' actions.

A significant impact is regarded as being:

> *important, notable, or of consequence, having regard to its context or intensity and depends upon the sensitivity, value, and quality of the environment which is impacted and upon the duration, magnitude, and geographical extent of the impacts. A significant impact is likely when it is a real or not a remote chance or possibility.*
>
> *Source: EPBC Policy Statement*

Guidelines on the correct interpretation of the actions and assessment of significance are located on the department's web site http://www.environment.gov.au/epbc/publications.

1.3 Planning proposal

The study area is currently zoned E3 Environmental Management. The planning proposal includes the rezoning of the western side of the powerline easement that runs through the site as R2 Low Density Residential and the remaining eastern side as E3 Environmental Management. The proponents are intending to offset the impacts through a Bio-Banking Application as it has been considered under transitional provisions of the TSC Act.

The E3 lands are likely to have in the future either a restriction of the use of that title under an 88B Instrument or a conservation agreement of some form which may or may not include a Biodiversity Stewardship Agreement under the new BC Act legislation.

Potential works within the E3 lands include the provision of stormwater detention basins and a single dwelling and associated works.



Figure 1 – Planning proposal



Figure 2 – Concept subdivision, asset protection zones and stormwater works

1.4 Site description

Table 1.1 provides a summary of the planning, cadastral, topographical, and disturbance details of the site.

The area of the site is approximately 14 ha with an electrical easement bisecting the site.

Table 1.1 – Site features

Location	71 St Andrews Road, Varroville
Local government area	Campbelltown
Grid reference	297400E 6237200N
Elevation	100m AHD +/- 5m
Topography	Situated on a mostly flat landscape with a very gentle rise to the south-east of the site along Andrews Road.
Geology and soils	Geology; Wianamatta Group, Bringelly Shale – Shale, carbonaceous claystone, claystone, laminate, fine to medium-grained lithic sandstone, rare coal and tuff.
Catchment and drainage	Catchment – Georges River, Sydney Metro CMA. There are no creeks or drainage lines within the study area.
Vegetation	Where present, native vegetation has an open woodland structure. Trees are around 15-25m tall in most areas, there is a limited mid-storey or nil, and a ground layer of grasses and forbs. The vegetation is modified throughout the study area due to previous clearing and continued grazing and cultivation processes.
Existing land use	Cattle grazing/managed
Clearing	The understorey has been previously cleared for indicated land uses.



Survey Methodology 2

2.1 Information collation, technical resources, desktop assessments, specialist identification and licences

A review of the relevant information pertinent to the subject site was undertaken.

Client documents reviewed include:

- Original and Revised Subdivision Concept Plan prepared by *Lean Lackenby & Hayward*

Standard technical resources utilised:

- *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities 2004* (working draft), Department of Environment and Conservation (DEC)
- Aerial photographs (Google Earth Pro / Spatial Information Exchange / NearMap)
- Topographical maps (scale 1:25,000)
- *Threatened Species Conservation Act 1995* (TSC Act)
- *Fisheries Management Act 1994* (FM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- Rare or Threatened Australian Plants (ROTAP)
- Vegetation mapping - Vegetation Mapping of the Cumberland Plain (NPWS 2002) and Sydney Metropolitan Catchment Management Authority (OEH 2013).

Desktop assessment:

To determine the likely and actual occurrence of flora species, fauna species and plant communities on the subject site, desktop assessments were undertaken including:

- ***A literature review*** – A review of readily available literature for the area was undertaken to obtain reference material and background information for this survey.

- ***A data search*** – A search of the *Atlas of NSW Wildlife* (OEH 2017) was undertaken to identify records of threatened flora and fauna species located within a 10km radius of the site. Searches were also undertaken on the DOEE – 'protected matters search tool' website to generate a report that will help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in the area of interest. The search was broadened to a 10km radius like the Atlas search. These two searches combined, enabled the preparation of a list of threatened flora and fauna species that could potentially occur within the habitats found on the site (Tables A2.1, A2.2 and A2.3).

Accuracy of identification:

Specimens of plants not readily discernible in the field were collected for identification. Structural descriptions of the vegetation were made according to Specht *et al* (1995).

***Licences*:**

Individual staff members of *Travers bushfire & ecology* are licensed under Clause 20 of the *National Parks and Wildlife (Land Management) Regulation 1995* and Sections 120 & 131 of the *National Parks and Wildlife Act 1974* to conduct flora and fauna surveys within service and non-service areas. NPWS Scientific Licence Numbers: SL100848.

Travers bushfire & ecology staff are licensed under an Animal Research Authority issued by the Department of Agriculture. This authority allows *Travers bushfire & ecology* staff to conduct various fauna surveys of native and introduced fauna for the purposes of environmental consulting throughout New South Wales.

2.2 Flora survey methodology

Flora survey was undertaken on the 3rd of November 2017. A random meander search was undertaken in accordance with Cropper (1993) to create a broad species list. Whilst some landscaping species were noted and identified during the random meander searches, no specific survey was undertaken for these species (most of which will not appear on the species list in section 3), in particular around the access driveway and existing dwelling.

Five (5) 20x20m and 50x20m transect plots were undertaken in accordance with the Biodiversity Assessment Methodology (BAM), 2017.

A review of the Atlas of NSW Wildlife, Bionet (OEH 2017) was undertaken prior to the botanical survey to identify threatened species previously recorded within 10km of the subject site and determine whether target searches were needed to be undertaken. Target searches for relevant threatened species were undertaken where applicable during the random meander, whilst undertaking plot transects, and additionally as stratified surveys that typically involve searching for the relevant species in linear lines at intervals of approximately 10-15m apart.

2.3 Fauna survey methodology

Site survey effort accounting for techniques deployed, duration, and weather conditions are outlined in Table 2.1 and are depicted on Figure 3.

Current standard fauna survey techniques employed by *Travers bushfire & ecology* in line with relevant survey guidelines as well as current survey knowledge are provided in Appendix 1. Fauna survey techniques that have been tailored to the site are provided in Section 2.6.

2.4 Field survey effort

Tables 2.1 and 2.2 below detail the flora and fauna survey effort undertaken for the subject site.

Table 2.1 – Fauna survey effort

Fauna group	Date	Weather conditions	Survey technique(s)	Time effort (24hr)
Diurnal birds	31/10/17	3/8 cloud, light-mod SW wind, no rain, temp 18°C	Diurnal opportunistic	1hr 5min 1050 - 1155
	2/11/17	4/8 cloud, light N wind, no rain, temp 23-18°C	Diurnal opportunistic	6hrs 1300 - 1900
Nocturnal birds	2/11/17	7/8 cloud, light ESE wind, no rain, temp 18-17°C	Spotlighting	2hrs 1930 - 2130
			Call playback (Powerful Owl)	Commenced @ 2000
Arboreal mammals	2/11/17	7/8 cloud, light ESE wind, no rain, temp 18-17°C	Spotlighting	2hrs 1930 - 2130
Terrestrial mammals	2/11/17	7/8 cloud, light ESE wind, no rain, temp 18-17°C	Spotlighting	2hrs 1930 - 2130
Bats	2/11/17	7/8 cloud, light ESE wind, no rain, temp 18-17°C	Spotlighting	2hrs 1930 - 2130
			Ultrasonic recording (passive monitoring) x3	Overnight from 1920
Reptiles	31/10/17	3/8 cloud, light-mod SW wind, no rain, temp 18°C	Habitat search, opportunistic	1hr 5min 1050 - 1155
	2/11/17	4/8 cloud, light N wind, no rain, temp 23-18°C	Habitat search, opportunistic	6hrs 1300 - 1900
Amphibians	2/11/17	7/8 cloud, light ESE wind, no rain, temp 18-17°C	Spotlighting & call identification	2hrs 1930 - 2130
Molluscs	31/10/17	3/8 cloud, light-mod SW wind, no rain, temp 18°C	Habitat searches	1hr 5min 1050 - 1155
	2/11/17	4/8 cloud, light N wind, no rain, temp 23-18°C	Habitat searches	6hrs 1300 - 1900

Table 2.2 – Flora survey effort

Flora survey	Survey technique(s)	Dates
Vegetation communities	Survey of the boundaries of all communities – field verification and aerial photographic interpretation	3/11/17
Stratified sampling	BAM quadrats	3/11/17
Target searches	Target searches in known habitats, primarily for *Pimelea spicata*	3/11/17

2.5 Site specific survey techniques

Diurnal birds

Three (3) diurnal bird census points were undertaken within the study area. A minimum of 30 minutes of survey was undertaken at each census point in an area radiating out to between 80-100m. Bird census points were selected to give an even spread and representation across the site and its communities (see Figure 3). Census points were also commenced in locations where bird activity was apparent, as often different small bird species are found foraging together. Opportunistic diurnal bird survey was conducted between census points and whilst undertaking other diurnal surveys.

Nocturnal birds

Given the marginal suitability of habitat present Powerful Owl (*Ninox strenua*) was targeted by call-playback techniques.

Invertebrates

Given the proximity to previous Atlas of NSW Wildlife records of Cumberland Plain Land Snail (*Meridolum corneovirens*) and the recorded presence of its typical host community, target surveys were undertaken. Habitat searches were undertaken within areas indicated on Figure 3. Within search areas the most appropriate areas of observed habitat were targeted. Dense areas of leaf litter with likely moisture retaining properties were scraped using a three pronged rake. Logs, stumps, artificial refuse and rocks were also turned over.

Habitat trees

Hollow-bearing trees were identified and recorded within the subject site on a *Trimble* handheld GPS unit during surveys. All data such as hollow types, hollow size, tree species, diameter at breast height, canopy spread and overall height were collected and a metal tag with the tree number placed on the trunk for field relocation purposes. Other habitat features such as nests and significant sized mistletoe for foraging were also noted.

A summary of hollow-bearing tree results is provided in Table 4.3.

2.6 Survey limitations

It is important to note that field survey data collected during the survey period is representative of species occurring within the subject site for that occasion. Due to effects of fire, breeding cycles, migratory patterns, camouflage, weather conditions, time of day,

visibility, predatory and / or feeding patterns, increased species frequency or richness may be observed within the subject site outside the nominated survey period. Habitat assessments based on the identification of micro-habitat features for various species of interest, including regionally significant and threatened species, have been used to minimise the implications of this survey limitation.

Flora survey limitations

The species list does not include all household garden / landscaping species and those species which could not be identified at the time of the survey past genus level.

Given that ploughing had been recently undertaken, the number of observed species might be lower than normal. Additional species listed in the report by Gunninah has been included and noted in the species list, Table 3.1.

It is not expected that there are any limitations to threatened flora species survey which could change the outcomes of significance assessment.

Fauna survey limitations

Seven hollow-bearing trees were identified within the study area. Some of the hollows are suitable for microbats, notably the recorded threatened hollow-dependent Large-Footed Myotis, Greater Broad-nosed Bat and Yellow-bellied Sheathtail-bat. Also the East-coast Freetail Bat recorded during previous site survey by Gunninah (2015).

Stag-watching of each of the identified hollows has not been undertaken and is recommended within any proposed development areas. Any identified threatened microbat roost should be retained in-situ as the removal of such a roost would be considered significant impact on the respective local populations.



Survey Results 3

3.1 Flora results

3.1.1 Flora species

The plants observed within the vegetation communities of the subject site are listed in the Table 3.1 below.

Table 3.1 – Flora observations for the subject site

Family	Scientific name	Common name	Species recorded by Gunninah only (2015)
Trees			
Mimosaceae	*Acacia decurrens*	Black Wattle	
Myrtaceae	*Angophora floribunda*	Rough-barked Apple	
Myrtaceae	*Eucalyptus amplifolia*	Cabbage Gum	✓
Myrtaceae	*Eucalyptus eugenioides*	Thin-leaved Stringybark	
Myrtaceae	*Eucalyptus fibrosa*	Broad Leaved Ironbark	
Myrtaceae	*Eucalyptus longifolia*	Woollybutt	✓
Myrtaceae	*Eucalyptus moluccana*	Grey Box	
Myrtaceae	*Eucalyptus tereticornis*	Forest Red Gum	
Santalaceae	*Exocarpos cupressiformis*	Native Cherry	
Myrtaceae	*Melaleuca decora*	-	
Shrubs			
Mimosaceae	*Acacia ulicifolia*	Prickly Moses	
Euphorbiaceae	*Breynia oblongifolia*	Coffee Bush	
Pittosporaceae	*Bursaria spinosa* var. *spinosa*	Native Blackthorn	
Faboideae	*Chorizema parviflorum*	Eastern Flame Pea	✓
Fabaceae	*Dillwynia sieberi*	Prickly Parrot-pea	
Apocnynaceae	*Gomphocarpus fruticosus**	Narrow Leaf Cotton Bush	
Oleaceae	*Olea europaea* subsp. *cuspidata**	African Olive	
Rubiaceae	*Opercularia diphylla*	-	✓
Asteraceae	*Ozothamnus diosmifolius*	White Dogwood	
Groundcovers			
Lamiaceae	*Ajuga australis*	Austral Bugle	✓
Amaranthaceae	*Alternanthera denticulata*	Lesser Joyweed	
Asteraceae	*Arctotheca calendula**	Capeweed	
Poaceae	*Aristida vagans*	Three-awn Speargrass	
Poaceae	*Avena fatua**	Wild Oats	
Poaceae	*Axonopus fissifolius**	Narrow-leafed Carpet Grass	

Family	Scientific name	Common name	Species recorded by Gunninah only (2015)
Poaceae	*Bothriochloa decipiens*	Redleg Grass	✓
Poaceae	*Bothriochloa macra*	-	✓
Brassicaceae	*Brassica oleracea**	Cauliflower	✓
Poaceae	*Briza minor**	Shivery Grass	
Poaceae	*Briza subaristata**	-	
Poaceae	*Bromus carthartícus**	Prairie Grass	✓
Acanthaceae	*Brunoniella australis*	Blue Trumpet	
Crassulaceae	*Bryophyllum pinnatum**	-	✓
Brassicaceae	*Capsella bursa-pastoris**	Shepherds purse	
Cyperaceae	*Carex inversa*	Knob Sedge	
Apiaceae	*Centella asiatica*	Indian Pennywort	
Carophyllaceae	*Cerastium glomeratum**	Mouse-ear Chickweed	✓
Sinopteridaceae	*Cheilanthes sieberi*	Rock Fern	
Poaceae	*Chloris truncata*	Windmill Grass	
Poaceae	*Chloris ventricosa*	Tall Chloris	
Asteraceae	*Cirsium vulgare**	Spear Thistle	
Asteraceae	*Conyza sumatrensis**	Fleabane	
Asteraceae	*Cotula australis*	Common Cotula	
Asteraceae	*Cymbonotus lawsonianus*	Bears-ear	
Poaceae	*Cynodon dactylon*	Common Couch	
Cyperaceae	*Cyperus eragrostis**	Umbrella Sedge	
Cyperaceae	*Cyperus gracilis*	-	✓
Alismataceae	*Damasonium minus*	Starfruit	
Solanaceae	*Datura stramonium**	Common Thornapple	✓
Phormiaceae	*Dianella longifolia*	-	
Poaceae	*Dichelachne micrantha*	Short-hair Plume Grass	✓
Convolvulaceae	*Dichondra repens*	Kidney Weed	
Poaceae	*Echinopogon caespitosus* var. *caespitosus*	Tufted Hedgehog Grass	
Poaceae	*Ehrharta erecta**	Panic Veldtgrass	
Chenopodiaceae	*Einadia hastata*	Berry Saltbush	✓
Chenopodiaceae	*Einadia polygonoides*	-	
Chenopodiaceae	*Einadia trigonos* subsp. *trigonos*	Fishweed	
Cyperaceae	*Eleocharis cylindrostachys*	-	
Cyperaceae	*Eleocharis sphacelata*	Tall Spike-rush	
Poaceae	*Entolasia marginata*	Bordered Panic	
Poaceae	*Eragrostis brownii*	Brown's Lovegrass	
Poaceae	*Eragrostis curvula**	African Lovegrass	
Poaceae	*Eragrostis leptostachya*	Paddock Lovegrass	✓
Asteraceae	*Euchiton sphaericus*	-	
Euphorbiaceae	*Euphorbia peplus**	Spurge	
Cyperaceae	*Fimbristylis dichotoma*	Common Fringe-rush	
Asteraceae	*Gamochaeta purpurea**	Purple Cudweed	✓
Geraniaceae	*Geranium homeanum*	Northern Cranesbill	
Boraginaceae	*Heliotropium amplexicaule**	Blue Heliotrope	
Clusiaceae	*Hypericum gramineum*	Small St Johns Wort	✓

Family	Scientific name	Common name	Species recorded by Gunninah only (2015)
Asteraceae	*Hypochaeris radicata**	Flatweed	
Juncaceae	*Juncus subsecundus*	Finger Rush	✓
Juncaceae	*Juncus usitatus*	Common Rush	
Anthericaceae	*Laxmannia gracilis*	Slender Wire Lily	
Lomandraceae	*Lomandra filiformis*	Wattle Mat-rush	✓
Fabaceae	*Lotus subbiflorus**	Hairy Birds-foot Trefoil	
Onagraceae	*Ludwigia peploides* subsp. *montevidensis*	Water Primrose	
Primulaceae	*Lysmiachia arvensis**	Scarlet Pimpernel	
Malvaceae	*Malva parviflora**	Small-flowered Mallow	✓
Poaceae	*Microlaena stipoides* var. *stipoides*	Weeping Grass	
Malvaceae	*Modiola caroliniana**	Red-flowered Mallow	
Poaceae	*Oplismenus aemulus*	Basket Grass	
Hydrocharitaceae	*Ottelia ovalifolia*	Swamp Lily	
Oxalidaceae	*Oxalis corniculata**	Yellow Wood Sorrel	
Oxalidaceae	*Oxalis perennans*	-	
Poaceae	*Panicum simile*	Two Colour Panic	
Poaceae	*Paspalidium distans*	-	
Poaceae	*Paspalum dilatatum**	Paspalum	✓
Poaceae	*Paspalum distichum*	Water Couch	
Poaceae	*Paspalum urvillei**	Vasey Grass	
Poaceae	*Pennisetum clandestinum**	Kikuyu	
Philydraceae	*Philydrum lanuginosum*	Frogmouth	
Plantaginaceae	*Plantago debilis*	Slender Plantain	✓
Plantaginaceae	*Plantago lanceolata**	Ribwort	
Plantaginaceae	*Plantago myosurus**	-	✓
Poaceae	*Poa annua**	Winter Grass	✓
Potamogetonaceae	*Potamogeton tricarinatus*	Pondweed	✓
Lobeliaceae	*Pratia purpurascens*	Whiteroot	
Acanthaceae	*Pseuderanthemum variabile*	Pastel Flower	
Rubiaceae	*Richardia stellaris**	-	✓
Brassicaceae	*Rorippa nasturtium-aquaticum*	Watercress	✓
Poaceae	*Rytidosperma pilosum*	Smooth-flower Wallaby Grass	
Poaceea	*Rytidosperma racemosum*	-	✓
Asteraceae	*Senecio madagascariensis**	Fireweed	
Poaceae	*Setaria parviflora**	-	
Malvaceae	*Sida rhombifolia**	Paddy's Lucerne	
Solanaceae	*Solanum chenopodioides**	Whitetip Nightshade	✓
Solanaceae	*Solanum nigrum**	Black Nightshade	
Solanaceae	*Solanum prinophyllum*	Forest Nightshade	
Asteraceae	*Soliva sessilis**	Jojo	
Asteraceae	*Sonchus oleraceus**	Common Sow-thistle	
Poaceae	*Sporobolus africanus**	Parramatta Grass	
Stackhousiaceae	*Stackhousia viminea*	-	
Poaceae	*Stenotaphrum secundatum**	Buffalo Grass	
Asteraceae	*Taraxacum officinale**	Dandelion	

Family	Scientific name	Common name	Species recorded by Gunninah only (2015)
Poaceae	*Themeda triandra*	Kangaroo Grass	
Juncaginaceae	*Triglochin microtuberosum*	Water Ribbons	
Verbenaceae	*Verbena bonariensis**	Purpletop	
Verbenaceae	*Verbena rigida**	Veined Verbena	
Plantaginaceae	*Veronica persica**	Creeping Speedwell	✓
Plantaginaceae	*Veronica plebeia*	Creeping Speedwell	
Campanulaceae	*Wahlenbergia gracilis*	Australian Bluebell	
Colchicaceae	*Wurmbea dioica* subsp. *dioica*	Early Nancy	✓
Vines			
Apocnyaceae	*Araujia sericifera**	Mothvine	
Asparagaceae	*Asparagus asparagoides**	Bridal Creeper	
Fabaceae	*Desmodium varians*	-	
Fabaceae	*Glycine clandestina*	Twining Glycine	
Fabaceae	*Glycine tabacina*	Variable Glycine	
Epiphytes			
Loranthaceae	*Amyema pendula*	Mistletoe	
*** denotes exotic species**			

3.1.2 Vegetation communities

One (1) natural remnant vegetation community was identified within the subject site through ground truthing. The remainder of the site is managed or ploughed with planted species around the existing dwelling.

- Cumberland Plain Woodland

Cumberland Plain Woodland

The structure of the community is a woodland or open woodland, 15-24m in height and with a projected foliage cover of 12-25%. The most common canopy species are *Eucalyptus moluccana, Eucalyptus tereticornis* and *Eucalyptus fibrosa.*

The mid-storey is almost absent, however slashed specimens of *Bursaria spinosa* are persistent, generally in the ground layer. There may be a few shrubs present along the site boundary which are not regularly slashed. *Melaleuca decora,* a small tree, is present on site, mostly along the central easement area and within Quadrat 5. Other slashed shrubs that were regular include *Acacia ulicifolia, Dillwynia sieberi, Breynia oblongifolia* and *Ozothamnus diosmifolius.*

The ground layer of vegetation is regularly ploughed or slashed. The western half has been recently ploughed before the site survey, north of the dwelling and shed. Grazing was occurring in close proximity to the dwelling (immediately east). Ploughing or slashing had been undertaken in the eastern half of the site but the ground layer was less disturbed at the time of the site survey.

Common groundcovers include *Aristida vagans, Brunoniella australis, Centella asiatica, Dichondra repens, Echinopogon caespitosus, Einadia* spp., *Eragrostis brownii, Geranium*

homeanum, Glycine clandestina, Microlaena stipoides, Oxalis perennans, Panicum simile, Pratia purpurascens, Rytidosperma spp., *Stackhousia viminea* and *Wahlenbergia gracilis.*

In relation to BioBanking and the Biodiversity Assessment Methodology (BAM), the vegetation type is equivalent to PCT849 - Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion.

The extent of the community was largely mapped using a handheld Trimble GPS and measured at 6.1 ha. The western half has more gaps at present due to a lack of native ground layer having been recently ploughed. The eastern half is more intact.







Photo 1 – 5, left to right, centre line through quadrat 1 to quadrat 5. Note the heavily disturbed and almost absent ground layer post ploughing.



Photo 6 – Slashed groundlayer in the centre of the eastern portion of the site



Photo 7 – Ploughed groundlayer in the centre of the western portion of the site looking towards the existing house and shed

Other vegetation

There are three (3) dams on site, some with fringing macrophytes. Some common species within the dam or on the embankment include *Elaeocarpus* spp., *Juncus* spp., *Ludwigia peploides, Paspalum distichum, Philydrum lanuginosum* and *Triglochin mocrotuberosum.*



Photo 8 – Dam adjacent to the northern boundary in eastern portion of the site



Photo 9 – Dam near northern boundary in western portion of the site

Planted vegetation occurs adjacent to the site entrance up to and surrounding the existing dwelling. Photo 10 shows an example along the access driveway.



Photo 10 – Planted vegetation along the access driveway

3.2 Fauna results

Fauna species observed throughout the duration of fauna surveys are listed in Table 3.2 below.

Table 3.2 – Fauna observations for the study area

Common name	Scientific name	Method observed	
		Gunninah 2014-15	*TBE* Oct-Nov 2017
Birds			
Australian Magpie	*Cracticus tibicen*	✓	O W
Australian Raven	*Corvus coronoides*	✓	O W
Australian Wood Duck	*Chenonetta jubata*	✓	O
Bell Miner	*Manorina melanophrys*	✓	O W
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*	✓	O W
Collared Sparrowhawk	*Accipiter cirrhocephalus*		O
Common Myna *	*Sturnus tristis*	✓	
Crested Pigeon	*Ocyphaps lophotes*	✓	O
Eastern Rosella	*Platycercus eximius*	✓	O W
Galah	*Eolophus roseicapillus*	✓	O W
Grey Butcherbird	*Cracticus torquatus*	✓	O W
Grey Fantail	*Rhipidura albiscapa*	✓	O W
Intermediate Egret	*Ardea intermedia*		O
Laughing Kookaburra	*Dacelo novaeguineae*	✓	O
Magpie-lark	*Grallina cyanoleuca*	✓	O W
Masked Lapwing	*Vanellus miles*	✓	O W

Common name	Scientific name	Method observed	
Mistletoebird	*Dicaeum hirundinaceum*		O W
Noisy Friarbird	*Philemon corniculatus*	✓	O W
Noisy Miner	*Manorina melanocephala*	✓	O W
Olive-backed Oriole	*Oriolus sagittatus*		W
Pacific Black Duck	*Anas superciliosa*	✓	
Pallid Cuckoo	*Cacomantis pallidus*		W
Pied Butcherbird	*Cracticus nigrogularis*		O
Pied Cormorant	*Phalacrocorax varius*	✓	
Red-rumped Parrot	*Psephotus haematonotus*	✓	W
Red-whiskered Bulbul *	*Pycnonotus jocosus*		W
Rufous Whistler	*Pachycephala rufiventris*		W
Scarlet Honeyeater	*Myzomela sanguinolenta*		O W
Spotted Pardalote	*Pardalotus punctatus*	✓	W
Striated Thornbill	*Acanthiza lineata*		
Sulphur Crested Cockatoo	*Cacatua galerita*		O W
Superb Fairy-wren	*Malurus cyaneus*		W
Welcome Swallow	*Hirundo neoxena*		O
White-browed Scrubwren	*Sericornis frontalis*		O W
White-faced Heron	*Egretta novaehollandiae*		O
White-necked Heron	*Ardea pacifica*	✓	
White-throated Gerygone	*Gerygone olivacea*		W
Willie Wagtail	*Rhipidura leucophrys*	✓	O W
Yellow-faced Honeyeater	*Caligavis chrysops*	✓	W
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*	✓	
Mammals			
Cat (feral)*	*Felis catus*	✓	
Chocolate Wattled Bat	*Chalinolobus morio*	✓	U[PO]
Common Brushtail Possum	*Trichosurus vulpecula*	✓	
Domesticated Cattle *	*Bos taurus*	✓	O
Domesticated Dog *	*Canis lupus familiaris*	✓	O
East-coast Freetail Bat [TS]	*Micronomus norfolkensis*	✓	
Eastern Bentwing-bat [TS]	*Miniopterus orianae oceanensis*	✓	U
Eastern Freetail-bat	*Mormopterus ridei*		U
European Red Fox *	*Vulpes vulpes*	✓	O
Forest Bat	*Vespadelus sp*	✓	U
Gould's Wattled Bat	*Chalinolobus gouldii*	✓	U
Greater Broad-nosed Bat [TS]	*Scoteanax rueppellii*		U
Large-footed Myotis[TS]	*Myotis macropus*		U
Rabbit *	*Oryctolagus cuniculus*	✓	O
White-striped Mastiff-bat	*Austronomus australis*		U
Yellow-bellied Sheathtail-bat [TS]	*Saccolaimus flaviventris*	✓	U[PR]
Reptiles			
Bar-sided Skink	*Eulamprus tenius*		O
Delicate Skink	*Lampropholis delicata*	✓	O
Eastern Water Dragon	*Intellagama lesueurii*	✓	
Weasel Skink	*Saproscincus mustelinus*	✓	
Amphibians			

Common name	Scientific name	Method observed	
Common Eastern Froglet	*Crinia signifera*	✓	W
Whistling Tree Frog	*Litoria verreauxii*	✓	

Note: * indicates introduced species
TS indicates threatened species

All species listed are identified to a high level of certainty unless otherwise noted as:

PR indicates species identified to a 'probable' level of certainty – more likely than not
PO indicates species identified to a 'possible' level of certainty – low-moderate level of confidence

E - Nest/roost	H - Hair/feathers/skin	P - Scat	W - Heard call
F - Tracks/scratchings	K - Dead	Q - Camera	X - In scat
FB - Burrow	O - Observed	T - Trapped/netted	Y - Bone/teeth/shell
G - Crushed cones	OW - Obs & heard call	U - Anabat/ultrasound	Z - In raptor/owl pellet

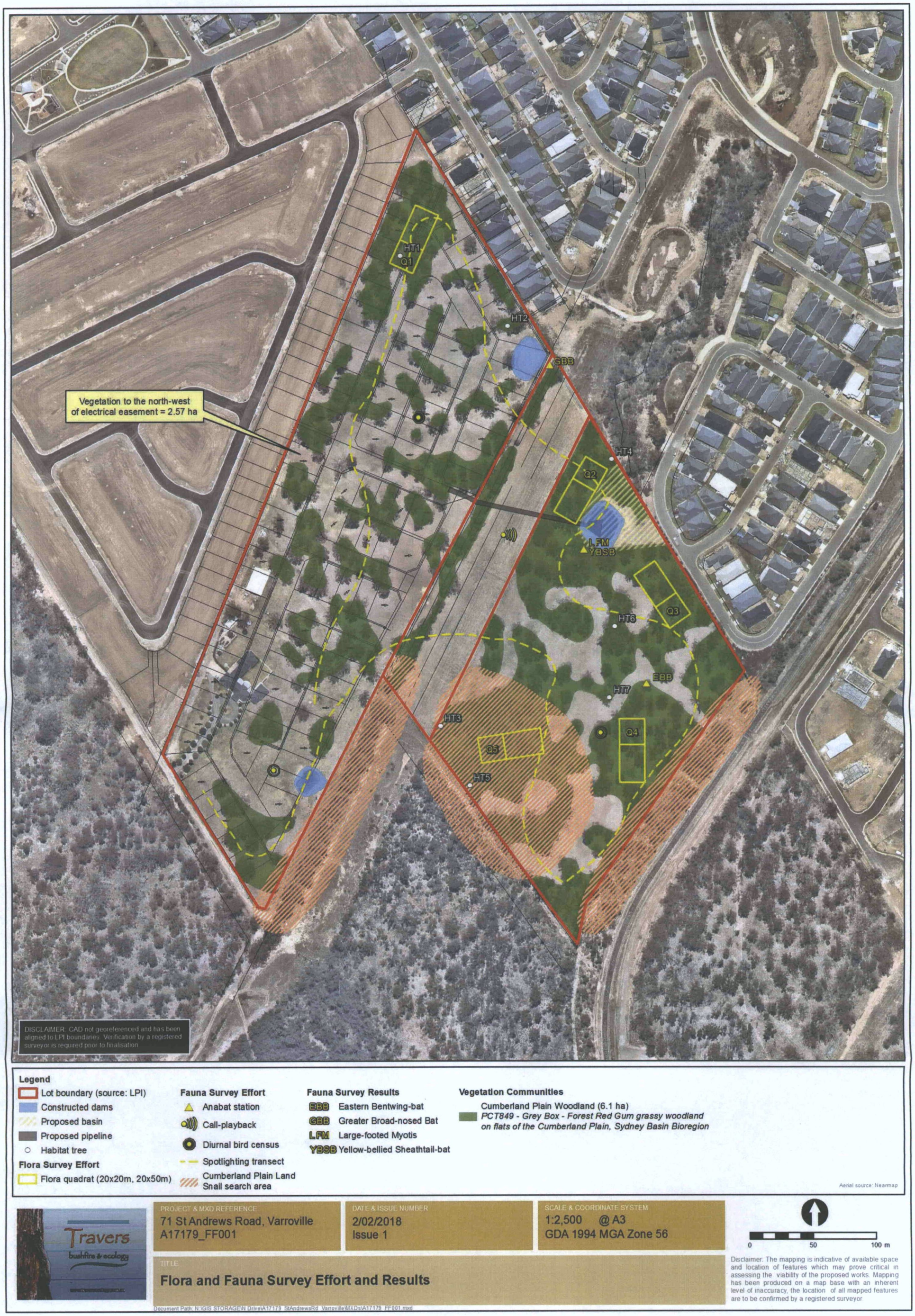


Figure 3 – Flora and fauna survey effort and results



Ecological Assessment 4

4.1 Previous surveys reviewed

Gunninah (2015) undertook a previous ecological assessment for the study area from site visits in 2014 and 2015 for a previous planning proposal. The species records have been considered and incorporated into this report where appropriate.

The following regional vegetation mapping was examined to identify the potential vegetation communities' onsite.

Native Vegetation Mapping of the Cumberland Plain (National Parks and Wildlife Service 2002).

The Vegetation Mapping of the Cumberland Plain (National Parks and Wildlife Service 2002) identified the vegetation as Map Unit 10 – Shale Plains Woodland.

Native Vegetation of the Sydney Metropolitan Catchment Management Area (OEH 2013)

The study area is approximately 500m outside of the Sydney Metropolitan CMA, instead within the Hawkesbury-Nepean. The mapping nearest the site suggests it is likely to be PCT 849 or PCT 850, both of which are derivatives of the Cumberland Plain Woodland community, listed under the TSC Act as critically endangered, and potentially Shale Gravel Transition Forest as critically endangered under the EPBC Act dependent upon size and quality criteria.

4.2 Flora

No threatened flora species were observed.

The ploughing within the western portion of the site would greatly reduce the likelihood of potential habitat for all species that may occur. It wasn't expected to be found. The habitat potential in the eastern portion was quite limited, possibly along the boundary fences where the vegetation was not regularly slashed or mown. Linear transects in a zig zag pattern were undertaken across parts of the eastern portion of the site but no threatened species were observed.

All species are listed in Table 3.1.

4.2.1 Local / Regional flora matters

The following species occur within the site and are considered to have some local value within the Campbelltown LGA, however none are listed as regionally significant as they have a widespread distribution across the Cumberland Plain of Sydney:

- *Euchiton sphaericus*
- *Oxalis perennans*

4.2.2 State legislative flora matters

(a) Threatened flora species (NSW)

TSC Act – A search of the *Atlas of NSW Wildlife* (OEH 2017) indicated a list of species that have been recorded within a 10 km radius of the study area. Those species are considered for suitable habitat and potential to occur in Table A2.1 (Appendix 2).

Based on the habitat assessment within Appendix 2, it is considered that the subject site provides varying levels of potential habitat for the following state listed threatened flora species:

Table 4.1 – State listed threatened flora species with suitable habitat present

Scientific name	*TSC Act*	Potential to occur	Potential impact
Pimelea spicata	E1	✓	Direct – on potential habitat only

Note: Full habitat descriptions for these species are provided in Appendix 2

Other species were considered to have low or marginal potential habitat but were ruled out due to previous pasture improvement and ongoing ploughing or slashing of the ground layer of vegetation.

No state listed threatened flora species were observed during survey(s) undertaken. These species have been assessed in detail within Appendix 3.

(b) Endangered flora populations (NSW)

There is one (1) known endangered population within the Campbelltown LGA: *Marsdenia viridiflora* subsp. *viridiflora*.

There are no close recordings of the species. Potential habitat is likely to limited prior to slashing but not suitable any longer.

It is not represented within the study area.

(c) Threatened ecological communities (NSW)

One (1) critically endangered ecological community (EEC) – Cumberland Plain Woodland – was observed within the subject site.

One (1) EEC was located onsite, namely;

- Cumberland Plain Woodland

6.1 ha of Cumberland Plain Woodland occurs within the study area.

The proposed rezoning to R2 for the western portion would likely impact 2.57 ha of Cumberland Plain Woodland. Rezoning the eastern portion to E3 would see retention of the majority of the 3.53 ha subject to the installation of stormwater devices and a dwelling. The

impact of a dwelling and APZ in this zone, with a stormwater basin and piping (trench) totalling 0.32 ha.

This community has have been assessed in detail within Appendix 3.

4.2.3 Endangered wetland communities

A number of wetland communities have been listed as an 'endangered ecological community' under the NSW TSC Act. We note that 'wetlands' are included in the definition of 'waterfront lands' in accordance with the Water Management Act 2000 due to their inclusion in the definition of a 'lake' under the same act.

Impacts on wetland communities must be assessed under the TSC Act and if present the management of wetland communities must be given due consideration in accordance with the objectives and principles of management as contained within the NSW Wetlands Policy (2010), and appropriate management as determined by NSW DPI - Office of Water in their general terms of approval (GTA's). This may include but not limited to the provision of buffers, management of stormwater runoff and maintenance of natural inflows or runoff into those wetland communities.

- Artesian springs ecological community - endangered ecological community listing
- Castlereagh swamp woodland community - endangered ecological community listing
- Coastal saltmarsh in the NSW North Coast, Sydney Basin and South East Corner bioregions - endangered ecological community listing
- Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions - endangered ecological community listing
- Kurri sand swamp woodland in the Sydney Basin Bioregion - endangered ecological community listing
- Lagunaria swamp forest on Lord Howe Island - endangered ecological community listing
- Maroota Sands swamp forest - endangered ecological community listing
- Montane peatlands and swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions - endangered ecological community listing
- Newnes Plateau Shrub Swamp in the Sydney Basin Bioregion - endangered ecological community listing
- Swamp oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner bioregions - endangered ecological community listing
- Swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions - endangered ecological listing
- Sydney Freshwater Wetlands in the Sydney Basin Bioregion - endangered ecological community listing
- The shorebird community occurring on the relict tidal delta sands at Taren Point - endangered ecological community listing
- Upland wetlands of the drainage divide of the New England Tableland Bioregion - endangered ecological community listing

None of the aforementioned wetland communities are present within the study area or required any further consideration.

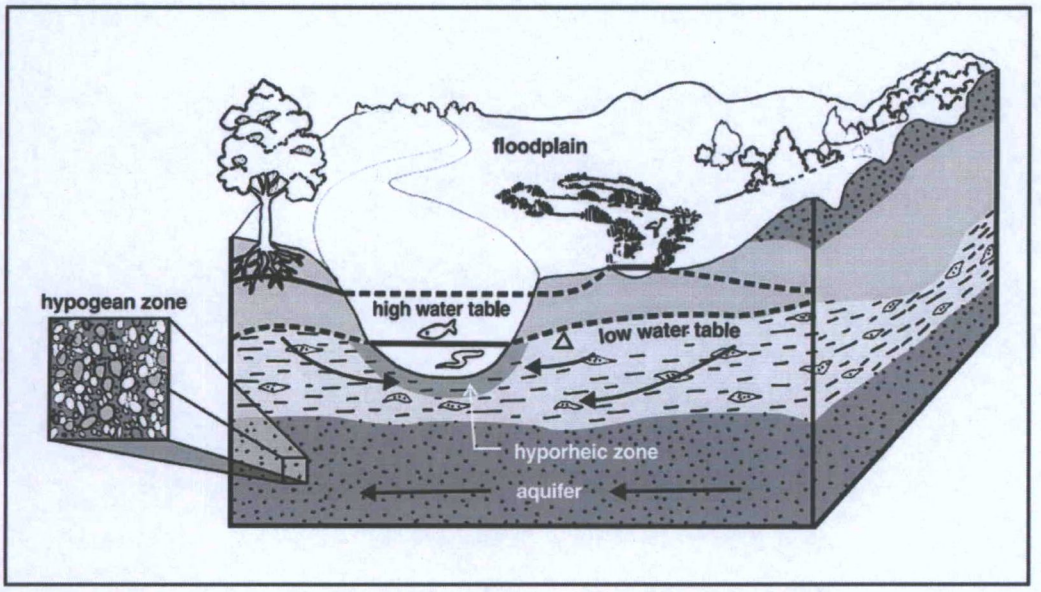
In accordance with the NSW DPI - Office of Water - Guidelines for Controlled Activities a standardised buffer of 40m applies to these communities subject to offset provisions. Where they are mostly cleared, highly fragmented or highly disturbed, consolidation and management in accordance with a Vegetation Management Plan is recommended. The

buffers provided are to be considered in the landscape context and consultation with NSW DPI – WaterNSW (formerly NSW Office of Water) undertaken to confirm the appropriateness of setbacks.

4.2.4 Groundwater dependent ecosystems (GDEs)

Groundwater dependent ecosystems are communities of plants, animals and other organisms whose extent and life processes are dependent on groundwater. Some examples of ecosystems which depend on groundwater are:

- wetlands;
- red gum forests, vegetation on coastal sand dunes and other terrestrial vegetation;
- ecosystems in streams fed by groundwater;
- limestone cave systems;
- springs; and
- hanging valleys and swamps.



Alluvial groundwater system discharging into a river

Groundwater dependent ecosystems are therefore ecosystems which have their species composition and their natural ecological processes determined by groundwater (NSW State Groundwater Dependent Ecosystems Policy April 2002).

There are no GDE's present within the study area for consideration.

4.2.5 Matters of national environmental significance - flora

(a) Threatened flora species (national)

A review of the schedules of the *EPBC Act* indicated the potential for a list of threatened flora species to occur within a 10km radius of the site. These species have been considered for habitat presence and potential to occur within Appendix 2.1.

Based on the habitat assessment within Appendix 2.1, it is considered that the subject site provides varying levels of potential habitat for the following nationally listed threatened flora species:

Table 4.2 – Nationally listed threatened flora species with suitable habitat present

Scientific name	*EPBC Act*	Potential to occur	Potential impact
Pimelea spicata	E	✓	Direct – on potential habitat only

One (1) nationally listed threatened flora species, *Pimelea spicata,* has the potential for habitat within the study area. It was not observed within the study area.

(b) Endangered ecological communities (national)

Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest is the equivalent critically endangered ecological community under the EPBC Act to Cumberland Plain Woodland under the TSC Act.

There are a number of criteria the vegetation must have in order to qualify for recognition under the EPBC Act which figure 4 displays as a flowchart.

In each of the 5 quadrats, native groundcover does not exceed 5% except in no. 3. In no. 3 it was measured at 10%. In comparison to the exotic or introduced species, native species made up much less that 30% of the groundcover. As such, the condition of the vegetation has been severely depleted such that it no longer can be considered under the EPBC Act.

A referral to DOEE under the EPBC Act will therefore not be required.

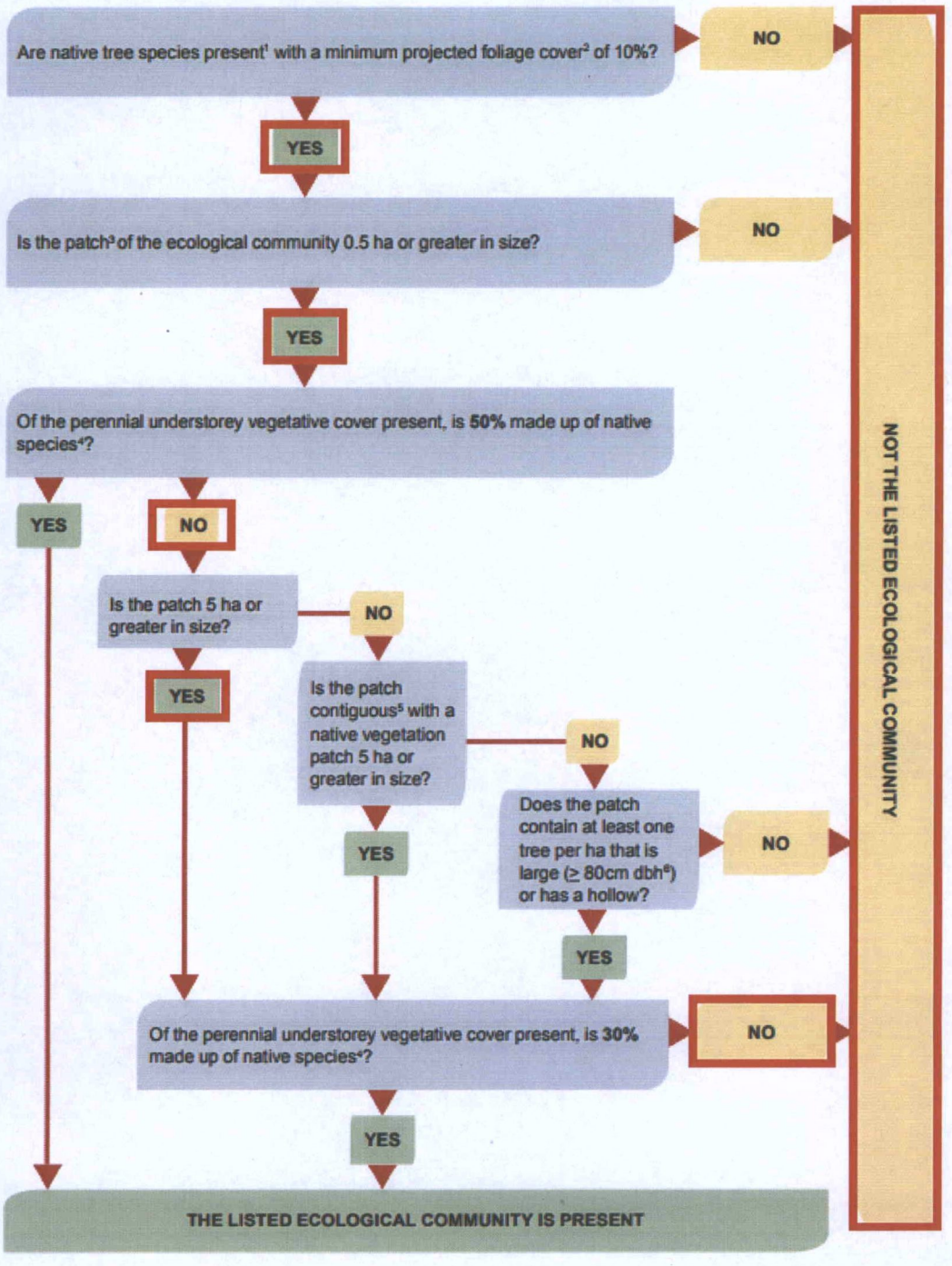


Figure 4 – Flowchart for determination of Cumberland Plain Shale Woodland and Shale-Gravel Transition Forest

4.3 Fauna

All fauna species recorded during survey are listed in Table 3.2.

4.3.1 Fauna habitat

The fauna habitats present within the site are identified within Table 4.3.

Table 4.3 – Observed fauna habitat

Topography				
Flat ✓	Gentle	Moderate	Steep	Drop-offs
Vegetation structure				
Closed Forest	Open Forest	Woodland ✓	Heath	Grassland ✓
Disturbance history				
Fire	Under-scrubbing ✓	Cut and fill works ✓		
Tree clearing ✓	Grazing ✓			
Soil landscape				
DEPTH:	Deep ✓	Moderate ✓	Shallow	Skeletal
TYPE:	Clay ✓	Loam ✓	Sand	Organic
VALUE:	Surface foraging ✓	Sub-surface foraging ✓	Denning/burrowing	
WATER RETENTION:	Well Drained ✓	Damp / Moist	Water logged	Swamp / Soak
Rock habitat				
No rock habitat present				
Feed resources				
FLOWERING TREES:	Eucalypts ✓	Corymbias	Melaleucas ✓	
	Banksias	Acacias ✓		
SEEDING TREES:	Allocasuarinas	Conifers		
WINTER FLOWERING EUCALYPTS:	C. maculata	E. crebra	E. globoidea	E. sideroxylon
	E. squamosa	E. grandis	E. multicaulis	E. scias
	E. robusta	E. tereticornis ✓	E. agglomerata	E. siderophloia
FLOWERING PERIODS:	Autumn	Winter ✓	Spring ✓	Summer ✓
OTHER:	Mistletoe ✓	Figs / Fruit ✓	Sap / Manna	Termites ✓
Foliage protection				
UPPER STRATA:	Dense	Moderate	Sparse ✓	
MID STRATA:	Dense	Moderate	Sparse ✓	
PLANT / SHRUB LAYER:	Dense	Moderate	Sparse ✓	
GROUNDCOVERS:	Dense	Moderate ✓	Sparse ✓	
Hollows / logs				
TREE HOLLOWS:	Large ✓	Medium ✓	Small ✓	
TREE HOLLOW TYPES	Spouts / branch	Trunk ✓	Broken Trunk	Basal Cavities	Stags
GROUND HOLLOWS:	Large	Medium	Small	
Vegetation debris				
FALLEN TREES:	Large	Medium	Small	
FALLEN BRANCHES:	Large	Medium	Small ✓	
LITTER:	Deep	Moderate	Shallow ✓	
HUMUS:	Deep	Moderate	Shallow ✓	

Drainage catchment						
WATER BODIES	Wetland(s)	Soak(s)	Dam(s) ✓	Drainage line(s)	Creek(s)	River(s)
RATE OF FLOW:	Still ✓		Slow		Rapid	
CONSISTENCY:	Permanent ✓		Perennial		Ephemeral	
RUNOFF SOURCE:	Urban / Industrial	Parkland		Grazing ✓	Natural	
RIPARIAN HABITAT:	High quality	Moderate quality		Low quality	Poor quality ✓	
Artificial habitat						
STRUCTURES:	Sheds ✓		Infrastructure		Equipment	
SUB-SURFACE	Pipe / culvert(s)		Tunnel(s)		Shaft(s)	
FOREIGN MATERIALS:	Sheet		Pile / refuse ✓			

4.3.2 Habitat trees

A complete assessment of the location of habitat trees and the size of hollows within was undertaken as part of surveys. Table 4.4 below provides hollow-bearing tree data and Figure 3 shows locations of habitat trees.

One large hollows was considered suitable in size for threatened owls but is not considered likely for use given its placement in a highly managed landscape. There are only records of Powerful Owl within 3km of the study area however there is no roosting opportunity for this species within the study area itself.

Three (3) hollow-dependent threatened fauna species were recorded present during survey including the Yellow-bellied Sheathtail-bat, Large-footed Myotis and the Greater Broad-nosed Bat. Hollows recorded present may be suitable for roosting and breeding by these species. The removal of a hollow roost within the landscape for any of these bats species would be regarded as a potential significant impact on a local population, given the limited selection of hollows by these local populations. Subsequent to the findings of suitable hollows, each of these will need to be checked for use prior to subdivision.

The recorded presence of a threatened microbat roost within the proposed R2 Residential area will require this to be retained. This may be undertaken ahead of any further planning to effectively advise the subdivision layout. There are only two hollow-bearing trees within this area so the potential for their use is not expected. Similarly the proposed E3 land has scope to contain a single dwelling and additional hollow-bearing trees within any proposed development footprint will be similarly constrained. Hence further survey is required to advise future layouts.

Table 4.4 – Habitat tree data

Tree No	Common Name	Scientific Name	DBH (cm)	Height (m)	Spread (m)	Vigour (%)	Hollows Recorded
HT1	Grey Box	*E moluccana*	42	18	8	75	1x 0-5cm branch
HT2	Rough-barked Apple	*A floribunda*	62	15	6	75	4x 0-5cm branch, 2x10-15cm branch spouts
HT3	Forest Red Gum	*E tereticornis*	105	23	13	85	1x 10-15cm trunk
HT4	Grey Box	*E moluccana*	125	19	6	70	1x 40-50cm low trunk
HT5	Broad-leaved Paperbark	*M quinquenervia*	80	19	6	80	1x 0-5cm trunk, 1x 0-5cm branch
HT6	Forest Red Gum	*E tereticornis*	160	21	13	80	1x 5-10cm branch, 1x 40-50cm broken trunk
HT7	Grey Box	*E moluccana*	70	19	7	70	3x 0-5cm branch,

Tree No	Common Name	Scientific Name	DBH (cm)	Height (m)	Spread (m)	Vigour (%)	Hollows Recorded
							1x 0-5cm branch spout, 2x10-15cm branch

4.3.3 Local fauna matters

No fauna species recorded present during survey are listed as a regionally significant species within the *Native Fauna of Western Sydney - Urban Bushland Biodiversity Survey* (NPWS 1997).

4.3.4 State legislative fauna matters

(a) Threatened fauna species (NSW)

TSC Act – A search of the *Atlas of NSW Wildlife* (OEH, 2017) provided a list of threatened fauna species previously recorded within a 10km radius of the subject site. These species are listed in Table A2.2 (Appendix 2) and are considered for potential habitat within the subject site.

Based on the habitat assessment within Appendix 2, it is considered that the subject site provides varying levels of potential habitat for the following state listed threatened fauna species:

Table 4.5 – State listed threatened fauna species with suitable habitat present

Common Name	TSC Act	Potential to occur
Yellow-bellied Sheathtail-bat	V	recorded
Eastern Bentwing-bat	V	recorded
Large-footed Myotis	V	recorded
Greater Broad-nosed Bat	V	recorded
East-coast Freetail Bat	V	recorded (Gunninah)
Little Eagle	V	✓
Little Lorikeet	V	✓
Swift Parrot	E	✓
Dusky Woodswallow	V	✓
Grey-headed Flying-fox	V	✓
Little Bentwing-bat	V	✓
Varied Sittella	V	✓
Eastern Falsistrelle	V	low
Cumberland Plain Land Snail	E	low
Spotted Harrier	V	unlikely
Square-tailed Kite	V	unlikely
Turquoise Parrot	V	unlikely
Powerful Owl	V	unlikely
Speckled Warbler	V	unlikely
Regent Honeyeater	E4A	unlikely

Note: Full habitat descriptions for these species are provided in Appendix 2

Four (4) state listed threatened fauna species including Greater Broad-nosed Bat (*Scoteanax rueppellii*), Large-footed Myotis (*Myotis macropus*), Eastern Bentwing-bat (*Miniopterus orianae oceanensis*) and Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*), were recorded within the study area.

The Yellow-bellied Sheathtail-bat was recorded only to a 'probable' level of certainty however this species as well as the Eastern Bentwing-bat and the East-coast Freetail Bat (*Micronomus norfolkensis*) were recorded during previous site surveys by *Gunninah* (2015). This is a total of five (5) state listed threatened fauna species recorded.

These species have been assessed in detail within Appendix 3. The impact assessment for these species has concluded a not significant impact provided that hollows are inspected for use by any threatened microbats species and the presence of such hollows are retained in-situ with appropriate buffers.

FM Act – No habitats suitable for threatened aquatic species were observed within the subject site and as such the provisions of this act do not require any further consideration.

(b) Endangered fauna populations (NSW)

There are no endangered fauna populations previously recorded within 10km of the study area or expected to occur.

(c) SEPP 44 Koala Habitat Protection

SEPP 44 Koala Habitat Protection applies to land within Local Government Areas (LGAs) listed under Schedule 1 of the Policy. In addition, Part 2 of the Policy outlines a three (3) step process to assess the likelihood of the land in question being potential or core koala habitat. Part 2 applies to land which has an area of greater than 1 hectare or has, together with any adjoining land in the same ownership, an area of more than 1 hectare.

The subject site is required to be considered under SEPP 44 as it falls within the Campbelltown LGA, which is listed on Schedule 1 of this Policy. In addition, the total area of the subject site is greater than 1 hectare, hence Part 2 – Development Control of Koala Habitats, of the Policy applies.

Potential Koala Habitat (PKH) is defined as land where at least 15% of the total number of trees in the upper or lower strata constitutes any of the tree species listed in Schedule 2 of the policy.

Core Koala Habitat (CKH) is defined as an area of land with a resident population of koalas, evidenced by attributes such as breeding females (i.e. females with young) and recent sightings of and historical records of a population.

A Koala Plan of Management is required to be prepared where council is satisfied that the land is CKH.

Step 1 – Is the land PKH?

One Koala food tree species Forest Red Gum (*Eucalyptus tereticornis),* as listed on Schedule 2 of SEPP 44 – was recorded within the subject site. These trees comprised greater than 15% of the total number of trees within the Cumberland Plain Woodland vegetation community present and therefore is classified under SEPP 44 as 'potential Koala habitat'.

Step 2 – Is the land CKH?

No Koalas were directly observed at the time of fauna survey, which included diurnal searches of trees and spotlighting. In addition, there was no secondary evidence of Koala habitation in the area including characteristic scratches on trees and scats beneath trees.

A search of the Atlas of NSW Wildlife (OEH 2017) found five-hundred and forty-three (543) records of Koala habitation within a 10 km radius of the study area. None of these records are within 3km of the study area and all are associated with the well-known Georges River population. As such the study area is not considered to comprise 'core Koala habitat' as defined under SEPP 44.

Step 3 – Koala Plan of Management

As the land is not considered to comprise CKH a Koala Plan of Management is not considered to be required.

4.3.5 National environmental significance - fauna

(a) Threatened fauna species (National)

EPBC Act – A review of the schedules of the *EPBC Act* identified a list of threatened fauna species or species habitat likely to occur within a 10km radius of the subject site. These species have been listed in Table A2.2 (Appendix 2), and those with potential habitat within the subject site are considered in the seven-part test within Appendix 3.

Based on the habitat assessment within Appendix 2, it is considered that the subject site provides varying levels of potential habitat for the following nationally listed threatened fauna species:

Table 4.6 – Nationally listed threatened fauna species with suitable habitat present

Common name	EPBC Act	Potential to occur
Swift Parrot	E	✓
Grey-headed Flying-fox	V	✓
Regent Honeyeater	CE	unlikely

No nationally listed threatened fauna species, were recorded within the study area during survey.

The Significant Impact Criteria for species listed under the EPBC Act 1999 is provided in Appendix 4. An assessment of impacts with consideration to this criteria has concluded that there will not be any likely significant impact on any nationally listed threatened fauna species with potential to occur, as a result of the planning proposal.

(b) Protected migratory species (National)

The EPBC Act Protected Matters Report provides additionally listed terrestrial, wetland and marine migratory species of national significance likely to occur, or with habitat for these species likely to occur, within a 10km radius of the subject site. The habitat potential of migratory species is considered in Table A2.3 (Appendix 2). The habitat potential of threatened migratory species is considered in Table A2.3 Table A2.2 (Appendix 2).

No nationally protected migratory bird species were recorded present during the surveys. The impact assessment for nationally protected migratory species with potential to occur has concluded a not significant impact.

4.4 Vegetation connectivity and wildlife corridors

The managed woodland vegetation within the study area contributes to local connectivity towards the immediate south and then east. The combined local connective landscape is however isolated from other major remnant or contiguous vegetation including any major conservation parks or reserves.

Whilst the study area does provide some degree of canopy only connectivity to this local remnant, removal of vegetation within the study area, particularly the proposed R2 area, will not cause any segmentation, fragmentation or isolation of this local connectivity. This is demonstrated in Figure 5 below.

The connectivity that will be maintained to the immediate south is represented by better quality unmanaged native vegetation able to support small terrestrial animal species and their habitats.

Threatened fauna species recorded during fauna survey or otherwise within the local connective landscape include the Cumberland Plain Land Snail, Greater Broad-nosed Bat, Large-footed Myotis, Eastern Bentwing-bat, Yellow-bellied Sheathtail-bat, East-coast Freetail Bat, Grey-headed Flying-fox, Varied Sittella, Little Lorikeet and Little Eagle. Each of these are highly mobile flying species with the exception of the Cumberland Plain Land Snail, which was not found within the study area and is unlikely to occur. The removal of habitat for the planning proposal will not likely inhibit or reduce local movements for any of these remaining flying species.

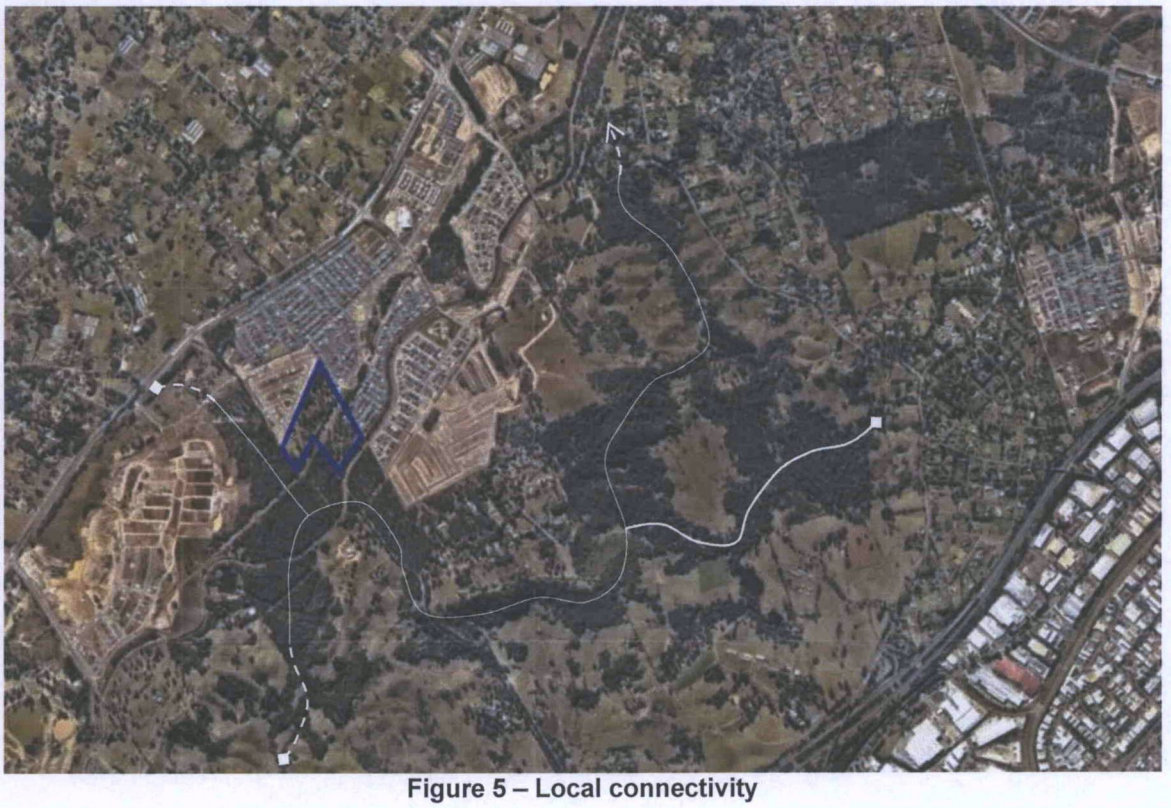


Figure 5 – Local connectivity

4.5 Suitability of the proposed zones

The following objectives and permitted uses are listed within Campbelltown LEP 2015:-

Zone R2 Low Density Residential

1 Objectives of zone

- To provide for the housing needs of the community within a low density residential environment.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.
- To enable development for purposes other than residential only if that development is compatible with the character of the living area and is of a domestic scale.
- To minimise overshadowing and ensure a desired level of solar access to all properties.
- To facilitate diverse and sustainable means of access and movement.

2 Permitted without consent

Home occupations

3 Permitted with consent

Attached dwellings; Boarding houses; Building identification signs; Business identification signs; Centre-based child care facilities; Community facilities; Dual occupancies; Dwelling houses; Emergency services facilities; Environmental facilities; Environmental protection works; Exhibition homes; Exhibition villages; Flood mitigation works; Group homes; Home-based child care; Home businesses; Home industries; Multi dwelling housing; Places of public worship; Recreation areas; Recreation facilities (outdoor); Respite day care centres; Roads; Schools; Semi-detached dwellings

4 Prohibited

Any development not specified in item 2 or 3

Zone E3 Environmental Management

1 Objectives of zone

- To protect, manage and restore areas with special ecological, scientific, cultural or aesthetic values.
- To provide for a limited range of development that does not have an adverse effect on those values.
- To enable development for purposes other than rural-residential only if that development is compatible and complementary, in terms of design, size and scale, with the character of land in the zone.
- To allow cellar door premises, restaurants and cafes only where they are directly associated with the agricultural use of the land.
- To protect, and maintain the environmental, ecological and visual amenity of, the Scenic Hills, the Wedderburn Plateau and environmentally sensitive lands in the vicinity of the Georges River from inappropriate development.
- To preserve the rural heritage landscape character of the Scenic Hills.
- To protect and enhance areas of scenic value and the visual amenity of prominent ridgelines.
- To protect bushland, wildlife corridors and natural habitat, including waterways and riparian lands.

- To ensure the preservation and maintenance of environmentally significant and environmentally sensitive land.

2 Permitted without consent

Home occupations

3 Permitted with consent

Animal boarding or training establishments; Bed and breakfast accommodation; Building identification signs; Business identification signs; Cellar door premises; Dual occupancies (attached); Dwelling houses; Educational establishments; Emergency services facilities; Environmental facilities; Environmental protection works; Extensive agriculture; Farm buildings; Farm stay accommodation; Flood mitigation works; Home-based child care; Home businesses; Home industries; Horticulture; Places of public worship; Recreation areas; Restaurants or cafes; Roads; Roadside stalls; Rural workers' dwellings; Viticulture; Water supply systems

4 Prohibited

Industries; Multi dwelling housing; Residential flat buildings; Retail premises; Seniors housing; Service stations; Warehouse or distribution centres; Any other development not specified in item 2 or 3

The proposed zones R2 is considered suitable for proposed residential subdivision area given the conservation of Cumberland Plain Woodland in the adjoining E3 Environmental management lands and the offsetting of the residual impacts through the NSW Biobanking Scheme. The existing understorey within the R2 zone is highly modified with improved pasture species. The R2 lands are bounded by residential development and an electrical easement and hence is an extension to the existing residential subdivision areas.

The proposed E3 zoning for better quality environmentally sensitive lands provides security of protection for the critically endangered ecological community - Cumberland Plain Woodland under the planning scheme, limits the subdivision to smaller lots and provides the opportunity for the conservation lands to be established as a biobanking site to provide a long-term protection and biodiversity conservation outcome. The ability to apply a single dwelling within the E3 land allows the land to be managed by a single land owner for conservation purposes.

Restoration of the CPW as part provides a consolidated restoration outcome that will be bound on three sides by a road, electrical easements and Sydney water supply upper canal hence providing boundary protection. Ongoing protection can be established via a conservation agreement and or offered as a biobanking site or a biodiversity stewardship site under the Biodiversity Conservation Act 2016.



Conclusion 5

Travers bushfire & ecology has been engaged to undertake a flora and fauna assessment for a planning proposal within Lot 71 DP 706546 accessed from St Andrews Road, Varroville.

Ecological survey and assessment has been undertaken in accordance with relevant legislation including the *Environmental Planning and Assessment Act 1979*, the *Threatened Species Conservation Act 1995*, the commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and the *Fisheries Management Act 1994*.

5.1 Legislative compliance

In respect of matters required to be considered under the *Environmental Planning and Assessment Act 1979* and relating to the species / provisions of the *Threatened Species Conservation Act 1995*, four (4) threatened fauna species including Greater Broad-nosed Bat (*Scoteanax rueppellii*), Large-footed Myotis (*Myotis macropus*), Eastern Bentwing-bat (*Miniopterus orianae oceanensis*) and Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*), no threatened flora species and one (1) EEC, Cumberland Plain Woodland, were recorded within the study area.

The Yellow-bellied Sheathtail-bat was recorded only to a 'probable' level of certainty however this species as well as the Eastern Bentwing-bat and the East-coast Freetail Bat (*Micronomus norfolkensis*) were recorded during previous site surveys by *Gunninah* (2015).

In accordance with Section 5A of the *Environmental Planning and Assessment Act 1979*, the 7 part test of significance concluded that the planning proposal will not have a significant impact on any threatened species, populations or EECs provided that further survey to identify potential bat roosting is undertaken and recorded threatened bat roosts are retained in-situ. In this case, a Species Impact Statement should not be required for the proposal.

In respect of matters required to be considered under the *Environment Protection and Biodiversity Conservation Act 1999*, no threatened fauna species, no protected migratory bird species, no threatened flora species, and no EEC under this Act were recorded within the study area. The planning proposal was not considered to have a significant impact on matters of national environmental significance as the vegetation present and being impacted is not considered to meet the condition criteria to be commensurate with *Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest*. Offsetting of the biodiversity impacts is recommended to ensure a maintain or improve outcome is achieved. As such a referral to Department of Environment and Energy is not required.

In respect of matters relative to the *Fisheries Management Act 1994*, no suitable habitat for threatened marine or aquatic species was observed within the subject site and there are no matters requiring further consideration under this Act.

5.2 Potential ecological impacts

The direct, indirect and cumulative ecological impacts have been considered in respect to recorded biodiversity, threatening processes and extent of impact as a result of the proposed works:-

The direct impacts of the proposal within the subject site area is considered as:

- Removal/modification of 2.57 ha of Cumberland Plain Woodland within the proposed R2 lands
- Potential removal of 0.2 ha of Cumberland Plain Woodland for a dwelling within the proposed E3 lands including the APZ
- Removal / modification of 0.12 ha of Cumberland Plain Woodland within the E3 lands for a proposed basin and pipe line
- Potential removal of vegetation for stormwater detention devices
- Subsequent removal of threatened fauna species foraging habitat
- Reduction in local connectivity and patch size of remnant bushland areas
- Removal of small and medium sized hollows suitable for recorded threatened species

The potential indirect impacts of the proposal are considered as:

- Edge effects such as weed incursions into the adjacent remaining natural habitat areas
- Reduced cross-site movements by small bird species such as passerines.
- Increased presence of pet cats and dogs in the locality and subsequent resultant impacts on native wildlife.
- Increased spill-over from noise, activity, scent and lighting effects into the adjacent quality natural habitat areas.

The potential cumulative impacts (combined results of past, current and future activities) of the proposal are considered as:

- Cumulative loss of Cumberland Plain Woodland
- Cumulative loss of winter flowering resources and threatened species habitat
- Further reduction of the connective remnant
- Increased varied human presence and activity within the remaining natural habitat areas of the adjacent bushland remnant.
- Edge effects from inappropriate use of remaining native vegetation areas such as additional clearing, dumping of materials, dumping of faecal, food or general waste and building refuse.

5.3 Mitigation and amelioration of impacts

The following recommendations are made to avoid, minimise or ameliorate the above potential ecological impacts, address threatening processes and to create a positive ecological outcome for threatened species and their associated habitats.

- Locate the potential dwelling and stormwater devices within cleared or degraded lands and to minimise the loss of vegetation.

- Residual impacts of the proposed residential and associated works are to be offset through the NSW Biobanking or Biodiversity offsetting scheme.

- It is recommended that a Biodiversity Stewardship Assessment Report be undertaken on the eastern remnant proposed for future retention and protection of the Cumberland Plain Woodland remnant, its connective values and local patch size.

- Where they adjoin the development areas, the boundaries of the conservation areas shall be clearly marked out on-site to ensure their protection. All areas of natural vegetation retention shall be protected by fencing, prior to construction, to ensure that these areas are not damaged during the construction phase.

- Construction activities will be intermittently supervised on-site and monitored by a project ecologist to ensure that the recommendations of this report are implemented.

- Where possible revegetation using locally occurring native plant species is to be re-established within the proposed E3 lands.

- Target weed control is to be undertaken across all proposed E3 lands to improve the condition of the ground layer and assist in natural regeneration as well as reduce completion against planted native understorey species..

- Standard *Phytophthora cinnamomi* protocol applies to the cleaning of all plant, equipment, hand tools and work boots prior to delivery onsite to ensure that there is no loose soil or vegetation material caught under or on the equipment and within the tread of vehicle tyres. Any equipment onsite found to contain soil or vegetation material is to be cleaned in a quarantined work area or wash station and treated with anti-fungal herbicides.

- Erosion control measures are to be in place to reduce temporary erosion and sedimentation risks to adjacent vegetation and any nearby drainage channel.

- All areas containing natural habitat features which have been identified for retention are to be protected with fencing prior to construction

- Hollows present within the proposed R2 Residential landscape should be inspected for the presence of roosting by recorded threatened microbat species. If any of these hollows are found to contain such a roost (which is not expected) then this tree is to be retained with appropriate buffers from the development landscape. The same inspections and protections are required for any hollow-bearing trees located within a proposed building footprint located within the proposed E3 area.

- According to DEC (2004) survey Guidelines, stag-watching of all trees should be undertaken during warmer months (October - March). Outside of this period microbats may become dormant during cooler months therefore tree climbing inspections with use of a videoscope should be undertaken at this time to effectively determine presence and use of hollows.

- Where the felling of hollow-bearing trees is required, this is to be conducted under the supervision of a fauna ecologist to ensure appropriate animal welfare procedures are taken, particularly for threatened species not previously recorded within these hollows. Hollows of high quality or with fauna recorded residing within should be sectionally dismantled for relocation and all hollows should be inspected for occupation, signs of previous activity and potential for reuse.

- Subsequent hollows of retention value are to be relocated to E3 conservation area. Nest boxes may be constructed to replace a removed hollow however a relocated/refurbish natural hollow is preferred for use by threatened microbat species. Constructed boxes should be constructed all of weatherproof timber (marine ply), fasteners and external paint and appropriately affixed to a recipient tree under the guidance of a fauna ecologist.

- If a threatened species is found to be occupying the hollow then the hollow section is to be reattached to a recipient tree within the nearby conservation areas as selected and directed by the fauna ecologist. The welfare and temporary holding of the residing animal(s) is at the discretion of the fauna ecologist. The hollow section should be well secured in the recipient tree in a manner that will not compromise the current or future health of that tree.
- If any fauna species, a nest or roost is located during development works, then works should cease until safe relocation can be advised by a contact fauna ecologist.

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Fauna Survey Methodologies

A1

The fauna survey methods outlined within this Appendix are techniques employed by *Travers bushfire & ecology,* based on industry standards as well as additional methods found to be effective for select fauna groups. The fauna survey techniques deployed for each specific site are outlined within the survey effort table in the main body of this report. The techniques selected will depend upon the site characteristics and extent of available habitat as well as restrictions such as available survey time and weather conditions.

If any additional or target survey techniques for fauna species are undertaken, beyond the methods outlined within this Appendix, the details of these will be described within the main body of this report.

1 Standard survey techniques

1.1 Diurnal birds

Diurnal birds are typically identified visually and / or by calls during diurnal surveys. Habitat searches to identify nests, feathers, eggs, or signs of foraging may be utilised more specifically for identifying threatened diurnal bird species.

Visual observations are made more accurate with the use of binoculars and where necessary or practical, with the use of a spotting scope. Binoculars are carried by the fauna surveyor at all times during nocturnal and diurnal fauna surveys. A birding field guide is always available in the field when required for verifications.

Calls are identified in the field by the fauna surveyor. If an unknown call is heard it is cross-matched to comprehensive bird call reference libraries taken into the field. A call library of birds occupying the NSW coastal areas is also stored into a mobile phone for a quick reference. This phone is carried into the field at all times and may be used for call-playback methods and recording calls for later analysis.

Diurnal bird census points may be undertaken at large sites where the total area may not be effectively covered during the survey period, or as a measure to ensure focused bird only survey.

Song-meters may also be used for remote diurnal bird call surveys in pre-selected diurnal periods (particularly during the dawn chorus) over the deployment period.

1.2 Nocturnal birds

Searches for evidence of Owl roosts, key perches and potential Owl roosting / breeding hollows are made during diurnal site searches. Whitewash, feathers or regurgitated pellets give key information. Pellets are sent for analysis of contents to assist in identification where necessary.

Generally, the presence of nocturnal birds during the nocturnal period is first determined by quiet listening after dusk for calls by individuals emerging from diurnal roosts. Following this,

and provided no calls are heard, call-playback techniques are employed for threatened species that have suitable habitat present.

Threatened nocturnal birds known to provide response to call-playback techniques include Masked Owl (*Tyto novaehollandiae*), Powerful Owl (*Ninox strenua*), Barking Owl (*Ninox connivens*), Sooty Owl (*Tyto tenebricosa*), Grass Owl (*Tyto longimembris*), Black Bittern (*Ixobrychus flavicollis*), Australian Bittern (*Botaurus poiciloptilus*) and Bush Stone-curlew (*Burhinus grallarius*).

Each call is typically played for five minute periods with five minute intervals of quiet listening for a response. This is followed with spotlighting and periods of quiet listening throughout the nocturnal survey.

Separation distances between broadcasting stations during a single night of survey are advised for different species within survey guidelines. These include 1km between Owl calls and 3km between Bush Stone-curlew calls. Subsequent to this, separate broadcasting stations will be deployed on the same night where sites of significant size are surveyed. Separations for bitterns are not advised and these may be broadcast at a number of stations along suitable habitat areas.

Where an owl species has been recorded or is known to occur, call-playback techniques will not be deployed for that species to prevent disturbance of breeding activity. Where a threatened owl is known to occur appropriate additional effort will be undertaken to identify appropriate nesting/roosting trees and identify signs of use as per the methods guided by owl specialist John Young. These techniques vary pending the time of year but all with a focus to identify key breeding and roosting habitat trees and areas.

Stag-watching at appropriate times of year will also be undertaken where suitable large hollows for Owl nesting / roosting show signs of activity or are located within development areas. Full covert or semi-covert Reconyx surveillance cameras may be mounted at suspected hollows to target owl use and behaviour.

Song-meters may also be used to remotely target presence of owls by recording calls in selected nocturnal periods (particularly after dusk and before dawn) in the early breeding period.

1.3 Arboreal mammals

Arboreal mammals may be surveyed using Elliott type A, B and / or C traps, small and / or large hair tubes, surveillance cameras, video endoscope, spotlighting, call-playback techniques, scat searches or searches for other signs of activity.

Baiting and layout for Elliott trapping and hair tubing are typically incorporated into terrestrial trapping and hair tubing effort, unless where target survey is undertaken. Standard baiting and layout is therefore described in Section A1.4 below within terrestrial survey methods. Where gliders are targeted, the standard bait mix may be additionally laced with a nectarivor powder mix used for feeding captive birds. Where Brush-tailed Phascogales are targeted the standard bait mix may be additionally laced with an insectivore powder mix. Where Eastern Pygmy Possum is targeted, the bait mix will be more heavily laced with honey.

Elliott traps for arboreal captures are placed onto tree mounted platforms that are attached to the trunk 2-3m above the ground, at an incline to facilitate drainage during inclement weather. Plastic sleeves are placed around or over traps when there is a possibility of wet weather in the forecast. Arboreal hair tubes are attached to the trunk of trees using rubber bands with the tube entry facing down, preventing water entry.

For all arboreal traps and hair tubes a mixture of honey and water is sprayed onto the trunk up to 8m above the trap and around the trap as a lure. Where Eastern Pygmy Possum is targeted, a high concentrate honey water mix is also sprayed from the base of trunk up and along connective branches.

Arboreal traps and hair tubes are placed in trees selected to bias target species. These are often flowering or sap flow trees for gliders, rough-barked trees for the Brush-tailed Phascogale and Banksias for the Eastern Pygmy possum.

Surveillance cameras may be used to target arboreal mammals in instances where the camera can be placed targeting a location on a tree where baiting is placed. This method may utilise the efforts of tree climbers to permit placement a good height, particularly in instances where scratches indicate regular usage patterns or a hollow is a suspected den.

A videoscope is used for active observations of hollow cavities for the presence of arboreal mammals (and other hollow-dependent fauna). Where a cavity extends beyond the cable distance an angle drill hole is made from the outside so sections can be viewed down to the base. Single photo or video footage may be recorded to assist identification or where only nest bedding material is recorded. This may also be used for later verification of identification.

Where habitat is suitable, the presences of Koala (*Phascolactos cinereus*), Yellow-bellied Glider (*Petaurus australis*) and Squirrel Glider (*Petaurus norfolcensis*) may be targeted by call-playback techniques. Calls are played for five minute periods during nocturnal surveys. This is followed by quiet listening and spotlighting. Arboreal gliders are also identified from characteristic sap feeding scars on select tree species.

1.3.1 Koala survey

Koala survey is undertaken where the site is considered to provide potential habitat under the definitions of SEPP 44 - Koala Habitat Protection, or in the presence of feed trees listed in Appendix 1 of the Recovery Plan for the Koala. Habitat may also be defined according to locally prepared Koala Plans of Management.

SEPP 44 is applied to land within Local Government Areas (LGAs) listed under Schedule 1 of the Policy. Part 2 is applied to land which has an area of greater than 1ha or has, together with any adjoining land in the same ownership, an area of more than 1ha.

To determine Potential Koala Habitat (PKH) under the definitions of SEPP 44 an estimate of the percentage density of each tree species within vegetation communities is determined by averaging the percentage of stems counted. PKH is defined as land where at least 15% of the total number of trees in the upper or lower strata constitutes any of the tree species listed in Schedule 2 of the Policy.

Where Koala habitat is considered to be present, the site will be surveyed on foot, with known Koala food trees being inspected for signs of use. Trees are inspected for characteristic scratch and claw marks on the trunk and scats around the base of each tree. Koalas may also be targeted during nocturnal survey involving call-playback techniques and spotlighting.

For large sites, Koala search quadrats may be employed within portions of communities where feed trees are present at suitable densities. All Koala feed trees within quadrats are searched for signs of activity including characteristic claw 'pock' marks on the trunk and faecal pellets around the base. Pellet searches are undertaken according to the tree base

search methods described in *Phillips & Callaghan* (2008). Search quadrats are less labour intensive than the SAT techniques described below but may only be an initial survey effort to determine presence / absence.

Where any Koala activity is recorded the complete Spot Assessment Technique (SAT) described by *Phillips & Callaghan* (2008) may be undertaken as a measure of Koala *activity*. This technique may also be employed in the first instance as an indicator of presence / absence, particularly where a site has potential Koala activity based on previous records.

For any survey technique, the location and density of Koala droppings, if found, are documented.

1.4 Terrestrial mammals

Various traps may be used to survey for the presence of terrestrial mammals. These include Elliott trapping, medium and large cage trapping, small and large hair tubing and pitfall traps. Other survey methods for terrestrial mammals include the use of surveillance cameras, song-meters, spotlighting and activity searches.

Arboreal and terrestrial Elliott traps and hair tubes are placed in grids, or more commonly along trap-lines of 5-10 traps separated by distances of 20-50m, depending on site size and variation of habitat. Trap or hair tube sizes selected at each trap station may alternate or may have an emphasis on certain sizes according to target species.

Selection of terrestrial Elliott trap, cage trap, hair tube or pitfall trap locations has an emphasis on nearby foliage, runways, shelters and signs of activity.

Standard bait mix for all Elliott traps, medium cage traps and hair tubes is a mixture of rolled oats, honey and peanut butter. Standard bait mix may be supplemented with sardines in large hair tubes or cage traps to simultaneously target Spotted-tailed Quoll. Cage traps may also be baited solely with meat, chicken or roadkill to target Spotted-tailed Quoll. Where Potoroos or Bandicoots are targeted, truffle oil may be used to lace the standard bait mix or used on its own.

Surveillance cameras are used in terrestrial mammal surveys particularly for detection of a broad target group or shy species. The surveillance camera is mounted on a tree and directed towards a closed baited trap or canister. Surveillance cameras may also be used to detect use or monitor activity at burrows, hollows, nests, runways, etc.

Song-meters may be used as a supplementary surveying tool to identify mammal calls including Yellow-bellied Glider, Squirrel Glider and Spotted-tailed Quoll.

During diurnal site searches, assessment is made of 'found' scats, markings, diggings, runways and scratches located. Any scats or pellets not readily identifiable (particularly predator scats) may be collected and sent to Barbara Triggs for identification of contents, hair or bone fragments.

1.5 Bats

Micro-chiropteran bats are surveyed by echolocation using ultrasonic recording detectors or trapped using harp (Constantine) traps, mist nets or trip lines. Microchiropteran bats are also surveyed by searches of subterranean habitats such as caves, tunnels or shafts where present, or by searching structures such as under bridges and abandoned buildings or wall / ceiling cavities, where entry is possible.

Ultrasonic recording detectors are used in fixed passive monitoring positions. Active monitoring may also be used in conjunction with spotlighting or during stag-watching for greater accuracy of recorded call identification. Active monitoring utilises a handheld sonograph recording microbat calls in real-time. Spotlighting of the microbat is then used to determine size and wing morphology to assist in finer differentiation between species with similar call shape and frequencies.

Harp traps and mist nets are placed along suitable 'flyways' such as along open narrow road / river corridors to maximise the likelihood of captures. Traps may be purpose set to capture bats emerging from roosts by being placed at the entry of tunnels / caves or draped over the edge of bridges. Trip lines are placed over water to trip low flying drinking bats into the water. These bats are collected as they swim to the waters edge.

Harp traps are checked during early nocturnal survey, as well as each morning. Mist nets and trip lines require constant monitoring. Captured bats are identified using field identification guides. Bats are released at the point of capture after dusk or placed under trunk bark / splits of nearby trees.

Mega-chiropteran bat species, such as Grey-headed Flying-fox, are surveyed by targeting flowering / fruiting trees during spotlighting activities and by listening to distinctive vocalisations. Suitable roosting habitat is searched for presence of small or large established camps during diurnal survey periods.

1.6 Amphibians

Amphibians are surveyed by vocal call identification, call-playback, spotlighting along the edge of water-bodies, pitfall trapping, funnel trapping, by driving along sealed roads near waterways, habitat searches and collection of tadpoles.

Calls are identified in the field by the fauna surveyor. For similar calling species, or if an unknown male call is heard, it is cross-matched to frog call reference libraries taken into the field. A call library of frogs occupying the NSW coastal areas is also stored into a mobile phone for a quick reference. This phone is carried into the field at all times and may be used for call-playback methods and recording calls for later analysis.

Threatened frog species that call in chorus may be targeted by use of call-playback techniques where suitable habitat exists, with some species more reliable than others in providing a response. Red-crowned Toadlet may also be targeted by clapping and loud retort along suitable habitat drainages in order to evoke a call response.

Any amphibians found are visually identified and, when required to be examined, are handled with latex gloves and kept moist until release. Any tadpoles requiring capture are collected with a scoop net and placed within a snap-lock clear plastic bag for analysis of colour and morphological features. Where tadpole identification cannot be made in the field tadpoles are placed in a small glass box with laminated grid paper and dorsal and lateral photos are taken. These are supplied to Marion Anstis or Dr Arthur White for identification.

Song-meters may also be used to remotely record frog calls in selected periods (particularly during dusk) close to breeding areas over a preselected recording period.

Amphibian survey yields best results during or following wet periods with seasonal breeding and subsequent male calling varying according each species. Targeted survey is thus undertaken in appropriate seasons.

1.7 Reptiles

Reptiles are surveyed opportunistically during diurnal site visit(s), but also by habitat searches, pitfall trapping, funnel trapping, by driving along roads on humid nights and by camera surveillance at burrows.

Habitat searches for reptiles are undertaken in likely localities such as under logs, rocky slabs on rock surfaces, under sheet debris, under bark exfoliations and leaf litter at the base of trees and along the edge of wetlands. Aspect and land surface thermal properties are considered to determine best search locations particularly along rocky escarpments.

During warmer months spotlighting may assist survey effort particularly during humid conditions.

1.8 Invertebrates

Target survey is undertaken for Cumberland Plain Land Snail (*Meridolum corneovirens*) or Dural Land Snail (*Pommerhelix duralensis*) when in proximity to previous *Bionet* records and particularly where typical host vegetation communities are present. The most appropriate areas of observed habitat are searched. Dense areas of leaf litter with likely moisture retaining properties are scraped using a three pronged rake. Logs, stumps, artificial refuse and rocks are also turned over. In large survey areas, search quadrats are undertaken evenly across highest quality habitat areas to estimate population size.

The top (spiral side), side (showing aperture) and underside (showing umbilicus) of snail specimens found are photographed and sent to Michael Shea or Frank Koehler of the Australian Museum Malacology Unit for confirmation of identification.

2 Habitat trees

Hollow-bearing tree surveys use a *Trimble* handheld GPS unit to log both field reference location as well as tree data. Data such as hollow types, hollow size, tree species, diameter at breast height, canopy spread and overall height are documented. A metal tag with the tree number is placed on the trunk for field relocation purposes. Other habitat features such as nests and significant sized mistletoe for foraging are also noted.

3 Survey effort table descriptors:

Target - Where effort is specifically concentrated towards an individual species. Selected target species will be identified within the survey effort table and where necessary described within the report.

Opportunistic - Where birds are identified by observation, call or indirect methods as the opportunity arises.

Habitat search - Where suitable areas of habitat for selected fauna groups such as frogs, reptiles and invertebrates are specifically searched.

Diurnal bird census point(s) - Bird surveys are undertaken within a specified area surrounding a point (or in a quadrat) for a specified amount of time. Size and time will be specified in the survey effort table. These are more typically undertaken across larger sites where the total area cannot be effectively covered during the survey period. Subsequently census points are selected to adequately represent each of the habitat areas present and particularly areas designated for proposed development. Often census points are commenced at locations where bird activity is noticeably high.

Spotting-scope outlook - A *Nikon* spotting scope with 16~47 zoom at x60 magnification on a mounted tripod is used for distant inspections of diurnal birds. This is undertaken at wetlands for viewing waterfowl and waders but also other difficult to access areas. It may also be used for inspecting activity at nests, hollows and combined with spotlight for a panoramic search in open areas.

Call-playback - This involves broadcasting pre-recorded calls from CD through a 15 watt Toa 'Faunatech' amplifier to evoke a response from a target species known to reply. Species selected for call-playback will be indicated in the survey effort table.

Spotlighting - Is carried out using a hand held Olight LED spotlights with varied light intensity settings. This technique involves walking amongst the woodland areas, forest fringes, along roads, trails and fence lines so that a maximum number of trees can be observed. Intensity is regulated depending on the vegetation structure and distances viewed to enable eyeshine without retina damage to observed animals. Spotlighting around water-bodies and particularly along the shallow fringes is used for finding frogs. Spotlighting is used in combination with binoculars or spotting scope for closer night inspections.

Stag-watching - Involves watching hollows in the dusk period approximately 15 minutes prior to dark until 30 minutes following dark. Placement of the observer on the ground allows for a silhouette of any emerging fauna to be seen against the lighter sky background such that a spotlight is not required, which would likely to disrupt emergence behaviour. Where any movement is observed, a spotlight may then be used for identification purposes.

Search quadrats - Are undertaken within a specified area surrounding a point (or in a quadrat) for a specified amount of time. These are more typically undertaken across larger sites where the total area cannot be effectively covered during the survey period. Subsequently quadrats are selected to adequately represent each of the suitable habitat areas present and particularly areas designated for proposed development. The use of this technique simply as an initial time-effective suitable indicator of presence / absence of Koalas has been discussed with Koala expert, Stephen Phillips.

Koala Spot Assessment Technique (SAT) - Method outlined by *Phillips & Callaghan* (2008) and accepted by the Australian Koala Foundation to determine Koala activity levels. Activity levels are calculated from the proportion of trees showing signs of Koala use as indicated by the presence of scats as well as site location within the state.

Elliott trapping - Using *Elliott* type A (33x10x10cm) and Type B (45x15x15cm), B and / or Type C traps for trapping small sized mammals. Trapping nights' effort will be indicated in the survey effort table. Trapping layout, trap sizes, baiting and trapping period will be outlined within the site specific methodology section.

Medium cage trapping - Using medium sized cage traps (17x17x45cm foldout cages with tread-plate mechanism or 22x25x58cm rigid cage with tread-plate mechanism) for trapping up to cat/bandicoot sized mammals. Trapping layout, target species, baiting and trapping period will be outlined within the site specific methodology section.

Large cage trapping - Using large sized cage traps (25x25x50cm foldout cages with pull lever (meat) mechanism, 28x28x60cm foldout cages with tread-plate mechanism or 30x30x70cm rigid cage with tread-plate mechanism) for trapping up to quoll sized mammals. Trapping layout, target species, baiting and trapping period will be outlined within the site specific methodology section.

Hair tubing - Using small (40mm diameter x 120mm long) and/or large (90mm diameter x 200mm long) PVC pipe sections for collecting mammal hair samples. At one end of each tube is an enclosed chamber where the bait is placed and capped. Small drill holes in the inside face of the chamber allow the smell of the bait to permeate out through the tube without allowing access to the bait. At the other open entry end, double-sided tape is attached around the inner rim so hair samples of animals entering the tube are collected.

Hair samples collected are sent to Barbara Triggs for identification. Trapping layout, tube sizes, baiting and trapping period will be outlined within the site specific methodology section.

EPP denning tubes - Using (80mm diameter x 240mm long) PVC pipe sections to provide a nesting/denning opportunity for Eastern Pygmy Possum. Both ends and covered and sealed with PVC caps. A 60mm diameter cardboard post-pack tube wrapped in bubble wrap for insulation and capped at the base is placed inside the PVC pipe. A 33mm drill hole on the side at one end permits access and velcro tape stuck down the internal cylinder allows the animal to climb down to the base. Cut lines around the outer surface of the tube permit small mammals to climb up the outside. Denning tubes are placed vertically in shrub trees (preferably flowering banksias). If no animals are found residing within the tube after a prolonged survey period (generally 6 weeks) use may then instead also be identified from bedding material present. Pygmy Possums use fine bedding material such as *Isopogon* and *Banksia ericifolia* by comparison to Feather-tail Gliders and Antechinus which use eucalypt leaves.

Pitfall trapping - Is used to survey for small terrestrial mammals, frogs, reptiles and invertebrates. Pitfall trapping involves the use of 15cm diameter and 60cm long PVC stormwater pipe sections placed vertically into pre dug holes. The pipe is placed and set firm with surrounding soil so that the top rim is level with the ground surface. Drift fences made of damp-proof-course 270mm wide are held tight and upright by wooden and steel pegs and run along the length of each trap-line. Drift fences are run over the middle of each pit in the trap line ensuring at least 5m of fencing is run along each side of each pit. Ground fauna passing beyond the pitfall transect are diverted towards the pits along the fence line.

Funnel trapping - Is used to survey mainly for frogs and reptiles. Funnel traps are 18cm x 18cm x 75cm long and constructed of shade cloth with an internal spring and wire frame in a similar design to yabby traps. At each end an inward facing funnel directs fauna through a 4cm hole and into the trap. Herpetofauna search the walls and corners for an exit and discover it difficult to re-find the internal exit hole. As with pitfall traps, funnel traps are used with drift fences that divert fauna towards the trap entry. At least 5m of fencing is run between each funnel trap which may be placed on either side of the fence. Trapping layout, target species, fence lengths and trapping period will be outlined within the site specific methodology section.

Passive microbat monitoring - Involves leaving the Anabat (Mk2 or SD-2) or SM4Bat zero-crossing recorders in a fixed mounted position to record call-sequences of passing bats. Recording locations are determined in order to represent different available foraging structures for various micro-chiropteran bat species. Dams, cleared flyways, high insect activity areas, forest edges and ecotones are particularly targeted. Bat call recordings are analysed using Analook 3.7.23 computer software.

Active microbat monitoring - Is a method of active microbat recording during stag-watching or during nocturnal spotlighting survey. Active monitoring involves walking with an Echo Meter Touch microphone allied to a mobile acoustics spectrogram app on iPhone for viewing call-sequences in real-time. When calls are heard the transducer microphone is actively directed towards the calling animal with the aid of a spotlight, so longer and clearer call sequences may be recorded. When calls of a potential threatened species are observed on the sonograph a view by spotlight of the bat size and wing morphology is attempted for greater identification accuracy.

Active vehicle microbat monitoring - Is a method of active microbat recording deployed when large distances need to be covered in a nocturnal survey period. A Hi-mic extension cable allows the transducer microphone to be placed on a bracket on the roof of a travelling vehicle so calls may be viewed whilst driving. The vehicle travels at no more than 40km/h to prevent wind interference. When calls of a potential threatened species are observed on the dash mounted PDA screen active spotlighting is undertaken.

Harp trapping - Is used to capture microchiropteran bats. Harp traps have an aluminium frame with a two-bank 4.2m^2 area and calico capture bag set along the base area.

Mist netting - Is used to capture microchiropteran bats. The mist net capture area is 2.4m high and 9m wide and supported by two 3.5m poles which are braced with ropes and pegs. Design is a 0.08mm ultrafine nylon monofilament thread arranged in a 14x14mm mesh, with four horizontal capture pockets. These features are specific for the use to capture micro-chiropteran bat species and are provided from the only known supplier in Poland.

Trip lining - Is used to capture microchiropteran bats. Fishing line is strung tight on pegs in a zig-zag pattern across open water-bodies just above the water surface to trip drinking bats into the water.

Surveillance camera - Is used to remotely monitor activity at burrows, hollows, etc. or to survey for species presence at baited stations. A Reconyx Hyperfire HC500, HC550 or HC600 digital weatherproof camera with a passive motion detector and a night-time infrared illuminator is used depending on the target outcome. Full covert or semi-covert cameras will be used to maximise recordings or for behaviour, whilst white-flash cameras will be used for colour identification. The camera is mounted on a tree or tripod and takes three consecutive photo frames on the detection of movement up to 30m away or the detection of a heat/cold source different to the ambient temperature.

Song-meters - are used to remotely record animal calls. SM4 bioacoustics song-meters may be programmed to record during select periods in the day depending on the targeted activity. Song Scope software may be used to create a recogniser file and determine the frequency of calls over the recorded period, which may be effective in determining local breeding activity, numbers and locations.

Videoscope - is used for active observations of hollow cavities for the presence of arboreal mammals and other hollow-dependent fauna. A Dellon industrial endoscope with a 1m cable and rotational camera head and LED light allow real-time inspection down irregular shaped cavities to be viewd on the attached LCD screen. Single photo or video footage may be recorded.

Weather conditions - Survey effort for each fauna group accounting for methods undertaken, duration, and weather conditions are provided in the survey effort table. Weather details are documented for all survey techniques and include:

- air temperature
- cloud cover
- rain (e.g. none, light drizzle, heavy drizzle, heavy rain)
- recent rain events (where relevant)
- wind strength e.g. calm, light (leaves rustle), moderate (moves branches), strong (moves tree crowns)
- wind direction
- moon (where relevant) (e.g. none, 1/4 moon, 1/2 moon, 3/4 moon, full moon)



Threatened & Migratory Species Habitat Assessment

A2

Table A2.1 provides an assessment of potential habitat within the subject site for state and nationally listed threatened flora species recorded within 10km on the Atlas of NSW Wildlife (OEH) or indicated to have potential habitat present within 10km on the *EPBC Act* Protected Matters Tool.

Table A2.1 – Threatened flora habitat assessment

Scientific name DATABASE SOURCE	*TSC Act*	*EPBC Act*	Growth form and habitat requirements	Recorded on site (✓)	If not recorded onsite				Considered in 7 part test of significance (✓) Refer to Appendix 3
					Suitable habitat present (✓)	Nearby and / or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Acacia bynoeana EPBC	E1	V	Erect or spreading shrub to 0.3m high growing in heath and dry sclerophyll Open Forest on sandy soils. Often associated with disturbed areas such as roadsides. Distribution limits N-Newcastle S-Berrima.	x	x	-	-	x	x
Acacia pubescens OEH EPBC	V	V	Spreading shrub 1-4m high open sclerophyll growing in open forest and woodlands on clay soils. Distribution limits N-Bilpin S-Georges River.	x	marginal	closest record 5km	61 recent records nearby	unlikely and not expected	x

Scientific name DATABASE SOURCE	*TSC Act*	*EPBC Act*	Growth form and habitat requirements	Recorded on site (✓)	If not recorded onsite				Considered in 7 part test of significance (✓) Refer to Appendix 3
					Suitable habitat present (✓)	Nearby and / or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Allocasuarina glareicola EPBC	E1	E	Small shrub 1-2m high growing in open sclerophyll forest on lateritic soils derived from tertiary alluviums. Distribution limits Castlereagh NR region.	x	x	-	-	x	x
Asterolasia elegans EPBC	E1	E	Erect shrub 1-3m high growing in moist sclerophyll forests on Hawkesbury sandstone slopes hillsides. Distribution limits Maroota region.	x	x	-	-	x	x
Cryptostylis hunteriana EPBC	V	V	Saprophytic orchid. Grows in swamp heath on sandy soils. Distribution limits N-Gibraltar Range S-south of Eden.	x	x	-	-	x	x
Cynanchum elegans OEH EPBC	E1	E	Climber or twiner to 1m. Grows in rainforest gullies, scrub & scree slopes. Distribution limits N-Gloucester S-Wollongong.	x	x	Closest record <1km	No recent records	prefers more shale woodland	x
Dillwynia tenuifolia OEH	V	-	Erect shrub 0.6-1m high. Grows in Woodlands and Open Forest on sandstone shale or laterite. Distribution limits N-Howes Valley S-Cumberland Plain.	x	marginal	Closest record 9km	One recent record	unlikely and not expected to occur	x
Eucalyptus benthamii OEH EPBC	V	V	Blue gum to 40m high. Wet forest on sandy alluvial soils. Distribution limits N-Yarramundi S-Bents Basin.	x	x	-	-	x	x

Scientific name DATABASE SOURCE	*TSC Act*	*EPBC Act*	Growth form and habitat requirements	Recorded on site (✓)	If not recorded onsite				Considered in 7 part test of significance (✓) Refer to Appendix 3
					Suitable habitat present (✓)	Nearby and / or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Eucalyptus scoparia OEH	E1	V	Smooth-barked tree only known from vicinity of Bald Rock.	x	x	-	-	x	x
Genoplesium baueri OEH EPBC	E1	E	A terrestrial orchid that grows in sparse sclerophyll forest and moss gardens over sandstone. Flowers Feb – Mar Distribution limits N – Hunter Valley S – Nowra	x	x	-	-	x	x
Grevillea parviflora subsp. *parviflora* OEH EPBC	V	V	Open to erect shrub to 1m. Grows in woodland on light clayey soils Distribution limits N-Cessnock S-Appin.	x	x	Closest record 10km	1 recent record	unlikely and not expected to occur	x
Gyrostemon thesioides OEH	E1	-	Multi-stemmed shrub to 70cm. Grows on hillsides and riverbanks. Confined to Georges and Nepean Rivers and believed extinct.	x	x	-	-	x	x
Haloragis exalata subsp. *exalata* EPBC	V	V	Shrub to 1.5m high. Grows in damp places near watercourses. Distribution limits N-Tweed Heads S-south of Eden.	x	x	-	-	x	x
Leucopogon exolasius OEH EPBC	V	V	Erect shrub to 2m high. Rocky hillsides and creek banks in Sydney Sandstone Gully Forest. Confined to Woronora and Georges Rivers and Stokes Creek.	x	x	-	-	x	x
Maundia triglochinoides OEH	V	-	A reed-like herb which grows in swamps and shallow fresh water on clay. Distribution Limits N-Qld border S-Wyong.	x	x	-	-	x	x

Scientific name DATABASE SOURCE	*TSC Act*	*EPBC Act*	Growth form and habitat requirements	Recorded on site (✓)	If not recorded onsite				Considered in 7 part test of significance (✓) Refer to Appendix 3
					Suitable habitat present (✓)	Nearby and / or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Melaleuca deanei OEH EPBC	V	V	Shrub to 3m high. Grows in heath on sandstone. Distribution limits N-Gosford S-Nowra.	x	x	-	-	x	x
Pelargonium sp. Striatellum EPBC	E1	E	Herb to 90cm tall which grows in damp places especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance. Varied distribution from SE NSW to QLD.	x	x	-	-	x	x
Persoonia hirsuta OEH EPBC	E1	E	Erect to decumbent shrub. Grows in dry sclerophyll forest and woodland on Hawkesbury sandstone with infrequent fire histories. Distribution limits N-Glen Davis S-Hill Top.	x	x	-	-	x	x
Persoonia nutans OEH EPBC	E1	E	Erect to spreading shrub. Grows in dry sclerophyll forest and woodland on laterite and alluvial sands. Distribution limits Cumberland Plain.	x	x	-	-	x	x
Pimelea spicata OEH EPBC	E1	E	Decumbent or erect shrub to 0.5m high. Occurs principally in woodland on soils derived from Wianamatta Shales. Distribution limits N-Lansdowne S-Shellharbour.	x	✓ but limited	Closest record 2km	429 recent records	Potential	✓
Pomaderris brunnea OEH EPBC	V	V	Shrub to 3m high. Confined to Upper Nepean and Colo Rivers where it grows in open forest.	x	x	-	-	x	x

Scientific name DATABASE SOURCE	*TSC Act*	*EPBC Act*	Growth form and habitat requirements	Recorded on site (✓)	If not recorded onsite				Considered in 7 part test of significance (✓) Refer to Appendix 3
					Suitable habitat present (✓)	Nearby and / or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Pterostylis gibbosa EPBC	E1	E	Terrestrial orchid which occurs near Wollongong and in Hunter Valley in sclerophyll forest, sometimes with paperbarks.	x	x	-	-	x	x
Pterostylis nigricans OEH	V	-	Terrestrial orchid. Prefers coastal heathland with Heath Banksia (Banksia ericifolia), and lower-growing heath with lichen-encrusted and relatively undisturbed soil surfaces, on sandy soils. The Dark Greenhood occurs in north-east NSW north from Evans Head, and in Queensland.	x	x	-	-	x	x
Pterostylis saxicola OEH EPBC	E1	E	Terrestrial orchid. Grows in shallow sandy soil above rock shelves, usually near Wianamatta / Hawkesbury transition. Distribution limits N-Hawkesbury River S-Campbelltown.	x	x	-	-	x	x
Pultenaea parviflora OEH EPBC	E1	V	Erect shrub. Grows in dry sclerophyll forest at the intergrade between Tertiary Alluviums and Wianamatta Shales. Distribution limits Cumberland Plain.	x	marginal	Closest record 10km	No recent records	unlikely and not expected to occur	x
Pultenaea pedunculata OEH	E1	-	Prostrate shrub. Grows in dry sclerophyll forest and disturbed sites. Confined to Prestons and Villawood in NSW.	x	marginal	Closest record 6km	3 recent records	unlikely and not expected to occur	x

Scientific name DATABASE SOURCE	*TSC Act*	*EPBC Act*	Growth form and habitat requirements	Recorded on site (✓)	If not recorded onsite				Considered in 7 part test of significance (✓) Refer to Appendix 3
					Suitable habitat present (✓)	Nearby and / or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Syzygium paniculatum OEH EPBC	V	V	Small tree. Subtropical and littoral rainforest on sandy soil. Distribution limits N-Forster S-Jervis Bay.	x	x	-	-	x	x
Thelymitra sp. 'Kangaloon' *(Thelymitra kangaloonica)* EPBC	CE	CE	A terrestrial orchid with dark blue flowers, presented in mid-late spring. Only known from the Robertson area in the Southern Highlands. Often in association with the endangered ecological community *Temperate Highland Peat Swamps on Sandstone.*	x	x	-	-	x	x
Thesium australe OEH EPBC	V	V	Erect herb to 0.4m high. Root parasite. Themeda grassland or woodland often damp. Distribution limits N-Tweed Heads S-south of Eden.	x	x	-	-	x	x

OEH	-	Denotes species listed within 10km of the subject site on the *Atlas of NSW Wildlife*
EPBC	-	Denotes species listed within 10km of the subject site in the *EPBC Act* habitat search
V	-	Denotes vulnerable listed species under the relevant Act
E or E1	-	Denotes endangered listed species under the relevant Act
CE	-	Denotes critically endangered listed species under the relevant Act

Table A2.2 provides an assessment of potential habitat within the subject site for state and nationally listed threatened fauna species recorded within 10km on the *Atlas of NSW Wildlife* (OEH) or indicated to have potential habitat present within 10km on the *EPBC Act* Protected Matters Tool.

Table A2.2 – Threatened fauna habitat assessment

Common name *Scientific name* DATABASE SOURCE	TSC Act	EPBC Act	Preferred habitat *Distribution limit*	Recorded on site (✓)	If not recorded on site				Considered in 7 part test of significance (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Giant Burrowing Frog *Heleioporus australiacus* OEH EPBC	V	V	Inhabits open forests and riparian forests along non-perennial streams, digging burrows into sandy creek banks. *Distribution Limit: N-Near Singleton S-South of Eden.*	x	x	-	-	x	x
Red-crowned Toadlet *Pseudophryne australis* OEH	V	-	Prefers sandstone areas, breeds in grass and debris beside non-perennial creeks or gutters. Individuals can also be found under logs and rocks in non-breeding periods. *Distribution Limit: N-Pokolbin. S-near Wollongong.*	x	x	-	-	x	x
Green and Golden Bell Frog *Litoria aurea* OEH EPBC	E	V	Prefers the edges of permanent water, streams, swamps, creeks, lagoons, farm dams and ornamental ponds. Often found under debris. *Distribution Limit: N-Byron Bay S-South of Eden.*	x	x	-	-	x	x

Common name *Scientific name* DATABASE SOURCE	TSC Act	EPBC Act	Preferred habitat *Distribution limit*	Recorded on site (✓)	If not recorded on site				Considered in 7 part test of significance (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Littlejohn's Tree Frog *Litoria littlejohnii* EPBC	V	V	Found in wet and dry sclerophyll forest associated with sandstone outcrops at altitudes 280-1,000m on eastern slopes of Great Dividing Range. Prefers flowing rocky streams. *Distribution Limit: N-Hunter River S-Eden.*	x	x	-	-	x	x
Southern Bell Frog *Litoria raniformis* EPBC	E	V	Prefers the edges of permanent water, streams, swamps, creeks, lagoons, farm dams and ornamental ponds. Often found under debris. *Distribution Limit: N-ACT Bay. S-Albury.*	x	x	-	-	x	x
Broad-headed Snake *Hoplocephalus bungaroides* OEH EPBC	E	V	Sandstone outcrops, exfoliated rock slabs and tree hollows in coastal and near coastal areas. *Distribution Limit: N-Mudgee Park. S-Nowra.*	x	x	-	-	x	x
Freckled Duck *Stictonetta naevosa* OEH	V	-	Occurs mainly within the Murray-Darling basin and the channel country within large cool temperate to sub-tropical swamps, lakes and floodwaters with cumbungi, lignum or melaleucas. *Distribution Limit: N- Tenterfield. S-Albury.*	x	x	-	-	x	x

Common name *Scientific name* DATABASE SOURCE	TSC Act	EPBC Act	Preferred habitat *Distribution limit*	Recorded on site (✓)	If not recorded on site				Considered in 7 part test of significance (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Australasian Bittern *Botaurus poiciloptilus* EPBC	E	E	Found in or over water of shallow freshwater or brackish wetlands with tall reedbeds, sedges, rushes, cumbungi, lignum and also in ricefields, drains in tussocky paddocks, occasionally saltmarsh, brackish wetlands. *Distribution Limit: N-North of Lismore. S- Eden.*	x	x	-	-	x	x
Spotted Harrier *Circus assimilis* OEH	V	-	Utilises grassy plains, crops and stubblefields; saltbush, spinifex associations; scrublands, mallee, heathlands; open grassy woodlands. *Distribution Limit: N-Tweed Heads. S-South of Eden.*	x	✓	x	✓	unlikely	✓
White-bellied Sea Eagle (*Haliaeetus leucogaster*) OEH	V	-	Occupies coasts, islands, estuaries, inlets, large rivers, inland lakes and reservoirs. *Sedentary; dispersive. N-Tweed Heads. S-South of Eden.*	x	x	-	-	x	x
Little Eagle *Hieraaetus morphnoides* OEH	V	-	Utilises plains, foothills, open forests, woodlands and scrublands; river red gums on watercourses and lakes. *Distribution Limit - N-Tweed Heads. S-South of Eden.*	x	✓	✓	✓	✓	✓

Common name *Scientific name* DATABASE SOURCE	TSC Act	EPBC Act	Preferred habitat *Distribution limit*	Recorded on site (✓)	If not recorded on site				Considered in 7 part test of significance (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Square-tailed Kite *Lophoictinia isura* OEH	V	-	Utilises mostly coastal and sub-coastal open forest, woodland or lightly timbered habitats and inland habitats along watercourses and mallee that are rich in passerine birds. *Distribution Limit: N-Goondiwindi. S-South of Eden.*	x	✓	x	✓	unlikely	✓
Black Falcon *Falco subniger* OEH	V	-	Inhabits plains, grasslands, foothills, timbered watercourses, wetland environs, crops; occasionally over towns and cities. *N-Tweed Heads. S-South of Eden*	x	✓	x	x	Not likely	x
Bush Stone-curlew *Burhinus grallarius* OEH	E	-	Utilises open forests and savannah woodlands, sometimes dune scrub, savannah and mangrove fringes. *Distribution Limit: N-Border Ranges National Park. S-Near Nowra.*	x	marginal	x	x	Not likely	x
Red Knot *Calidris canutus* OEH	-	E	The red knot is a small to medium migratory shorebird. During the non-breeding season in Australasia, the red knot mainly inhabit intertidal mudflats, sandflats and sandy beaches of sheltered coasts and sometimes on sandy ocean beaches or shallow pools on exposed rock platforms. They are occasionally seen on terrestrial saline wetlands near the coast and on sewage ponds and saltworks	x	x	-	-	x	x

Common name *Scientific name* DATABASE SOURCE	TSC Act	EPBC Act	Preferred habitat *Distribution limit*	Recorded on site (✓)	If not recorded on site				Considered in 7 part test of significance (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Australian Painted Snipe *Rostratula australis* EPBC	E	E	Most numerous within the Murray-Darling basin and inland Australia within marshes and freshwater wetlands with swampy vegetation. *Distribution Limit: N-Tweed Heads. S-South of Eden.*	x	x	-	-	x	x
Curlew Sandpiper *Callidris ferruginea* EPBC	E	CE	Mainly coastal, but many inland feeding along tidal mudflats, salt marsh, salt fields, fresh, brackish or saline wetlands and sewerage ponds. *Distribution Limit: N-Tweed Heads. S-South of Eden.*	x	x	-	-	x	x
Eastern Curlew *Numenius madagascariensis* EPBC	-	CE	Primarily coastal especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass. Occasionally on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. Often recorded among saltmarsh and on mudflats fringed by mangroves and also in coastal saltworks and sewage farms. *Distribution Limit: N-Tweed Heads. S-South of Eden.*	x	x	-	-	x	x

Common name *Scientific name* DATABASE SOURCE	TSC Act	EPBC Act	Preferred habitat *Distribution limit*	Recorded on site (✓)	If not recorded on site				Considered in 7 part test of significance (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Gang-gang Cockatoo *Callocephalon fimbriatum* OEH	V	-	Prefers wetter forests and woodlands from sea level to > 2,000m on the Great Dividing Range, timbered foothills and valleys, timbered watercourses, coastal scrubs, farmlands and suburban gardens. *Distribution Limit: mid north coast of NSW to western Victoria.*	x	x	-	-	x	x
Glossy Black-Cockatoo *Calyptorhynchus lathami* OEH	V	-	Open forests with *Allocasuarina* species and hollows for nesting. *Distribution Limit: N-Tweed Heads. S-South of Eden.*	x	x	-	-	x	x
Little Lorikeet *Glossopsitta pusilla* OEH	V	-	Inhabits forests, woodlands; large trees in open country; timbered watercourses, shelterbeds, and street trees. *Distribution Limit: N-Tweed Heads. S-South of Eden.*	x	✓	x	✓	✓	✓
Swift Parrot *Lathamus discolour* OEH EPBC	E	E	Inhabits eucalypt forests and woodlands with winter flowering eucalypts. *Distribution Limit: N-Border Ranges National Park. S-South of Eden.*	x	✓	✓	✓	✓	✓
Turquoise Parrot *Neophema pulchella* OEH	V	-	Inhabits coastal scrubland, open forest and timbered grassland, especially ecotones between dry hardwood forests and grasslands. *Distribution Limit: N-Near Tenterfield. S-South of Eden.*	x	✓	x	x	unlikely	✓

Common name *Scientific name* DATABASE SOURCE	TSC Act	EPBC Act	Preferred habitat *Distribution limit*	Recorded on site (✓)	If not recorded on site				Considered in 7 part test of significance (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Powerful Owl *Ninox strenua* OEH	V	-	Forests containing mature trees for shelter or breeding and densely vegetated gullies for roosting. *Distribution Limits: N-Border Ranges National Park. S-Eden.*	×	✓	×	✓	unlikely	✓
Masked Owl *Tyto novaehollandiae* OEH	V	-	Open forest and woodlands with cleared areas for hunting and hollow trees or dense vegetation for roosting. *Distribution Limit: N-Border Ranges National Park. S-Eden.*	×	✓	×	×	Not likely	×
Eastern Bristlebird *Dasyornis brachypterus* EPBC	E	E	Coastal woodlands, dense scrubs and heathlands, especially where low heathland borders taller woodland or dense tall tea-tree. *Distribution Limit: N-Tweed Heads. S-South of Eden.*	×	×	-	-	×	×
Speckled Warbler *Chthonicola sagittata* OEH	V	-	Found in temperate eucalypt woodland and open forest including forest edges, wooded farmland and urban areas with mature eucalypts. *Distribution Limit: N-Urbanville. S-Eden.*	×	Sub-optimal	×	✓	unlikely	✓
Regent Honeyeater *Xanthomyza Phrygia* OEH EPBC	E4A	CE	Found in temperate eucalypt woodland and open forest including forest edges, wooded farmland and urban areas with mature eucalypts. *Distribution Limit: N-Urbanville. S-Eden.*	×	✓	×	×	unlikely	✓

Common name *Scientific name* DATABASE SOURCE	TSC Act	EPBC Act	Preferred habitat *Distribution limit*	Recorded on site (✓)	If not recorded on site				Considered in 7 part test of significance (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Painted Honeyeater *Grantiella picta* EPBC	V	V	A nomadic bird occurring in low densities within open forest, woodland and scrubland feeding on mistletoe fruits. Inhabits primarily Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. *Distribution Limit: N-Boggabilla. S-Albury with greatest occurrences on the inland slopes of the Great Dividing Range.*	x	✓	x	x	Not likely	x
Black-chinned Honeyeater *Melithreptus gularis gularis* OEH	V	-	Found in woodlands containing box-ironbark associations and River Red Gums, also drier coastal woodlands of the Cumberland Plain and Hunter Richmond and Clarence. *Distribution Limit: N-Cape York Pen. Qld. S-Victor H. Mt Lofty Ra & Flinders Ra. SA.*	x	✓	x	x	Not likely	x
Varied Sittella *Daphoenositta chrysoptera* OEH	V	-	Open eucalypt woodlands / forests (except heavier rainforests); mallee, inland acacia, coastal tea-tree scrubs; golf courses, shelterbelts, orchards, parks, scrubby gardens. *Distribution Limit: N-Border Ranges National Park. S-South of Eden.*	x	Sub-optimal	✓	✓	✓	✓

Common name *Scientific name* DATABASE SOURCE	TSC Act	EPBC Act	Preferred habitat *Distribution limit*	Recorded on site (✓)	If not recorded on site				Considered in 7 part test of significance (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Dusky Woodswallow *Artamus cyanopterus cyanopterus* OEH	V	-	Found in woodlands and dry open sclerophyll forests, usually dominated by eucalypts, including mallee associations. It has also been recorded in shrublands and heathlands and various modified habitats, including regenerating forests; very occasionally in moist forests or rainforests. Prefers habitat with an open understorey. Often observed in farmland tree patches or roadside remnants. *Widespread in eastern, southern and southwestern Australia.*	x	✓	✓	✓	✓	✓
Hooded Robin *Melanodryas cucullata cucullata* OEH	V	-	Found in Eucalypt woodlands, *Acacia* scrubland, open forest, and open areas adjoining large woodland blocks, with areas of dead timber. *Distribution Limit: N-Central Qld. S-Spencer Gulf SA.*	x	x	-	-	x	x
Scarlet Robin *Petroica boodang* OEH	V	-	Found in foothill forests, woodlands, watercourses; in autumn-winter, more open habitats: river red gum woodlands, golf courses, parks, orchards, gardens. *Distribution Limit: N-Tweed Heads. S-South of Eden.*	x	✓	x	x	Not likely	x

Common name *Scientific name* DATABASE SOURCE	TSC Act	EPBC Act	Preferred habitat *Distribution limit*	Recorded on site (✓)	If not recorded on site				Considered in 7 part test of significance (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Flame Robin *Petroica phoenicea* OEH	V	-	Summer: forests, woodlands, scrubs, from sea-level to *c.* 1800 m. Autumn-winter: open woodlands, plains, paddocks, golf courses, parks, orchards. *Distribution Limit: N northern NSW tablelands. S-South of Eden.*	x	✓	x	x	Not likely	x
Spotted-tailed Quoll *Dasyurus maculatus* OEH EPBC	V	E	Dry and moist open forests containing rock caves, hollow logs or trees. *Distribution Limit: N-Mt Warning National Park. S-South of Eden.*	x	x	-	-	x	x
Koala *Phascolarctos cinereus* OEH EPBC	V	V	Inhabits both wet and dry eucalypt forest on high nutrient soils containing preferred feed trees. *Distribution Limit: N-Tweed Heads. S-South of Eden.*	x	✓	x	x	Not likely	x
Eastern Pygmy Possum *Cercatetus nanus* OEH	V	-	Found in a variety of habitats from rainforest through open forest to heath. Feeds on insects but also gathers pollen from banksias, eucalypts and bottlebrushes. Nests in banksias and myrtaceous shrubs. *Distribution Limit: N-Tweed Heads. S-Eden.*	x	x	-	-	x	x

Common name *Scientific name* DATABASE SOURCE	TSC Act	EPBC Act	Preferred habitat *Distribution limit*	Recorded on site (✓)	If not recorded on site				Considered in 7 part test of significance (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Greater Glider *Petauroides volans* EPBC	-	V	Favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species. Population density is optimal at elevation levels at 845 m above sea level. Prefer overstorey basal areas in old-growth tree stands. Highest abundance typically in taller, montane, moist eucalypt forests, with relatively old trees and abundant hollows *Distribution Limit: N-Border Ranges National Park. S- South of Eden.*	x	x	-	-	x	x
Brush-tailed Rock-wallaby *Petrogale penicillata* EPBC	E	V	Found in rocky gorges with a vegetation of rainforest or open forests to isolated rocky outcrops in semi-arid woodland country. *Distribution Limit: N-North of Tenterfield. S-Bombala.*	x	x	-	-	x	x
Grey-headed Flying-fox *Pteropus poliocephalus* OEH EPBC	V	V	Found in a variety of habitats including rainforest, mangroves, paperbark swamp, wet and dry open forest and cultivated areas. Forms camps commonly found in gullies and in vegetation with a dense canopy. *Distribution Limit: N-Tweed Heads. S-Eden.*	x	✓	✓	✓	✓	✓

Common name *Scientific name* DATABASE SOURCE	TSC Act	EPBC Act	Preferred habitat *Distribution limit*	Recorded on site (✓)	If not recorded on site				Considered in 7 part test of significance (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Yellow-bellied Sheathtail-bat *Saccolaimus flaviventris* OEH	V	-	Rainforests, sclerophyll forests and woodlands. *Distribution Limit: N-North of Walgett. S-Sydney.*	✓	-	-	-	-	✓
East-coast Freetail Bat *Micronomus norfolkensis* OEH	V	-	Inhabits open forests and woodlands foraging above the canopy and along the edge of forests. Roosts in tree hollows, under bark and buildings. *Distribution Limit: N-Woodenbong. S-Pambula.*	×	✓	✓	✓	✓	✓
Large-eared Pied Bat *Chalinolobus dwyeri* OEH EPBC	V	V	Warm-temperate to subtropical dry sclerophyll forest and woodland. Roosts in caves, tunnels and tree hollows in colonies of up to 30 animals. *Distribution Limit: N-Border Ranges National Park. S-Wollongong.*	×	marginal	×	✓	Not likely	×
Eastern Falsistrelle *Falsistrellus tasmaniensis* OEH	V	-	Recorded roosting in caves, old buildings and tree hollows. *Distribution Limit: N-Border Ranges National Park. S-Pambula.*	×	✓	×	×	low	✓
Little Bentwing-bat *Miniopterus australis* OEH	V	-	Roosts in caves, old buildings and structures in the higher rainfall forests along the south coast of Australia. *Distribution Limit: N-Border Ranges National Park. S-Sydney.*	×	✓	✓	✓	✓	✓

Common name *Scientific name* DATABASE SOURCE	TSC Act	EPBC Act	Preferred habitat *Distribution limit*	Recorded on site (✓)	If not recorded on site				Considered in 7 part test of significance (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Eastern Bentwing-bat *Miniopterus orianae oceanensis* OEH	V	-	Prefers areas where there are caves, old mines, old buildings, stormwater drains and well-timbered areas. *Distribution Limit: N-Border Ranges National Park. S-South of Eden.*	✓	-	-	-	-	✓
Large-footed Myotis *Myotis macropus* OEH	V	-	Roosts in caves, mines, tunnels, buildings, tree hollows and under bridges. Forages over open water. *Distribution limits: N-Border Ranges National Park. S-South of Eden.*	✓	-	-	-	-	✓
Greater Broad-nosed Bat *Scoteanax rueppellii* OEH	V	-	Inhabits areas containing moist river and creek systems, especially tree lined creeks. *Distribution Limit: N-Border Ranges National Park. S-Pambula.*	✓	-	-	-	-	✓

Common name *Scientific name* DATABASE SOURCE	TSC Act	EPBC Act	Preferred habitat *Distribution limit*	Recorded on site (✓)	If not recorded on site				Considered in 7 part test of significance (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
New Holland Mouse *Pseudomys novaehollandiae* EPBC	-	V	Occurs in heathlands, woodlands, open forest and paperbark swamps and on sandy, loamy or rocky soils. Coastal populations have a marked preference for sandy substrates, a heathy understorey of leguminous shrubs less than 1m high and sparse ground litter. Recolonise of regenerating burnt areas. *Distribution Limit: N-Border Ranges National Park. S-South of Eden.*	x	x	-	-	x	x
Cumberland Plain Land Snail *Meridolum corneovirens* OEH	E	-	Inhabits remnant eucalypt woodland of the Cumberland Plan. Shelters under logs, debris, clumps of grass, around base of trees and burrowing into loose soil. *Distribution Limit: Cumberland Plain of Sydney Basin Region.*	x	marginal	✓	✓	low	✓
Macquarie Perch *Macquaria australasica* EPBC	V (FM Act 1994)	E	Occurs in south east Australia at moderate to high altitudes in rivers and reservoirs. Historical records show the species was widespread and abundant in the upper reaches of the Lachlan, Murrumbidgee and Murray Rivers and their tributaries. Allen (1989) states that introduced populations are present in Nepean River and water supply dams in the Sydney area. Occurs in lakes and flowing streams, usually in deep holes.	x	x	-	-	x	x

Common name *Scientific name* DATABASE SOURCE	TSC Act	EPBC Act	Preferred habitat *Distribution limit*	Recorded on site (✓)	If not recorded on site				Considered in 7 part test of significance (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Australian Greyling *Prototroctes maraena* EPBC	Part 2, Section 19 – Protected Fish (FM Act 1994)	V	Clear, moderate to fast flowing water in the upper reaches of rivers (sometimes to altitudes above 1,000m). Typically found in gravel bottom pools. Often forming aggregations below barriers to upstream movement (e.g. weirs, waterfalls).	x	x	-	-	x	x

OEH	-	Denotes species listed within 10km of the subject site on the *Atlas of NSW Wildlife*
EPBC	-	Denotes species listed within 10km of the subject site in the *EPBC Act* habitat search
V	-	Denotes vulnerable listed species under the relevant Act
E	-	Denotes endangered listed species under the relevant Act
E	-	Denotes critically endangered listed species under the relevant Act
NOTE:	1.	This field is not considered if no suitable habitat is present within the subject site
	2.	'records' refer to those provided by the *Atlas of NSW Wildlife*
	3.	'nearby' or 'recent' records are species specific accounting for home range, dispersal ability and life cycle

Table A2.3 provides an assessment of potential habitat within the subject site for nationally *protected* migratory fauna species recorded within 10km on the *EPBC Act* Protected Matters Tool. Nationally *threatened* migratory species are considered in Table A2.2.

Table A2.3 – Migratory fauna habitat assessment

Common Name *Scientific Name*	PREFERRED HABITAT *Migratory Breeding*	Suitable Habitat Present (✓)	Recorded on Site (✓)	COMMENTS
Oriental or Horsfield's Cuckoo (*Cuculus optatus*)	It mainly inhabits forests, occurring in coniferous, deciduous and mixed forest. It feeds mainly on insects and their larvae, foraging for them in trees and bushes as well as on the ground.	x	-	-
White-bellied Sea Eagle (*Haliaeetus leucogaster*)	Coasts, islands, estuaries, inlets, large rivers, inland lakes, reservoirs. *Sedentary; dispersive.*	x	-	-
White-throated Needletail (*Hirundapus caudacutus*)	Airspace over forests, woodlands, farmlands, plains, lakes, coasts, towns; companies forage often along favoured hilltops and timbered ranges. *Breeds Siberia, Himalayas, east to Japan. Summer migrant to eastern Australia.*	✓	x	-
Rainbow Bee-eater (*Merops ornatus*)	Open woodlands with sandy, loamy soil; sandridges, sandspits, riverbanks, road cuttings, beaches, dunes, cliffs, mangroves, rainforest, woodlands, golf courses. *Breeding resident in northern Australia. Summer breeding migrant to south east and south west Australia.*	x	-	-
Spectacled Monarch (*Monarcha trivirgatus*)	Understorey of mountain / lowland rainforest, thickly wooded gullies, waterside vegetation, mostly well below canopy. *Summer breeding migrant to south-east Qld and north-east NSW down to Port Stephens from Sept/Oct to May. Uncommon in southern part of range.*	x	-	-
Black-faced Monarch (*Monarcha melanopsis*)	Rainforests, eucalypt woodlands; coastal scrubs; damp gullies in rainforest, eucalypt forest; more open woodland when migrating. *Summer breeding migrant to coastal south east Australia, otherwise uncommon.*	x	-	-
Yellow Wagtail (*Motacilla flava*)	The yellow wagtail typically forages in damp grassland and on relatively bare open ground at edges of rivers, lakes and wetlands, but also feeds in dry grassland and in fields of cereal crops.	x	-	-
Satin Flycatcher (*Myiagra cyanoleuca*)	Heavily vegetated gullies in forests, taller woodlands, usually above shrub-layer; during migration, coastal forests, woodlands, mangroves, trees in open country, gardens. *Breeds mostly south east Australia and Tasmania over warmer months, winters in north east Qld.*	x	-	-

Common Name *Scientific Name*	PREFERRED HABITAT *Migratory Breeding*	Suitable Habitat Present (✓)	Recorded on Site (✓)	COMMENTS
Rufous Fantail (*Rhipidura rufifrons*)	Undergrowth of rainforests / wetter eucalypt forests / gullies; monsoon forests, paperbarks, sub-inland and coastal scrubs; mangroves, watercourses; parks, gardens. On migration, farms, streets buildings. *Breeding migrant to south east Australia over warmer months. Altitudinal migrant in north east NSW in mountain forests during warmer months.*	x	-	-
Great Egret (*Ardea alba*)	Shallows of rivers, estuaries; tidal mudflats, freshwater wetlands; sewerage ponds, irrigation areas, larger dams, etc. *Dispersive; cosmopolitan.*	✓	x	-
Cattle Egret (*Ardea ibis*)	Stock paddocks, pastures, croplands, garbage tips, wetlands, tidal mudflats, drains. *Breeds in summer in warmer parts of range including NSW.*	✓	x-	-
Latham's Snipe (*Gallinago hardwickii*)	Soft wet ground or shallow water with tussocks and other green or dead growth; wet parts of paddocks; seepage below dams; irrigated areas; scrub or open woodland from sea-level to alpine bogs over 2,000m; samphire on saltmarshes; mangrove fringes. *Breeds Japan. Regular summer migrant to Australia. Some overwinter.*	✓	x	-
Fork-tailed Swift (*Apus pacificus*)	Aerial: over open country, from semi-arid deserts to coasts, islands; sometimes over forests, cities. *Breeds Siberia, Himalayas, east to Japan south east Asia. Summer migrant to east Australia. Mass movements associated with late summer low pressure systems into east Australia. Otherwise uncommon.*	✓	x	-



7 Part Test of Significance

A3

Council, or the authorising authority is required to consider the impact upon threatened species, populations and / or EECs from any development or activity via the process of a 7 part test of significance. The significance of the assessment is then used to determine the need for a more detailed SIS.

The following 7 part test of significance relies on the ecological assessment provided in Sections 3 and 4 of this report and should be read as such.

Flora and fauna investigations and habitat assessments of the study area have resulted in the identification of suitable habitat for the following threatened species and populations with varying potential to occur. Species recorded or with a considered potential to occur have been noted. The potential for any direct or indirect impacts on these species has also been considered and noted.

Threatened flora

Scientific name	BC Act	Potential to occur	Potential impact
Pimelea spicata	E1	✓	Direct – on potential habitat only. Likely to be on the marginal areas of the site like adjacent to fence lines that have been slashed less frequently.

Threatened fauna

Common Name	BC Act	Potential to occur	Potential impact
Yellow-bellied Sheathtail-bat	V	recorded	Direct – on potential roosting/breeding hollow and recorded foraging area
Eastern Bentwing-bat	V	recorded	Direct – on recorded foraging area
Large-footed Myotis	V	recorded	Direct – on potential roosting/breeding hollow and recorded foraging area
Greater Broad-nosed Bat	V	recorded	Direct – on potential roosting/breeding hollow and recorded foraging area
East-coast Freetail Bat	V	recorded (Gunninah)	Direct – on potential roosting/breeding hollow and recorded foraging area
Little Eagle	V	✓	Direct – on potential foraging area
Little Lorikeet	V	✓	Direct – on potential roosting/breeding hollow and potential foraging area
Swift Parrot	E	✓	Direct – on potential foraging area
Dusky Woodswallow	V	✓	Direct – on low potential breeding and potential foraging area
Grey-headed Flying-fox	V	✓	Direct – on likely foraging area
Little Bentwing-bat	V	✓	Direct – on potential foraging area
Varied Sittella	V	✓	Direct – on low potential breeding and potential foraging area
Eastern Falsistrelle	V	low	Direct – on low potential breeding and potential foraging area
Cumberland Plain Land Snail	E	low	Direct – on low potential habitat

Common Name	BC Act	Potential to occur	Potential impact
Spotted Harrier	V	unlikely	Direct – on unlikely potential foraging area
Square-tailed Kite	V	unlikely	Direct – on unlikely potential foraging area
Turquoise Parrot	V	unlikely	Direct – on unlikely potential foraging area
Powerful Owl	V	unlikely	Direct – on unlikely potential foraging area
Speckled Warbler	V	unlikely	Direct – on unlikely potential foraging area
Regent Honeyeater	E4A	unlikely	Direct – on unlikely potential foraging area

Endangered populations

- None for fauna
- None for flora

Endangered ecological communities

- Cumberland Plain Woodland

The 7 part test of significance is as follows:

a) In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction

The direct and indirect impacts of the proposal are considered within Section 5.2.

With consideration to the relative direct and indirect impacts on all threatened species with varying potential to occur, it is considered that the proposal is unlikely to disrupt the life cycle for any of these listed species such that a viable local population would be placed at risk of extinction. Species recorded present during survey, previously recorded nearby or with high potential to occur and requiring further discussion given potential impacts are further discussed in detail below.

Summary of threatened species recorded

Greater Broad-nosed Bat (*Scoteanax rueppellii*), Large-footed Myotis (*Myotis macropus*), East-coast Freetail-bat (*Micronomus norfolkensis*) and Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*)

These four microbat species are considered here collectively together due to their similar potential dependence on hollows for roosting and breeding. Whilst the selection of hollow types, sizes and microclimatic conditions varies between these species, the potential impacts on an important hollow and the subsequent assessment outcome is consistent for each.

The Greater Broad-nosed Bat inhabits a variety of habitats including moist gullies in mature coastal forest, rainforest, open woodland, *Melaleuca* swamp woodland, wet and dry sclerophyll forests, cleared paddocks with remnant trees and tree lined creeks in open areas (Churchill 2008). The Greater Broad-nosed Bat predominantly forages within open forest, woodlands, along vegetated creeklines and small river systems (Hoye and Richards 1995).

This species roost in tree hollows, cracks and fissures in trunks and dead branches, under exfoliating bark as well as the roof of old buildings (Churchill 2008, Hoye & Richards 1995).

The Greater Broad-nosed Bat feeds on large slow flying beetles and moths (Dwyer 1965; Vestjens and Hall 1977). This species is a slow flier and generally hunts for insects over understorey vegetation as well as foraging along the interface of clearings and paddocks with forested areas and along tree-lined creeks (Richards 1988).

The Large-footed Myotis inhabits rainforests and open forests containing creeks and lakes over which it feeds and roosts in tree hollows, caves, mines, under bridges, in tunnels and occasionally buildings (Richards 1995). The Large-footed Myotis predominantly forages along creeklines and over waterbodies where it takes insects and small fish from on and just below the water surface (Richards 1995). This species has a strong association with streams and permanent waterways, most frequently at low elevations and in flat or undulating country and usually in areas that are vegetated rather than cleared. They will live in most habitat types as long as it is near water (Churchill 2008).

The East-coast Freetail Bat forages above the canopy of open forests and woodlands and in clearings at forest edges, feeding on small insects (Allison, Hoye & Law 2008). This species is thought to roost predominantly in tree hollows but also under loose bark and occasionally in houses and outbuildings (Allison, Hoye & Law 2008). Until recent findings of a roost within mangroves, all known natural roosts had occurred within hollow spouts of large mature eucalypts. The species is often found close to dams and waterholes. The East-coast Freetail Bat species will utilize paddock trees and isolated remnant vegetation when in proximity to larger forest remnants (Allison, Hoye & Law 2008). Cleared and semi-cleared landscapes are found to have higher activity levels than urban or forested landscapes. Riparian sites are also found to have high activity levels.

The Yellow-bellied Sheathtail-bat inhabits a wide variety of Eucalypt forests, foraging above the canopy in high flying, high speed movements (Richards 2008). In mallee or open country it comes closer to the ground. Usually found in mixed sex groups of two to six and occasionally up to 30, the Yellow-bellied Sheathtail Bat roosts in large tree hollows and has been found in the abandoned nests of Sugar Gliders (Churchill 2008).

A colony of six Yellow-bellied Sheathtail-bat were found roosting inside the trunk of a large hollow tree were clinging to the walls, hanging head down and propped up by their forearms; They were well separated but tended to cluster around the entrance hole (Churchill 2008). Large maternity colonies may exceed 100 individuals. Occasionally it has been found resting on the walls of buildings in broad daylight, possibly due to exhaustion from migratory habits or disease.

Hollows present within the proposed R2 Residential landscape should be inspected for the presence of roosting by recorded threatened microbat species. This includes only two recorded trees. If any hollows within these trees are found to contain a threatened microbat roost (which is not expected), then this tree is to be retained with appropriate buffers from the development landscape. The same inspections and protections are required for any hollow-bearing trees located within a proposed building footprint located within the proposed E3 area.

According to DEC (2004) survey Guidelines, stag-watching of all trees should be undertaken during warmer months (October - March). Outside of this period microbats may become dormant during cooler months therefore tree climbing inspections with use of a videoscope should be undertaken at this time to effectively determine presence and use of hollows.

In the event that no activity is recorded, the felling of hollow-bearing trees is to be conducted under the supervision of a fauna ecologist to ensure appropriate animal welfare procedures are taken, particularly for threatened species not previously recorded within these hollows. Hollows of high quality or with fauna recorded residing within should be sectionally dismantled for relocation and all hollows should be inspected for occupation, signs of previous activity and potential for reuse.

Hollows of high quality or with fauna recorded residing within should be sectionally dismantled and all hollows should be inspected for occupation, activity and potential for reuse. In the instance of recording the presence of threatened microbats during tree removal, maximum effort should ensure safe relocation of the roosting colony.

Re-used hollows or those with likely occupation are to be relocated to the E3 lands. All other hollows removed should be replaced with nest boxes. Relocated hollows are preferred instead of bat boxes for the identified microbat species. Boxes should be constructed all of weatherproof timber (marine ply), fasteners and external paint.

Provided the above mitigation measures are undertaken with respect to threatened hollow-dependent microbats, the proposal will not likely cause a significant impact on the local population of these species.

b) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction

There are no endangered fauna populations previously recorded within 10km of the study area or expected to occur.

There is one endangered flora population within the Campbelltown LGA, These are:

- *Marsdenia viridiflora* subsp. *viridiflora* in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith LGAs

Despite searches undertaken for this species within the subject site, no specimens were located.

Therefore, it is considered that the action proposed is not likely to have an adverse effect on the life cycle of these species that constitute the endangered populations such that a viable local population of these species is likely to be placed at risk of extinction.

c) In the case of a critically endangered or endangered ecological community, whether the action proposed:

i. Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

One (1) EEC – Cumberland Plain Woodland – was observed within the study area. Vegetation on the eastern side of the easement is heavily impacted, however the density of trees is higher and the ground layer does not appear to be ploughed as frequently or as low as the western side, allowing for greater species diversity and more regrowth. The western side of the easement north of the existing dwelling is heavily ploughed with little or no mid-storey regrowth and the native species diversity is lower. There has been some past removal of trees across the site but more obvious on the western side as the density of trees is a bit lower.

Throughout the site there has been some pasture improvement, therefore the ground layer may have only moderate levels of native species with introduced grasses often outcompeting native herbs and grasses.

The study area does form part of an extensive corridor that occurs in the local area over approximately 4.5km from Raby Road to Denham Court Road. The vegetation in the eastern portion of the site is key to maintenance of the corridor and the new adjoining development to the north has provided a corridor of vegetation running either side of the electrical easement. If the eastern side of the site is not retained for a corridor, the usage value would be severely diminished.

Cumberland Plain Woodland in the western portion amounts to 2.57 ha and 3.53 ha in the eastern portion.

The proposed rezoning to R2 for the western portion would likely impact (in the future) 2.57 ha of Cumberland Plain Woodland. Rezoning the eastern portion to E3 would see retention of the majority of the 3.53 ha and subject to the installation of stormwater devices and a dwelling with APZ. These impacts would equate to 0.32 ha of vegetation, howeve there is potential for a total of approximately 4.5 ha in total to be protected and restored. An estimated 0.2 ha of vegetation would be removed for a dwelling and APZ located centrally within the E3 lands, and a further 0.12 ha for a proposed sediment basin and pipe line.

The western portion of proposed R2 area whilst part of a vegetated corridor, is only supplementary to the corridor, but not essential to its functioning capacity.

All surrounding allotments with native vegetation all contain Cumberland Plain Woodland and mostly zoned E3. The recently developed lots to the north are part of the south-west growth centres area. The zoning of E3 assists in protecting remnant Cumberland Plain Woodland in the locality.

Vegetation on site has been thinned as is clearly visible in the aerial photography, compared with vegetation to the west, south and east on adjoining lands zoned E3 which is more intact and contains some native mid-storey vegetation.

The impact of 2.89 ha upon an extensive remnant in the locality of better condition, will not isolate or fragment the EEC, break connectivity or destroy its functioning. As such, the proposal is unlikely to have an adverse effect on the extent of Cumberland Plain Woodland such that its local occurrence is likely to be placed at risk of extinction.

ii. Is likely to substantially and adversely modify the composition such that its local occurrence is likely to be placed at risk of extinction,

The planning proposal would have an estimated impact upon 2.57 ha within the proposed R2 lands and limited impact on the remaining 3.53 ha within the proposed E3 lands for the purposes of stormwater devices and a single dwelling and asset protection zones. An estimated 0.32 ha of vegetation would be removed for a dwelling and APZ, basin and pipe line located centrally within the E3 lands.

It is unlikely that the proposed development will adversely modify the composition of this community such that its local occurrence is likely to be placed at risk of extinction.

d) In relation to the habitat of threatened species, populations or ecological community:

It is considered that the habitat attributes of the subject site provide known or potential habitat for *Pimelea spicata*, Cumberland Plains Woodland, Spotted Harrier, Little Eagle, Square-tailed Kite, Little Lorikeet, Swift Parrot, Turquoise Parrot, Powerful Owl, Speckled Warbler, Regent Honeyeater, Varied Sittella, Dusky Woodswallow, Grey-headed Flying-fox, Yellow-bellied Sheathtail-bat, East-coast Freetail Bat, Eastern Falsistrelle, Little Bentwing-bat, Eastern Bentwing-bat, Large-footed Myotis, Greater Broad-nosed Bat and Cumberland Plain Land Snail.

i. The extent to which habitat is likely to be removed or modified as a result of the action proposed, and

The subject site has an area of 14 ha, which comprises approximately 6.1 ha of disturbed native vegetation. The planning proposal is likely to remove 2.89 ha of disturbed native vegetation in the western portion of the site and a small amount within the proposed E3 lands. The vegetation to be impacted will have partial to good quality habitat for the aforementioned species.

ii. Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

The managed woodland vegetation within the study area contributes to local connectivity towards the immediate south and then east. The combined local connective landscape is however already isolated from other major remnants or contiguous vegetation including any major conservation parks or reserves.

Whilst the study area does provide some degree of canopy only connectivity to this local remnant, removal of vegetation within the study area, particularly the proposed R2 area, will not cause any segmentation, fragmentation or isolation of this local connectivity. This is demonstrated in Figure 5 in Section 4.4.

The connectivity that will be maintained to the immediate south is represented by better quality unmanaged native vegetation able to support small terrestrial animal species and their habitats.

Threatened fauna species recorded during fauna survey or otherwise within the local connective landscape include the Cumberland Plain Land Snail, Greater Broad-nosed Bat, Large-footed Myotis, Eastern Bentwing-bat, Yellow-bellied Sheathtail-bat, East-coast Freetail Bat, Grey-headed Flying-fox, Varied Sittella, Little Lorikeet and Little Eagle. Each of these are highly mobile flying species with the exception of the Cumberland Plain Land Snail, which was not found within the study area and is unlikely to occur. The removal of habitat for the planning proposal will not likely inhibit or reduce local movements for any of these remaining flying species.

Therefore, it is considered that known habitat for a threatened species, population or ecological community within the local area and region is unlikely to become isolated or fragmented as a result of the proposal.

iii. The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality

In respect to threatened fauna species recorded, the hollows present may have importance for roosting and breeding. Subsequent mitigation measures including inspections of these hollows are advised in order to protect any threatened roosting bat colony.

The proposed area of impact associated with the planning proposal is not likely of high quality, of any breeding importance or central to the home range requirements of any remaining threatened fauna species considered such that behaviour or ecology of these species will be significantly altered in any way.

Whilst the importance of the Cumberland Plain Woodland is high given it's a critically endangered ecological community status, the removal of the western portion of the remnant on site will not break the connective value of the community as it is abundant locally, and partly protected in E3 environmental management zoning.

With respect to threatened flora, no specimens have been detected. The western portion of the site does not appear to provide suitable habitat for any species. The eastern portion may provide small amounts of potential habitat for *Pimelea spicata* in areas of limited disturbance such as along some boundaries.

e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)

The site has not been identified as critical habitat within the provisions of the TSC Act. Therefore this matter does not require any further consideration at this time.

f) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan

Approved state recovery plans have been prepared for the following threatened species with potential habitat within the subject site:

- Large Forest Owls ((Powerful Owl (*Ninox strenua*), Sooty Owl (*Tyto tenebricosa*) and Masked Owl (*Tyto novaehollandiae*)) (DEC 2006)
- *Pimelea spicata* (DEC 2004)
- Cumberland Plain Recovery Plan (DECC 2010)

It is considered that the planning proposal is generally consistent with the objectives or actions of the above-mentioned draft and approved recovery plans.

g) Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

A key threatening process is defined in the *TSC Act* as a process that threatens, or could threaten, the survival or evolutionary development of species, populations or ecological communities.

The current list of key threatening processes under the *TSC Act*, and whether the proposed activity is recognised as a threatening process, is shown below.

Listed key threatening process (as described in the final determination of the Scientific Committee to list the threatening process)	**Is the development or activity proposed of a class of development or activity that is recognised as a threatening process?**		
	Likely	**Possible**	**Unlikely**
Aggressive exclusion of birds by Noisy Miners (*Manorina melanocephala*)		✓	

Listed key threatening process (as described in the final determination of the Scientific Committee to list the threatening process)	Is the development or activity proposed of a class of development or activity that is recognised as a threatening process?		
	Likely	Possible	Unlikely
Alteration of habitat following subsidence due to longwall mining			✓
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands			✓
Anthropogenic Climate Change	✓		
Bushrock removal			✓
Clearing of native vegetation	✓		
Competition and habitat degradation by feral goats			✓
Competition and grazing by the feral European Rabbit (*Oryctolagus cuniculus*)		✓	
Competition from feral honeybees			✓
Death or injury to marine species following capture in shark control programs on ocean beaches			✓
Entanglement in, or ingestion of anthropogenic debris in marine and estuarine environments			✓
Forest Eucalypt dieback associated with over-abundant psyllids and bell miners		✓	
High frequency fire resulting in the disruption of life-cycle processes in plants and animals and loss of vegetation structure and composition			✓
Herbivory and environmental degradation caused by feral deer			✓
Importation of red imported fire ants into NSW			✓
Infection by *Psittacine circoviral* (beak and feather) disease affecting endangered psittacine species and populations			✓
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis			✓
Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae		✓	
Infection of native plants by *Phytophthora cinnamomi*		✓	
Introduction of the large earth bumblebee (*Bombus terrestris*)			✓
Invasion and establishment of exotic vines and scramblers	✓		
Invasion and establishment of Scotch Broom (*Cytisus scoparius*)		✓	
Invasion and establishment of the Cane Toad (*Bufo marinus*)			✓
Invasion, establishment and spread of *Lantana camara*	✓		
Invasion of native plant communities by bitou bush & boneseed *Chrysanthemoides monilifera*			✓
Invasion of native plant communities by exotic perennial grasses	✓		
Invasion of native plant communities by African Olive (*Olea europaea* subsp. *cuspidata*)	✓		

Listed key threatening process (as described in the final determination of the Scientific Committee to list the threatening process)	Is the development or activity proposed of a class of development or activity that is recognised as a threatening process?		
	Likely	Possible	Unlikely
Invasion of the Yellow Crazy Ant (*Anoplolepis gracilipes*)			✓
Loss of Hollow-bearing trees	✓		
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants		✓	
Loss and/or degradation of sites used for hill-topping by butterflies			✓
Predation and hybridisation by feral dogs (*Canis lupus familiaris*)			✓
Predation by the European Red Fox (*Vulpes vulpes*)			✓
Predation by the Feral Cat (*Felis catus*)		✓	
Predation by Gambusia holbrooki Girard, 1859 (plague minnow or mosquito fish)			✓
Predation by the Ship Rat (*Rattus rattus*) on Lord Howe Island			✓
Predation, habitat degradation, competition & disease transmission from Feral pigs (*Sus scofa*)			✓
Removal of dead wood and dead trees	✓		

The above key threatening processes have been considered in reference to the proposal. It was considered that the proposal may contribute to a small degree to a number these processes as described below. It was not considered that the proposal will have a large or significant impact on any of the following key threatening processes. Some mitigation measures have been listed under each process to minimise or reduce such impacts upon those processes.

Summary of "likely" or "possible" Key Threatening Processes

This section identifies what mitigation measures can be implemented to address threatening processes.

Aggressive exclusion of birds by Noisy Miners (Manorina melanocephala)

Noisy Miners have been recorded present within the study area. It is likely that Noisy Miners from within the study area may be slightly displaced as a result of habitat removal for the planning proposal, resulting in increased impacts from this species on other native birds in the nearby surrounds. Given the high degree of disturbance in the local surrounds it is expected that the Noisy Miner is already at impacting numbers in these areas.

Human-caused Climate Change

The proposal will require the removal of a small amount of vegetation which will result in a negative or positive contribution to climate change. Vegetation is considered to act as a sink for a range of greenhouse gases but in particular Carbon Dioxide. The maintenance of native vegetation cover is a key strategy to combat the contributing impacts of the proposed action on Climate Change. Increased risk of bushfire, flooding and storms are to be considered as part of the proposed action. Whilst almost insignificant in size, the proposal is

part of the accumulative effect and thus should be considered as contributing to this threatening process.

Clearing of native vegetation

The proposed rezoning would likely impact (in the future) 2.89 ha of Cumberland Plain Woodland. Restoration of CPW within the proposed E3 lands and offsetting is recommended to mitigate the clearing of vegetation.

Invasion and establishment of exotic vines and scramblers

Without a vegetation management plan or equivalent, the edge effects caused by the proposed residential development may increase the potential for species such as Moth Vine or Blackberry to become more dominant features of the proposed conservation portion of the site.

Competition and grazing by the feral European rabbit

It is expected that the planning proposal will increase or decrease the potential for rabbit invasion. Rabbit management and control such as through exclusion fencing, destruction of warrens and target "Pindone" baiting is recommended as a standard protocol.

Forest Eucalypt dieback associated with over-abundant psyllids and bell miners

The study area consists of woodland patches subject to existing impacts of Bell Miners. The study area is however already devoid of any likely breeding potential due to the absence of understorey and scrub vegetation for nesting. The proposal is unlikely to significantly enhance the effect of this threatening process of displace the Bell Miners into additional areas.

Infection of native plants by Phytophthora cinnamomi

The proposal may temporarily increase the risk of fungal infection on site as it may be spread via vehicular movement and relocation of soil and vegetation. Consequently standard *Phytophthora cinnamomi* protocol applies to the cleaning of all plant, equipment, hand tools and work boots prior to delivery onsite to ensure that there is no loose soil or vegetation material caught under or on the equipment and within the tread of vehicle tyres or tracks. Any equipment found to contain soil or vegetation material from offsite is to be cleaned in a quarantined work area or wash station and treated with anti-fungal pesticides prior to commencing work.

Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae

'Myrtle Rust' may be spread via machinery, animals and humans as well as by environmental factors such as wind. The presence of machinery and construction works is likely to slightly increase the potential for spread of this key threatening process. Similar protocols as to *Phytophthora cinnamomi* should be applied.

Invasion of native plant communities by exotic perennial grasses

The proposal is of a class of development recognised as a threatening process due to possible incursions of grasses such as *Pennisetum clandestinum* (Kikuyu) and similar perennial grasses. Much of the site has previously been pasture improved and has replaced native grasses. However the management of this threatening process can be achieved

through the imposition of a vegetation management plan or similar will assist in control of exotic perennial grasses.

Loss of hollow-bearing trees

Hollow-bearing tree surveys identified two hollow-bearing trees containing medium (10-30cm) and small (0-10cm) sized hollows within the R2 Residential portions of the planning proposal. The proposal will require the removal of these hollow-bearing trees and as such is of a class of development recognised as a threatening process.

Threatened species with suitable habitat within the site and dependant on hollows of this nature include Little Lorikeet, Yellow-bellied Sheathtail-bat, East-coast Freetail Bat, Eastern Falsistrelle, Large-footed Myotis and Greater Broad-nosed Bat. Four of the abovementioned five microbat species were recorded during surveys undertaken. The relocation or replacement of hollows removed with refurbish hollows or nesting boxes placed within the conservation areas of the site is recommended as an appropriate means to supplement the loss of natural hollows.

Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants

Retained vegetation in the eastern portion of the site may be impacted by garden escapes by adjoining properties. Similarly, adjoining existing E3 lands to the south of the site may be impacted by dumped garden escapes, creepers, bulbs and seed blow in.

Residents could be encouraged to plant native endemic species. Control access to retained vegetation areas is important to limit this type of impact. Weed control should also be undertaken in retained vegetation areas on a regular basis.

Predation by feral cat (Felis catus)

The planning proposal may alter impacts on adjoining lands by increasing the numbers of domestic cat ownership and as such the action proposed may increase the impact of this threatening process.

Removal of dead wood and dead trees

The planning proposal will require the removal of deadwood and dead trees and as such is of a class of development recognised as a threatening process. Threatened fauna species with potential habitat within the subject site and likely dependent on dead wood or dead trees include Speckled Warbler, Varied Sittella, Dusky Woodswallow and Cumberland Plain Land Snail. None of these species have been recorded to date within the study area. Given the low quality habitat associated with deadwood and dead trees present within the development areas, the removal of dead wood and dead trees is not considered likely to impact on threatened species or the biodiversity of the local area.



National - Significant Impact Criteria

A4

Under the EPBC Act an action will require approval from the Australian Government Environment Minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance. The following significant impact criteria were sourced from the EPBC Act Policy Statement 1.1 (May 2006):

CRITICALLY ENDANGERED AND ENDANGERED SPECIES

Significant impact criteria

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- Lead to a long-term decrease in the size of a population;
- Reduce the area of occupancy of the species;
- Fragment an existing population into two or more populations;
- Adversely affect habitat critical to the survival of a species;
- Disrupt the breeding cycle of a population;
- Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;
- Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat;
- Introduce disease that may cause the species to decline; or
- Interfere with the recovery of the species.

>> What is a population of a species?

A 'population of a species' is defined under the EPBC Act as an occurrence of the species in a particular area. In relation to critically endangered, endangered or vulnerable threatened species, occurrences include but are not limited to:

- a geographically distinct regional population, or collection of local populations; or
- a population, or collection of local populations, that occurs within a particular bioregion.

>> What is habitat critical to the survival of a species or ecological community?

'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- For activities such as foraging, breeding, roosting, or dispersal;
- For the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators);
- To maintain genetic diversity and long term evolutionary development; or
- For the reintroduction of populations or recovery of the species or ecological community.

Such habitat may be, but is not limited to: habitat identified in a recovery plan for the species or ecological community as habitat critical for that species or ecological community; and/or habitat listed on the Register of Critical Habitat maintained by the Minister under the EPBC Act.

VULNERABLE SPECIES

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- lead to a long-term decrease in the size of an important population of a species;
- reduce the area of occupancy of an important population;
- fragment an existing important population into two or more populations;
- adversely affect habitat critical to the survival of a species;
- disrupt the breeding cycle of an important population;
- modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;
- result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat;
- introduce disease that may cause the species to decline; or
- interfere substantially with the recovery of the species.

>> What is an important population of a species?

An 'important population' is a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

- Key source populations either for breeding or dispersal;
- Populations that are necessary for maintaining genetic diversity; and/or
- Populations that are near the limit of the species range.

CRITICALLY ENDANGERED AND ENDANGERED ECOLOGICAL COMMUNITIES

Significant impact criteria

An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:

- Reduce the extent of an ecological community;
- Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines;
- Adversely affect habitat critical to the survival of an ecological community;
- Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns;
- Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting;
- Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:
  - assisting invasive species, that are harmful to the listed ecological community, to become established; or
  - causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community; or
- Interfere with the recovery of an ecological community.

MIGRATORY SPECIES

Significant impact criteria

An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

- Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species;
- Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species; or
- Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

>> What is important habitat for a migratory species?

An area of 'important habitat' for a migratory species is:

a) Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; and/or
b) Habitat that is of critical importance to the species at particular life-cycle stages; and/or
c) Habitat utilised by a migratory species which is at the limit of the species range; and/or
d) Habitat within an area where the species is declining.

>> What is an ecologically significant proportion?

Listed migratory species cover a broad range of species with different life cycles and population sizes. Therefore, what is an 'ecologically significant proportion' of the population varies with the species (each circumstance will need to be evaluated). Some factors that should be considered include the species' population status, genetic distinctiveness and species specific behavioural patterns (for example, site fidelity and dispersal rates).

>> What is the population of a migratory species?

'Population', in relation to migratory species, means the entire population or any geographically separate part of the population of any species or lower taxon of wild animals, a significant proportion of whose members cyclically and predictably cross one or more national jurisdictional boundaries including Australia.

Appendix F Traffic Report prepared by Varga Traffic Planning Pty Ltd

Planning Proposal for a
Proposed Residential Development

Lot 71 in DP706546
St Andrews Road, Varroville

TRAFFIC AND PARKING ASSESSMENT REPORT

6 February 2018

Ref 17476

VARGA TRAFFIC PLANNING Pty Ltd
Transport, Traffic and Parking Consultants

Suite 6, 20 Young Street, Neutral Bay NSW 2089 - PO Box 1868, Neutral Bay NSW 2089
Ph: 9904 3224, Email: varga@vtp.net.au

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Figure 2 Site
Figure 3 Road Hierarchy
Figure 4 Existing Traffic Controls

1. INTRODUCTION

This report has been prepared to accompany a planning proposal to Campbelltown City Council for a residential subdivision to be located at Lot 71 in DP706546 (Figures 1 and 2).

The Planning Proposal involves the subdivision and rezoning of the land from *E3 Environmental Management* to part *R2 Low Density Residential* and in part retention of the *E3 Environmental Management Land.*

The proposed residential subdivision is located adjacent a completed residential subdivision which forms part of the East Leppington Precinct, and makes provision for the following:

- 98 new residential allotments
- construction of a new local road network which connects with the completed residential subdivision on the adjacent Cornish site.

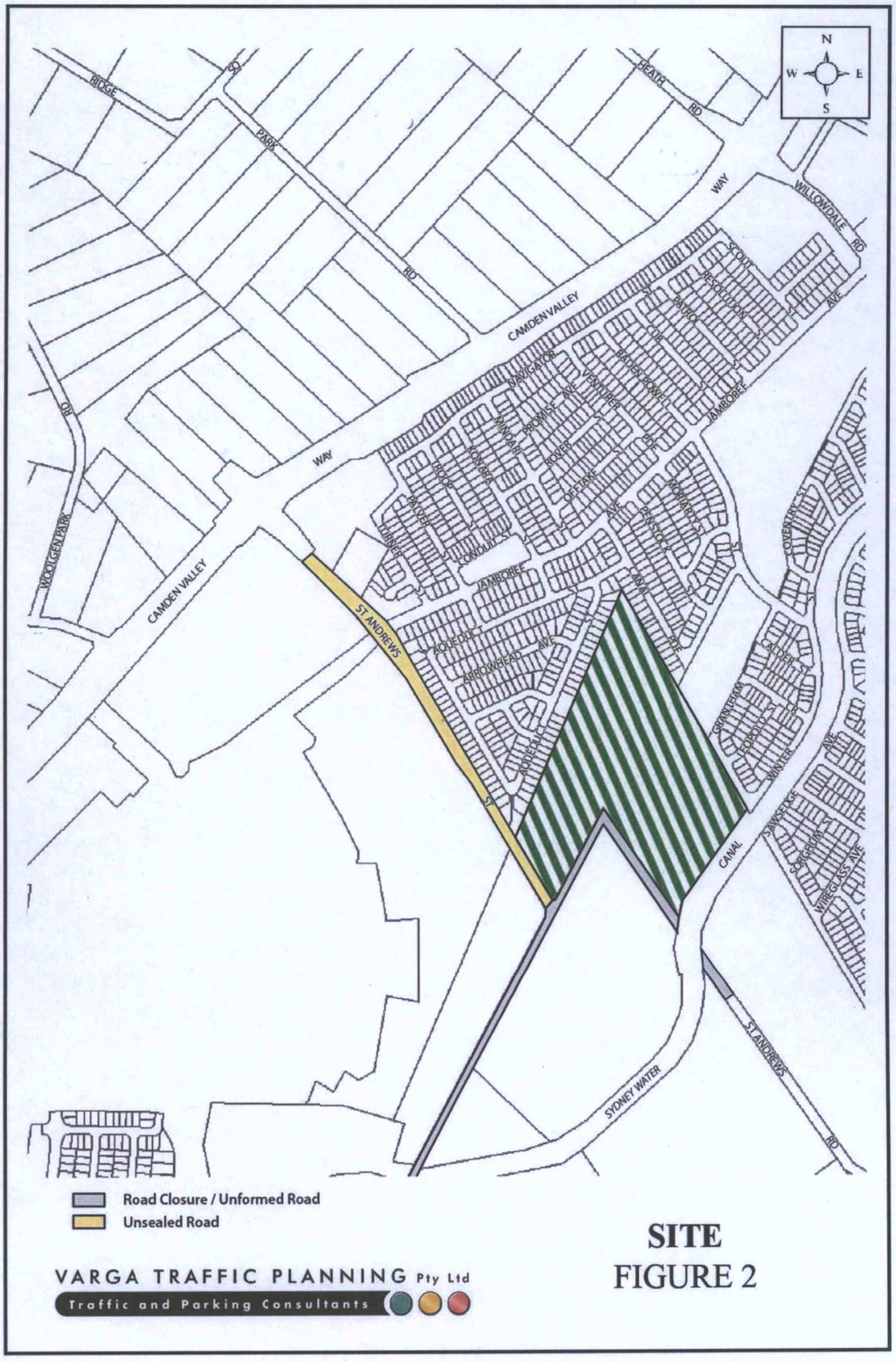
The purpose of this report is to assess the traffic and parking implications of the subdivision proposal and to that end this report:

- describes the site and provides details of the planning proposal
- reviews the road network in the vicinity of the site
- estimates the traffic generation potential of the planning proposal
- assesses the traffic implications of the planning proposal in terms of road network capacity
- reviews the geometric design features of the proposed new road network
- assesses the off-street parking implications of the planning proposal.



VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants

LOCATION
FIGURE 1



SITE
FIGURE 2

2. PROPOSED DEVELOPMENT

Site

The subject site is located on the eastern side of St Andrews Road, north of the Sydney Water Canal. The site has a street frontage approximately 148m in length to St Andrews Road and occupies an area of approximately 13.5ha.

The subject site is currently occupied by a single dwelling house with a number of associated outbuildings. The remainder of the site generally comprises tall trees, a dam and a riparian corridor through the centre of the site.

Vehicular access to the site is currently provided via a single driveway located at the north-western corner of the St Andrews Road site frontage.

East Leppington Precinct

The NSW State Government has approved the rezoning of East Leppington Precinct that hugs the northern and eastern boundaries of the subject site to provide land for approximately 4,450 dwellings, a local centre, a village centre, 26 hectares of open space and recreation areas, new primary school and community centre, upgrades to major roads, including Camden Valley Way and Denham Court Road, new pedestrian and cycle links integrated with open space.

Significant infrastructure will be provided in the East Leppington Precinct over time to support the increase in population. These will include interconnected roads, walking and cycling networks, a bus-friendly road network and higher housing densities.

A number of upgrades to Camden Valley Way have already been completed, including new traffic signals at its intersections with St Andrews Road, Willowdale Drive and with Denham Court Road, creating an increasingly accessible transport corridor connecting the Precinct with surrounding major centres and infrastructure.

Cardno prepared a detailed traffic assessment and green travel strategy in June 2013 as part of the East Leppington Precinct project application, both of which are referenced throughout this report. Extracts from the *Cardno* reports are reproduced in the following pages illustrating the following:

- *Figure 4.1 Indicative Layout Plan (including subject site overlay)*
- *Figure 5.2 East Leppington Road Hierarchy (including subject site overlay)*
- *Figure 5.5 SIDRA Intersection Layouts (including Camden Valley Way & St Andrews Road)*
- *Appendix A – Local Street Section.*

Proposed Development

The planning proposal involves the subdivision of the subject site to create 98 new residential allotments. The proposed new allotments will have an average frontage of 15m and a minimum lot size of 450m^2.

A new local road network is proposed with a road reservation width of 16 metres, including a new local road link with the completed subdivision on the adjacent Cornish site, consistent with the East Leppington Precinct road hierarchy requirements.

The planning proposal will also make provision for the widening of St Andrews Road along its frontage.

Plans for the purposes of this planning proposal have been prepared by *Lean, Lackenby & Hayward* and are reproduced in the following pages.

Figure 4.1 Indicative Layout Plan v12.6

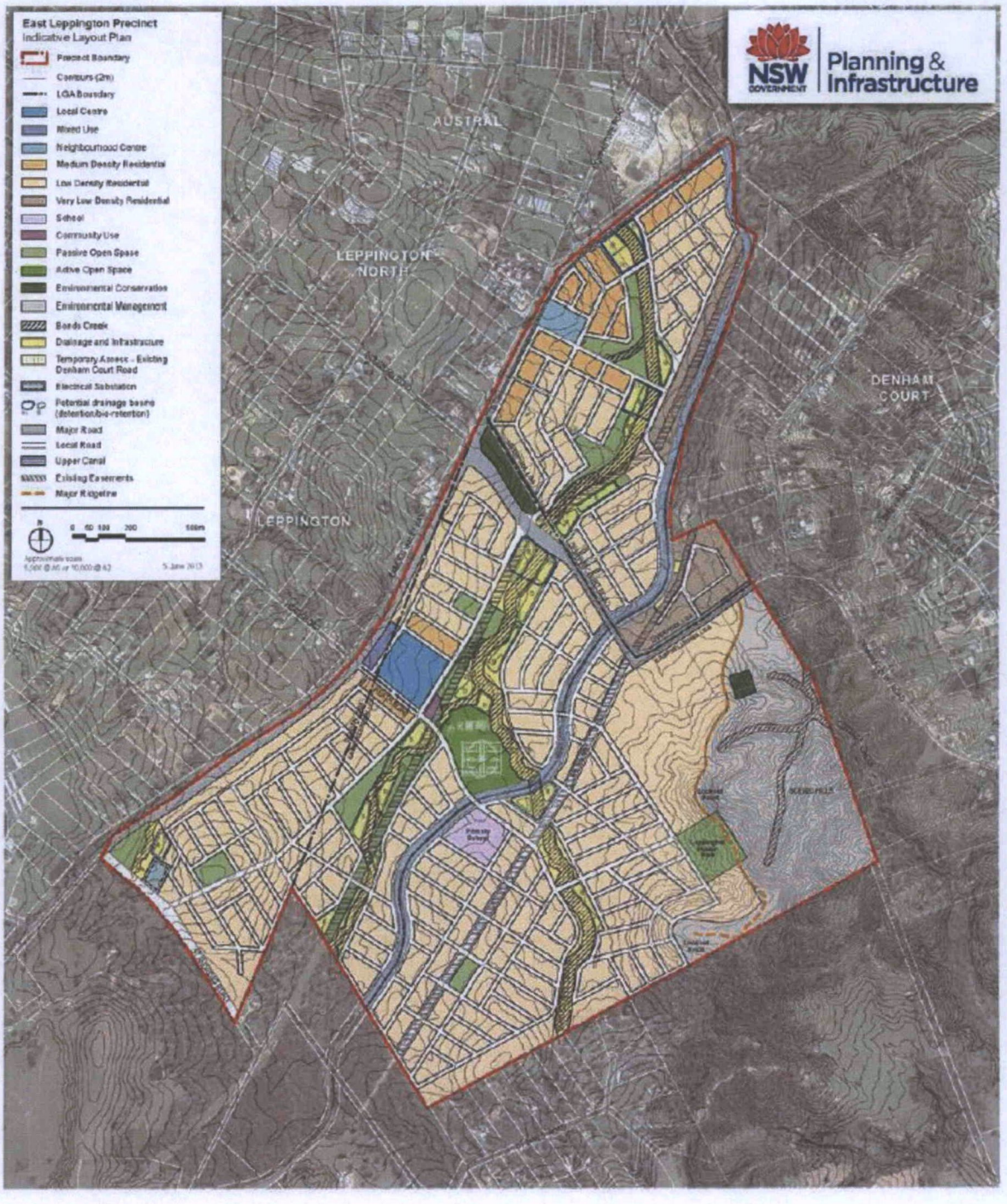
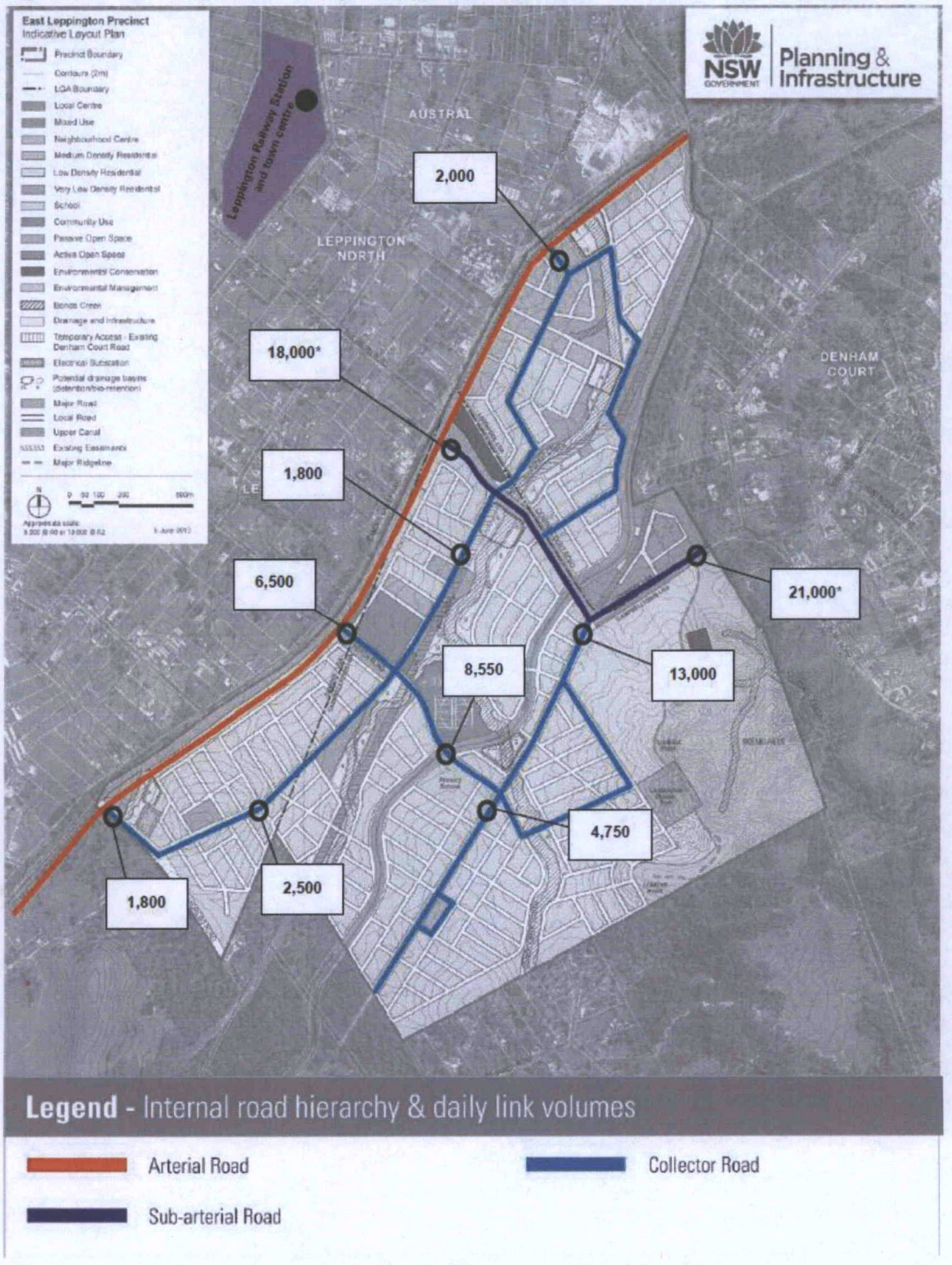
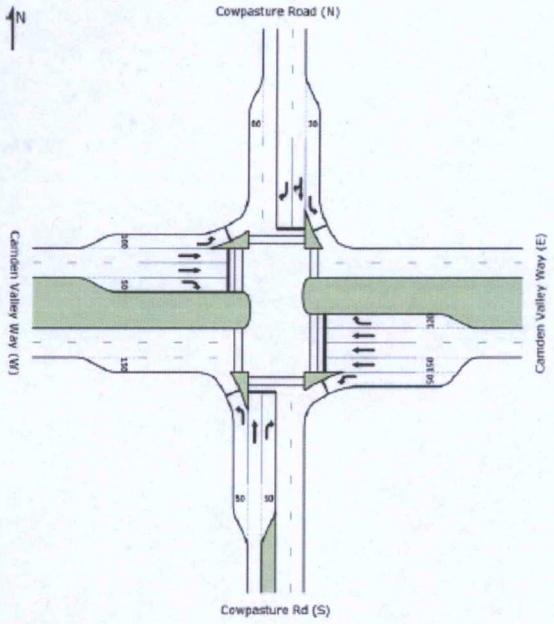


Figure 5.2 Internal Road Hierarchy & Daily Link Volumes (2036 – 10 year design horizon)

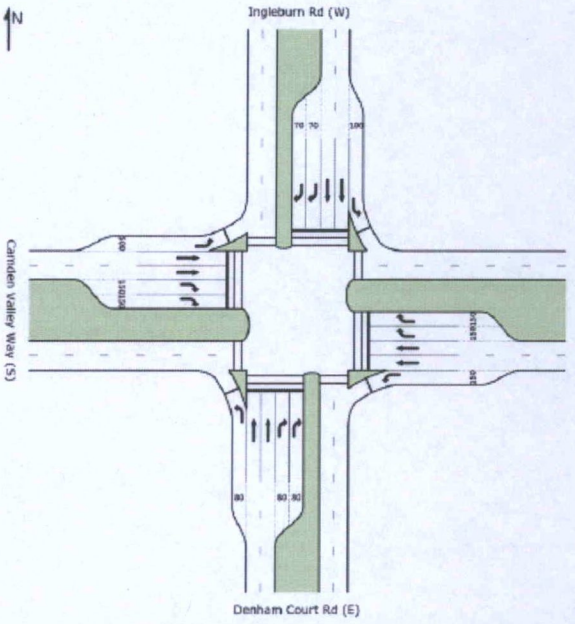


*East Leppington Precinct development traffic plus 2036 forecast background traffic of approximately 10,000 daily trips

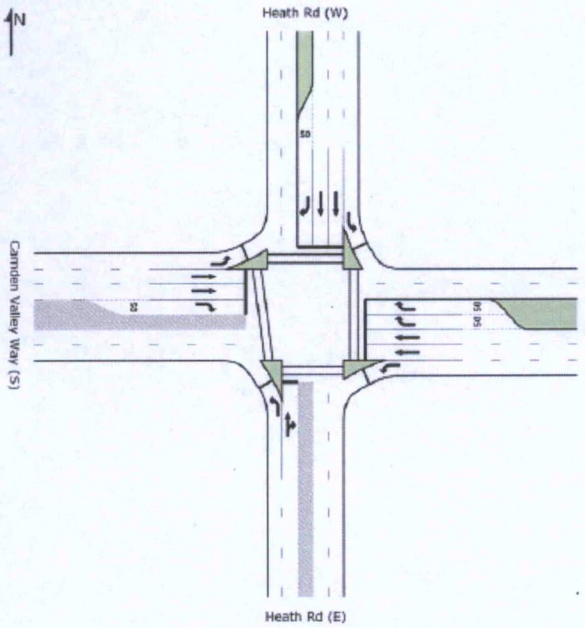
Figure 5.5 SIDRA Intersection Layouts



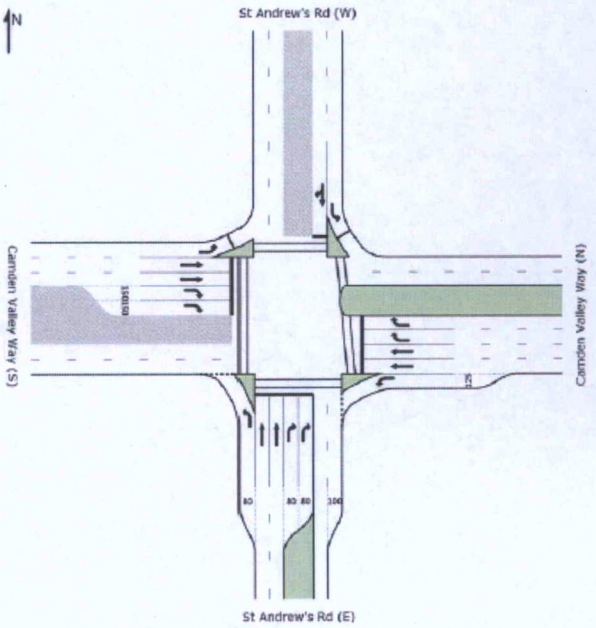
Camden Valley Way / Cowpasture Road



Camden Valley Way / Denham Court Road



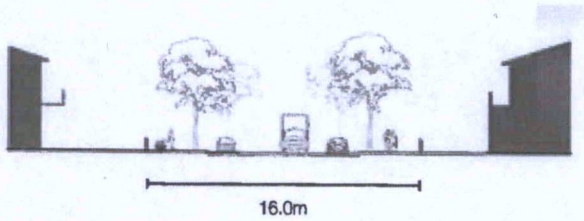
Camden Valley Way / Heath Road



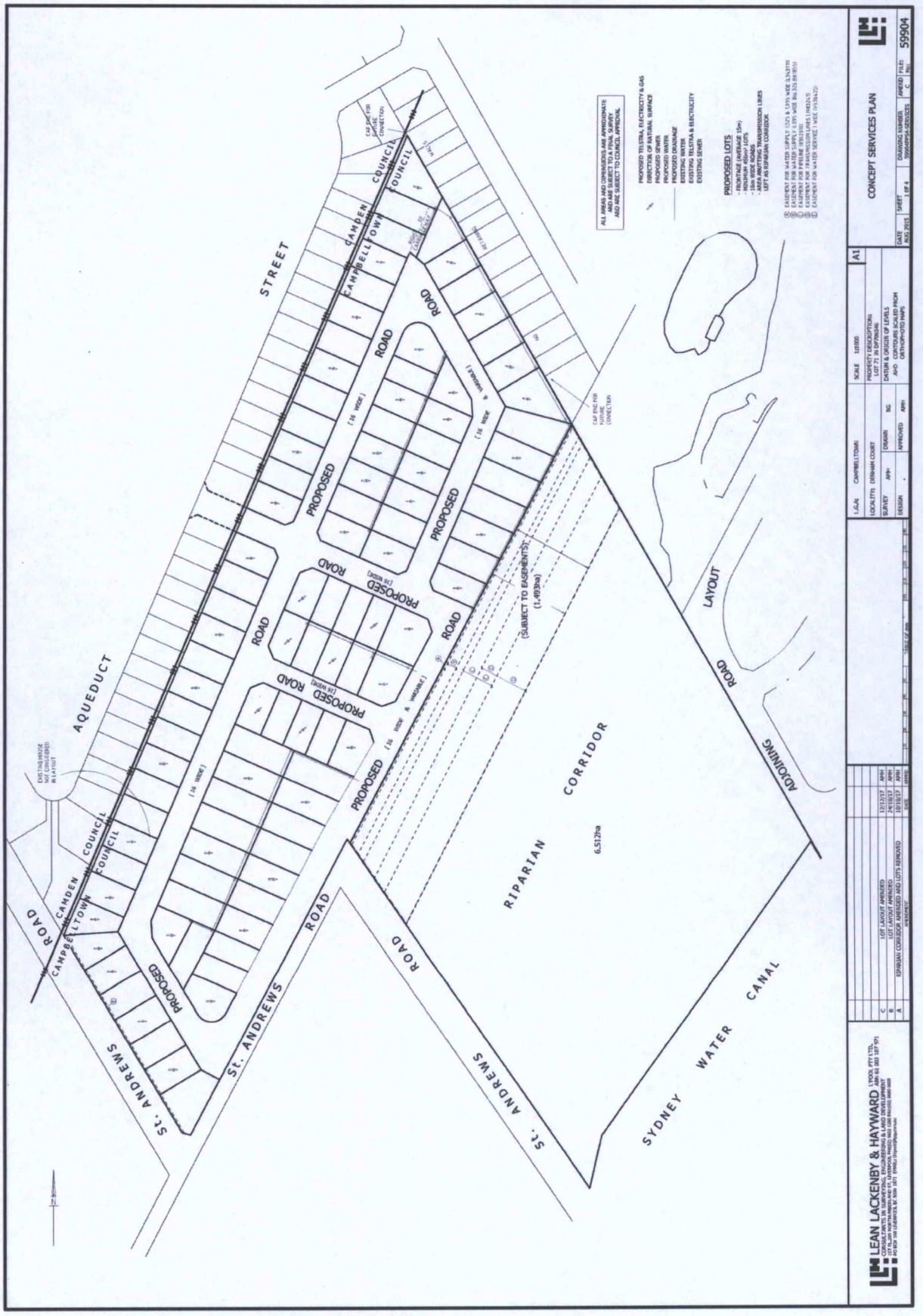
Camden Valley Way / St Andrew's Road

street hierarchy: local streets

STREET TYPE/ROLE AND FUNCTION	URBAN DESIGN CHARACTER	TYPICAL REQUIREMENTS
LOCAL STREETS Give priority to pedestrians and cyclists. Traffic loads are 1,000-3,000 vehicles / day Designed for a vehicle speed of up to 50km/hr.	**Uses** Local Streets should accommodate shared pedestrian and bike and vehicular uses. Local Streets should provide continuous pedestrian and cycle paths. **Profile** These streets are designed to slow residential traffic. The width of these streets may vary when accommodating buses or where there is a low demand for on-street parking.	Street Reserve: 16 metres Travel-way: • 3.0 metres each way



Local Street Section
Source: Edmondson Park Locality DCP Template, Liverpool City Council


CONCEPT SERVICES PLAN
59904
LEAN LACKENBY & HAYWARD
AQUEDUCT
STREET
ROAD
PROPOSED
ROAD
CAMDEN COUNCIL
CAMPBELLTOWN COUNCIL
St. ANDREWS
RIPARIAN CORRIDOR
6.512ha
SYDNEY WATER CANAL
ADJOINING
LAYOUT
(SUBJECT TO EASEMENTS)
(1.493ha)
PROPOSED LOTS

3. TRAFFIC ASSESSMENT

Road Hierarchy

The road hierarchy allocated to the road network in the vicinity of the site by the Roads and Maritime Services is illustrated on Figure 3.

Camden Valley Way is classified by the RMS as a *State Road* and provides the key east-west road link in the area, linking Hume Highway, M7 and M5 interchanges at Prestons, near Liverpool, Camden, Narellan and Harrington Park. It has recently been upgraded to carry two traffic lanes in each direction with opposing traffic flows separated by a central median island.

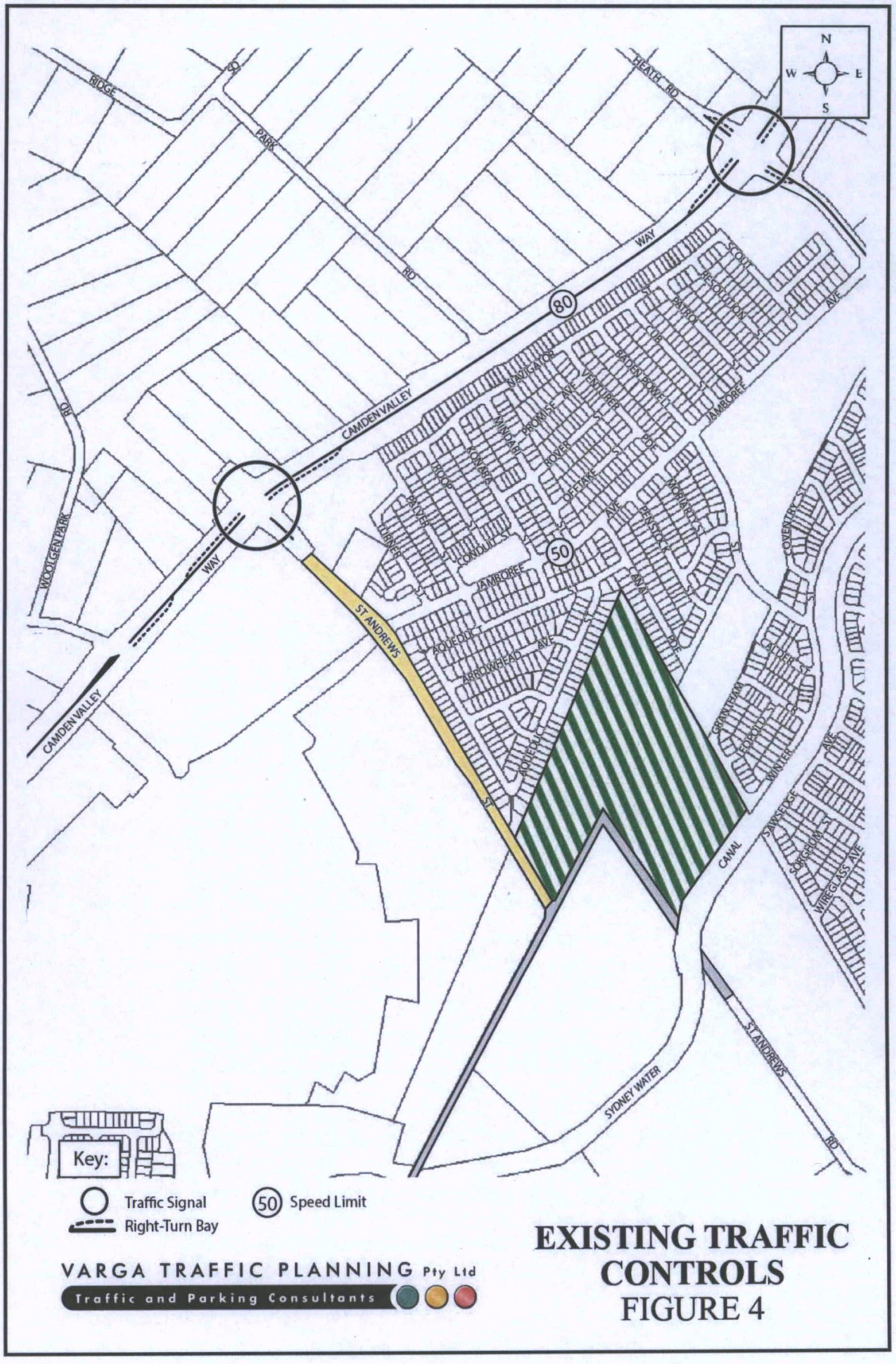
St Andrews Road is a local, unclassified road which is primarily used to provide vehicular and pedestrian access to frontage properties. Currently there is no connection to Campbelltown Road to the east.

Existing Traffic Controls

The existing traffic controls which apply to the road network in the vicinity of the site are illustrated on Figure 4. Key features of those traffic controls are:

- an 80 km/h SPEED LIMIT which applies to Camden Valley Way
- a default urban 50km/h SPEED LIMIT which applies to St Andrews Road and all other local roads in the area
- a SHELTERED RIGHT-TURN BAY in Camden Valley Way onto St Andrews Road
- TRAFFIC SIGNALS in Camden Valley Way where it intersects with St Andrews Road and Denham Court Road.


N
W
E
S
CAMDEN VALLEY WAY
DENHAM COURT RD
DENHAM COURT
JAMBOREE AVENUE
CANAL PARADE
WINTER STREET
SAWTELL AVENUE
WIREGRASS AVENUE
EPPINGTON
Key:
State Road
Regional Road
VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants
ROAD HIERARCHY
FIGURE 3



EXISTING TRAFFIC CONTROLS
FIGURE 4

Traffic Generation

The traffic implications of development proposals primarily concern the effects of the *additional* traffic flows generated as a result of a development and its impact on the operational performance of the adjacent road network during the morning and afternoon commuter peak periods.

An indication of the traffic generation potential of the planning proposal is provided by reference to the Roads and Maritime Services' publication *Guide to Traffic Generating Developments, Section 3 - Landuse Traffic Generation (October 2002)* and the updated traffic generation rates in the recently published RMS *Technical Direction (TDT 2013/04a)* document.

The RMS *Technical Direction* document specifies that it replaces those sections of the RMS *Guidelines* indicated, and must be followed when RMS is undertaken trip generation and/or parking demand assessments.

The RMS *Guidelines* and *Technical Direction* are based on extensive surveys of a wide range of land uses and nominate the following traffic generation rates which are applicable to the planning proposal:

Low Density Residential Dwellings

AM: 0.95 peak hour vehicle trips per dwelling

PM: 0.99 peak hour vehicle trips per dwelling

Application of the above traffic generation rate to the 98 outlined in the planning proposal yields a traffic generation potential of approximately 94 vehicle trips per hour (vph) during the AM peak hour and 98 vph during the PM peak hour. This is likely to comprise approximately 19 vph IN/75 vph OUT during the AM peak hour, and 78 vph IN/20 vph OUT during the PM peak hour.

In the short term, that traffic activity will access the site via the now completed local road network on the adjacent Cornish site. A new local road link is proposed from Aqueduct Street in the adjacent Cornish site to connect with the local roads proposed on the subject site.

The projected cumulative traffic flows of 105 vph to 109 vph during peak periods expected to be generated by the proposed residential subdivision can be comfortably accommodated on that new local road link to the now completed Aqueduct Street on the adjacent Cornish site.

It is noted also that some 25% of trips are expected to be local trips in any event as detailed in the following extracts from the Roads and Maritime Services' publication *Guide to Traffic Generating Developments, Section 3 – Land Use Traffic Generation (October 2002)*:

> *"Note that not all trips are external trips. As a guide, about 25% of trips are* ***internal*** *to the subdivision, involving local shopping, schools and local social visits. When reviewing the traffic impact of traffic generated on sub-regional and regional roads, some adjustment is necessary, depending on the location of the shops, schools and recreational facilities".*

The external traffic activity expected to be generated by the subject site is likely to be dispersed over a number of collector roads such as St Andrews Road, Willowdale Drive and Denham Court Road. For the purposes of this assessment, it has been assumed that there would be approximately 14 vph IN/56 vph OUT in the AM peak hour, and approximately 58 vph IN/15vph OUT during the PM peak hour using either Willowdale Drive or Denham Court Road, and via the St Andrews Road intersection in the longer term.

The now completed dual carriageway on Camden Valley Way includes new intersection layouts at the St Andrews Road, Willowdale Drive and Denham Court Road intersections. These include turning lanes comprising highly efficient, high capacity intersections with substantial spare capacity, based on the results of traffic modelling undertaken in the *Cardno* report.

Accordingly, the external traffic flows expected to be generated by the planning proposal will be minimal, and are expected to be dispersed over a number of recently upgraded intersections along Camden Valley Way.

In the circumstances, it is reasonable to conclude that the external traffic flows expected to be generated by the planning proposal will not have any unacceptable traffic implications in terms of road network capacity.

Internal Local Road Layout Considerations

A new local road network is proposed on the site with a road reservation width of 16 metres, consistent with the East Leppington Precinct road hierarchy requirements, and will link with the now completed Aqueduct Street in the residential subdivision on the adjacent Cornish site.

The planning proposal will make provision for the widening of St Andrews Road along its frontage, and further extending it southward into the proposed residential subdivision.

Parking

The proposed new local road network makes provision for on-street car parking as illustrated on the *Appendix A – Local Street Section* drawing reproduced in Chapter 2 of this report.

Off-street car parking is to be provided on each individual allotment, and will be addressed in separate development applications for the construction of the dwellings. There is no doubt however, that the size of the allotments will be sufficient to accommodate vehicular access and off-street car parking being provided on each of the allotments in accordance with Council's parking requirements.

Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

- the planning proposal seeks approval to permit the subdivision of the site into 98 residential allotments with a new internal road network

- the planning proposal could not be expected to have any unacceptable traffic implications in terms of road network capacity

- based on the modelling results in *Cardno's* report there is significant spare capacity in Camden Valley Way where it intersects with St Andrews Road, Willowdale Drive and

Denham Court Road, and no further improvements are needed to accommodate the additional traffic flows generated as a consequence of the planning proposal

- the future car parking facilities will be provided and designed in accordance with Council's requirements and the relevant Australian Standards

- the proposed internal/local road layout is consistent with the requirements of the East Leppington Precinct road network hierarchy.