GAT & Associates Pty Ltd

Planning Proposal

February 2018

(Amended June 2021)

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 part E2 Environmental Conservation, RE1 Public Recreation and Special Purposes – Drainage

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1. INTRODUCTION

1.1 Preamble

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 (Lot 71 in Deposited Plan 706546).

The submission of this amended Planning Proposal report follows receipt of a Gateway Determination letter issued by the Department of Planning, Industry and Environment (DPIE) on 11 January 2021.

The Gateway Determination required the Planning Proposal and Supporting Studies to be updated as follows:

> *"1. Prior to public exhibition, the planning proposal is to be amended as follows:*
>
> *(a) include a note that an acquisition authority for the land proposed to be rezoned RE1 Public Recreation is to be determined;*
>
> *(b) confirm that adequate social infrastructure is in place, identify these facilities including active and passive open space, and the availability to future residents;*
>
> *(c) provide further commentary on Planning Priority W5 of the Western District Plan, in relation to access to public transport;*
>
> *(d) undertake an Aboriginal Cultural Heritage assessment and respond to the findings.*
>
> *2. Prior to public exhibition, the supporting studies are to be updated as follows:*
>
> *(a) Bushfire Protection Assessment: consider the availability of the additional road access being provided through the East Leppington Precinct, and if this connection is not viable, determine whether the evacuation route along St Andrews Road is adequate;*
>
> *(b) Flora and Fauna Assessment: review the assessment to ensure the proposal is consistent with the current version of State Environmental Planning Policy (Koala Habitat Protection) 2019;*
>
> *(c) Gas Pipeline Assessment: address safety issues taking into consideration Planning Circular PS 18-010: Development adjacent to high pressure pipelines transporting dangerous goods;*
>
> *(d) Traffic and Parking Assessment: consider the availability of the additional road access being provided through the East Leppington Precinct, and if this connection is not viable, amend the assessment and proposal accordingly".*

The following comments are provided in response:

> *1. Prior to public exhibition, the planning proposal is to be amended as follows:*
>
> *(a) to include a note that an acquisition authority for the land proposed to be rezoned RE1 Public Recreation is to be determined;*
>
> Comment:
>
> In accordance with Condition 1(a), it is noted that an acquisition authority for the land proposed to be rezoned RE1 is to be determined.

(b) confirm that adequate social infrastructure is in place, identify these facilities including active and passive open space, and the availability to future residents;

Comment:

The report identifies that the proposal will increase demand for open space, given the increase in population. The report specifies that this can be accommodated within the land nominated to be zoned RE1 Private Recreation and SP2 Local Drainage.

Reference should be made to the Social Infrastructure Assessment prepared by Judith Stubbs & Associates dated 11 June 2021.

(c) provide further commentary on Planning Priority W5 of the Western District Plan, in relation to access to public transport;

Comment:

As detailed in the submitted Traffic and Parking Assessment Report, with respect to access to public transport, the subject site is located within 6 – 9 minute driving distance of Leppington Railway Station. The Railway Station provides for connections to the T2 Inner West and Leppington Line and T5 Cumberland Line.

Bus services, including Routes 841, 855, 856 and 858 link commuters to Narellan, Liverpool and Oran Park.

A commuter car park comprising of 872 car spaces is also available allowing for commuters to park and ride.

Reference should be made to the Traffic and Parking Assessment Report prepared by Varga Traffic Planning Pty. Ltd. dated 10 June 2021.

(d) undertake an Aboriginal Cultural Heritage Assessment and respond to the findings.

Comment:

The report concludes that no Aboriginal sites, objects or places, or areas of potential Aboriginal archaeological sensitivity were identified within the study area or immediate surrounds during the archaeological survey.

The report goes on to state that, *"Based on the results of the archaeological survey, the predictive model for Aboriginal heritage sites and the varying the levels of ground disturbance within the study area, it is considered the study area does have potential to retain Aboriginal objects or subsurface archaeological deposits".*

In view of the above, archaeological test excavations are required as part of future development applications to confirm the presence, extent and integrity of the potential archaeological deposit.

Reference should be made to the Aboriginal Cultural Heritage Assessment prepared by AMBS Ecology & Heritage dated June 2021.

2. Prior to public exhibition, the supporting studies are to be updated as follows:

(a) Bushfire Protection Assessment: consider the availability of the additional road access being provided through the East Leppington Precinct, and if this connection is not viable, determine whether the evacuation route along St Andrews Road is adequate;

Comment:

The submitted report nominates APZ requirements to the proposal and notably requires that a second access point is required to the subdivision in order to comply with Planning for Bushfire Protection 2019. Accordingly, a new road is proposed linking the proposed residential land to Grantham Crescent.

Reference should be made to the Bushfire Protection Assessment report prepared by Travers Bushfire and Ecology dated 10 June 2021.

(b) Flora and Fauna Assessment: review the assessment to ensure the proposal is consistent with the current version of State Environmental Planning Policy (Koala Habitat Protection) 2019;

Comment:

The submitted report concludes that replacement planting of a significant number of trees is required to address the Campbelltown Koala Management Plan. A Vegetation Management Plan is recommended to be undertaken at the time of a Development Application to determine what can be planted onsite with the remaining trees to be offset via a monetary contribution.

Reference should be made to the addendum report prepared by Travers Bushfire and Ecology dated 16 June 2021 with respect to SEPP 2021 (Koala Habitat Protection).

An updated copy of the Flora and Fauna Assessment Report has also been provided under a separate cover.

(c) Gas Pipeline Assessment: address safety issues taking into consideration Planning Circular OS 18-010: Development adjacent to high pressure pipelines transporting dangerous goods;

Comment:

The submitted letter has marginally adjusted the siting of the proposed residential land to ensure a 20m clearance buffer between the boundary of the proposed residential land and the gas pipeline.

Recommendations made with respect to the roadway being proposed within the environmental land are to be addressed as part of a Construction Certificate.

Reference should be made to the letter prepared by Craig and Rhodes dated 10 June 2021.

(d) Traffic and Parking Assessment: consider the availability of the additional road access being provided through the East Leppington Precinct, and if this connection is not viable, amend the assessment and proposal accordingly.

Comment:

The report confirms that the additional road required as a result of RFS requirements is not necessary from a traffic engineering perspective, noting that the connection to St Andrews Road will remain the preferable route.

Reference should be made to the Traffic and Parking Assessment Report prepared by Varga Traffic Planning Pty. Ltd. dated 10 June 2021.

A detailed history of the subject site, previous application and supporting studies is provided under Section 3 of this report.

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; part E2 Environmental Conservation and part RE1 Public Recreation and Special Purposes – Drainage; 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 part R2 Low Density Residential; part E2 Environmental Conservation and part RE1 Public Recreation and Special Purposes – Drainage. A total of 111 lots are proposed for residential use, with 110 of these lots to be located in the eastern half of the site and one pocket of R2 Low Density Residential zoned land to be located in the western half of the site.

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

- Aboriginal Cultural Heritage Assessment prepared by AMBS dated June 2021;
- Bushfire Report prepared by Travers Ecology dated June 2021;
- Concept Plan of Drainage/Services prepared by Lean Lackenby and Hayward dated June 2021;

- Concept Plan of Subdivision prepared by Lean Lackenby and Hayward dated June 2021;
- Contamination Report prepared by SLR Consulting dated September 2015;
- Ecological Report prepared by Travers Ecology dated June 2021;
- Flood Assessment Report prepared by Cardno dated December 2018;
- Gas Pipeline Assessment prepared by Craig and Rhodes dated June 2021;
- Social Impact Assessment prepared by Judith Stubbs & Associated dated June 2021;
- Traffic Report prepared by Varga Traffic Planning Pty. Ltd dated June 2021.

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 3.33(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 (now known as Section 10.7) 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: Campbelltown City – Bushfire Prone Land Map)

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, although the site has been identified as containing significant vegetation on Council's biodiversity map.

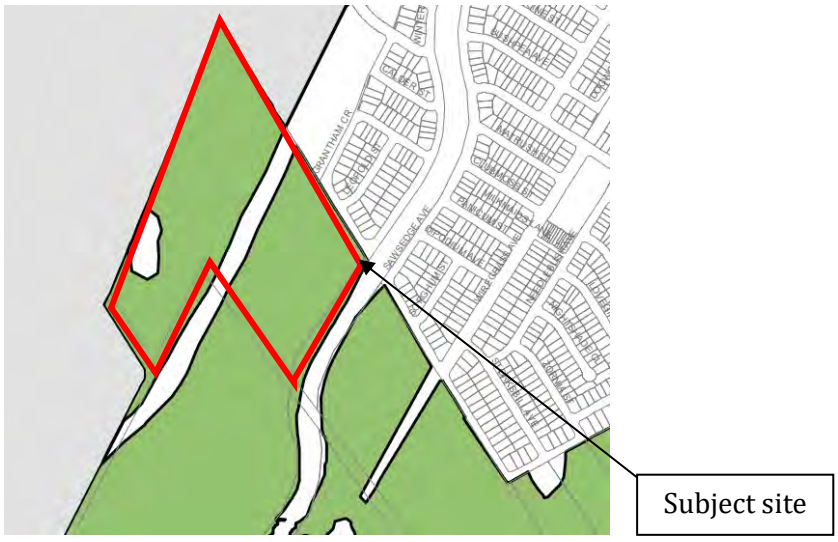


Figure 4 Terrestrial Biodiversity Map (Source: CLEP15)

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 5 and 6 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.

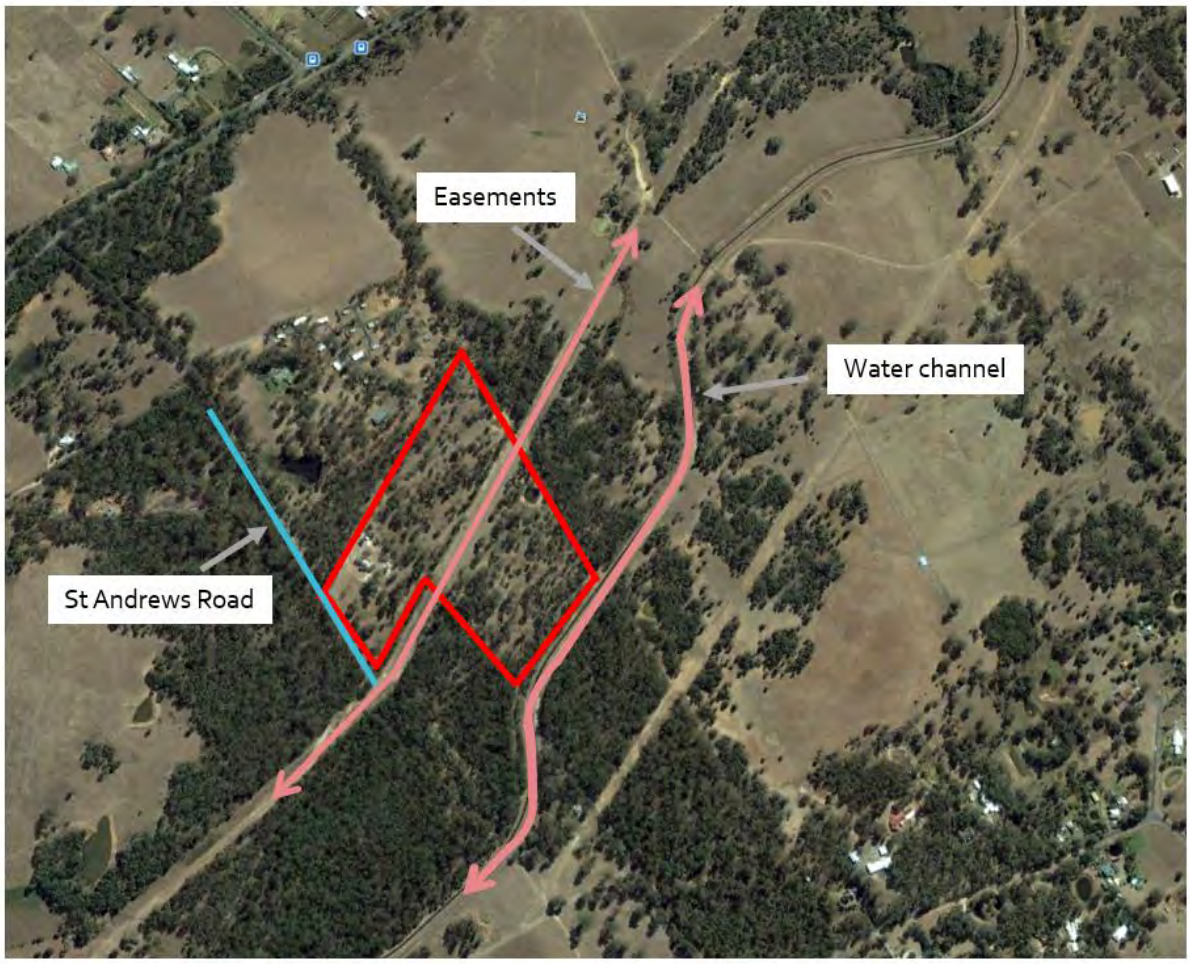


Figure 5 Subject site as at April 2006 (Source: Google Earth)

Figure 6 Subject site as at 12 January 2021 (Source: NearMap)

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 7 and 8 below illustrate the changed environment in the context of the Scenic Hills.

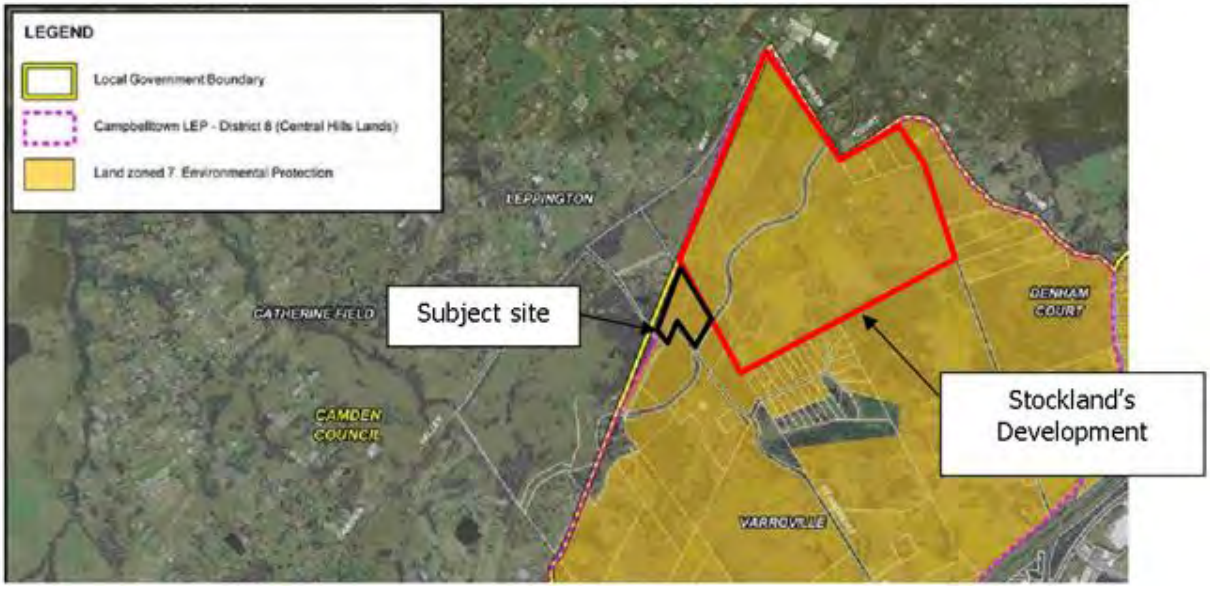


Figure 7 Scenic Hills site context - Based on the 1973 City Structure Plan

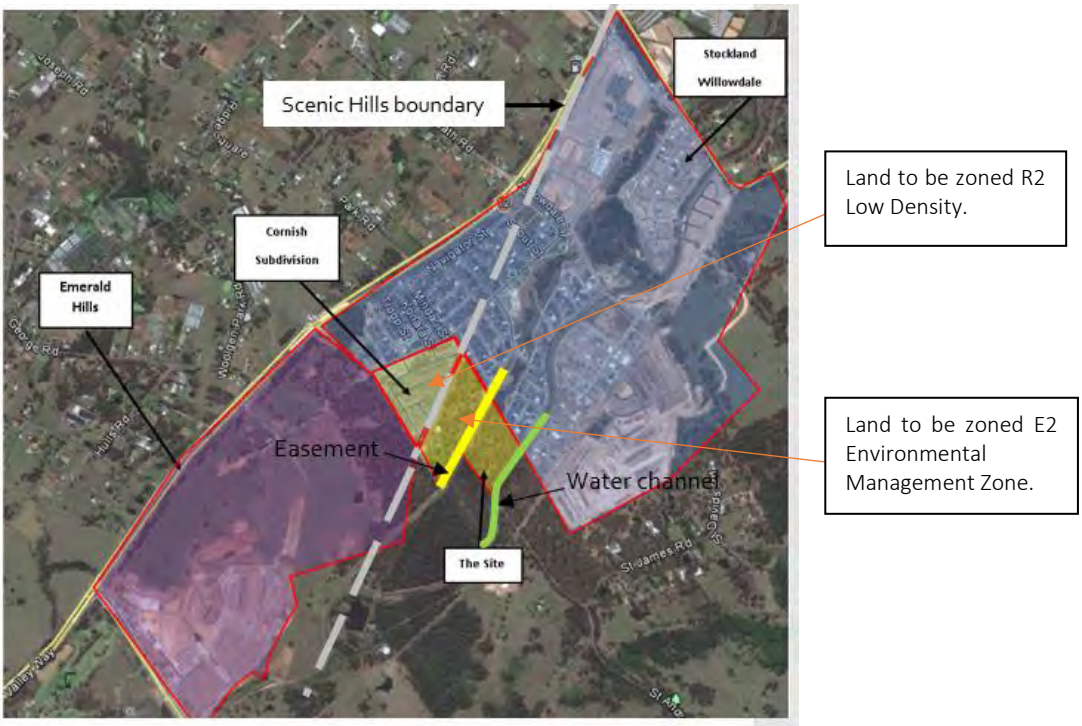


Figure 8 Scenic Hills site context - Based on current development patterns/legislation

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 9 Photos demonstrating pre and post development context

Reference should also be made to Figure 10 below which depicts the location of approved subdivisions in proximity to the subject site and further reinforces the evolving landscape.

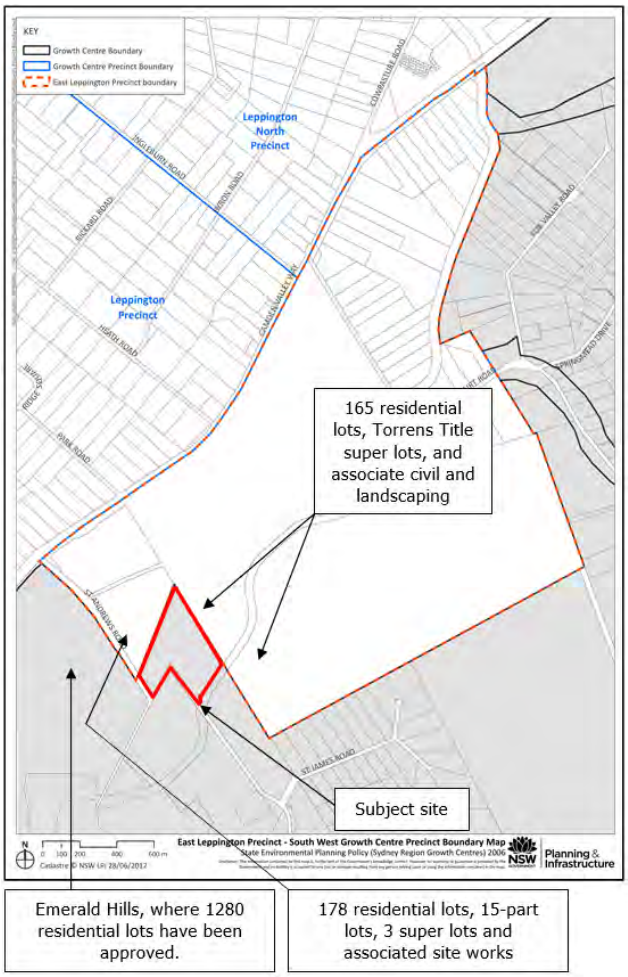


Figure 10 Location of approved subdivisions in proximity to the subject site

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 11 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 proceeded 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.

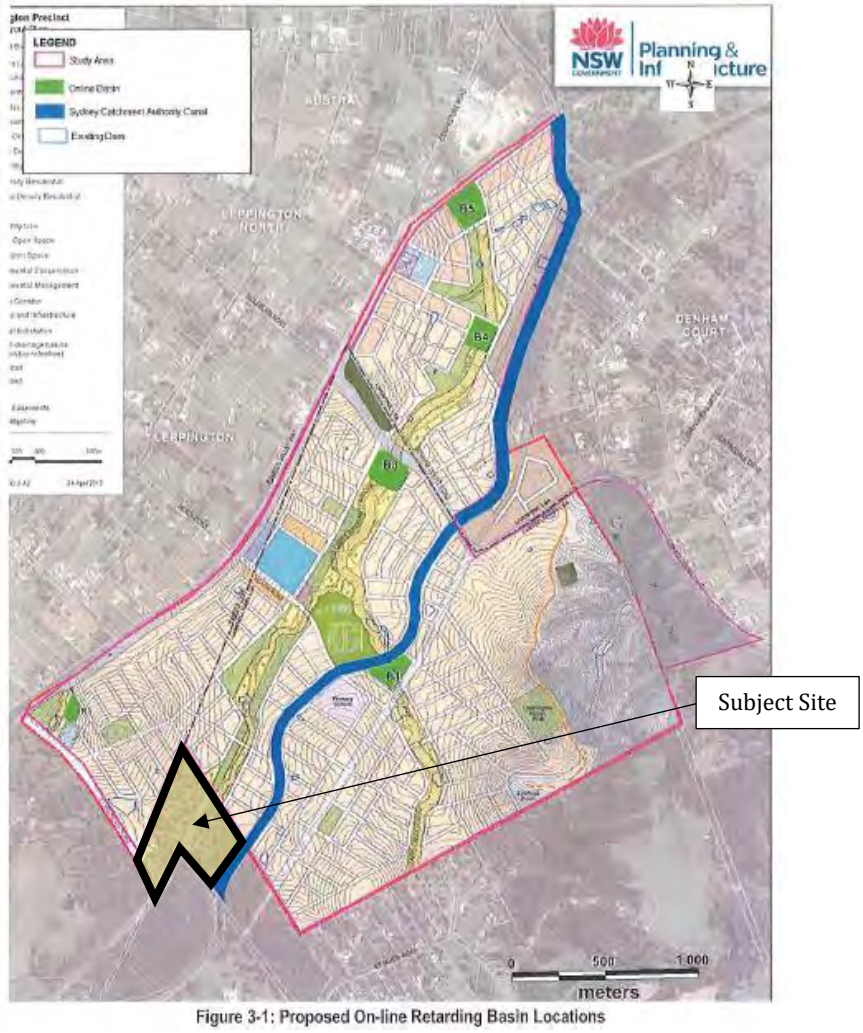


Figure 11 Subject site in relation to the East Leppington Precinct

In these circumstances, the purpose of a 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 adjoining 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 proceed 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 12 on the following page.

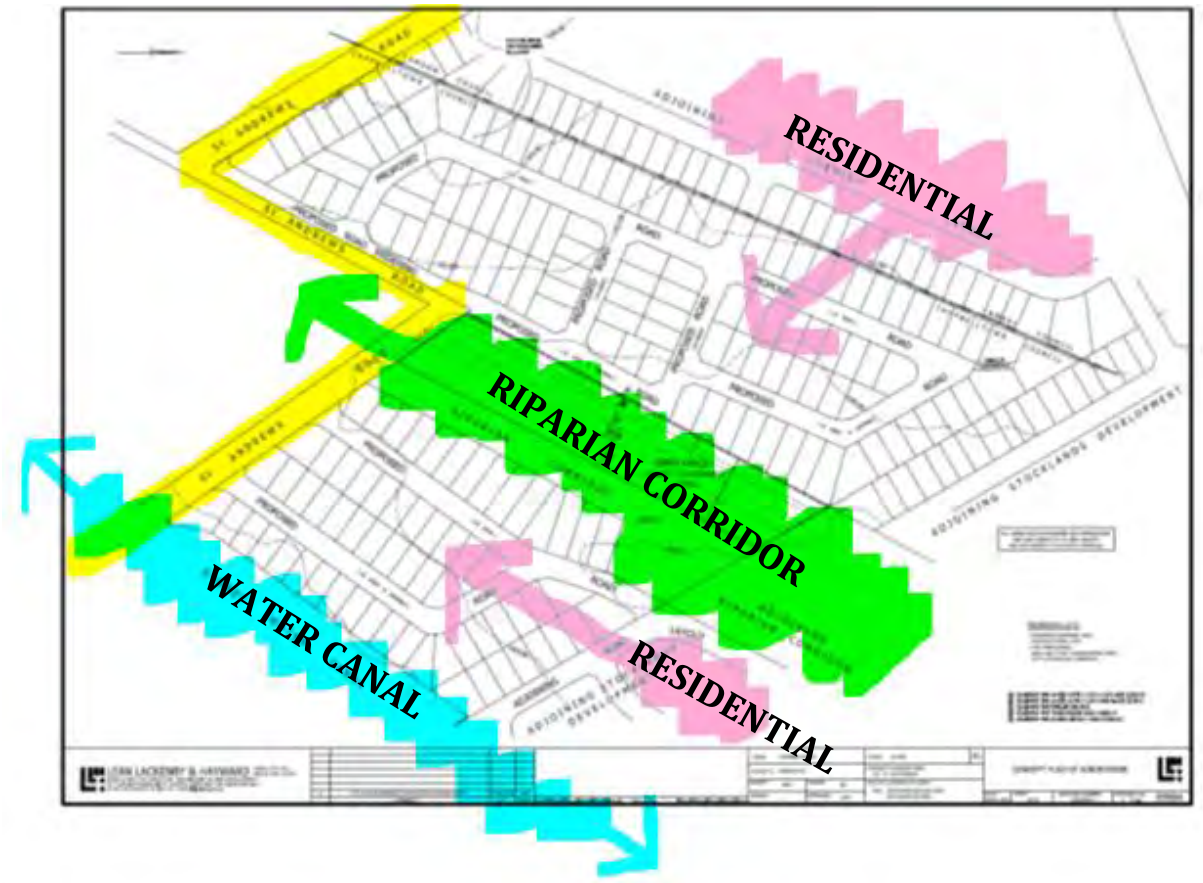


Figure 12 Original concept plan

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 as 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 13 on the following page.

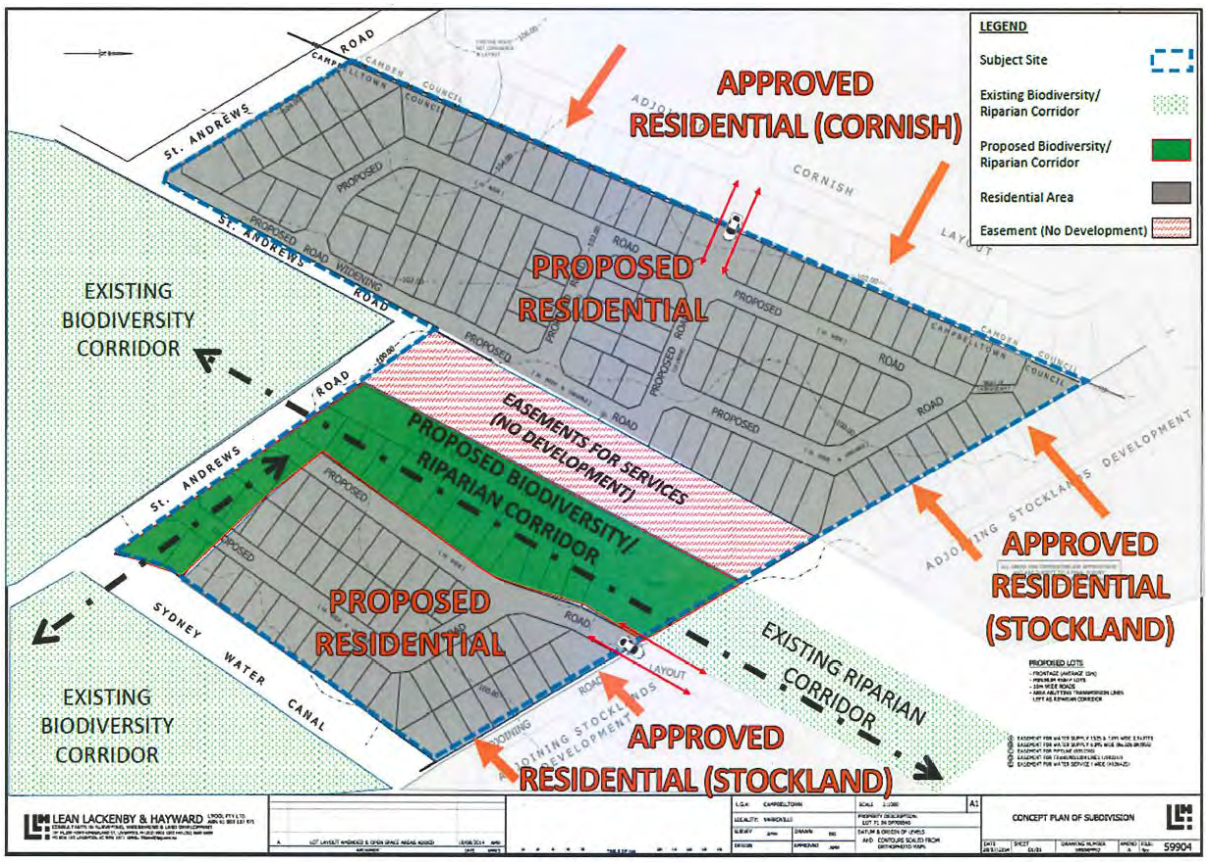


Figure 13 Revised concept plan having regard to OEH advice

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.

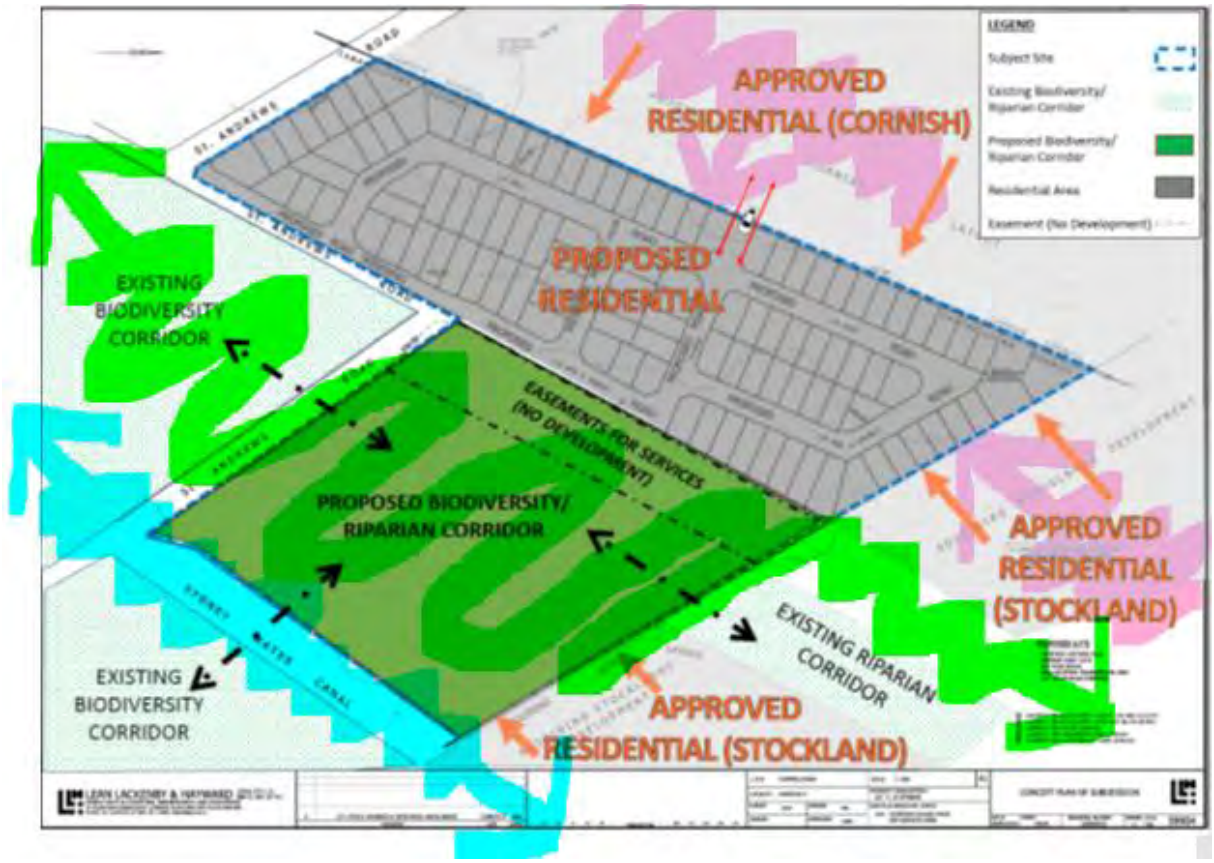


Figure 14 Revised concept plan with an emphasis to biodiversity retention/regeneration

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 12 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 their site inspection that the character of this area has changed to an urban context. There was also an 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.

With the informal support of Council, a revised Planning Proposal Request was lodged with Council on 19 February 2018.

The proposal was considered by the Campbelltown City Local Planning Panel on 25 July 2018 who expressed their support subject to additional information being provided with respect to how the proposal aligns with the strategic framework outlined by the District Plan; impact of the gas pipeline on the development footprint and a strategy to ensure the existing urban edge is not replicated by future development and a sensitive interface is achieved.

It is noteworthy that as part of their minutes, the Local Planning Panel acknowledged:

> *"The site is adjoined on two sides by land developed for residential purposes pursuant to the Growth Centres SEPP and that an electricity easement forms a third boundary of the land proposed to be developed. As a result, the land proposed to be rezoned for residential purposes is currently isolated and appears no longer suitable for its current use".*

A subsequent letter from Council dated 7 August 2018 further requested additional information with respect to:

- Consistency with higher order strategic plans;
- Compatibility of E3 Zone with Future Biobanking area (conservation stewardship site);
- Ecological assessment with respect to the extent and quantity of Cumberland Plains Woodland;
- Vehicular access;
- Bushfire; and
- Flooding/stormwater issues.

A copy of both the minutes provided by the Local Planning Panel and Council's letter are provided as Appendices to this report.

Following internal team meetings to refine the development in light of the comments above, another meeting was held with Council Staff on 9 November 2018 to discuss the proposed amendments to ensure a compatible outcome was realised.

All additional information was then formally submitted to Council on 21 December 2018 and is included as an Appendix to this report.

A favourable Council report was later prepared by Council Officers recommending that the proposal be submitted to the Department for a Gateway Determination.

The proposal was then unexpectedly refused by the Councillors at their meeting on 11 June 2019 without explanation.

A Rezoning Review was considered by DPIE and on 9 December 2019, the Sydney Western City Planning Panel determined that the proposed instrument should be submitted for a Gateway determination because the proposal has demonstrated specific strategic and site specific merit.

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".

However, as conditions (a), (b) and (c) as described above were not met within the specified three year period, this road connection was subsequently lost and the area formerly nominated to form the road has since been redeveloped as residential lots.

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 111 lots .

The proposed lots have been designed generally as 300 – 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.

As part of our response to the Gateway Determination letter, the proposed road layouts have also been reconsidered. A new road is proposed leading from the site to the north, connecting the subject site to Grantham Crescent. The inclusion of the new road follows advice from our Bushfire Consultant advising that two evacuation routes are required under the provisions of Planning for Bushfire Protection.

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.

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 15 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.

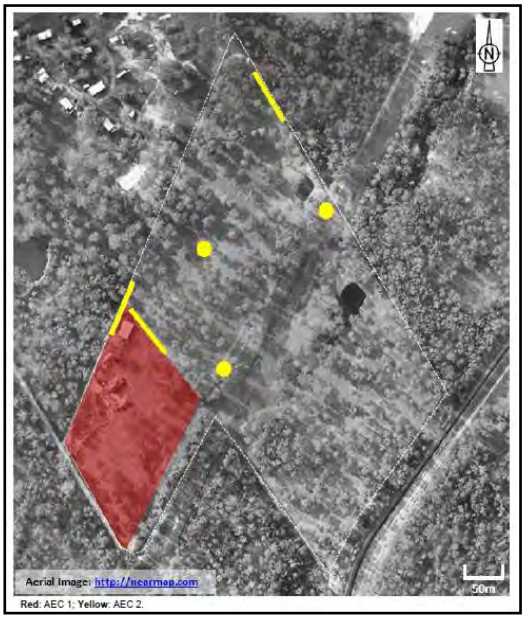


Figure 15 Areas of environmental concern (Source: SLR Consulting)

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 is 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 report was updated in June 2021 to address the items raised in the Gateway Determination letter issued by DPIE. Most notably, the concept plan of subdivision has since been updated to provide for an additional road to ensure that two points of evacuation are available to the future residents in keeping with the provisions of Planning for Bushfire Protection.

The bushfire report found:

> *"Our assessment found that bushfire can potentially affect the site from the bushland located beyond St Andrew Road to the south-west and the vegetation associated with the electrical services easement and proposed E2 zoned land located within the eastern portion of the site resulting in possible ember attack, radiant heat and potentially flame attack.*
>
> *This report has concluded that due to potential for St Andrews Road to be cut off in a bushfire event it is recommended that a second access point to the subdivision is required in order to comply with PBP 2019.*
>
> *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 as outlined below.*

Table 5.1 - Planning principles

Planning principles	*Recommendations*
Ensuring land is suitable for development in the context of bush fire risk.	*The proposed zoning is suitable for the site. With the application of bushfire protection measures the bushfire risk posed can be mitigated.*
Ensuring new development on BFPL will comply with PBP	*New development is capable of complying with PBP.*
Minisiming reliance on performance based solutions	*The APZs have bee provided in compliance with the acceptable solutions, with fuel loads adopted in the calculations greater than the minimum required for a grassy woodland.*
Providing adequate infrastructure associated with emergency evacuation and firefighting operations.	*The proposed new access road/s and provision of utilities (gas and water) will support safe evacuation of residents and access by fire fighters.*
Facilitating appropriate ongoing land management practices	*APZs have been restricted within development allotments.*
Strategic planning should provide for the exclusion of inappropriate development in bush fire prone areas as follows:	
The development is exposed to a high bush fire risk and should be avoided.	*The development site can support appropriate bushfire protection measures in response to the bushfire risk.*
The development is likely to be difficult to evacuate during a bushfire due to landscape, access limitations, fire history and/or size and scale	*Adequate access will be provided to the existing road network. The proposal adjoins existing development to the north-east and north-west. The scale of the development and lack of recent wildfire history will support evacuation efforts if required.*

The development will adversely affect other bush fire protection strategies or place existing development at an increased risk	*The proposal will not increase the bushfire risk to the surrounding development.*
The development is within an area of high bush fire risk where density of existing development may cause evacuation issues for both existing and new occupants; and	*The proposal is not expected to cause evacuation issues for the existing population. The existing and proposed road network is capable of supporting the proposed rezoning.*
The development has environmental constraints to the area which cannot be overcome.	*An Ecological Assessment has been prepared by this firm to address the ecological concerns.*

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

Recommendation 1 – *The development is as generally indicated on the attached Schedule 1 – Plan of Bushfire Protection Measures.*

Recommendation 2 – *APZs are to be provided to the proposed development as outlined in Table 3.2 and as generally depicted within Schedule 1.*

Recommendation 3 – *The entire development area (proposed R2 zone) is managed as an inner protection area (IPA) throughout the lifetime of the development and until each lot is sold /developed and the hazard is removed.*

Recommendation 4 – *At the issue of a subdivision certificate, a suitably worded instrument is required pursuant to section 88 of the Conveyancing Act 1919 for the purpose of a 16m asset protection zone (APZ) to be created within the electrical easement and to east of eight (8) development lots in accordance with Appendix 4 of Planning for Bush Fire Protection 2019 as depicted in Schedule 1 – Bushfire Protection Measures (mxd ref: 18GAT03)BF001, dated 27/04/21)*

Recommendation 5 – *Access is to comply with the performance requirements outlined in Section 5.3.3 of Planning for Bush Fire Protection 2019.*

Recommendation 6 – *Building construction standards for the proposed future dwellings are to be applied in accordance with AS 3959 Construction of buildings in bushfire prone areas (2018), and Planning for Bush Fire Protection 2019.*

Recommendation 7 – *Water, electricity and gas supply is to comply with Section 5.3.3 of Planning for Bush Fire Protection 2019.*

Recommendation 8 – *Fencing is to comply with Section 7.6 of PBP. All fences in bush fire prone areas should be made of either hardwood or non-combustible materials. However, in circumstances where the fence is within 6m of a building or in areas of BAL 29 or greater, they should be made of non-combustible material only."*

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 Ecology Report has been updated in June 2021 and provides for an addendum to the report which specifically address item 2b) of the Gateway Determination letter which required consideration of State Environmental Planning Policy (Koala Habitat Protection) 2019.

With regards to SEPP (Koala Habitat Protection) 2019, the addendum acknowledges that this Policy has been replaced by SEPP (Koala Habitat Protection) 2021 which commenced on 17 March 2021. The new SEPP applies to all zones within the Campbelltown local government area unless an approved Koala Plan of Management is in force. In this case, the Campbelltown Comprehensive Koala Plan of Management applies to the subject site.

The site has not been mapped as Core Koala Habitat however does encompass Potential Koala Habitat. The report concludes that,

> *"A Vegetation Management Plan be prepared at the time of DA identifying the locations of planting within the proposed E2 lands and to specify the vegetation management works to compensate of the loss of foraging trees caused by the future subdivision. This can be used as a means of providing appropriate revegetation offsets or a Koala offset contribution where the required offset planting cannot be provided.*
>
> *Selective street planting may also be used as a supplementary measure where the planting can be demonstrated to be safely integrated into open landscapes. In this case high quality foraging species known to be of lower safety risk should be used such as Tallowwoods (Eucalyptus microcorys)".*

The following comments are provided with respect to the Flora and Fauna Assessment Report which has been prepared for the subject site. The report supports the proposed rezoning application and the associated removal of vegetation to accommodate such development.

The report states,

> *"**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), Southern Myotis (Myotis macropus), Large 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 Large 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 vegetation removal 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 proposed vegetation removal 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 DAWE 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 2.74 ha of Cumberland Plain Woodland within the proposed R2 lands*
- *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 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.

- *Residual impacts of the proposed vegetation removal 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 vegetation removal.*

- *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 E2 lands to the south-east of the powerline easement.*

- *Target weed control is to be undertaken across all retained E2 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 or alternatively hollows are to be re-located or replaced with nest boxes of a similar size within*

adjoining retained vegetation. The same inspections and protections are required for any hollow-bearing trees located within E2 area to the south-east of the powerline easement.

- *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 the E2 conservation area to the south-east of the powerline easement. 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 entirely 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

An updated 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, existing traffic controls, traffic generation, internal local road layout considerations and consideration of off street parking.

The report concludes;

- *"The planning proposal seeks approval to permit the subdivision of the site into 111 residential allotments with a new internal road network*

- *The planning proposal is within a short 6 to 9 minutes driving distance to Leppington Station with substantial amount of FREE commuter parking*

- *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 networks 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 Social Infrastructure Assessment

As required by Condition 1b) of the Gateway Determination letter, a Social Infrastructure Assessment report has been prepared by Judith Stubbs and Associates.

Reference should be made to Part 1.1 and Appendix G of this report.

3.3.7 Aboriginal Cultural Heritage Assessment

As required by Condition 1d) of the Gateway Determination letter, an Aboriginal Cultural Heritage Assessment report has been prepared by AMBS Ecology & Heritage.

Reference should be made to Part 1.1 and Appendix H of this report.

3.3.8 Gas Pipeline Assessment

As required by Condition 2c) of the Gateway Determination letter, an assessment of gas pipeline has been prepared by Craig & Rhodes.

Reference should be made to Part 1.1 and Appendix I of this report.

3.3.9 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

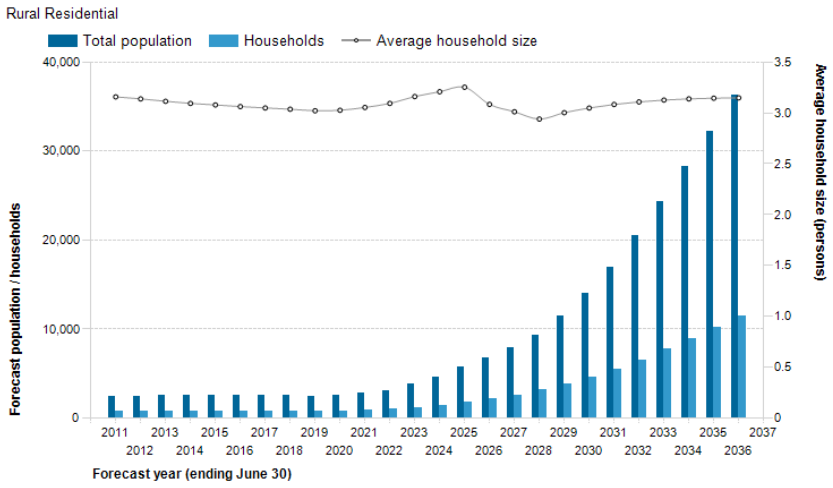
export

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.

Figure 16 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 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.

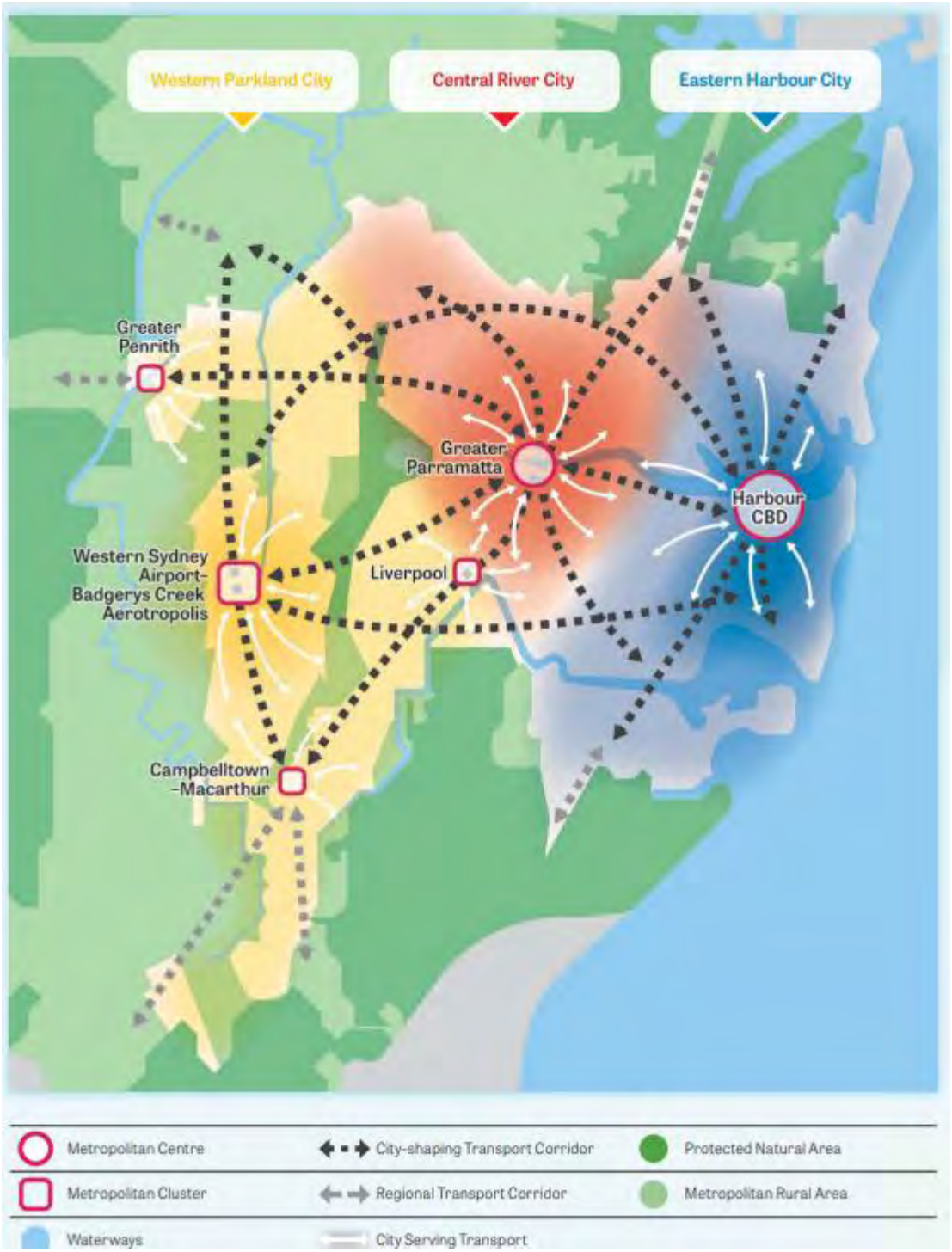


Figure 17 Western City District

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

The Western Parkland City District Plan seeks to:

"The vision for Greater Sydney as a metropolis of three cities – the Western Parkland City, the Central River City and the Eastern Harbour City and a 30 minute city – means residents in the Western City District will have quicker and easier access to a wider range of jobs, housing types and activities. This vision will improve the District's lifestyle and environmental assets".

The Plan nominates a total of twenty (22) planning priorities for the precinct with regards to Infrastructure and collaboration, Liveability, Productivity, Sustainability and Implementation.

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:

District	0–5 year housing supply target: 2016–2021	20-year strategic housing target: 2016–2036
Central City	53,500	207,500
Eastern City	46,550	157,500
North	25,950	92,000
South	23,250	83,500
Western City	39,850	184,500
Greater Sydney	189,100	725,000

Figure 18 Housing targets 2016 - 2036

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 Southwest 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 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.

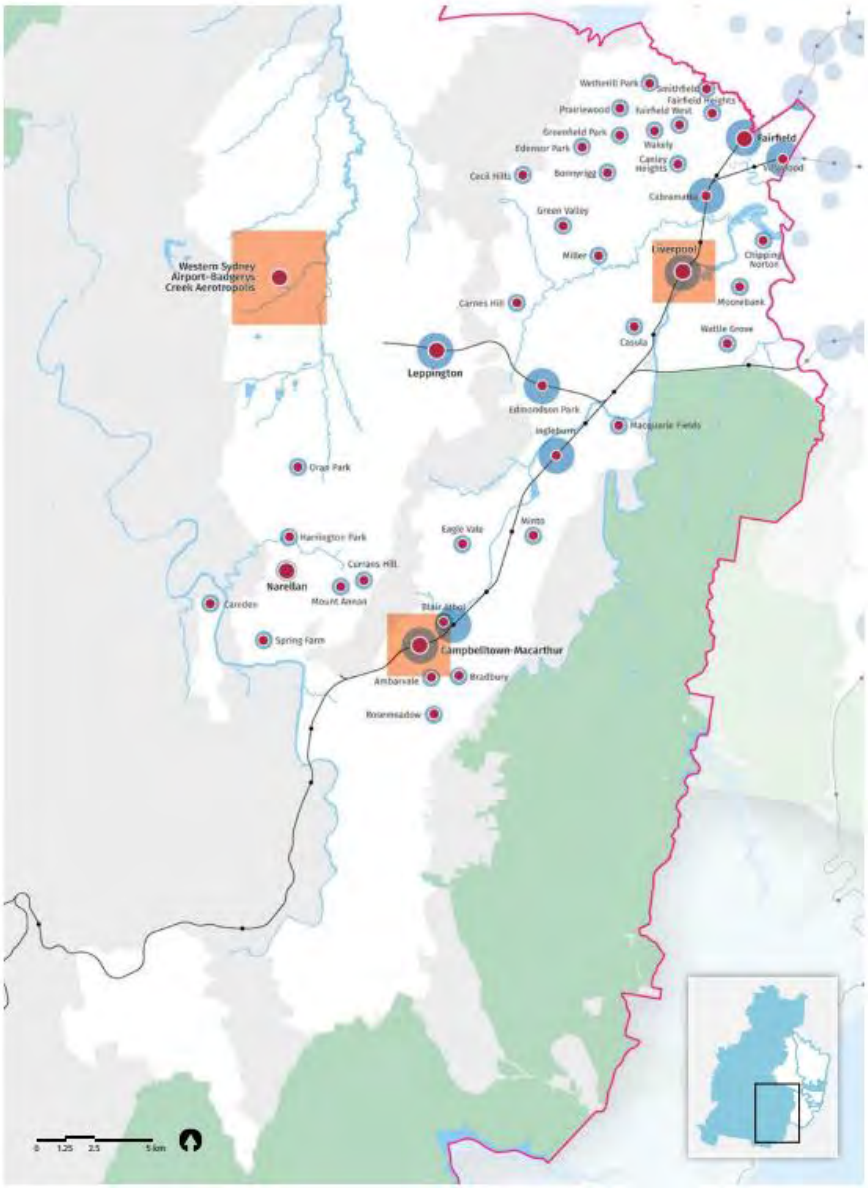


Figure 20 Strategic and local centres

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 E2 Environmental Conservation. 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 Greater Sydney Region Plan and the 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 Planned 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 Southwest 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 Southwest Sydney.

With these foundations it presents a new opportunity to supplement the supply of housing in Southwest 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 northwest 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.

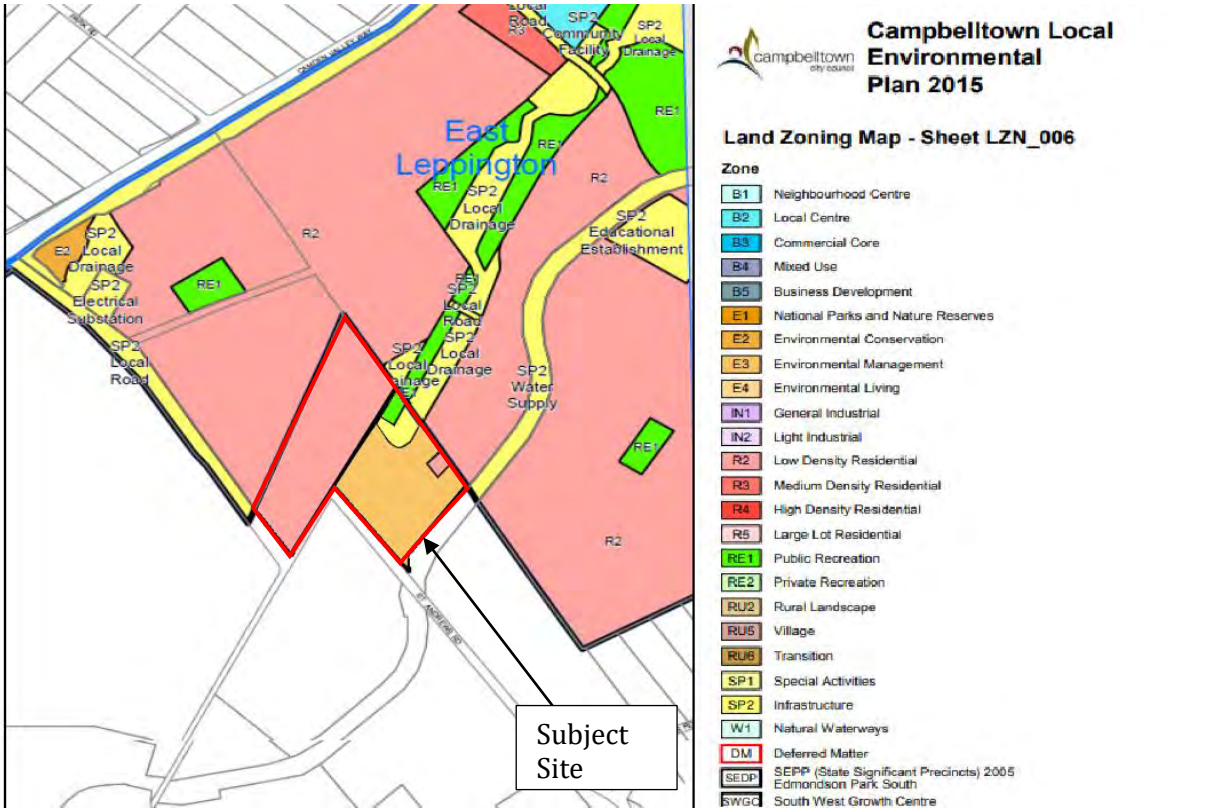


Figure 23: Proposed Land Zoning Map

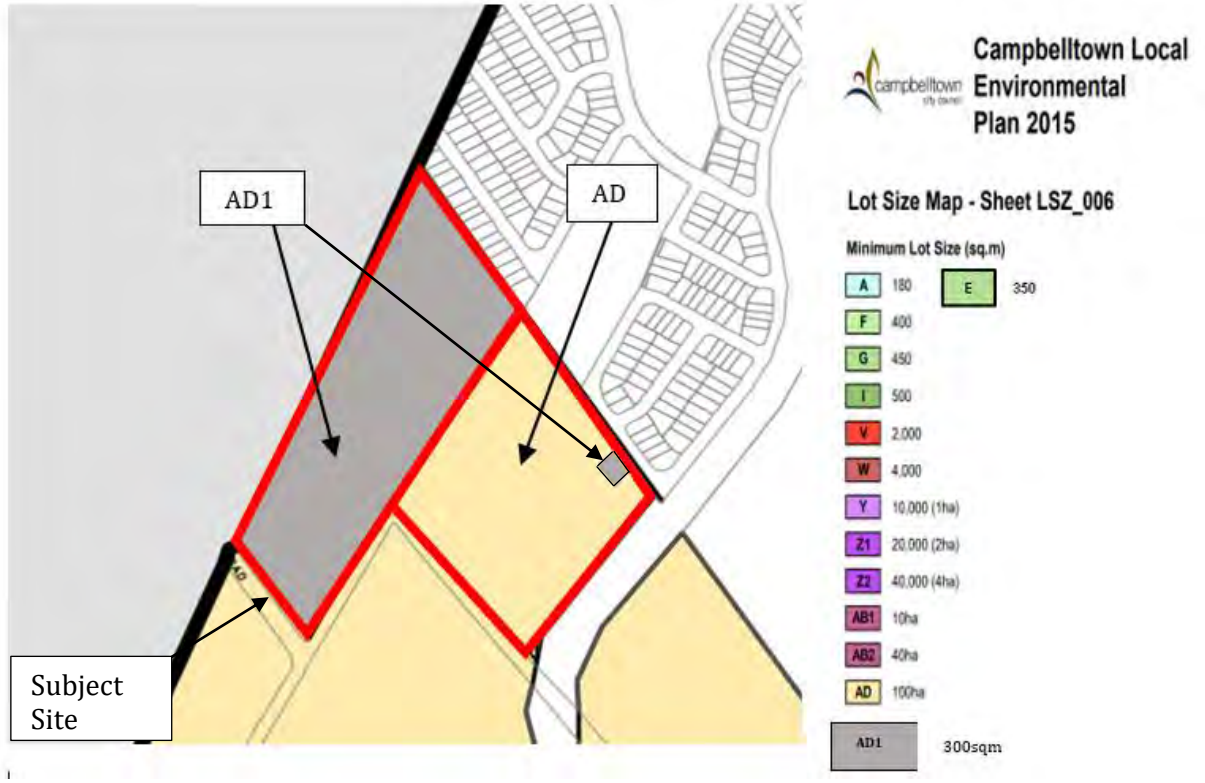


Figure 24: Proposed lot size map

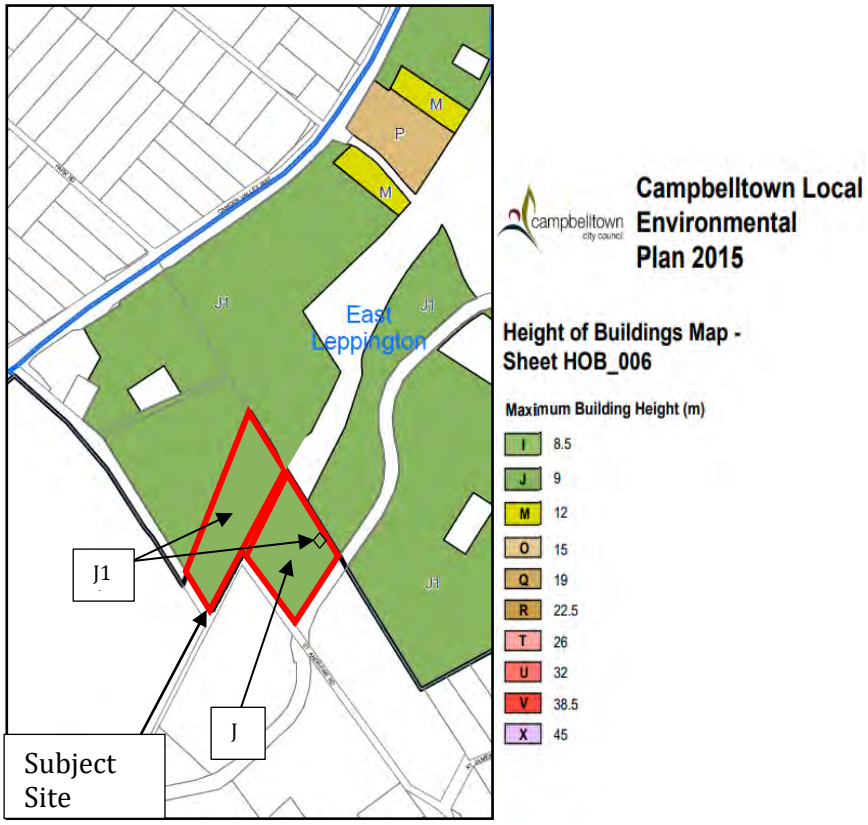


Figure 25: Proposed Height of Buildings Map

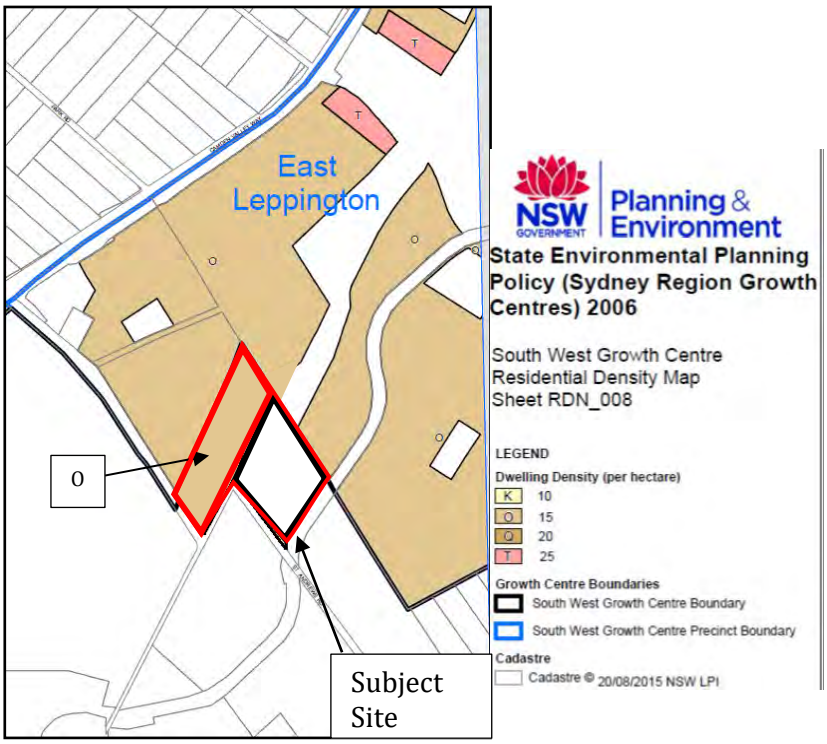


Figure 26: Proposed Residential Dwelling Density Map

4. LEGISLATIVE CONTEXT

Section 3.33(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 3.33(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 3.33(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 northeast and northwest and part E2 Environmental Conservation and part RE1 Public Recreation and Special Purposes – Drainage.

4.2 Explanation of Provisions

The proposed outcome will be achieved by:

- Rezone the site to part R2 Low Density Residential and part E2 Environmental Conservation and part RE1 Public Recreation and Special Purposes – Drainage; 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.

With the informal support of Council, a revised Planning Proposal Request was lodged with Council on 19 February 2018.

A favourable Council report was later prepared by Council Officers recommending that the proposal be submitted to the Department for a Gateway Determination.

The proposal was then unexpectedly refused by the Councillors at their meeting on 11 June 2019 without explanation. A Rezoning Review was considered by DPIE and on 9 December 2019, the Sydney Western City Planning Panel determined that the proposed instrument should be

submitted for a Gateway determination because the proposal has demonstrated specific strategic and site specific merit.

This amended report has therefore been prepared to accompany the Gateway determination issued for the proposal. 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 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 the bushfire affectation over the land does not prohibit development over to the site with appropriate measures capable of being put in place.

It is also a more appropriate outcome to manage the transition from urban land to environmental by using the existing services at the centre of the site to provide a buffer rather than the current abrupt interface of R2 land on adjoining sites with the existing E3 zoning afforded to the subject site. This has been reinforced in the suite of photographs provided in this report.

Section B – Relationship to strategic planning framework

3. *Will the planning proposal give effect to the objectives and actions of the applicable regional, or district plan or strategy (including any exhibited draft plans or strategies)?*

As detailed under Section 3.3.9 of this report, the proposal has made regard to the Greater Sydney Region Plan noting that the subject site is located within the Western Parkland City. The proposal aligns with Planning Priority W5 of the Western City District plan which states,

> *"Planning Priority W5: Providing housing supply, choice and affordability, with access to jobs, services and public transport".*

The Strategic Directions of the Western City District Plan recognise that an adequate supply of land for residential purposes is required to meet Sydney's growth. Sites for new homes should be within 30 minutes by public transport to jobs and services in a major centre and should be located

where there is available or planned public transport capacity. The location of the subject site meets these directions given its proximity to the planned major centre of Leppington.

In addition to the north of the subject site (within the Leppington Major Centre) are mixed use employment corridors, including pockets of industrial and employment lands along Camden Valley Way which would cater to the increased residential population in the area.

The site also has the benefit of being able to utilise the 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.

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.

Upgrading works to Camden Valley Way from a two lane rural road to a four lane highway were completed at the end of 2015, improving road access and providing a new bus based public transport corridor in proximity to the site. It is noted that a bus stop is located within 800m of the subject site, linking the site to the new Train Station.

With these foundations it presents a new opportunity to supplement the supply of housing in Southwest 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.

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.

To retain the environmental zoning, the subject site becomes an isolated property given that to the northeast and northwest the site adjoins approved residential subdivisions and is bounded by Sydney Water Canal to the south and St Andrews Road to the west. Where opportunity exists to tidy the so called "loose ends" such as boundaries adjustments, then such adjustments should be made to achieve the relevant targets. It therefore makes planning sense for this site to be used to meet the additional housing targets.

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

The subject site is surrounded by new/proposed urban centres, with planned releases to the south west of the site. The scenic protection zoning afforded to the subject site is therefore diminished given the rapidly changing landscape.

4. Will the planning proposal give effect to a council's endorsed local strategic planning statement, or another endorsed local strategy or 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 19—Bushland in Urban Areas	Not applicable.
No 21—Caravan Parks	Not applicable.
No 33—Hazardous and Offensive Development	Not applicable.
No 36—Manufactured Home Estates	Not applicable.
No 47—Moore Park Showground	Not applicable.
No 50—Canal Estate Development	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 64—Advertising and Signage	Not applicable.
No 65—Design Quality of Residential Apartment Development	Not applicable.
No 70—Affordable Housing (Revised Schemes)	Not applicable.
State Environmental Planning Policy (Aboriginal Land) 2019	Not applicable.
State Environmental Planning Policy (Activation Precincts) 2020	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 (Coastal Management) 2018	Not applicable.
State Environmental Planning Policy (Concurrences and Consents) 2018	It is acknowledged that this SEPP provides additional powers to the Planning Secretary.
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 (Gosford City Centre) 2018	Not applicable.
State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004	Not applicable.
State Environmental Planning Policy (Infrastructure) 2007	Not applicable.
State Environmental Planning Policy (Koala Habitat Protection) 2020	Not applicable.

State Environmental Planning Policy	Statement of Consistency
	Refer to comments made in the submitted letter prepared by Travers Bushfire and Ecology.
State Environmental Planning Policy (Koala Habitat Protection) 2021	The provisions of this Policy have been addressed in a report prepared by Travers Bushfire and Ecology.
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 (Major Infrastructure Corridors) 2020	Not applicable.
State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007	Not applicable.
State Environmental Planning Policy (Penrith Lakes Scheme) 1989	Not applicable.
State Environmental Planning Policy (Primary Production and Rural Development) 2019	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 Aerotropolis) 2020	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.9.1Directions)?

The following tables outline the Ministerial Directions under s.9.1 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 proposed E2 Environmental Conservation zone 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	Not applicable.

No.	Title	Comment
	Overlays in Far North Coast LEPs	
2.6	Reduction in non-hosted short-term rental accommodation period	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 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 proposed E2 Environmental Conservation 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.
3.7	Reduction in non-hosted short-term rental accommodation period	Not applicable.
4. Hazard and Risk		

No.	Title	Comment
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 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.

No.	Title	Comment
		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 along the Pacific Highway, North Coast	Not applicable.
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.
5.11	Development of Aboriginal Land Council land	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.

No.	Title	Comment
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.
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.
7.7	Implementation of Glenfield to Macarthur Urban Renewal Corridor	Not applicable.
7.8	Implementation of the Western Sydney Aerotropolis Plan	Not applicable.

No.	Title	Comment
7.9	Implementation of Bayside West Precincts 2036 Plan	Not applicable.
7.10	Implementation of Planning Principles for the Cooks Cove Precinct	Not applicable.
7.11	Implementation of St Leonards and Crows Nest 2036 Plan	Not applicable.
7.12	Implementation of Greater Macarthur 2040	Not applicable.
7.13	Implementation of the Pyrmont Peninsula Place Strategy	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.

Judith Stubbs & Associates have undertaken a Social Infrastructure Assessment. The assessment has been detailed in Section 1.1 of this report. Also refer to Appendix G.

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 18-012) was issued by the Department of Planning on 14 August 2018 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:

1. *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 3.3.9 of this report.

2. *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.

3. *Responding to a change in circumstances, such as the investment 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 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:

4. LZN_006: Land Zoning Map
5. LSZ_006: Lot Size Map
6. HOB_006: 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 E2 Environmental Conservation and part RE1 Public Recreation and Special Purposes – Drainage 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 Schedule 1, Clause 4 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; part E2 Environmental Conservation and part RE1 Public Recreation and Special Purposes – Drainage 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.

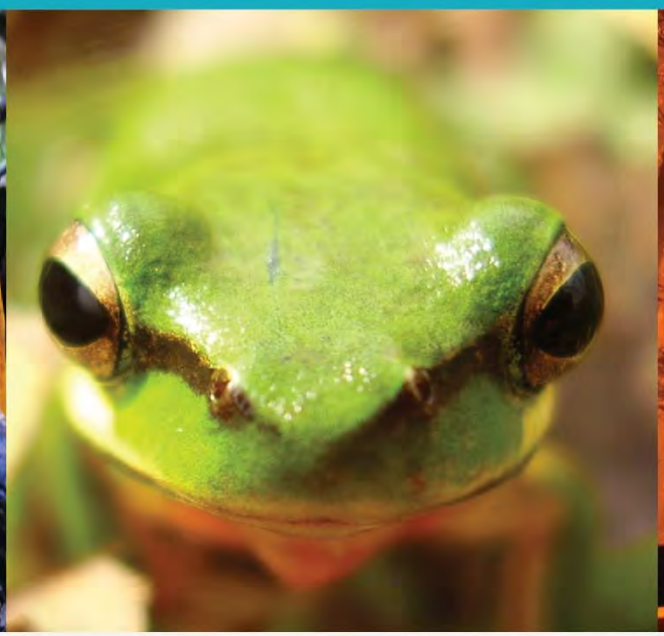
The subject property does not share any vehicular or pedestrian access with the suburb of Varroville and so is physically separated from the suburb. Given that the northern and eastern boundaries of the site immediately adjoin the East Leppington precinct, rezoning the subject site to match that of the 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 Southwest Growth Centre.

Appendix A Bushfire Report prepared by Travers Ecology

TRAVERS BUSHFIRE & ECOLOGY

A TBE ENVIRONMENTAL COMPANY



BUSHFIRE PROTECTION ASSESSMENT

Planning Proposal

Lot 71, DP 706546

71 St Andrews Rd

Varroville

Under Section 9.1 (2) Direction No 4.4 of the EP&A Act

10 June 2021

(REF: 18GAT03BF)

BUSHFIRE PROTECTION ASSESSMENT

Planning Proposal

Lot 71, DP 706546, 71 St Andrews Rd, Varroville

Report Authors:	Nicole van Dorst BPAD-L3 23610 Emma Buxton B.s
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Date:	30/04/21
File:	18GAT03BF

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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 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. The advice does advise on matters published by the NSW Rural Fire Service in their guidelines 'Planning for bush fire protection 2019 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 is to be confirmed by a registered surveyor.

EXECUTIVE SUMMARY HEADING

Travers bushfire & ecology prepared a bushfire protection assessment report for the proposed rezoning and future residential subdivision of Lot 71 DP 706546, 71 St Andrews Rd, Varroville of the site in December 2018.

Subsequent to that report Gateway Determination (PP_2020_CAMPB_004_00) has since been received from the Department of Planning, Industry and Environment (DPIE). As part of the determination, Condition 2 states that prior to public exhibition the Bushfire Protection Assessment report is to be updated as follows:

> *Consider the availability of the additional road access being provided through the East Leppington Precinct, and if this connection is not viable, determine whether the evacuation route along St Andrew Road is adequate*.

With respect to the availability of the road access through the East Leppington Precinct, a recent Land and Environment Court ruling has resulted in the road connection (to Aqueduct Street) being lost with the Commissioner ruling that this land could be subdivided into 4 Torrens Title allotments.

This updated bushfire report has been prepared to address the access requirements as outlined in *Planning for Bushfire Protection 2019* which was legislatively adopted in the *Environmental Planning and Assessment Regulations* in March 2020. This updated report includes an assessment of the road design and highlights the required bushfire protection measures, including asset protection zones (APZs), for future development based on the revised concept design.

The proposal seeks to rezone land to the west of the internal easement as R2 Low Density Residential with the remaining land being part E2 Environmental Conservation (with dwelling entitlement), RE1 Public Recreation and Special Purposes – Drainage.

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 bushland located beyond St Andrew Road to the south-west and the vegetation associated with the electrical services easement and proposed E2 zoned land located within the eastern portion of the site resulting in possible ember attack, radiant heat and potentially flame attack.

The bushfire risk posed to the planning proposal 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*.

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 2018*
BCA	*Building Code of Australia*
BSA	Bushfire safety authority
DA	development application
DCP	Development Control Plan
DPIE	Department of Planning, Industry and Environment
EEC	endangered ecological community
FDI	fire danger index
FMP	fuel management plan
IPA	inner protection area
LEP	*Local environmental plan*
OPA	outer protection area
PBP 2019	*Planning for bush fire protection 2019*
RFS	NSW Rural Fire Service
SFPP	special fire protection purpose

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1. INTRODUCTION

Travers bushfire & ecology has been requested by *GAT & Associates* to undertake an updated 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 City Council* as being bushfire prone (refer Figure 1.1). *Direction 4.4, Planning for Bush Fire Protection 2019 (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 9.1(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.

Figure 1-1– Bushfire prone land map

(source: NSW Planning Portal, 2021)

1.1 Aims of the assessment

The aims of the bushfire protection assessment are to:

- respond to condition 2 of the Gateway Determination with the provision of an updated bushfire report to address road design;
- review the bushfire threat to the landscape;
- undertake a bushfire attack assessment in accordance with *PBP 2019;*
- provide advice on planning principles, including the provision of perimeter roads, APZs and other specific fire management issues; and
- 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 (including the internal services easement) is proposed to be rezoned as part E2 Environmental Conservation (with dwelling entitlement), RE1 Public Recreation and Special Purposes – Drainage.

The majority of the Cumberland Plain Woodland (CPW) vegetation, identified within the Flora and Fauna Assessment compiled by *Travers bushfire & ecology* (April, 2021) 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), access to the site will be provided via an upgrade of St Andrews Road with a secondary egress point (as required under PBP, 2019) proposed to be provided to Grantham Crescent in the north-east.

This report has highlighted the bushfire constraints, minimum APZs as well as recommendations for future road design, building construction, water supply and utilities.

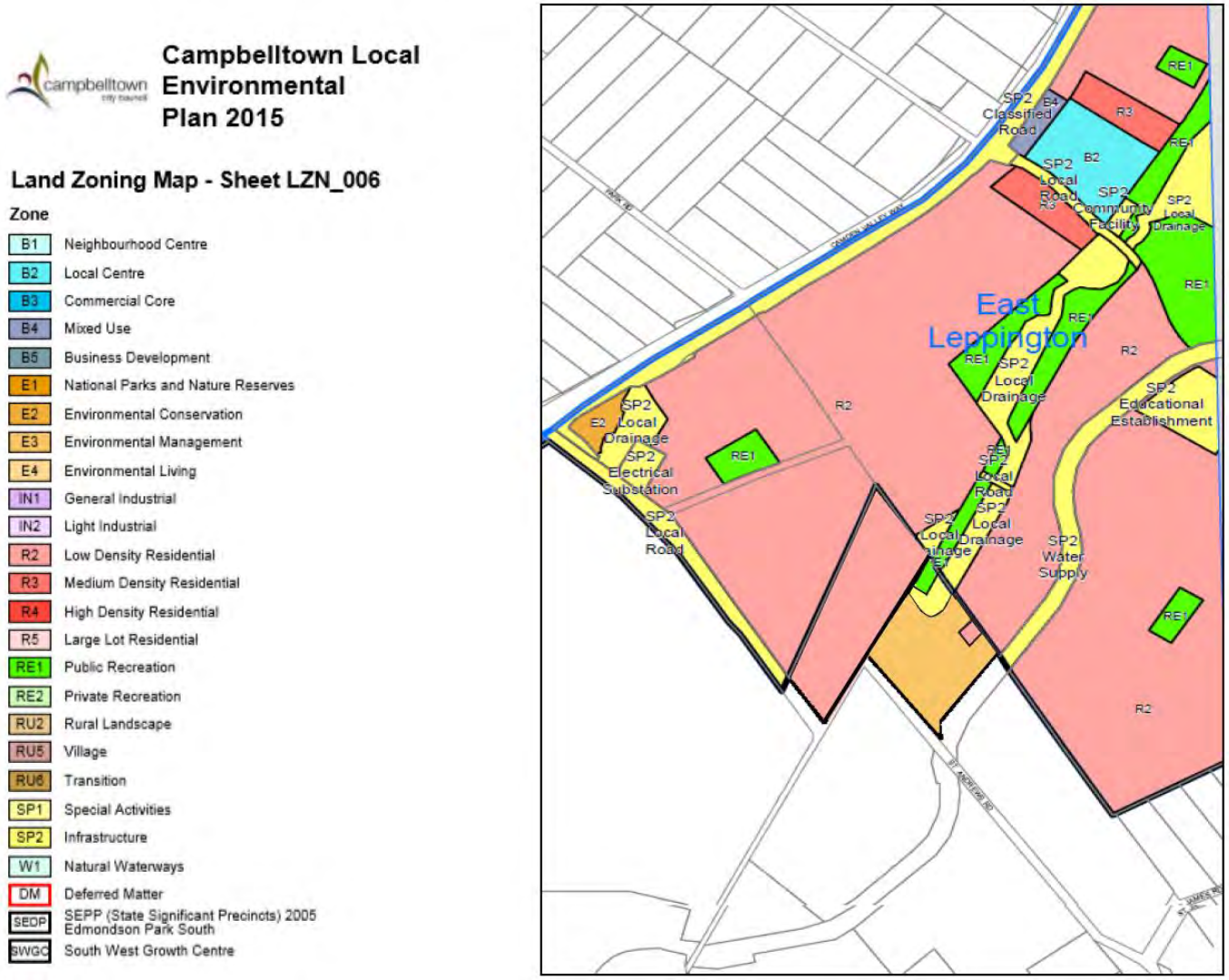


Figure 1-2– Proposed zoning

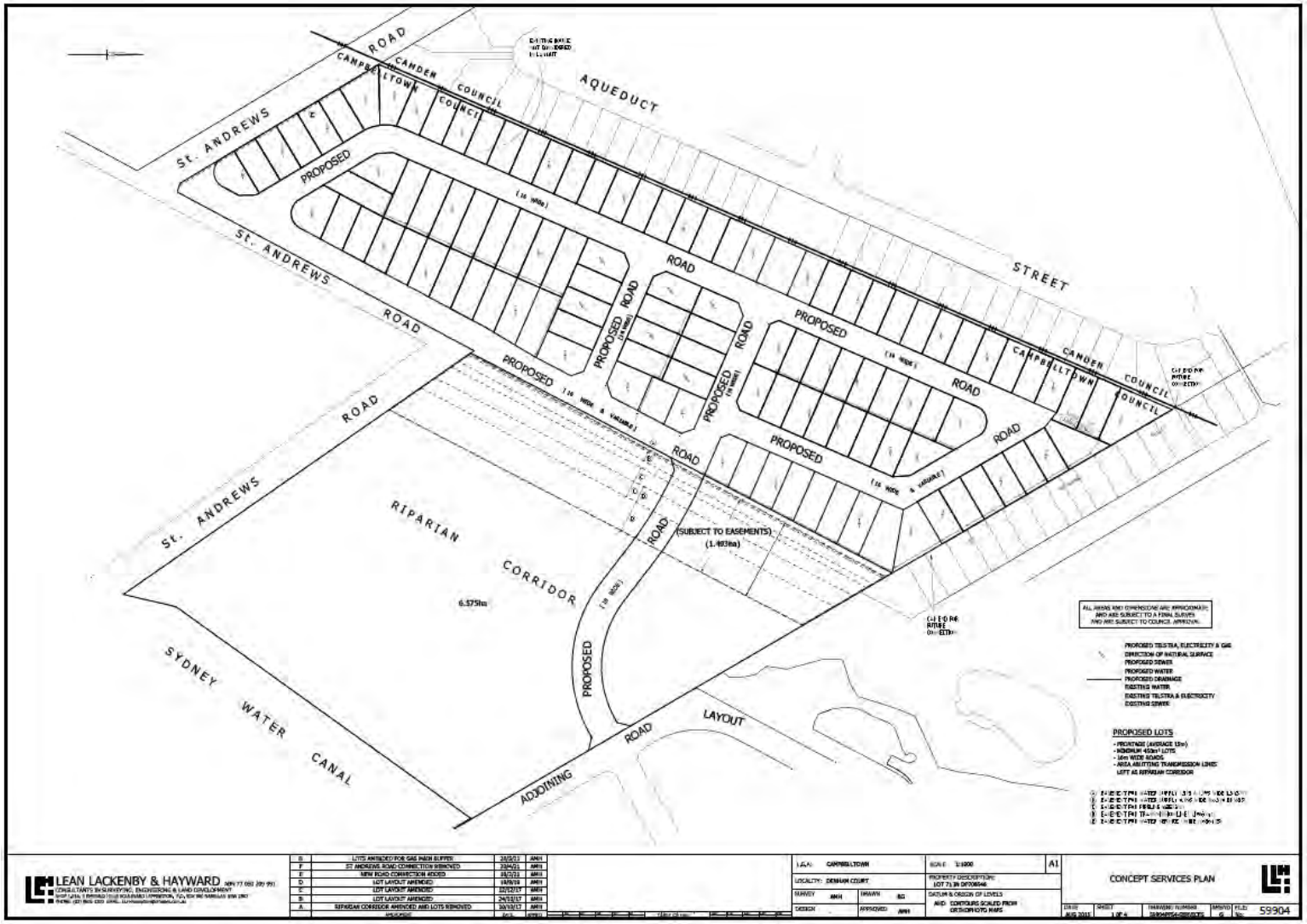


Figure 1-3– Proposed subdivision

(Source: Lean Lackenby & Hayward, ref: 59904, version G, dated 25.05.2021)

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:

- Proposed zoning and subdivision prepared by *Lackenby & Hayward,* ref 59904, Version G*,* dated 25.05.2021)
- Campbelltown Local Environmental Plan 2015
- Flora and Fauna Assessment, 2021 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 2019 (PBP)*
- *Community Resilience Practice Notes 2/12 Planning Instruments and Policies.*

1.4 Site description

The site is located at Lot 71 DP 706546, 71 St Andrews Rd, Varroville (refer *Figure 1-4*). 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 1-4 – Aerial appraisal

(source – NearMap, 2020)

1.5 Legislation and planning instruments

Is the site mapped as bushfire prone?	Yes
Proposed development type	Rezoning
Must the development consider Section 9.1(2) Direction No 4.4 of the EP&A Act?	Yes – the relevant authority must consult with the Commissioner of the NSW RFS.
Significant environmental features	A flora & fauna report has also been prepared by Travers bushfire & ecology (May, 2021). 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.
Details of any Aboriginal heritage	No known.
Does the proposal rely on an alternative solution?	Yes – Method 2 AS3959 to determine APZ distances based on the NSW RFS Comprehensive Fuel Loads

.

2. BUSHFIRE STRATEGIC STUDY

PBP 2019 includes the requirement to prepare a Strategic Bush Fire Study for rezoning applications. The level of information required is dependent upon the nature of the scale of the proposal, the bushfire risk and its potential impact upon the wider infrastructure network.

The Strategic Bush Fire Study is designed to assess whether new development is appropriate in the bush fire hazard context. It also provides the ability to assess the strategic implications of future development for bushfire mitigation and management.

Table 2-1 assesses the proposed development in terms of the broader bushfire landscape, land use as well as access and egress and associated infrastructure in accordance with Table 4.2.1 of *PBP 2019*.

Sections 3–5 outlines the relevant performance criteria to be achieved for future development in accordance with Section 5 of *PBP 2019*.

Table 2-1 – Bushfire Strategic Study.

Issue	Detail	Assessment Considerations	Proposal's compliance
Bushfire landscape assessment	A bush fire landscape assessment considers the likelihood of a bush fire, its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding landscape.	• The bush fire hazard in the surrounding area, including: o Vegetation o Topography o Weather • The potential fire behaviour that might be generated based on the above; • Any history of bush fire in the area, • Potential fire runs into the site and the intensity of such fire runs. • The difficulty in accessing and suppressing a fire, the continuity of bush fire hazard or the fragmentation of land scape fuels and the complexity of the associated terrain.	The site is bound by residential land to the north-east and north-west, Sydney Water Canal to the south-east and St Andrews Road to the south-west. A cleared electrical easement traverses the central portion of the site which will provide a fire break between the proposed R2 zone and the retained bushland. The bushland within the eastern portion of the site and extending within the adjoining land to the south-west is located on level to upslope topography. The typical / average climate in the Campbelltown area is for a warm temperate climate with high summer rainfalls between January and March with the bushfire season generally running from August to March. During the fire season, weather conditions of concern are hot, dry winds, particularly form the north-west accompanied by temperatures above 30 degrees. These conditions are sometimes followed by a rapid change producing strong southerly winds and high intensity storms, with concentrated periods of lightning with little rain (source: Macarthur Bush Fire Risk Management Plan 2012) A review of the fire history information from The Central Resource for Sharing and Enabling Environmental Data in NSW (SEED) reveals no fire history data for the site. The nearest record shows a wildfire impacting the vegetation at Holsworthy Military Reserve located 9.3m to the west during 2002 – 2003. Potential fire runs into the site would be from the bushland associated with Woodland Conservation Area in the south-west and south of the site. This bushland can be accessed via St Andrews Road to the immediate south-west or via Friend Road and Bergin Circuit which is located on the western side of the reserve. Access can also be achieved via the existing vehicular

Issue	Detail	Assessment Considerations	Proposal's compliance
			tracks associated with the electrical easement which traverses the central portion of the site and continues further south-west. Sydney Water Canal also provides a 20m wide fire break in the south-east. The provision of compliant access and asset protection zones will provide safe firefighting access to all bushland areas.
Land use assessment	The land use assessment will identify the most appropriate locations within the masterplan area or site layout for the proposed land uses.	• The risk profile of different areas of the development layout based on the above landscape study; • The proposed land use zones and the resultant permitted land uses; • The most appropriate siting of different land uses based on risk profiles within the site (i.e. not locating development on ridgetops, SFPP development to be located in lower risk areas of the site); and • The impact of the siting of these uses on APZ provision.	The planning proposal seeks approval for the rezone the western portion of the subject site from E3 – Environmental Management to R2 – Low Density Residential with the eastern portion of the site containing one dwelling entitlement only. Based on the low density residential coupled with the provision of future bushfire protection measures; the proposed development is capable of supporting the required asset protection zones equivalent to the bushfire risk exposure. This is also consistent with the recent development of land to the north and west of the site.
Access and egress	A study of the existing and proposed road networks both within and external to the masterplan area or site layout.	• The capacity for the proposed road network to deal with evacuating residents and responding emergency services, based on the existing and proposed community profile; • The location of key access routes and direction of travel, and • The potential for development to be isolated in the event of a bush fire.	Future access to the site will be provided via two (2) entry points, St Andrews Road in the south and Grantham Crescent in the north. The surrounding development to the north-east and north-west is low density residential development and the proposed development is not expected to have a significant impact on the existing road network. These egress routes allows for two (2) options in an evacuation in a bushfire event.

Issue	Detail	Assessment Considerations	Proposal's compliance
Emergency services	An assessment of the future impact of new development on emergency services provision.	• Consideration of the increase in demand for emergency services responding to a bush fire emergency (including the need for new stations / bridges); and • Impact on the ability of emergency services to carry out fire suppression in a bush fire emergency.	NSW RFS has a volunteer fire brigade at Catherine Fields, a 7 minute drive (5.5km) to the west. Fire and Rescue NSW has a station located on the corner of Ben Lomond Road and Campbelltown Road, a 13-minute (9.3km) drive to the south-east. The proximity of both services is considered adequate and no further stations are required. The proposed development will comply with *PBP* with the provision of access to the bushfire hazard, APZs and building construction standards to increase the site's resilience to bushfire attack and improve firefighting access.
Infrastructure	An assessment of the issues associated with infrastructure provision.	• The ability of the reticulated water system to deal with a major bush fire event (particularly in terms of water pressure); and • Life safety issues associated with fire and proximity to high voltage power lines, natural gas supply lines etc.	There is an electrical easement with traverses the central portion of the property. This easement is routinely maintained and currently does not support any vegetation. A hydraulic consultant will be engaged at DA stage to ensure the reticulated water supply will comply with *PBP.*
Adjoining land	The impact of new development on adjoining landowners and their ability to undertake bush fire management.	• Consideration of the implications of a change in land use on adjoining land including increased pressure on BPMs through the implementation of Bush Fire Management Plans.	The proposed development will provide for *PBP* complying bushfire protection measures with all measures being implemented within the site. Adjoining landholders are not required to increase their bushfire management responsibility.

3. BUSHFIRE THREAT ASSESSMENT

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.

3.1 Hazardous fuels

PBP guidelines require the identification of the predominant vegetation formation in accordance with David Keith (2004) if using the simplified acceptable solutions in PBP 2019, or alternatively the vegetation class if adopting the comprehensive vegetation fuel loads (as allowable when undertaking an assessment under Method 2 of AS3959). The hazardous vegetation is calculated for a distance of at least 140m from a proposed building envelope.

The hazardous vegetation within 140m of the planning proposal is identified within the Flora and Fauna Report prepared by this firm and consists of:

Table 3-1 – Vegetation communities

Aspect	Vegetation community	Vegetation formation (refer Note 1)	Vegetation class (refer Note 1)
South-west and east	Grey Box – Forest Red Gum grassland woodland on flats of the Cumberland Plain (PCT 849)	Woodlands	Coastal Valley Grassy Woodland

Note 1 – Whilst the vegetation is classified as a Coastal Valley Grassy Woodland with an understorey of predominantly grassland (refer photos 1 & 2) this assessment has considered the likelihood of the ground layer / shrub layer to grow back overtime as a result of changed land practices. As a result a worst case scenario has been adopted and the most appropriate formation being a Dry Sclerophyll Forest (shrub/grass) has been adopted. The closest vegetation classification based on the area is determined as Cumberland Dry Sclerophyll Forest (fuel load of 14/24.97 t/ha). This is higher than the identified Coastal Valley Grassy Woodland fuel load of 10/18.07 t/ha.

Photo 3-1– Woodland vegetation to the south-west (beyond St Andrews Road)

Photo 3-2 – Woodland vegetation within the proposed E2 zone surrounding the proposed single dwelling.

3.2 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.

3.3 Bushfire attack assessment

The following assessment has determined the APZ and BAL levels via the following approaches;

- Appendix B Method 2 (alternative solution) of AS3959 Construction of buildings in bushfire prone areas (2009).

A fire danger index (FDI) of 100 has been used to calculate bushfire behaviour on the site based on its location within the Greater Sydney region. Table 3-2 provides a summary of the bushfire attack assessment based on residential development and the methodologies identified above.

Table 3-2 – Bushfire attack assessment

Aspect	Vegetation formation within 140m of development / Fuel load	Effective slope of land	Minimum APZ (refer Note 1)	Building construction standard (metres) (refer Note 1)
Proposed R2 zoned land				
North-west & north-east	Managed land & land subject to future development	N/A	N/A	N/A
South-east (within electrical services easement)	Cumberland Dry Sclerophyll Forest (14/24.97 t/ha)	Level to upslope	16	BAL 29 (16-<23) BAL 19 (23 - <32) BAL 12.5 (32-<100)
South-west				
Single dwelling entitlement (E2 zoned land) –update once final plan is provided				
East and south	Cumberland Dry Sclerophyll Forest (14/24.97 t/ha)	Level to upslope	16	16
North-west				

Notes: * Slope is either 'U' meaning up slope or 'C' meaning cross slope or 'D' meaning down slope

Note 1 - A performance-based assessment using Appendix B of *AS3959* was undertaken to determine the required APZ and BAL levels based on the comprehensive fuel loads associated with Cumberland

Dry Sclerophyll Forest on a level slope. The results of the assessment are provided below and were prepared using the bushfire attack level calculator developed by *Flamesol.*

Calculated February 22, 2021, 1:50 pm (MDc v.4.9)

South-east & south-west

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	100	Rate of spread	1.68 km/h
Vegetation classification	Forest	Flame length	13.91 m
Understorey fuel load	14 t/ha	Flame angle	53 °, 63 °, 71 °, 75 °, 77 ° & 83 °
Total fuel load	24.97 t/ha	Elevation of receiver	5.55 m, 6.19 m, 6.57 m, 6.72 m, 6.77 m & 6.9 m
Vegetation height	n/a	Fire intensity	21,673 kW/m
Effective slope	0 °	Transmissivity	0.873, 0.855, 0.83, 0.804, 0.791 & 0.728
Site slope	0 °	Viewfactor	0.5988, 0.443, 0.3001, 0.2037, 0.1659 & 0.045
Flame width	100 m	Minimum distance to < 40 kW/m²	11.5 m
Windspeed	n/a	Minimum distance to < 29 kW/m²	15.5 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	22.6 m
Flame temperature	1,090 K	Minimum distance to < 12.5 kW/m²	31.9 m
		Minimum distance to < 10 kW/m²	37.8 m

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980

Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

4. SPECIFIC PROTECTION ISSUES

4.1 Asset protection zones (APZs)

Table 4-1 outlines the proposal's compliance with the performance criteria for APZs.

Table 4-1 – Performance criteria for asset protection zones (PBP 2019 guidelines pg. 43)

Performance criteria	Acceptable solutions	Acceptable solution	Performance solution	Comment
Potential building footprints will not be exposed to radiant heat levels exceeding 29kW/m^2 on each proposed lot	APZs are provided in accordance with Tables A1.12.2 and A1.12.4 based on the FFDI	☐	☑	Refer Section 2.3. APZ's have been determined based on an alternative solution ensuring radiant heat exposure of less than 29kW/m^2.
APZs are managed and maintained to prevent the spread of a fire towards the building	APZs are managed in accordance with the requirements of Appendix 4	☑	☐	The APZ will consist of road reserves and landscaped areas.
The APZ is provided in perpetuity	APZs are wholly within the boundaries of the development site	☑	☐	APZ's are confined within the boundary of the site and / or road reserves. A portion of the APZ will occur within the electrical easement and will be subject to an 88b instrument.
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised	The APZ is located on lands with a slope of less than 18^o	☑	☐	Complies. All slopes are less than 18 degrees.
Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions	Landscaping is in accordance with Appendix 4	☑	☐	Can be a condition of consent
	Fencing is constructed in accordance with section 7.6	☑	☐	Can be a condition of consent (see Note 1 below).
Note 1: Section 7.6 of PBP states that all fences in bush fire prone areas should be made of either hardwood or non-combustible material. However, in circumstances where the fence is within 6m of a building or in areas of BAL 29 or greater, they should be made of non-combustible material only.				

4.2 Building protection

In terms of future subdivision approval, the minimum APZ must be provided in accordance with *PBP.* The APZs provided in Table 3-2(Section 3.3) are based on a BAL 29 for those allotments fronting the hazard.

Although not required in terms of a planning proposal, 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 (2018).* 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 BAL setbacks that are likely to apply for future building construction. These BAL levels are for planning purposes only and will be assessed / confirmed prior to building construction stage. The APZ depicted in Schedule 1 attached is based on BAL 29 building construction (for those lots fronting the hazard).

4.3 Hazard management

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).

APZs are required to be managed as an IPA in accordance with RFS guidelines *Standards for Asset Protection Zones* (RFS, 2005), with landscaping design to comply with Appendix 4 of *PBP*. Appendix 2 provides maintenance advice for vegetation within the APZ

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

Minimum APZs have been recommended and are depicted in Schedule 1. The asset protection zone extends within the electrical easement to the rear of eight (8) allotments. This APZ will be subject to an 88b easement which will be maintained by the owner of the large E2 zoned allotment.

4.4 Access for firefighting operations

The proposed internal road layout will include the provision of perimeter roads adjoining bushland areas as well as an interconnecting internal road system. No dead ends are proposed. Two access points to the subdivision will be provided via an upgrade to St Andrews Road in the south-west and a secondary link provided to Grantham Crescent in the north-east.

Future access to the proposed single dwelling entitlement within the E2 zoned land will be gained via Grantham Crescent in the north.

Table 4-2 below outlines the performance criteria and acceptable solutions for future access within residential subdivision design.

Table 4-2 – Performance criteria for access within residential subdivisions

Performance criteria		Acceptable solution	Acceptable solution	Performance solution	Comment
ACCESS (GENERAL REQUIREMENTS)	Firefighting vehicles are provided with safe, all weather access to structures.	Property access roads are two-wheel drive, all-weather roads	☑		Complies.
		Perimeter roads are provided for residential subdivisions of three or more allotments.		☑	Complies (refer Note 1).
		Subdivisions of three or more allotments have more than one access in and out of the development.	☑		Complies
		Traffic management devices are constructed to not prohibit access by emergency services vehicles.	☑		Can be a condition of consent.
		Maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient.	☑		Complies. All roads will be sealed.
		All roads are through roads	☑		Complies.
		Dead end roads are not recommended, but if unavoidable, dead ends are not more than 200m in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end.	☑		All roads are through roads.
		Where kerb and guttering are provided on perimeter roads, roll top kerbing should be used to the hazard side of the road.	☑		Can be a condition of consent.
		Where access / egress can only be achieved through forest, woodland or heath vegetation, secondary access shall be provided to an alternate	☑		Complies.

Performance criteria	Acceptable solution	Acceptable solution	Performance solution	Comment
	point on the existing public road system.			
	One way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.	N/A	N/A	All roads are two (2) way.
The capacity of access roads is adequate for firefighting vehicles.	The capacity of perimeter and non-perimeter road surfaces and any bridges / causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges / causeways are to clearly indicate load rating.	☑		Can be a condition of consent.
There is appropriate access to water supply.	Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression.	☑		Can be a condition of consent.
	Hydrants are provided in accordance with *AS 2419.1:2005.*	☑		Can be a condition of consent.
	There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	N/A	N/A	Reticulated water is provided.

Note 1: A perimeter road has not been provided for eight (8) allotments in the northern portion of the site. The proposal maintains compliance with the performance requirements as firefighting vehicles are provided with safe access to the hazard via the proposed secondary road, the 16m APZ and cleared electrical easement which occurs in this area.

Performance criteria		Acceptable solution	Acceptable solution	Performance solution	Comment
PERIMETER ROADS	Access roads are designed to allow safe access and egress for	Are two-way sealed roads.	☑		Complies.
		Minimum 8m carriageway width kerb to kerb.	☑		Complies. Will be a condition of consent

Performance criteria		Acceptable solution	Acceptable solution	Performance solution	Comment
	firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.	Parking is provided outside of the carriageway width.	☑		Complies – can be a condition of consent
		Hydrants are located clear of parking areas.	☑		Can be a condition of consent.
		There are through roads, and these are linked to the internal road system at an interval of no greater than 500m.	☑		Complies.
		Curves of roads have a minimum inner radius of 6m.	☑		Can be a condition of consent.
		The maximum grade road is 15° and average grade is 10°.	☑		Can be a condition of consent.
		The road crossfall does not exceed 3°.	☑		Can be a condition of consent.
		A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	☑		Can be a condition of consent

Performance criteria		Acceptable solution	Acceptable solution	Performance solution	Comment
PROPERTY ACCESS	Firefighting vehicles can access the dwelling and exit the property safely.	There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles.	☑		Complies. All allotments are provided with direct frontage to the public road system.

4.5 Water supplies

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

Table 4-3 – Performance criteria for reticulated water supplies

Performance criteria	Acceptable solutions	Acceptable solution	Performance solution	Comment
Adequate water supplies is provided for firefighting purposes.	Reticulated water is to be provided to the development, where available.	☑		Reticulated water is available to the development.
	A static water supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed	N/A	N/A	
	Static water supplies shall comply with Table 5.3d.	N/A	N/A	
Water supplies are located at regular intervals. The water supply is accessible and reliable for firefighting operations.	Fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard *AS 2419.1:2005.*	☑		Can be made a condition of consent.
	Hydrants are not located within any road carriageway.	☑		Can be made a condition of consent.
	Reticulated water supply to urban subdivisions uses a ring main system for areas for areas with perimeter roads.	☑		Can be made a condition of consent.
Flows and pressure are appropriate.	Fire hydrant flows and pressures comply with the relevant clauses of *AS 2419.1:2005.*	☑		Can be made a condition of consent.
The integrity of the water supply is maintained.	All above-ground water service pipes are metal, including and up to any taps.	☑		Can be made a condition of consent.
	Above ground water storage tank shall be of concrete or metal	N/A	N/A	

4.6 Gas

The intent of measures is to provide adequate services of water for the protection of buildings during and after the passage of bushfire. Table 4-4 outlines the proposal's compliance with the acceptable solutions for reticulated water supply.

Table 4-4– Performance criteria for gas supplies (PBP guidelines pg. 47)

Performance criteria	Acceptable solutions	Acceptable solution	Performance solution	Comment
Location of gas services will not lead to the ignition of surrounding bushland or the fabric of buildings.	Reticulated or bottled gas bottles are to be installed and maintained in accordance with *AS/NZS 1596 (2014)*, the requirements of relevant authorities and metal piping is to be used.	☑		Can be made a condition of consent.
	All fixed gas cylinders are to be kept clear of flammable materials to a distance of 10m and shielded on the hazard side.	☑		Can be made a condition of consent.
	Connections to and from gas cylinders are metal.	☑		Can be made a condition of consent.
	Polymer sheathed flexible gas supply lines are not used.	☑		Can be made a condition of consent.
	Above ground gas service pipes are metal, including and up to any outlets.	☑		Can be made a condition of consent.

4.7 Electricity

The intent of measures is to locate electricity so as not to contribute to the risk of fire to a building. Table 4-5 outlines the required acceptable solutions for the subdivision's electricity supply.

Table 4-5 – Performance criteria for electricity services (PBP guidelines pg. 47)

Performance criteria	Acceptable Solutions	Acceptable solution	Performance solution	Comment
Location of electricity services limit the possibility of ignition of	Where practicable, electrical transmission lines are underground.	☑	☐	The majority of electrical lines will be underground

Performance criteria	Acceptable Solutions	Acceptable solution	Performance solution	Comment
surrounding bushland or the fabric of buildings.	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 ISSC3 Guideline for Managing Vegetation Near Power Lines.	☑	☐	Complies – to be condition of consent.

5. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

This updated bushfire report has been prepared to address the access requirements as outlined in *Planning for Bushfire Protection 2019* and in response to Condition 2 of the Gateway Determination.

Our assessment found that bushfire can potentially affect the site from the bushland located beyond St Andrew Road to the south-west and the vegetation associated with the electrical services easement and proposed E2 zoned land located within the eastern portion of the site resulting in possible ember attack, radiant heat and potentially flame attack.

This report has concluded that due to potential for St Andrews Road to be cut off in a bushfire event it is recommended that a second access to point to the subdivision is required in order to comply with PBP 2019.

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* as outlined below.

Table 5-1 – Planning principles

Planning principles	Recommendations
Ensuring land is suitable for development in the context of bush fire risk	The proposed zoning is suitable for the site. With the application of bushfire protection measures the bushfire risk posed can be mitigated.
Ensuring new development on BFPL will comply with PBP	New development is capable of complying with *PBP*.
Minimising reliance on performance-based solutions	The APZ's have been provided in compliance with the acceptable solutions, with fuel loads adopted in the calculations greater than the minimum required for a grassy woodland.
Providing adequate infrastructure associated with emergency evacuation and firefighting operations	The proposed new access road/s and provision of utilities (gas and water) will support safe evacuation of residents and access by fire fighters.
Facilitating appropriate ongoing land management practices.	APZ's have been restricted within development allotments.
Strategic planning should provide for the exclusion of inappropriate development in bush fire prone areas as follows:	
The development is exposed to a high bush fire risk and should be avoided	The development site can support appropriate bushfire protection measures in response to the bushfire risk.

Planning principles	Recommendations
The development is likely to be difficult to evacuate during a bushfire due to landscape, access limitations, fire history and /or size and scale	Adequate access will be provided to the existing road network. The proposal adjoins existing development to the north-east and north-west. The scale of the development and lack of recent wildfire history will support evacuation efforts if required.
The development will adversely affect other bush fire protection strategies or place existing development at increased risk	The proposal will not increase the bushfire risk to the surrounding development.
The development is within an area of high bush fire risk where density of existing development may cause evacuation issues for both existing and new occupants: and	The proposal is not expected to cause evacuation issues for the existing population. The existing and proposed road network is capable of supporting the proposed rezoning.
The development has environmental constraints to the area which cannot be overcome.	An Ecological Assessment has been prepared by this firm to address the ecological constraints.

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

5.2 Recommendations

Recommendation 1 - The development is as generally indicated on the attached Schedule 1 – Plan of Bushfire Protection Measures.

Recommendation 2 - APZs are to be provided to the proposed development as outlined in Table 3.2 and as generally depicted within Schedule 1.

Recommendation 3 - The entire development area (propose R2 zone) is managed as an inner protection area (IPA) throughout the lifetime of the development and until each lot is sold / developed and the hazard is removed.

Recommendation 4 - At the issue of a subdivision certificate, a suitably worded instrument is required pursuant to section 88 of the Conveyancing Act 1919 for the purpose of a 16m asset protection zone (APZ) to be created within the electrical easement and to east of eight (8) development lots in accordance with Appendix 4 of *Planning for Bush Fire Protection 2019* as depicted in Schedule 1 – Bushfire Protection Measures (mxd ref: 18GAT03_BF001, dated 27/04/2021)

Recommendation 5 - Access is to comply with the performance requirements outlined in Section 5.3.2 of *Planning for Bush Fire Protection 2019.*

Recommendation 6 - Building construction standards for the proposed future dwellings are to be applied in accordance with *AS3959 Construction of buildings in bushfire prone areas (2018)*, and *Planning for Bush Fire Protection 2019.*

Recommendation 7 - Water, electricity and gas supply is to comply with Section 5.3.3 of *Planning for Bush Fire Protection 2019.*

Recommendation 8 - Fencing is to comply with Section 7.6 of PBP. All fences in bush fire prone areas should be made of either hardwood or non-combustible material. However, in circumstances where the fence is within 6m of a building or in areas of BAL 29 or greater, they should be made of non-combustible material only.

6. 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 (2018) – *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 bush fire protection– a guide for councils, planners, fire authorities and developers*. NSW Rural Fire Service.

Rural Fire Service (2019) –*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.

Legend

- Lot boundary (source: LPI)
- Contours 1m (source: LiDAR)
- Easement
- Exisiting external access
- Edge of vegetation
- Constructed dams
- Biodiversity corridor
- Asset Protection Zone (APZ)

Aerial source: Nearmap

TRAVERS BUSHFIRE & ECOLOGY
A TBE ENVIRONMENTAL COMPANY

PROJECT & MXD REFERENCE	DATE & ISSUE NUMBER	SCALE & COORDINATE SYSTEM
St Andrews Rd, Varroville 18GAT03_BF001	27/04/2021 Issue 1 EB	1:2,500 GDA 1994 MGA Zone 56

0 50 100 m

TITLE

Schedule 1 - Bushfire Protection Measures

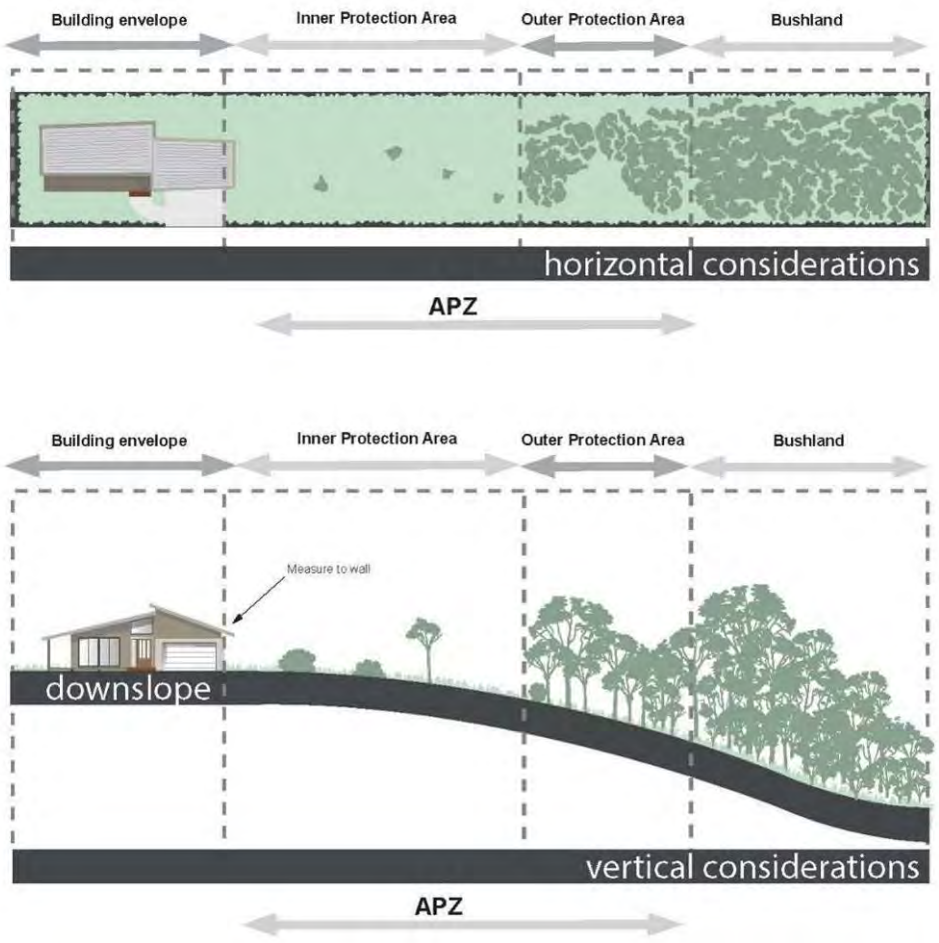
Disclaimer: The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features are to be confirmed by a registered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

Document Path: N:\GIS STORAGE\N Drive\18GAT03_StAndrewsRd_Varroville\MXDs\18GAT03_BF001.mxd

APPENDIX 1. MANAGEMENT OF ASSET PROTECTION ZONES

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: PBP, 2019)

Note: Vegetation management as shown is for illustrative purposes only. Specific advice is to be sought regarding 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 and OPA. The APZ is to be maintained in perpetuity and should be undertake regularly, particularly in advance of the bushfire season.

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;
- lower limbs should be removed up to a height of 2m above ground;
- tree canopies should be separated by 2 to 5m; and
- preference should be given to smooth barked and evergreen trees.

Shrubs are to be maintained to ensure;

- create large discontinuities or gas in the vegetation to slow sown or break the progress of fire towards buildings should be provides;
- shrubs should not be located under trees;
- shrubs should not form more than 10% of ground cover; and
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of vegetation.

Grass is to be maintained to ensure:

- grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
- leaves and vegetation debris should be removed (litter fuel within the IPA should be kept below 1cm)

General advice for landscaping is provided below:

- 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 into 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

N

EXISTING HOUSE NOT CONSIDERED IN LAYOUT

CAMPBELLTOWN COUNCIL ROAD

CAMDEN COUNCIL

AQUEDUCT

St. ANDREWS ROAD

PROPOSED [16 WIDE] ROAD

PROPOSED [16 WIDE] ROAD

PROPOSED [16 WIDE] ROAD

PROPOSED [16 WIDE & VARIABLE] ROAD

PROPOSED [16 WIDE & VARIABLE] ROAD

CAMDEN COUNCIL CAMPBELLTOWN COUNCIL STREET

RIGHT OF CARRIAGEWAY

WALLS

RETAINING

NO

CAP END FOR FUTURE CONNECTION

GAS

St. ANDREWS ROAD

RIPARIAN CORRIDOR

6.575ha

(SUBJECT TO EASEMENTS)
(1.493ha)

PROPOSED ROAD [18 WIDE]

SYDNEY WATER CANAL

ADJOINING LAYOUT ROAD

CAP END FOR FUTURE CONNECTION

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

DIRECTION OF NATURAL SURFACE

PROPOSED DRAINAGE

20metre HPG BUFFER

GAS HPG MAIN

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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PHONE: (02) 9602 1200 EMAIL: LLH-Reception@crhodes.com.au

	AMENDMENT	DATE	APPR'D
H	HPG LINE AND 20metre BUFFER ADDED	8/6/21	AMH
G	LOTS AMENDED FOR GAS MAIN BUFFER	28/5/21	AMH
F	ST ANDREWS ROAD CONNECTION REMOVED	20/4/21	AMH
E	NEW ROAD CONNECTION ADDED	18/2/21	AMH
D	LOT LAYOUT AMENDED	18/9/18	AMH
C	LOT LAYOUT AMENDED	12/12/17	AMH
B	LOT LAYOUT AMENDED	24/10/17	AMH

TABLE OF mm

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

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

DIRECTION OF NATURAL SURFACE

PROPOSED DRAINAGE

20metre HPG BUFFER

GAS HPG MAIN

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Ⓔ EASEMENT FOR WATER SERVICE 1 WIDE (V636425)

ST. ANDREWS ROAD
CAMPBELLTOWN COUNCIL
CAMDEN COUNCIL
AQUEDUCT
EXISTING HOUSE NOT CONSIDERED IN LAYOUT
PROPOSED ROAD [16 WIDE]
PROPOSED ROAD [18 WIDE]
NODE 1
NODE 2
NODE 3
NODE 4
NODE 5
NODE 6
225 uPVC
300 uPVC
375 uPVC
2 X600
RIGHT OF CARRIAGEWAY
WALLS
RETAINING WALL
(SUBJECT TO EASEMENTS)
1.493ha
RIPARIAN CORRIDOR
ECOSOL GPT 4900
TREAT 50% OF Q1 ARI
ORIFICE OUTLET
97.45 INV UP
2 x600 RCP CL2
10M LONG
1% GRADE
97.35 INV DOWN
1%AEP OVERFLW
3 X 0.605 @ 1%
1%AEP BYPASS
RESHAPE AND GRASS
TWL 98.45
1 IN 6
96.45
97.45
98.45
STORMWATER OUTLET & SPILLWAY
ROCK DISSIPATER - ENERGY
AS PER STD DWG SD 5-8 - AS REQUIRED
LANDCOM - SOILS AND CONSTRUCTION
VOLUME 1 - MANAGING URBAN STORMWATER
SYDNEY WATER CANAL
ADJOINING ROAD
LAYOUT

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 S
DRAINAGE PIPE KERB INLET PIT, SEALED PIT, GRATED PIT, DOWN PIPE, GUTTER OVERFLOW	DP PIT
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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F	NEW ROAD CONNECTION ADDED	18/2/21	AMH
E	LOT LAYOUT AMENDED	18/9/18	AMH
D	RESHAPING AND RELOCATION OF OSD AND POND	22/1/18	AMH
C	LOT LAYOUT AMENDED	12/12/17	AMH

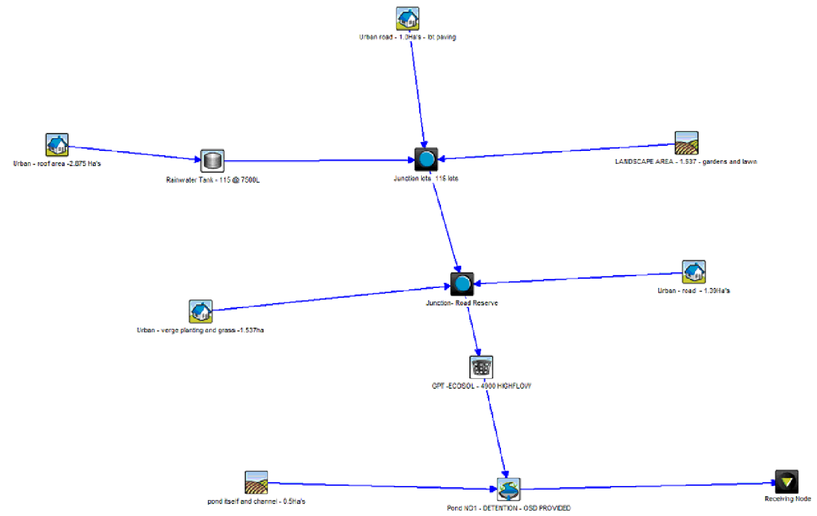
TABLE OF mm

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

CONCEPT DRAINAGE & ON SITE DETENTION/WSUD

DATE OCT 2017 | SHEET 2 of 4 | DRAWING NUMBER 59904PPS4-DR | AMEND I | FILE: 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	48.8	51.6E-3	7.20E3	15.6	116	1.22E3
Residual Load	32.6	0.163	473	4.54	45.0	0.00
% Reduction	33.2	-216.1	93.4	70.9	59.0	100.0

TREATMENT TRAIN MUSIC OUTCOME

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PHONE: (02) 9602 1200 EMAIL: LLH-Reception@crhodes.com.au

NO	AMENDMENT	DATE	APPR'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 OCT 2017 | SHEET 3 of 4 | DRAWING NUMBER 59904WSUD | AMEND A | FILE: 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

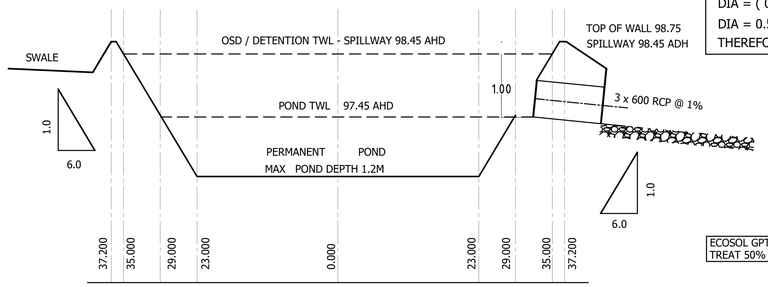
OSD MODELLING

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

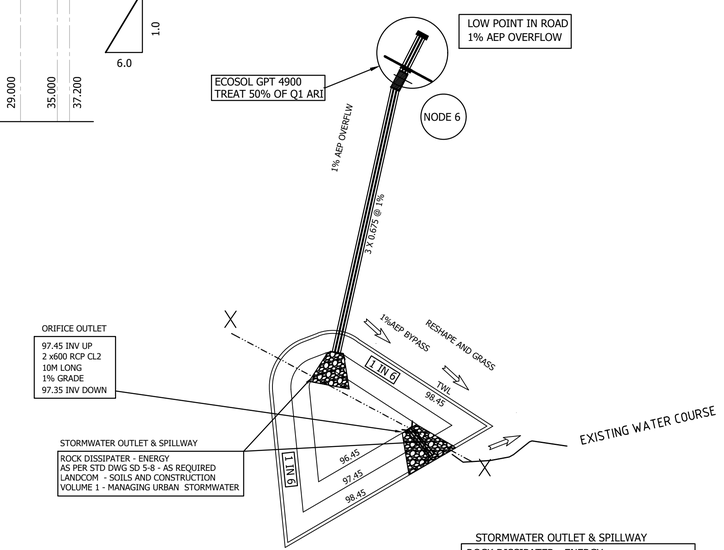
OUTFLOW 2.075 CUMSECS 1% AEP
PRE TO POST
DEPTH IN BASIN 0.95M
VOLUME : 2405.5 CUBIC METRES

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



STORMWATER OUTLET & SPILLWAY
ROCK DISSIPATER - ENERGY
AS PER STD DWG SD 5-8 - AS REQUIRED
LANDCOM - SOILS AND CONSTRUCTION
VOLUME 1 - MANAGING URBAN STORMWATER

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	0.500		
TOTAL		8.825 Ha	2.204	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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	AMENDMENT	DATE	APP'D
B	RESHAPING AND RELOCATION OF OSD AND POND	22/1/18	AMH
A	ISSUE TO COUNCIL AND CLIENT FOR REZONING	12/10/17	AMH

TABLE OF mm

L.G.A: CAMPBELLTOWN
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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 OCT 2017 | SHEET 4 of 4 | DRAWING NUMBER 59904OSD | AMEND B | FILE: No: 59904

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

N

EXISTING HOUSE NOT CONSIDERED IN LAYOUT

CAMPBELLTOWN COUNCIL ROAD

CAMDEN COUNCIL

AQUEDUCT

St. ANDREWS ROAD

PROPOSED [16 WIDE] ROAD

PROPOSED [16 WIDE] ROAD

PROPOSED [16 WIDE] ROAD

PROPOSED [16 WIDE & VARIABLE] ROAD

PROPOSED [16 WIDE & VARIABLE] ROAD

CAMDEN COUNCIL CAMPBELLTOWN COUNCIL STREET

RIGHT OF CARRIAGEWAY

WALLS

RETAINING

NO

CAP END FOR FUTURE CONNECTION

GAS

St. ANDREWS ROAD

RIPARIAN CORRIDOR

6.575ha

(SUBJECT TO EASEMENTS)
(1.493ha)

PROPOSED ROAD [18 WIDE]

SYDNEY WATER CANAL

ADJOINING LAYOUT ROAD

CAP END FOR FUTURE CONNECTION

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

DIRECTION OF NATURAL SURFACE

PROPOSED DRAINAGE

20metre HPG BUFFER

GAS HPG MAIN

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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	AMENDMENT	DATE	APPR'D
H	HPG LINE AND 20metre BUFFER ADDED	8/6/21	AMH
G	LOTS AMENDED FOR GAS MAIN BUFFER	28/5/21	AMH
F	ST ANDREWS ROAD CONNECTION REMOVED	20/4/21	AMH
E	NEW ROAD CONNECTION ADDED	18/2/21	AMH
D	LOT LAYOUT AMENDED	18/9/18	AMH
C	LOT LAYOUT AMENDED	12/12/17	AMH
B	LOT LAYOUT AMENDED	24/10/17	AMH

TABLE OF mm

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CONCEPT SERVICES PLAN

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

Appendix D Contamination Report prepared by SLR Consulting

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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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.

SLR Consulting disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

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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1.2 Objectives 1

1.3 Scope of Works 1

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3 SITE SETTING AND HISTORY REVIEW 3

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3.1.3 Hydrogeology 3
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Appendix C Acid Sulfate Soils Map
Appendix D Local Council Section 149 (2) Planning Certificate
Appendix E WorkCover NSW Records
Appendix F NSW EPA Records – 2014
Appendix G NSW EPA Records – 2015
Appendix H Land Title Ownership Records
Appendix I Historical Aerial Photographs
Appendix J Site Walkover Photographs

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.

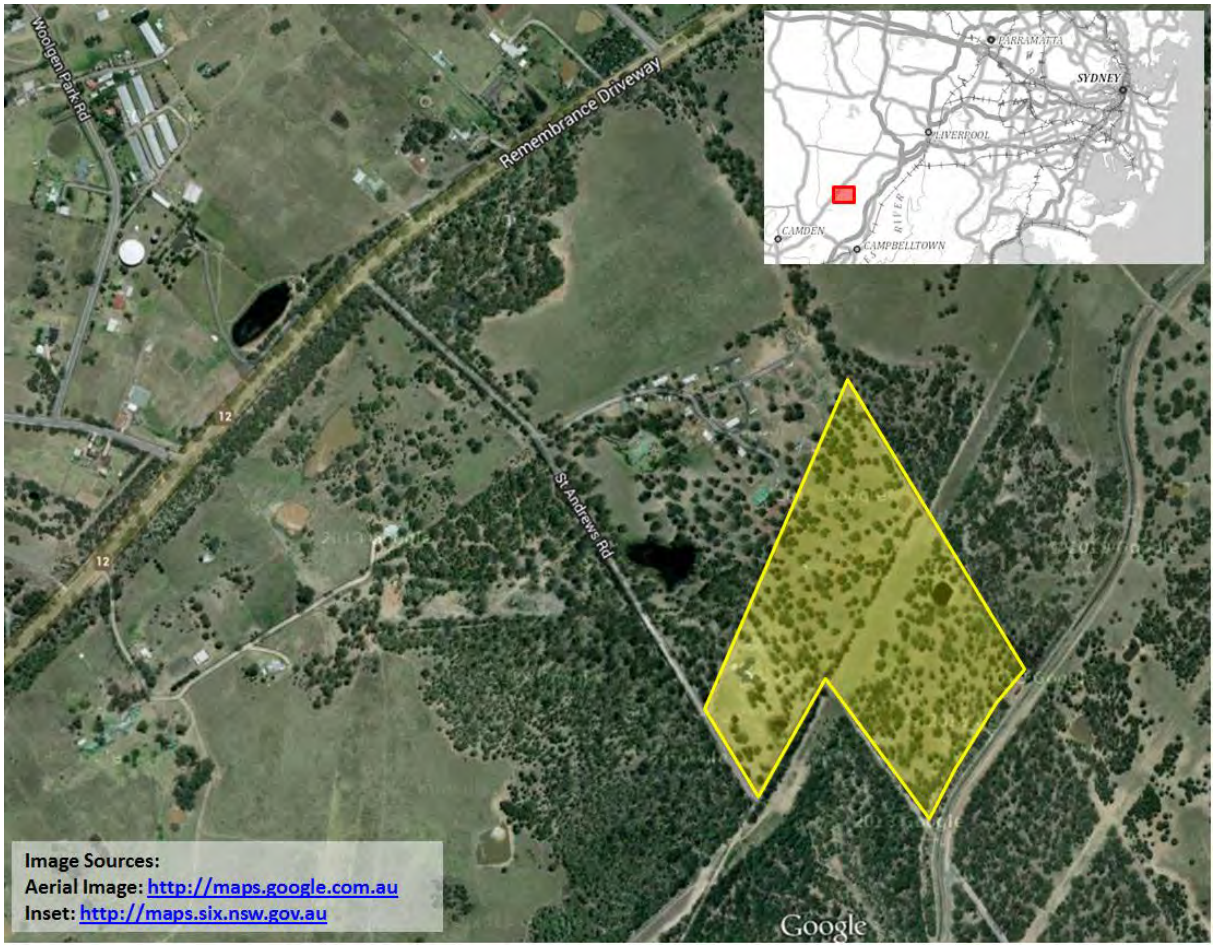


Figure 1 Site location and study area

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.

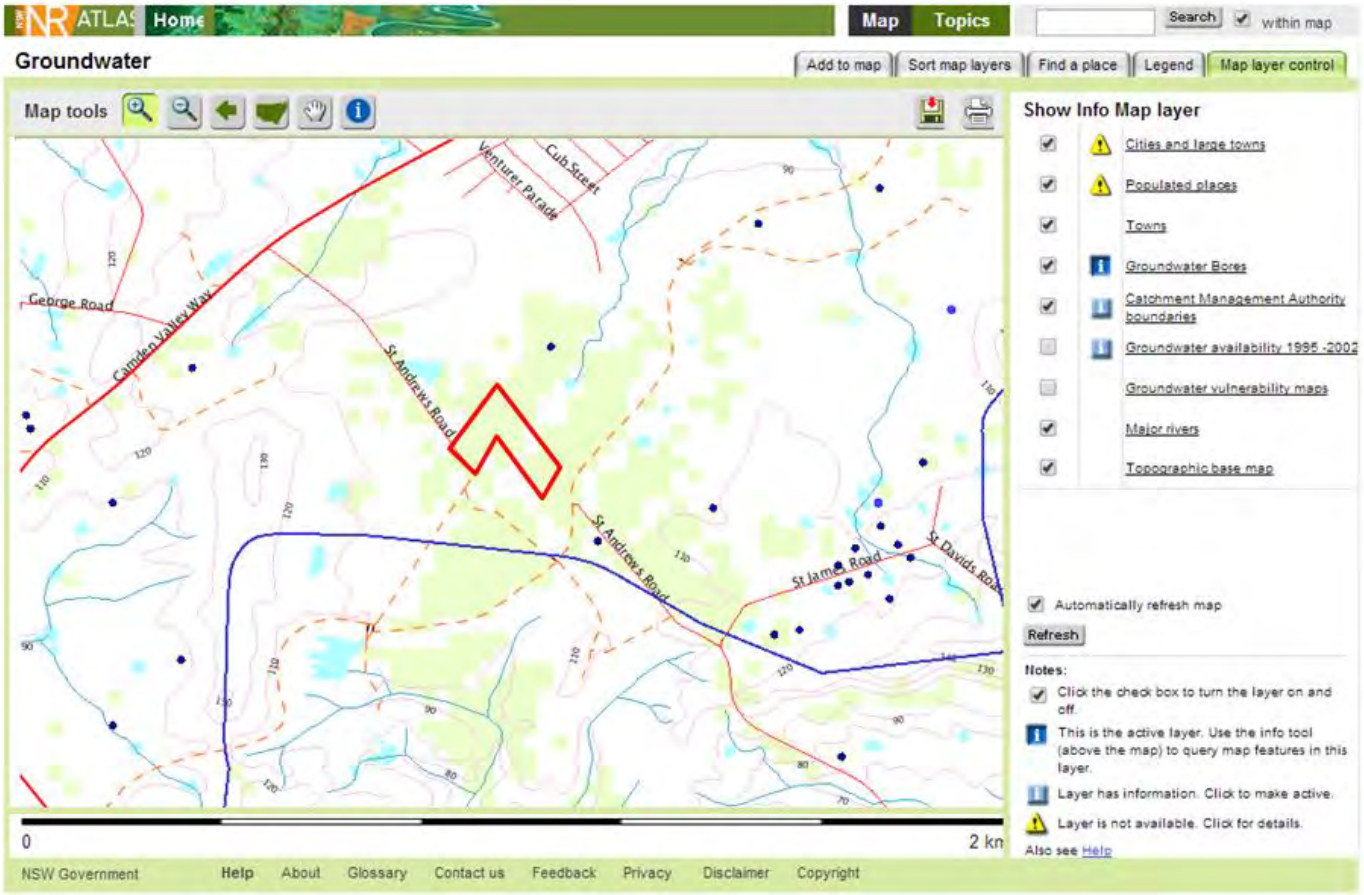
It should be noted that many investigations are based upon an assessment of potentially contaminating processes which may have occurred historically on the site. This assessment is based upon historical records associated with the site. Such records may be inaccurate, absent or contradictory. In addition 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

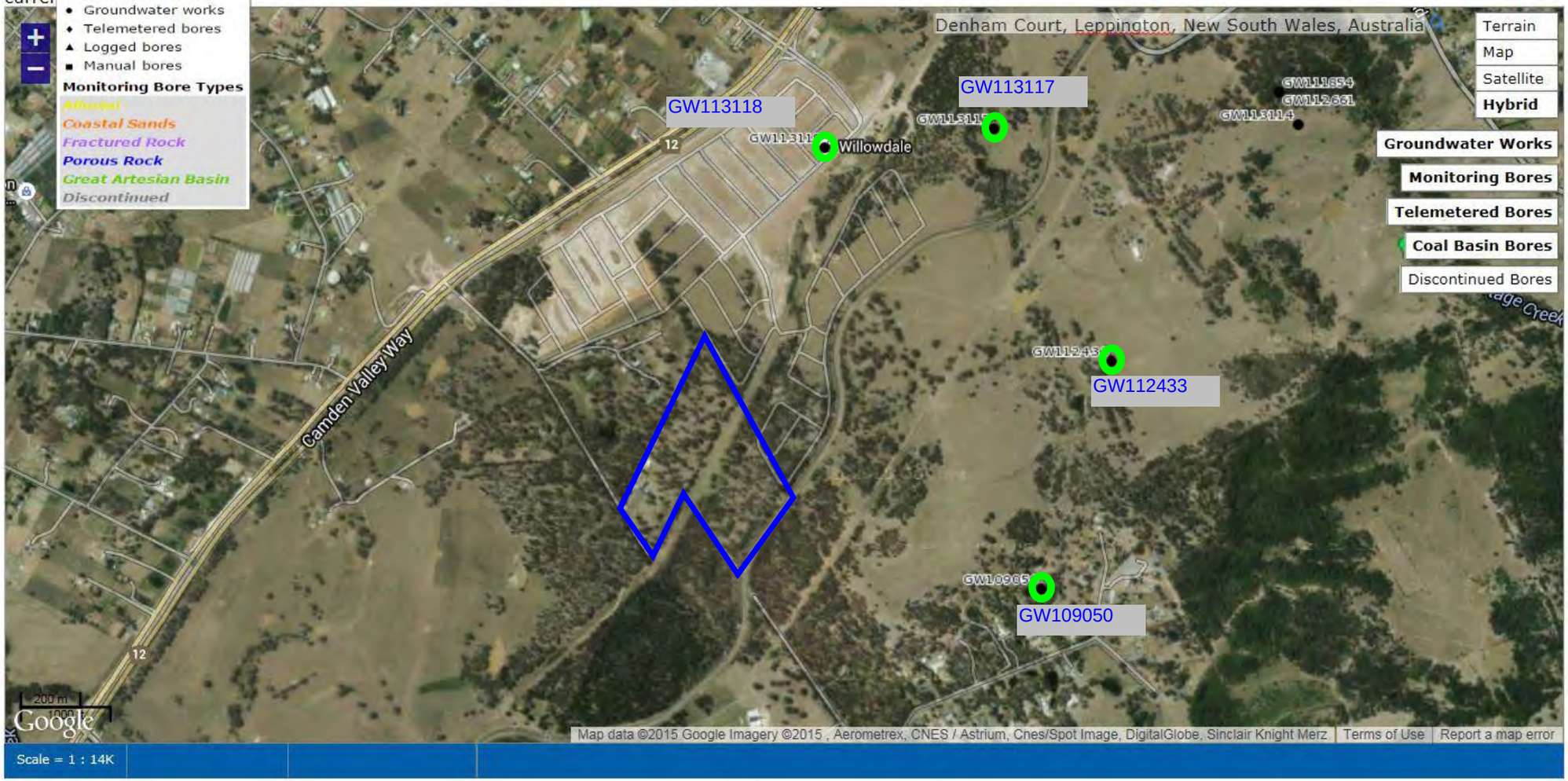
All Groundwater

All Groundwater Map

All data times are Eastern Standard Time

Map | Info

curren



Scale = 1 : 14K

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: **Final Depth:**
Completion Date: 22/02/2012 **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	1//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:** 6238066.0 **Latitude:** 33°58'42.7"S
Elevation Source: Unknown **Easting:** 297792.0 **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 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

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 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

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
CMA Map:
River Basin: - Unknown
Area/District:
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

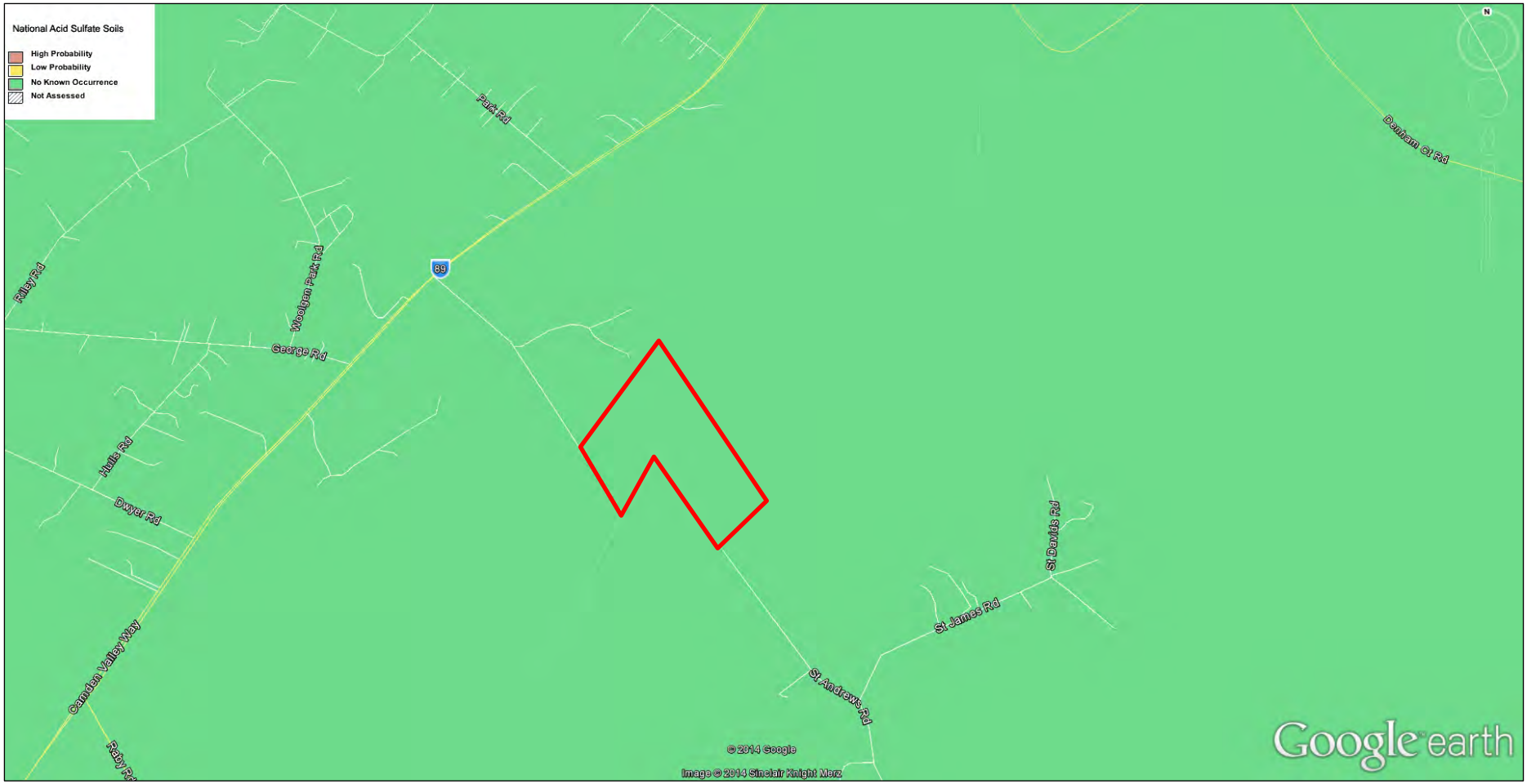
From (m)	To (m)	Thickness (m)			

Remarks

***** End of GW109050 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

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

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

RECEIVED
11 JUN 2014
SYDNEY

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

For free Interpreting Service, please bring this document to Council or ring the Telephone Interpreter Service 131 450 and ask that they contact your Council.

ARABIC

للحصول على خدمة ترجمة مجانية، يرجى إحضار هذه الوثيقة إلى البلدية أو الاتصال بخدمة الترجمة الهاتفية على الرقم 131 450 واطلب منهم الاتصال بالبلدية نيابةً عنك.

SPANISH

Para contar con los servicios gratuitos de un intérprete, traiga este documento al Municipio o llame al Servicio Telefónico de Intépretes al 131 450 y pida que contacten a su Municipio.

TAGALOG

Para sa walang bayad na Serbisyo ng Pagsasalin, dalhin ang dokumentong ito sa Konseho o tawagan ang Telephone Interpreting Service sa 131 450 at pakiusapan silang tawagan ang inyong Konseho.

SAMOAN

Mo Auaunaga o Faamatalaupu e le totogiina, faamolemole aumai lenei pepa tusia i le Ofisa o le Malo (Council) poo le vili i le Auaunaga o Faamatalaupu i Telefoni i le 131 450 ma fai i ai ia latou faafesootaia lau Ofisa o le Malo.

HINDI

निःशुल्क दुभाषिया सेवा के लिए, कृपया यह पत्र कांऊसिल के पास ले जाएँ या दूरभाष दुभाषिया सेवा को 131 450 पर फ़ोन करें और कहें कि वे आपकी कांऊसिल से संपर्क करें।

CHINESE

要獲得免費的傳譯服務，請攜帶本文件到市議會或致電 131 450 電話傳譯服務處，並請他們代您聯絡市議會。

LAO

ຜື່ອຂໍເອົາບາຍພາສາໂດຍບໍ່ຕ້ອງເສັຍຄ່າບໍລິການ, ກະລຸນາ ນຳເອົາເອກະສານນີ້ມາຫາ ຫ້ອງການສະພາ ຫລື ໂທຣະສັບ ຫາ ບໍລິການ ນາຍພາສາ ທາງໂທຣະສັບ ຕາມເບີ 131 450 ແລະ ຂໍໃຫ້ພວກເຂົາຕິດຕໍ່ຫ້ອງການສະພາຂອງທ່ານ.

ITALIAN

Per avvalervi di un servizio interpreti gratuito, portate il presente documento al Comune oppure telefonate al Servizio telefonico interpreti (TIS) al numero 131 450 chiedendo che vi metta in contatto con il Comune.

GREEK

Για δωρεάν Υπηρεσία Διερμηνέων, παρακαλείσθε να φέρετε αυτό το έγγραφο στη Δημαρχία ή να τηλεφωνήσετε στην Τηλεφωνική Υπηρεσία Διερμηνέων στο 131 450 και να ζητήσετε να επικοινωνήσουν με τη Δημαρχία σας.

VIETNAMESE

Để nhận được Dịch vụ Thông dịch miễn phí, hãy đem tài liệu này đến Hội đồng Thành phố hoặc gọi đến Dịch vụ Thông dịch qua Điện thoại (TIS) số 131 450 và nhờ họ liên lạc Hội đồng Thành phố của quý vị.

CROATIAN

Za besplatne usluge tumača, molimo donesite ovaj dokument u općinu ili nazovite Telefonsku službu tumača (Telephone Interpreter Service) na 131 450 i zamolite da za Vas nazovu općinu.

POLISH

W celu otrzymania bezpłatnej pomocy ze strony Służby Tłumaczy, prosimy przynieść ten dokument do Rady Miejskiej (Council) lub zadzwonić do Telefonicznej Służby Tłumaczy na numer 131 450 i poprosić o połączenie ze swoją Radą.

FRENCH

Pour un service d'interprétariat gratuit, veuillez apporter ce document à la mairie. Vous pouvez également téléphoner au service d'interprète au 131 450 et lui demander de contacter votre mairie.

BANGLA

বিনামূল্যে দোভাষী সেবা ব্যবস্থার জন্য, দয়াকরে এই দলিলাদি বা কাগজপত্র পরিষদে (কাউন্সিল) নিয়ে আসুন অথবা 131 450 নাম্বারে টেলিফোন দোভাষী সেবা ব্যবস্থায় ফোন করুন এবং তাদেরকে আপনার পরিষদের (কাউন্সিল) সাথে যোগাযোগ করতে বলুন।

TONGAN

Ki ha NgÇue Fakatonulea ta'etotongi, kÇtaki 'o 'omai e tohi ni ki he Kaunisoló pe telefoni ki he 'Ofisi Fakatonulea Telefonii 'i he 131 450 'o kole kenau fetu'utaki ki ho'o Kaunisoló.

KHMER

ដើម្បីទទួលយកតិចូចំរើបកប្រែភាសាដោយឥតគិតថ្លៃ សូមយកឯកសារនេះទៅសាលាសង្កាត់ ឬទូរស័ព្ទទៅតិចូចំរើបកប្រែភាសាតាមទូរស័ព្ទលេខ 131 450 រួចស្នើសុំឲ្យគេទាក់ទងជាមួយសាលាសង្កាត់របស់លោកអ្នក។

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

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.

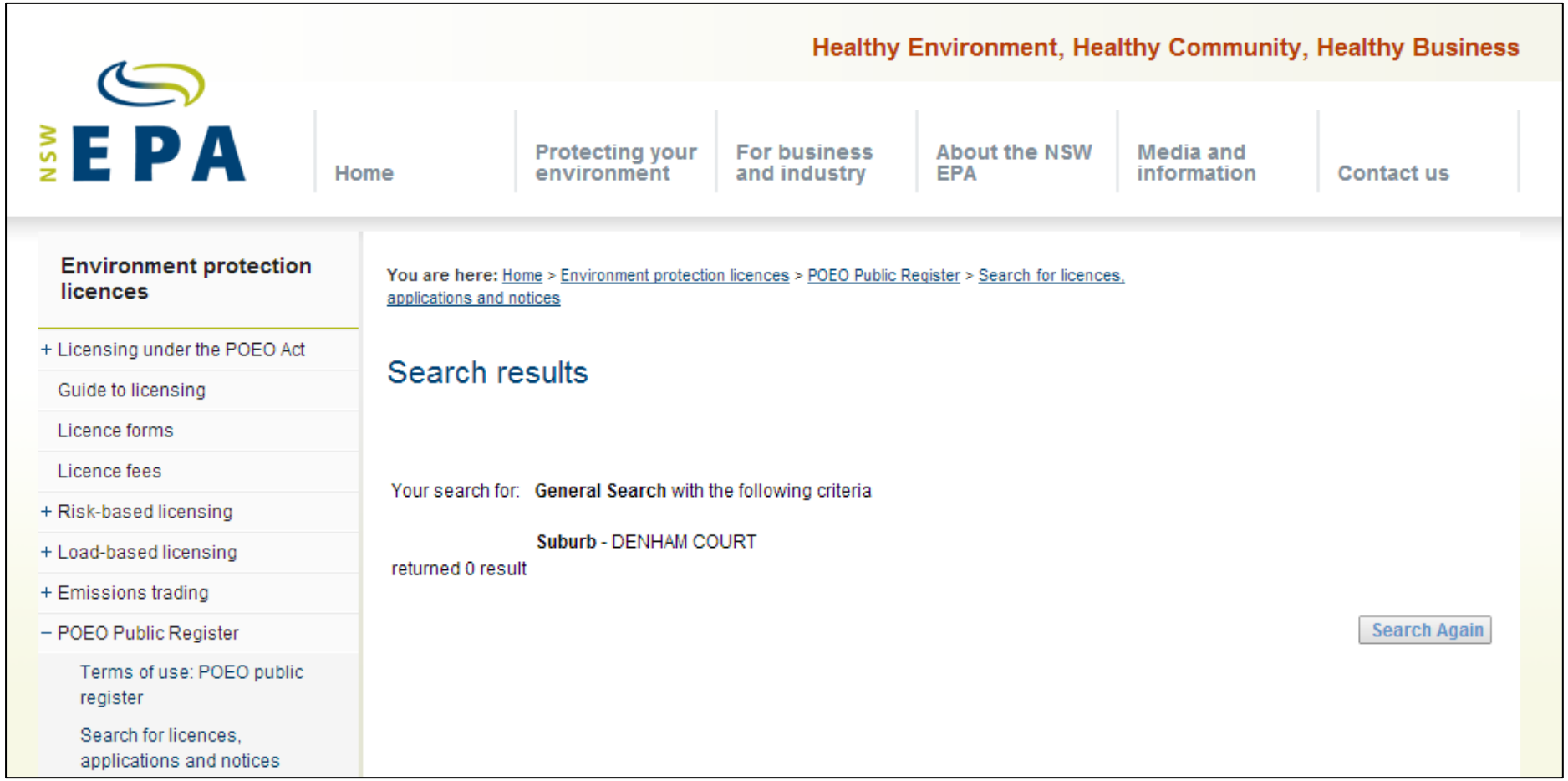
A search of the Stored Chemical Information Database (SCID) and the microfiche records held by WorkCover NSW has not located any records pertaining to the above mentioned premises.

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

Service First Registration Pty Ltd
ACN: 108 037 029
Ph: 02 8296 9000
Fax: 02 9279-2185
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)

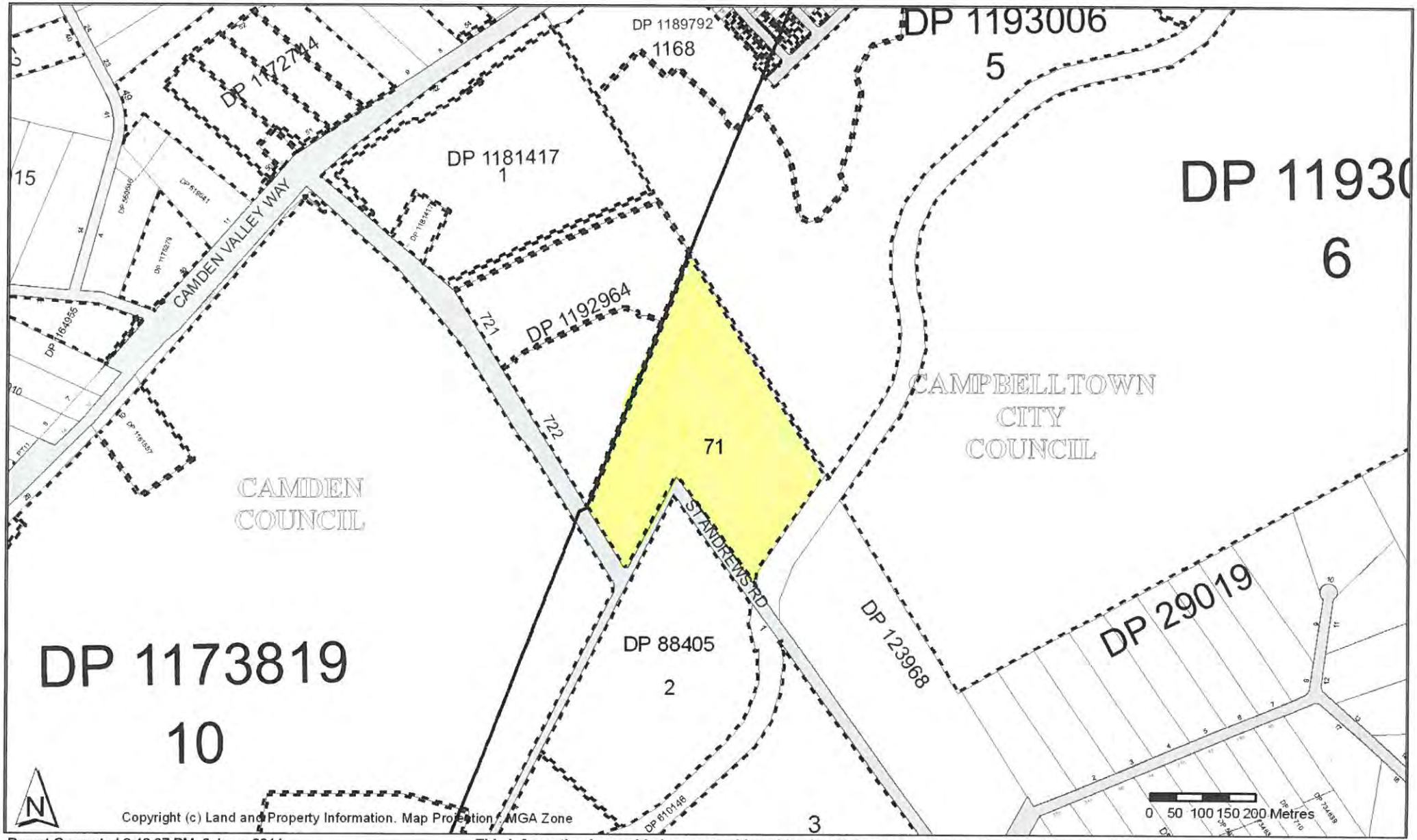
Land & Property Information

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

Copyright © Land and Property Information ABN: 84 104 377 806

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.

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

Signatures and seals only.

D.P. 706546

Registered: 16-8-1986

C.A.: No 98/1984 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

Municipality / City: CAMDEN / CAMPBELLTOWN

Locality: LEPPINGTON / DENHAM COURT

Parish: MINTO

County: CUMBERLAND

This is sheet 1 of my plan in ... sheets

RONALD JAMES REAGGER of LEAST CADASTRAL & SURVEYED PTY LTD of 16 WARD ST CAMPBELLTOWN

a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan is accurate, has been made ... by me or under my supervision ... in accordance with the Survey Practice Regulations, 1933, and was completed on 1

21st SEPT 1983

Signature

Surveyor registered under the Surveyors Act, 1929, as amended

Date of Approval: K-B

*Strike out either (1) or (2) if inapplicable

Purpose for use only for statements of intension 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

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 345 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

(insert "new road", "subdivision" or "consolidation" as set out hereon)

Subdivision No. 35/1984

Date 30TH APRIL, 1984

(Signature) Council Clerk

*This part of certificate to be deleted where application is only for a consolidation for the granting of a consent or where the land to be subdivided is wholly outside the limits of operations of the Metropolitan Water Sewerage and Drainage Board and the Hunter District Water Board.

†Delete if inapplicable.

The Common Seal of the Council of ... was hereto affixed by ... of a resolution passed in Council on the ... day of JANUARY 1983.

Mayor

Town Clerk

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

PLAN FORM 2

Plan Drawing only to appear in this space

*OFFICE USE ONLY

DP269185

SIGNATURE AND SEALS ONLY.

Registered: 23-3-1999

C.A:

Title System: TORRENS, CROWN LAND & OLD SYSTEM

Purpose: EASEMENT

Ref. Map: U7390-1, 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 & Hoshie Pty. Ltd. ACN 010 162 197 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

the 24 August 1998

Signature: [signature]

Surveyor registered under Surveyors Act, 1929, as amended

Datum Line of Azimuth

the insert date of survey.

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.

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 968 of the Metropolitan Water, Sewerage and Drainage Act, 1924, as amended, 1Hunter 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 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.

1Delete if inapplicable.

SURVEYOR'S REFERENCE: NO 0795-00/ CHECKLIST COUNTRY

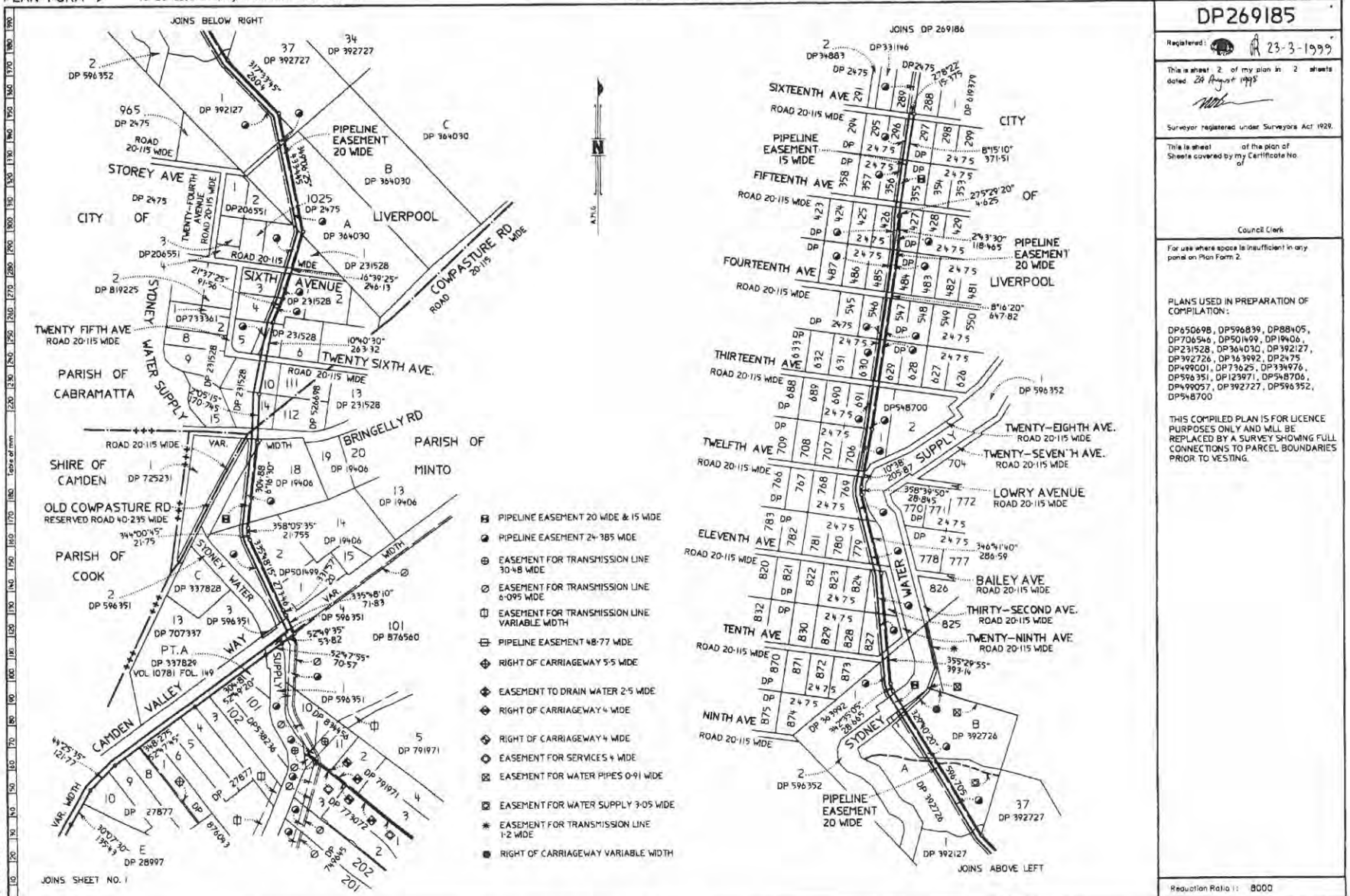
WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

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 28 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 9706 Folio 250 Lot 2 in Deposited Plan 650698 Easement for transmission line	The Uniting Church in Australia Property Trust (NSW) (Owner) D898183 (NSW Electricity Transmission Authority)	To be acquired under the Pipelines Act
82 Pipeline Easement shown in Sheet 1/2 of DP269185	7/598839 Lot 7 in Deposited Plan 598839	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	Volumes 7114 Folio 60 Lots 2, 3, 4 & 5 in Deposited Plan 68406 Easement for transmission line Mortgage Caveat Caveat Mortgage	Glensaugh Pty Limited (Owner) D898183 (NSW Electricity Transmission Authority) Z590268 (State Bank of New South Wales Limited) Z52550 (Edward George Morgan & Edna Carol Morgan) Z527706 (State Bank of New South Wales Limited) X240990 (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	71/708546 Lot 71 in Deposited Plan 708546 Easement for water supply Easement for transmission line Mortgage	Dario Petrin & Angelina Markowski (Owners) Bk 1855 No 326 D898183 (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) D898183 (NSW Electricity Transmission Authority) 3744069 (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 — 23-3-1999 — Signature of Applicant M.J. Sotak

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	1/334978 Lot 1 in Deposited Plan 334978 Mortgage	Fortunato Domenico Raso, Rosaria Raso, Angela Agata Raso & Teresa Raso (Owners) D444833 (Commonwealth Bank of Australia)	To be acquired under the Pipelines Act
90 Pipeline Easement shown in Sheet 1/2 & 2/2 of DP269185	Camden 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 596351	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

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) K661782 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) L225238 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 8103 Folio 125 Lot A in Deposited Plan 364030 Covenant Easement for pipeline	George Bazlovich (Owner) D999483 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

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 in 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 G280300 P720206 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) P720206	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 598352 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 13339 Folio 126 Lot 775 in Deposited Plan 2475 Easement for pipeline Mortgage	Marko Josipovic and Ana Josipovic (Owners) P720206 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 1068 Folio 94 Lot 788 in Deposited Plan 2475 Easement for pipeline	Douglas George Shoesmith (Owner) P720206	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

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 Adattini and Caterina Adattini (Owners) M436147 P720206	To be acquired under the Pipelines Act
120 Pipeline Easement shown in Sheet 2/2 of DP269185	Volume 7757 Folio 223 Lots 691 & 706 in Deposited Plan 2475 Easement for pipeline Mortgage	Anton Beuk and Lucja Beuk (Owners) P720206 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 7510 Folio 121 Lots 629 & 630 in Deposited Plan 2475 Easement for pipeline	Vito Rocco Polenza and Annunziata Polenza (Owners) P720206	To be acquired under the Pipelines Act
123 Pipeline Easement shown in Sheet 2/2 of DP269185	Volume 7716 Folio 28 Lot 547 in Deposited Plan 2475 Easement for pipeline	Barry Frances Mills (Owner) P720206	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 Schirripa and Teresa Schirripa (Owners) P720206 2187556 (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 4954 Folio 98 Lot 404 in Deposited Plan 2475 Easement for pipeline	Julka Scarnek and Mirko Scarnek (Owners) P720206	To be acquired under the Pipelines Act
127 Pipeline Easement shown in Sheet 2/2 of DP269185	Volume 8990 Folio 243 Lot 485 in Deposited Plan 2475 Easement for pipeline	Zoran Kukulj and Danica Kukulj (Owners) P720206	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) B29674 (Westpac Banking Corporation)	To be acquired under the Pipelines Act

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

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

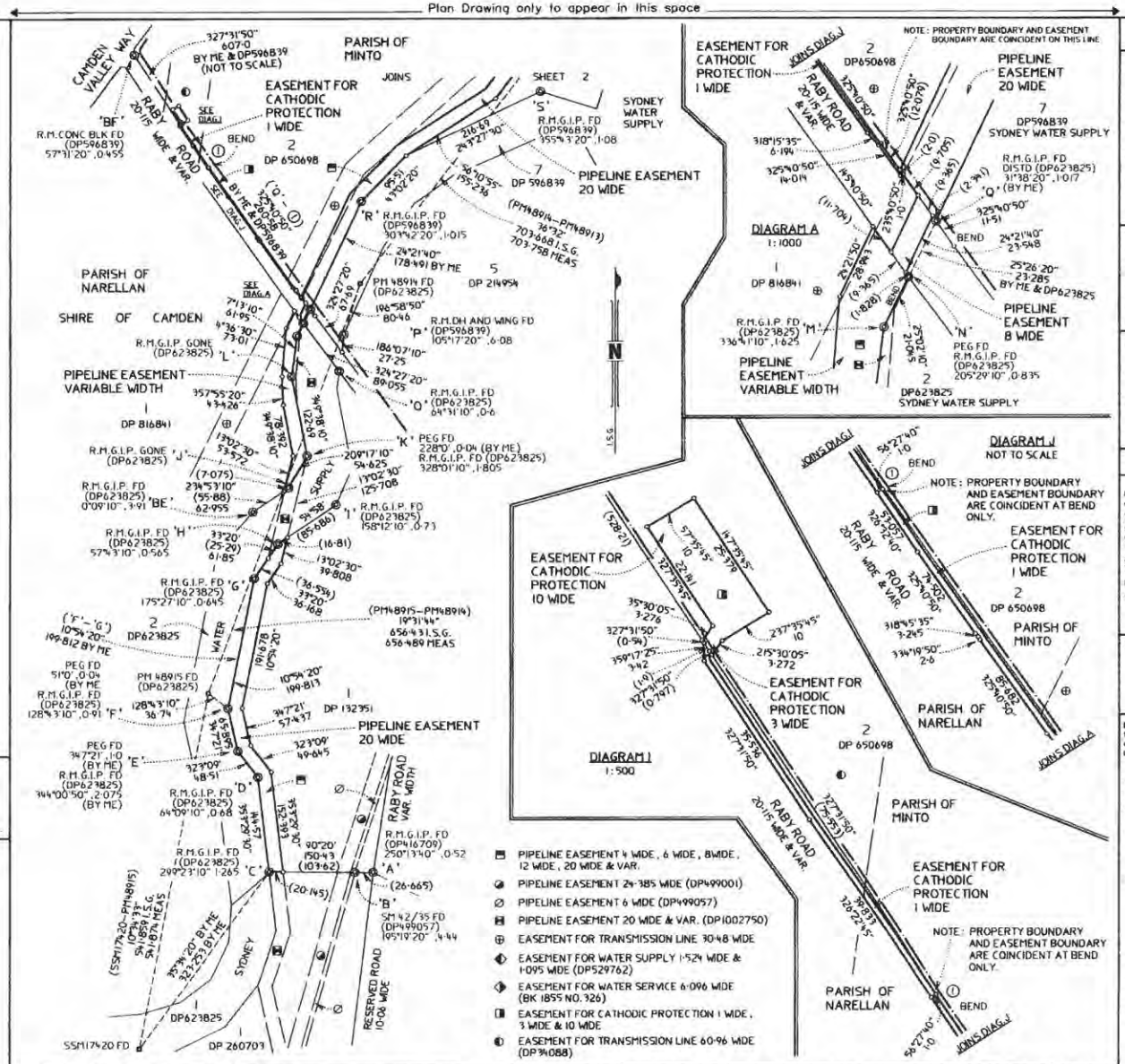
Signature of Applicant M J Sotak

PLAN FORM 2

Plan Drawing only to appear in this space

*OFFICE USE ONLY

SIGNATURE AND SEALS ONLY.



DP1016616

Registered: 20-9-2001

C.A:

Title System: TORRENS

Purpose: PIPELINES ACT 1967

Ref. Map: U7330-1, 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 KERVIN KEABLE of KEABLE FOX & HUGHES PTY. LTD., ACN 090 162 197 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/Rural

(Signature) 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

Date 30 May 2001

Crown Lands Office Approval

PLAN APPROVED Authorised Officer

Land District

Paper No. ..... pages

Field Book

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/*Solicitor/*Registered 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

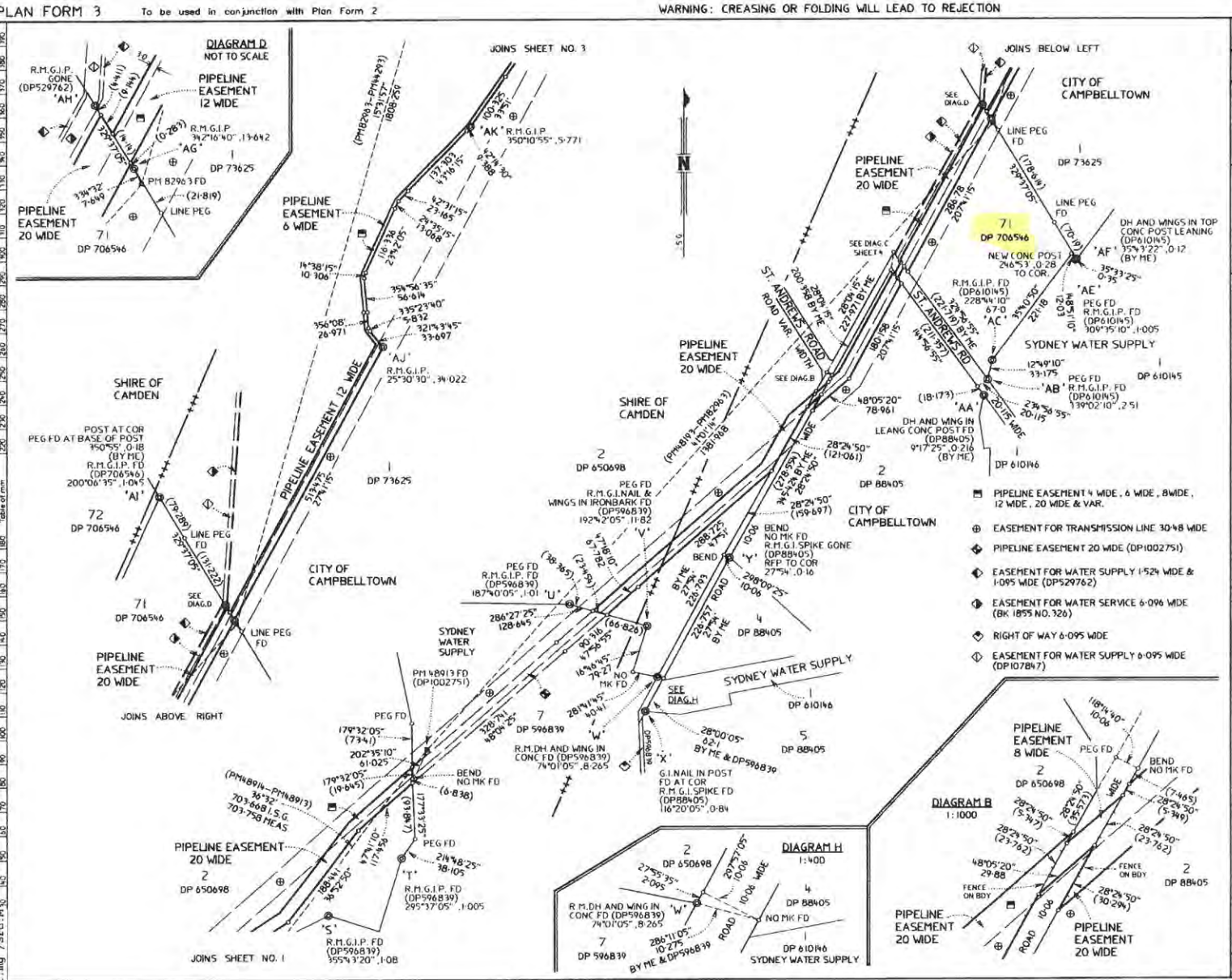
SURVEYOR'S REFERENCE: NO 0735-50/5 CHECKLIST COUNTRY

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 Table 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: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:ng /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 20/07/2001

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, DP623825, DP816841, DP650698, DP596839, DP88405, DP706546, DP610145, DP73625, DP27877, DP562696, DP876043, DP446480, DP596351, DP1002750, DP1002751, DP529762, DP34088, DP34084, DP446545, DP499001, DP610146, DP107847, DP334976, 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

© 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

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:2 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 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.

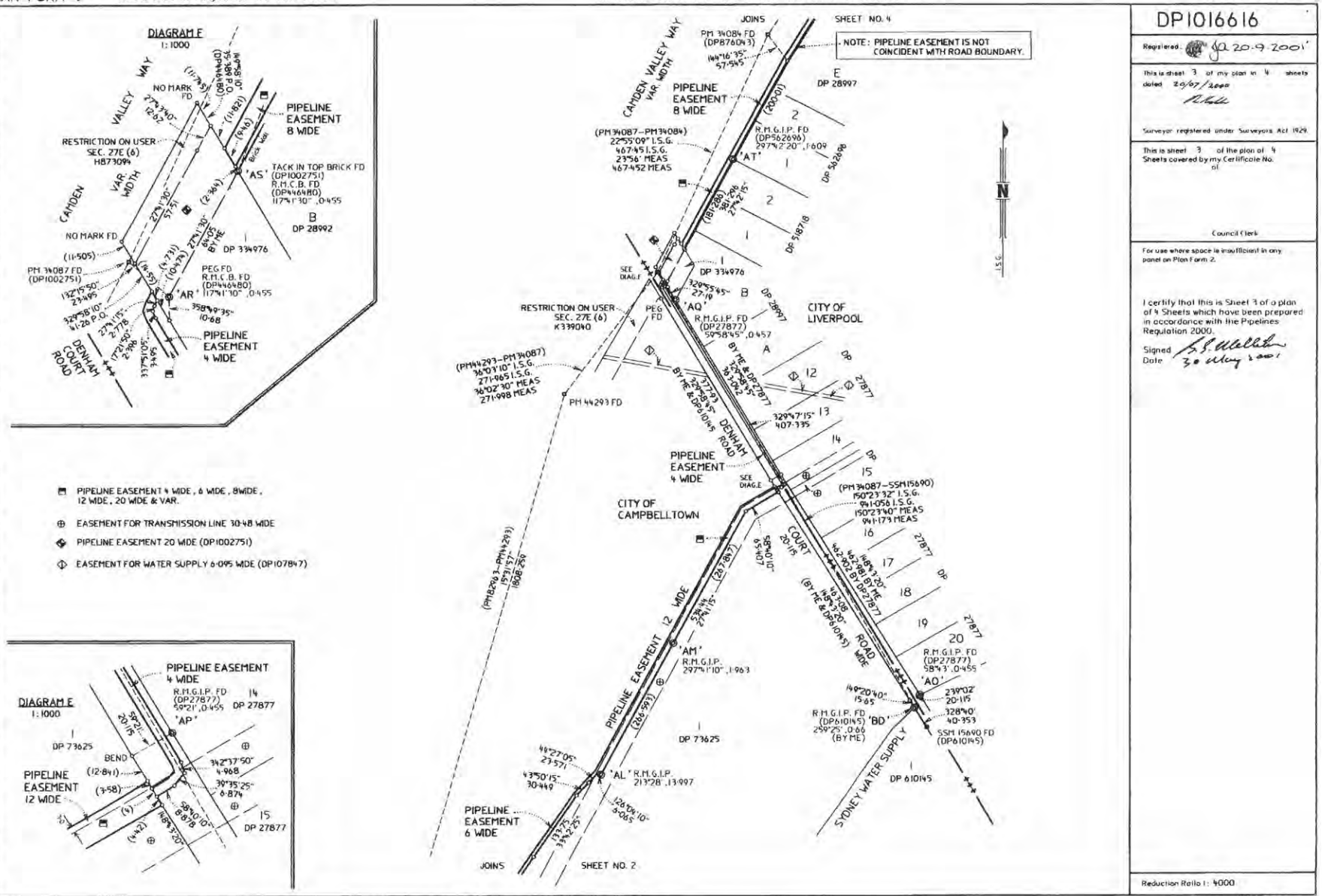
Signed
Date 30 May 2001

Reduction Ratio 1: 4000

SURVEYOR'S REFERENCE: NO 0735-50/5 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 /Pge:ALL /Seq:3 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 4 of my plan in 4 sheets dated 20/9/2001

Surveyor registered under Surveyors Act 1929.

This is sheet 4 of the plan of 4 Sheets covered by my Certificate No. of

Council Clerk

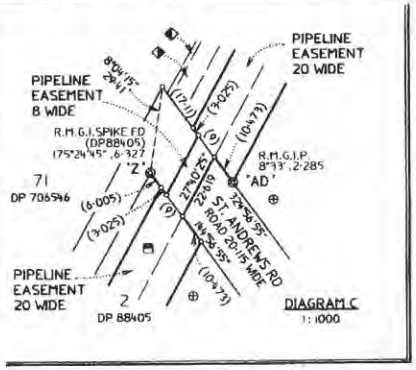
For use where space is insufficient in any panel on Plan Form 2

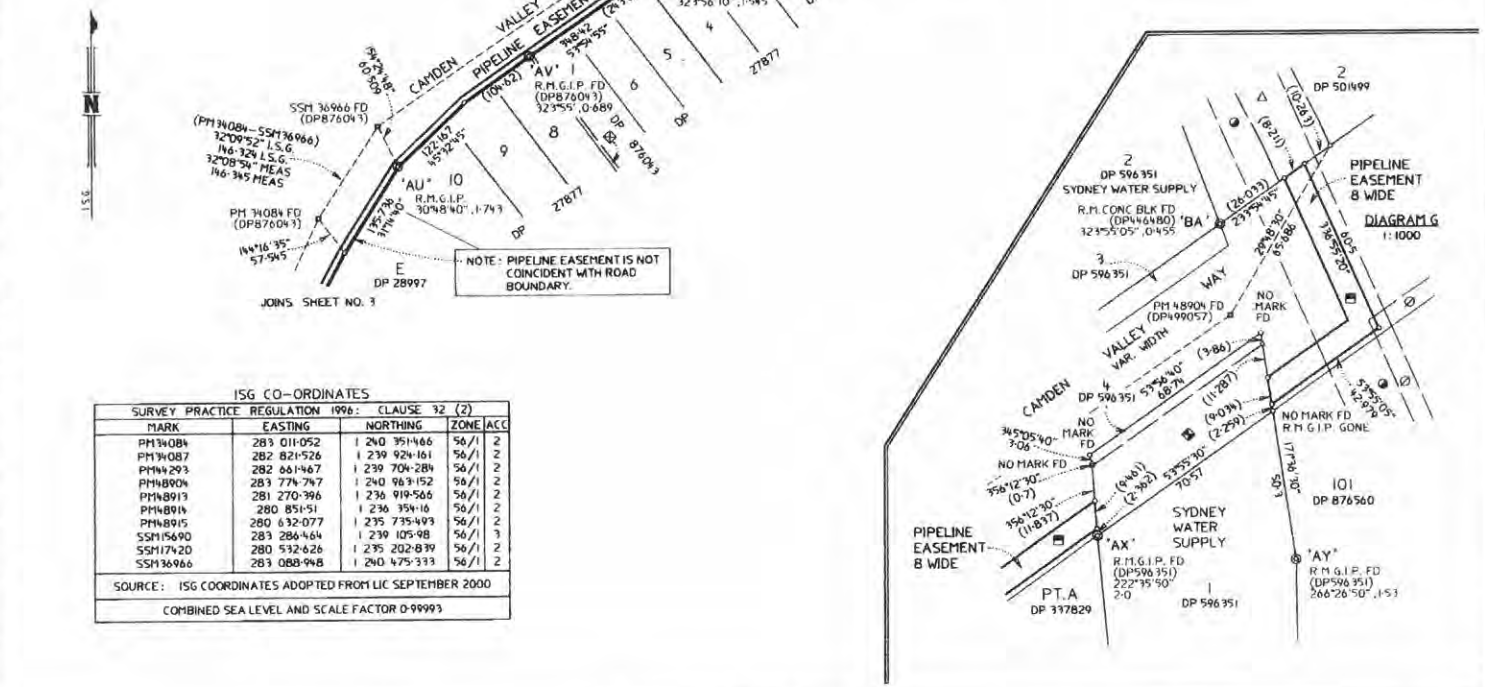
I certify that this is Sheet 4 of a plan of 4 Sheets which have been prepared in accordance with the Pipelines Regulation 2000.

Signed
Date 30 May 2001

Reduction Ratio 1 : 4000

NO 0735-90/5
SURVEYOR'S REFERENCE CHECKLIST COUNTRY





ISG CO-ORDINATES

SURVEY PRACTICE REGULATION 1996: CLAUSE 32 (2)				
MARK	EASTING	NORTHING	ZONE	ACC
PM34084	283 011·052	1 240 351·466	56/1	2
PM34087	282 821·526	1 239 924·161	56/1	2
PM44293	282 661·467	1 239 704·284	56/1	2
PM48904	283 774·747	1 240 963·152	56/1	2
PM48913	281 270·396	1 236 919·566	56/1	2
PM48914	280 851·51	1 236 359·16	56/1	2
PM48915	280 632·077	1 235 735·493	56/1	2
SSM15690	283 286·464	1 239 105·98	56/1	1
SSM17420	280 532·626	1 235 202·839	56/1	2
SSM36966	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, 8WIDE, 12 WIDE, 20 WIDE & VAR.
- PIPELINE EASEMENT 24·385 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)

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:4 of 4
Ref:mg /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:QA.OK /Prt:03-Jun-2014 14:41 /Pgs:ALL /Seq:1 of 5
Ref:mg /Src:M

RP13B

STAMP DUTY

$160.00

STAMP

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. L343711 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:

Signature of Transferor

Mayor

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 57CE.

LOCATION OF DOCUMENTS

CT	OTHER	
2		Herewith.
		In R.G.O. with
		Produced by

OFFICE USE ONLY

Checked	Passed	REGISTERED – –19
[illegible]	ϕ ADDED IN REG GEN. OFFICE 26.3.85 MS EF9	27 MAR 1985
Signed	Extra Fee	

OVER

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 de 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 ate 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 odged, 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	CT			5706

L.O. 880 D. WEST, GOVERNMENT PRINTER

Req:R618563 /Doc:DL V636425 /Rev:14-Aug-1997 /Sts:QA.OK /Prt:03-Jun-2014 14:41 /Pgs:ALL /Seq:3 of 5
Ref:mg /Src:M

3

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 e 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:OA.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. 706946

MUN./SHIRE/CITY ..... CAMPBELLTOWN

TOWN or LOCALITY ..PENHAM COURT.....

PARISH ..... MINTO .....

COUNTY ..... CUMBERLAND .....

Reduction Ratio 1:

(Lengths are in metres)

I RONALD JAMES RENGGER

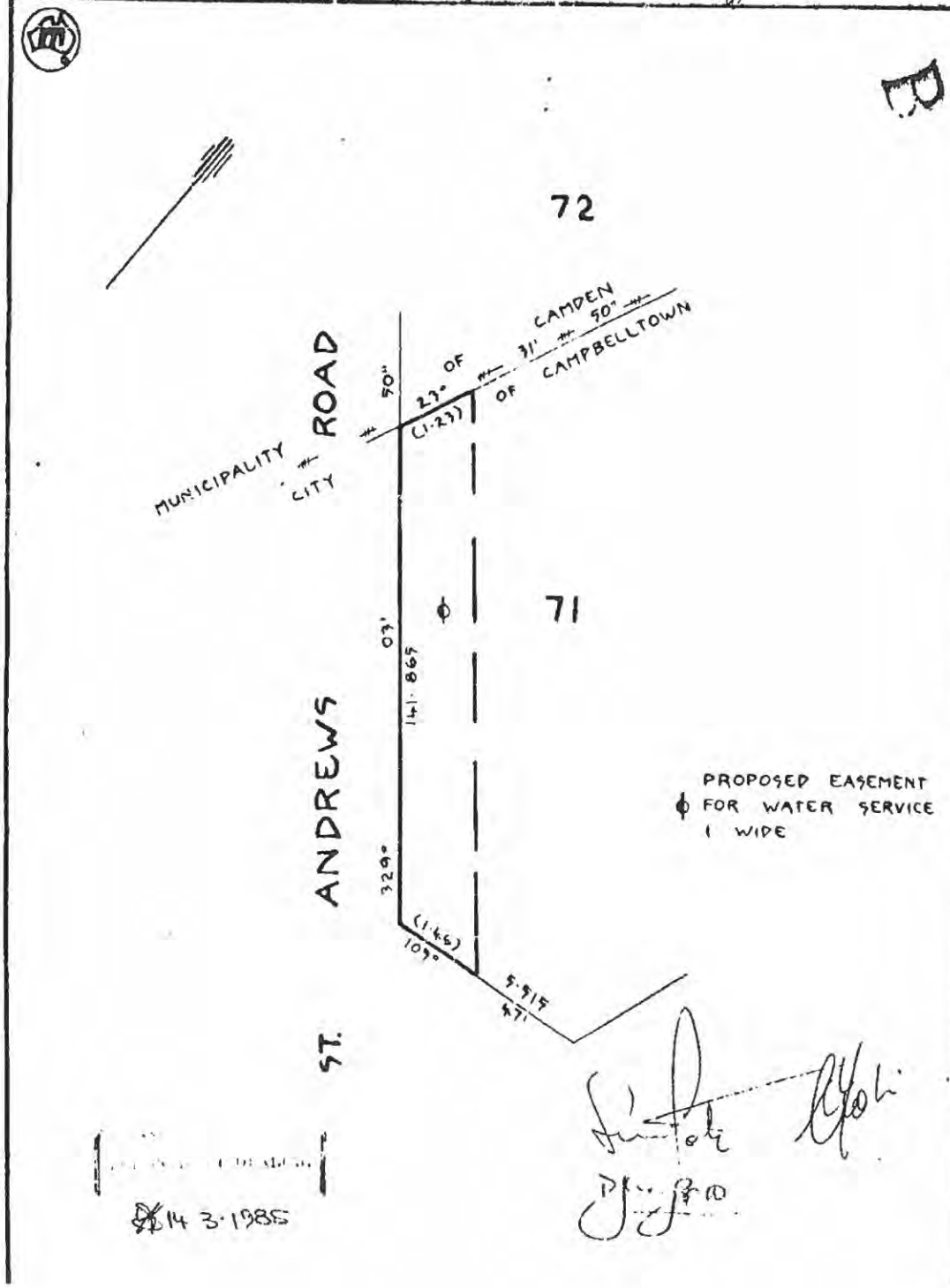
of Lean, Lackenby & Hayward,
6 Warby Street, CAMPBELLTOWN, N.S.W. 2560

a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that this plan has been compiled from information contained in

D.P. 706946

and was completed on 17TH. SEPTEMBER, 1984

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 [redacted] (2)

X240689

$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 Figure MAYOR

..... TOWN CLERK

..... 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)

344 ..... Address and occupation of Witness

.....

Solicitor for ~~XXXXXXX~~ Transferee 12-12-87
R.W. YANDELL

TO BE COMPLETED BY LODGING PARTY Notes (h) and (i)

LODGED BY [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

$74

RB2M RE Manual Regn 17 RB1

Req:R618566 /Doc:DL X565831 /Rev:16-Sep-2010 /Sts:OK.SC /Prt:03-Jun-2014 14:41 /Pgs:ALL /Seq:1 of 1
Ref:mg /Src:M

RP 13[illegible]5W

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)

*1.00 STAMP DUTY 26/11/8[illegible]

TRANSFEROR Note (b)

GLENSAUGH PTY. LIMITED 12th Floor, 275 George Street, SYDNEY.

351[illegible]E D

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

.....

Rudemann
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	
EA 9/12				
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 **TENANCY:** Tenants-in-Common in equal shares

(G)

(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 of Witness

MERILYN PULLIN
Name of Witness (BLOCK LETTERS)

180 Queen Street Campbelltown
Address of Witness

E Morgan
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 of Transferee
Solicitor for

If signed on the transferee's behalf by a solicitor or licensed conveyancer, show the signatory's full name in block letters.

N.S.W. STAMP DUTY
080798 1002 0x 00730211/03
$2.00

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

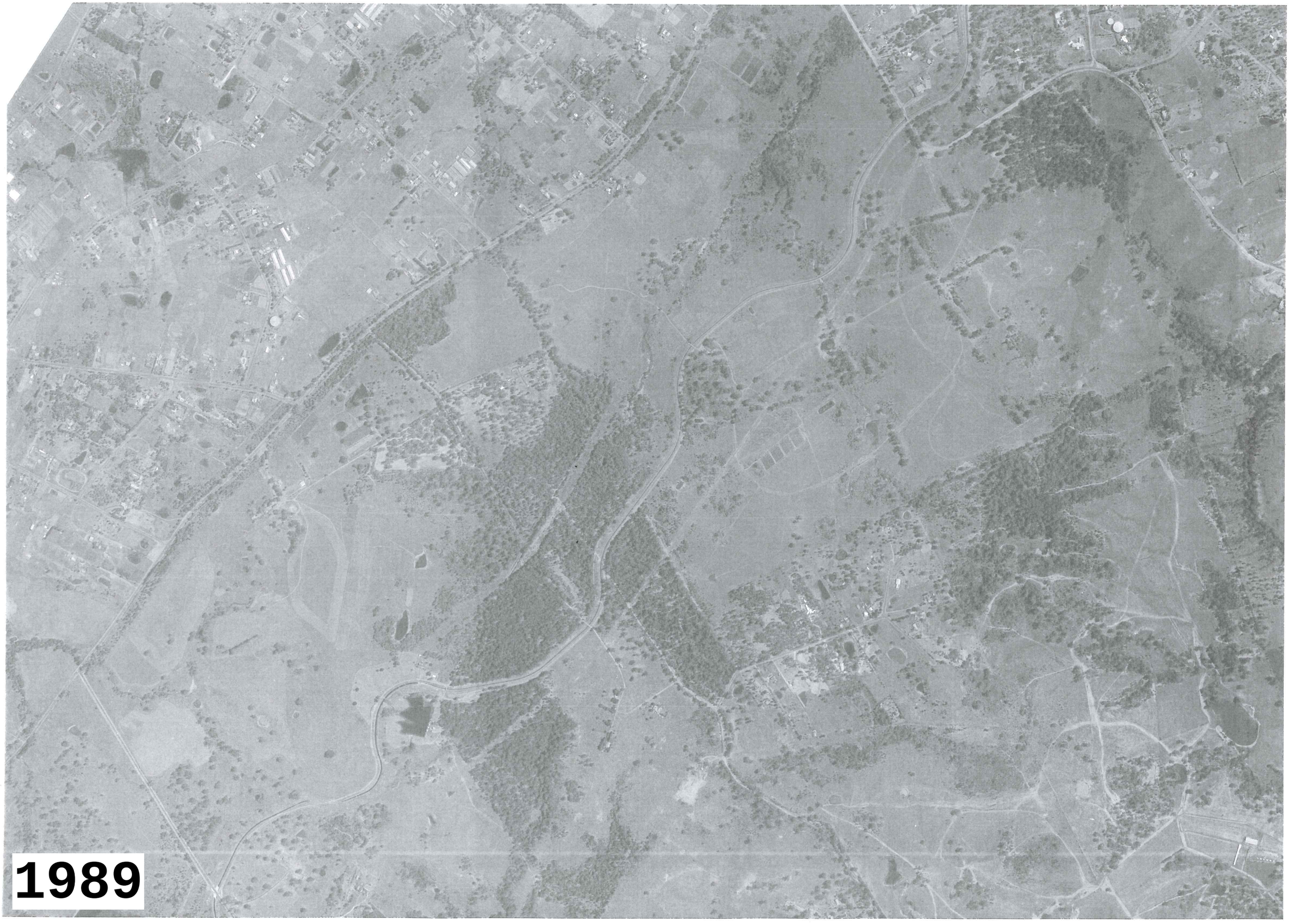
* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. InfoTrack an approved NSW Information Broker hereby certifies that the information

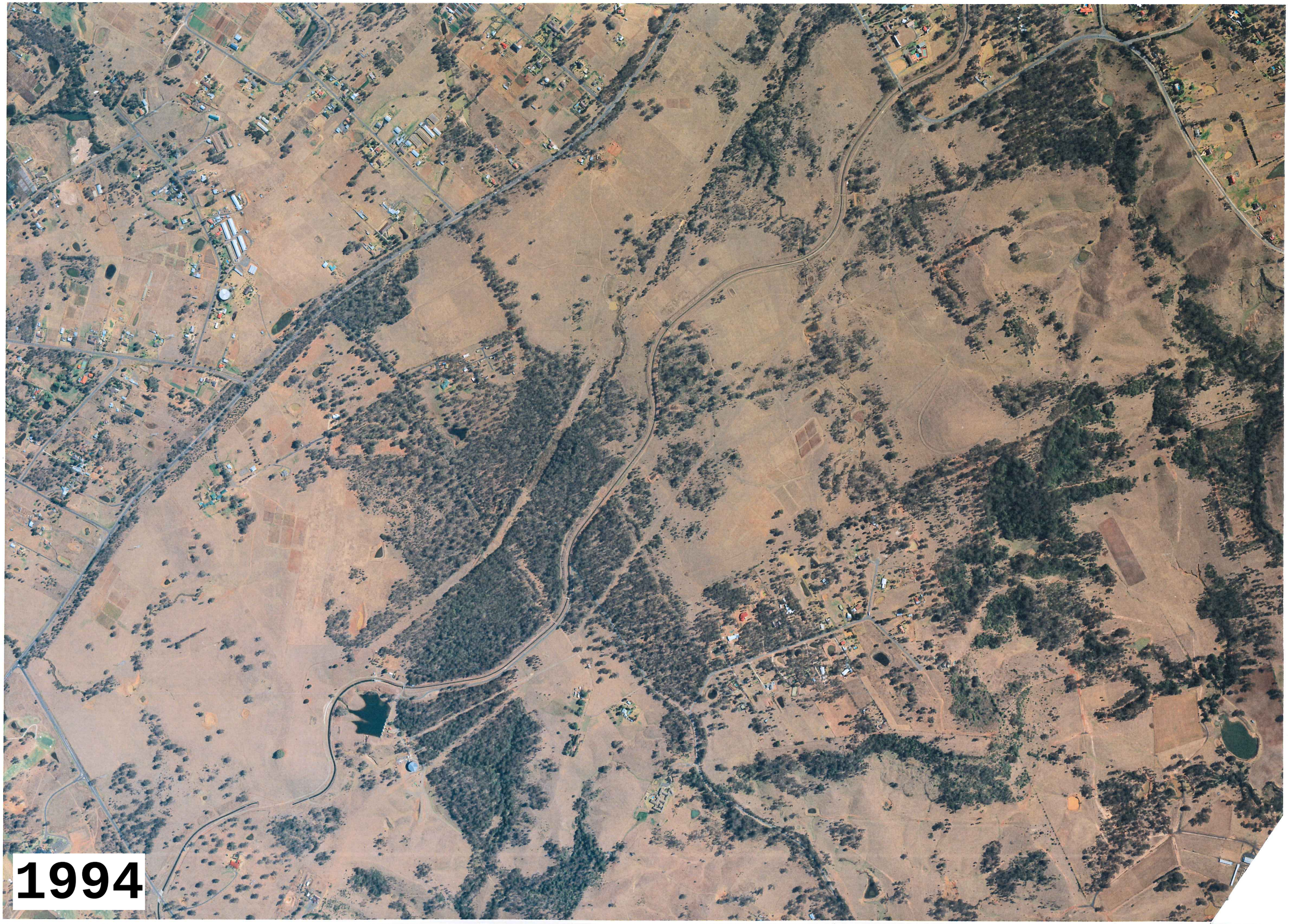
Historical Aerial Photographs

1947

1965

1982


1989


1994

2005

Search
Go
Search History
PhotoMaps
MultiView
Terrain
Map
Street Maps
Properties
2009
nearmap
current. clear. change.
Showing 22 Apr 2014
100 m
Terms of Use

Search
Go
Search History
PhotoMaps
MultiView
Terrain
Map
Street Maps
Properties
2014
nearmap
current : clear : change
Showing 14 Nov 2009
100 m
Terms of Use

SITE WALKOVER PHOTOGRAPHS

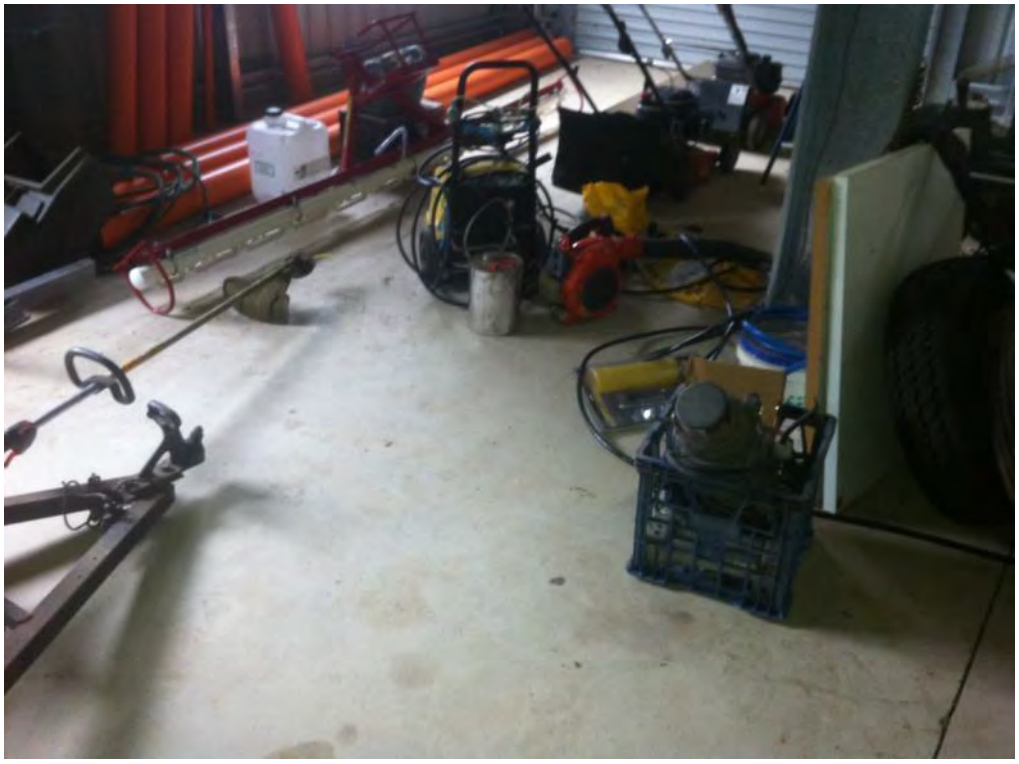
71 St Andrews Rd Denham Court NSW

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

A TBE ENVIRONMENTAL COMPANY

FLORA AND FAUNA ASSESSMENT

Proposed Development

Lot 71, DP 706546

71 St Andrews Road

VARROVILLE

16 June 2021

(REF: 18GAT03F2)

FLORA AND FAUNA ASSESSMENT

Proposed Residential Development

Lot 71, DP 706546, 71 St Andrews Road, Varroville

Report authors:	Michael Sheather-Reid B. Nat. Res. (Hons.) – Managing Director Accredited Assessor no. BAAS17085 Lindsay Holmes B. Sc. – Senior Botanist – Accredited Assessor no. BAAS17032 George Plunkett B. Sc. (Hons.), PhD – Botanist – Accredited Assessor no. BAAS19010 Robert Sansom B. Sc. (Hons.) – Botanist Corey Mead B. App. Sc. – Senior Fauna Ecologist – Accredited Assessor no. BAAS19050
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Fauna survey:	Tim Buckley B. Sc. – Fauna Field Ecologist
Plans prepared:	Sandy Cardow B. Sc. Emma Buxton B. Sc.
Approved by:	Michael Sheather-Reid (Accredited Assessor no. BAAS17085)
Date:	16/06/21
File:	18GAT03F2

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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.

EXECUTIVE SUMMARY

Travers bushfire & ecology has been engaged to undertake a flora and fauna assessment for a concept proposal within Lot 71, DP 706546, 71 St Andrews Road. 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.

Proposed development

The study area is currently zoned E3 Environmental Management. As the site is located within the Campbelltown local government area (LGA), this project is being assessed under the *Threatened Species Conservation Act* (*TSC Act*, 1995) in accordance with the *Biodiversity Conservation (Savings and Transitional) Regulations, 2017.* Local developments in the Campbelltown LGA may submit proposals under the *TSC Act* until November 25th, 2019. This assessment was submitted during that period, however minor adjustments have been requested which form this update.

The proposal is for the rezoning of the lands to the north-western side of the powerline easement and subsequent subdivision. The proponents are intending to offset the impacts through a biodiversity offset scheme.

The remaining proposed E2 lands on the south-eastern side of the powerline easement 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 *Biodiversity Conservation Act* (*BC Act*) 2016.

Future works within the E2 lands will also include a single dwelling with associated works and APZ, a constructed access road, and a stormwater detention basin.

At the previous meeting with Council, we were requested to provide an updated vegetation assessment for the site. In response to the existing condition of the ground layer vegetation which had been managed to a certain extent and had had ongoing grazing of agisted stock. All management of vegetation within the site was postponed and approximately 6-8 months of time has elapsed on site to provide an opportunity for understory vegetation to regenerate. During that time there was also one rainfall period. As a result of this survey, we would have expected significantly more understory regeneration on site however given that there was only a partial increase of understory regeneration within the site despite the removal of the vegetation management works this would suggest that the vegetation within the understorey is quite disturbed and is unlikely to regenerate to any comprehensive form. This vegetation assessment has relied on updated BAM plots within the site to provide and accurate representation of the existing vegetation at the time of survey.

It is noted that an avoidance of impact was requested at a previous meeting. It's important to note that this proposal was previously submitted and refused by the panel on the basis of a rezoning concept that was not supported. During discussions on that previous proposal, support was given to the conservation of the entire eastern portion of the site on the eastern side of the electrical easement, and a subdivision would occur on the western side. Consequently, this flora and fauna assessment has assessed the avoidance of impact on the eastern lot, with the exception of the access road that is required for bushfire access / safety purposes, and has assessed the impact on the eastern most portion which is proposed for R2

re-zoning. In addition, the previous report had assessed an APZ in the centre of the conservation lot and utilised the existing dam for the purposes of a storm water basin. The stormwater design has been revisited, and the stormwater basin has been accurately sized, which increased the size of this basin. In addition, the house, as agreed by council, has been moved closer to the northern boundary and typical building footprint appropriate APZ has been placed within that area. It is the intent that the house and APZ would be contained within an R2 zoning just for that area. The current flora and fauna report assesses the impacts based on the current state of the vegetation on site in accordance with the BAM.

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*), Southern Myotis (*Myotis macropus*), Large Bentwing-bat (*Miniopterus orianae oceanensis*) and Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*), no threatened flora species and one (1) critically endangered ecological community (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 Large 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* (*EPBC*) *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 proposed vegetation removal was not considered to have a significant impact on matters of national environmental significance as the remnant vegetation present which is 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 DAWE 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 and 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 2.74 ha of Cumberland Plain Woodland.

Conclusion

It is concluded that the proposed vegetation removal within Lot 71, DP 706546, 71 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

APZ	asset protection zone
BAM	Biodiversity Assessment Method (2020)
BAR	Biodiversity Assessment Report
BC Act	Biodiversity Conservation Act (2016)
BC Reg	Biodiversity Conservation Regulation (2017)
BCAR	Biodiversity Certification Assessment Report
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offset Scheme
BPA	bushfire protection assessment
BSSAR	Biodiversity Stewardship Site Assessment Report
CEEC	Critically endangered ecological community
CM Act	Coastal Management Act 2016
DAWE	Department of Agriculture, Water and the Environment.
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 (superseded by DAWE)
DPIE	NSW Department of Planning, Industry and Environment
EEC	endangered ecological community
EPA	Environment Protection Authority
EP&A Act	Environmental Planning and Assessment Act (1979)
EPBC Act	Environment Protection and Biodiversity Conservation Act (1999)
FM Act	Fisheries Management Act
IBRA	Interim Biogeographic Regionalisation for Australia
LEP	local environmental plan
LGA	local government area
LLS Act	Local Land Services Act (2013)
NES	national environmental significance
NPW Act	National Parks and Wildlife Act (1974)
NRAR	Natural Resources Access Regulator (NSW)
NSW DPI	NSW Department of Industry and Investment
OEH	Office of Environment and Heritage (superseded by DPIE from August 2019)
PCT	plant community type
PFC	projected foliage cover
RFS	NSW Rural Fire Service
ROTAP	rare or threatened Australian plants
SAII	Serious And Irreversible Impacts
SEPP	State Environmental Planning Policy
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
TPZ	tree preservation zone
TSC Act	Threatened Species Conservation Act (1995) – Superseded by the Biodiversity Conservation Act (2016)
VMP	vegetation management plan

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1. INTRODUCTION

Travers bushfire & ecology has been engaged to undertake a flora and fauna assessment for a concept proposal within Lot 71, DP 706546, 71 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.

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 Agriculture, Water and the Environment (DAWE) 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 applies 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 DAWE 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 Proposal

The study area is currently zoned E3 Environmental Management. The proposal is for the rezoning of the lands to the north-western side of the powerline easement and subsequent residential subdivision. The proponents are intending to offset the impacts through NSW Biodiversity Offsets Scheme as it has been assessed under transitional provisions of the *TSC Act*.

The remaining lands on the south-eastern side of the powerline easement 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 *BC Act*.

Future works within the E2 lands will also include a single dwelling with associated works and 10m wide APZ, a constructed access road, and a stormwater detention basin.

Table 1-1 – Vegetation removal and retention

Impacts & Actions	Area
Total CPW vegetation onsite	6.06 ha
Total proposed CPW removal	2.74 ha
Total proposed CPW retained	3.32 ha
CPW removed in North-western portion	2.57 ha
CPW removed in South-eastern portion	0.17 ha

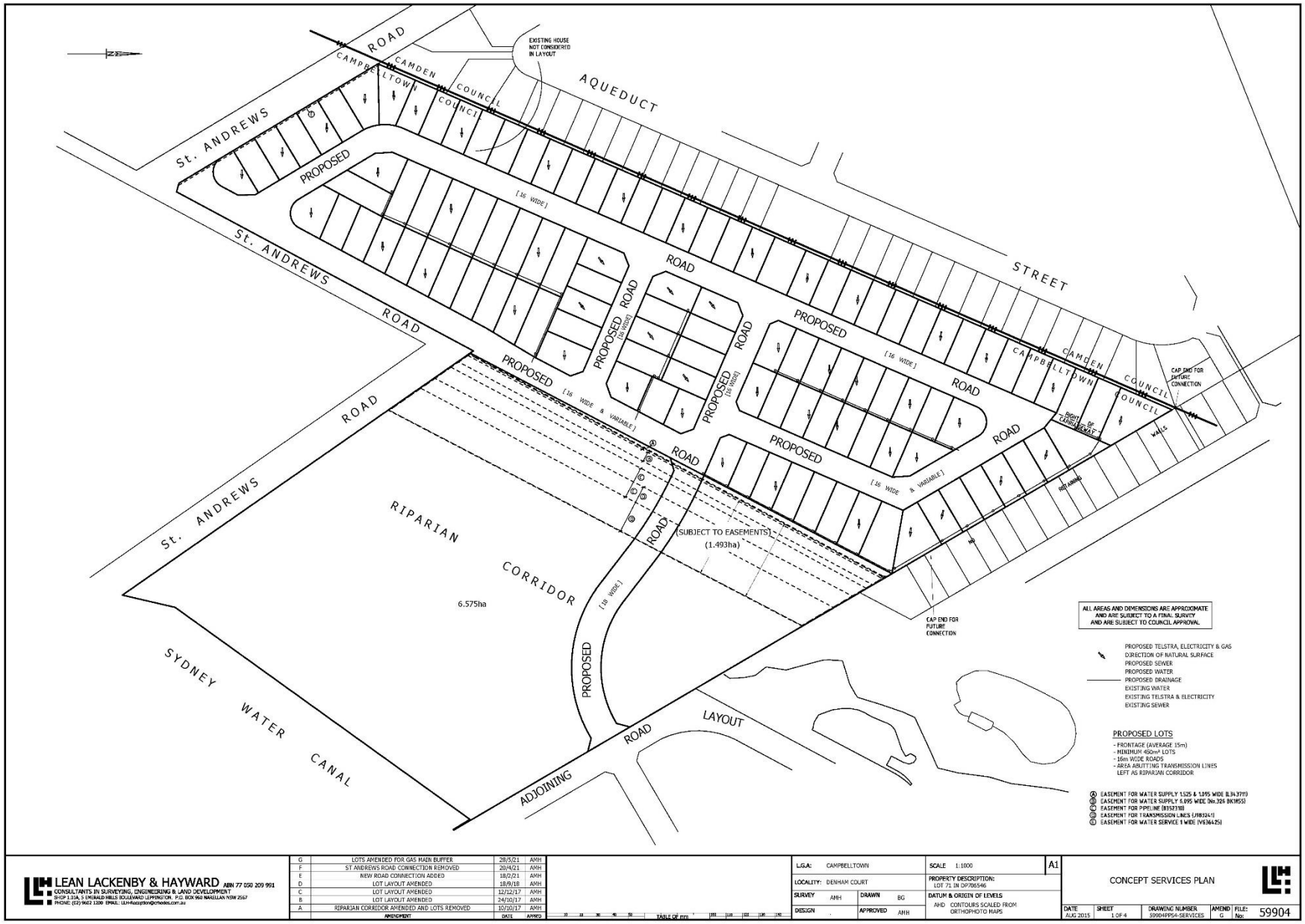

Figure 1-1 - Concept development plan

1.4 Site description

Table 1-2 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 1-2 – Site features

Location	71 St. Andrews Road, VARROVILLE Lot 71, DP 706546
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.
Zoning	E3 – Environmental management

2. SURVEY METHODOLOGY

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.

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*)
- Biodiversity Conservation Act 2016 (*BC 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 / 2016).

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, 2018 and 2021) was undertaken to identify records of threatened flora and fauna species located within a 10 km 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. Note that the search was undertaken when DOEE was active, it has since changed to DAWE. The search was broadened to a 10 km 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 (Table A 2-1,

Table A 2-2 and Table A 2-3).

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 10 km 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. Updated Bionet searches were undertaken in 2018 and 2021 to see if there were any new listings of threatened species that may require consideration.

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 4-2.

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 2.5.

2.4 Field survey effort

Table 2-1 and Table 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

Fauna group	Date	Weather conditions	Survey technique(s)	Time effort (24hr)
Molluscs	31/10/17	3/8 cloud, light-mod SW wind, no rain, temp 18^{o}C	Habitat searches	1hr 5min 1050 - 1155
	2/11/17	4/8 cloud, light N wind, no rain, temp 23-18^{o}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
Tree assessment	Recording of species and diameter-at-chest-height for trees in proposed road footprint	15/4/21

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 3-1

Vegetation to the north-west of electrical easement = 2.3 ha
Q1
Q5
Q6
Q7
Q8

FL

Figure 3-1). 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 3-1. 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 Southern 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.

3. SURVEY RESULTS

3.1 Flora results

3.1.1 Flora species

The plants observed within the vegetation communities of the subject site are listed in the o 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	
Poaceae	*Bothriochloa decipiens*	Redleg Grass	✓
Poaceae	*Bothriochloa macra*	-	✓
Brassicaceae	*Brassica oleracea**	Cauliflower	✓

Family	Scientific name	Common name	Species recorded by Gunninah only (2015)
Poaceae	*Briza minor**	Shivery Grass	
Poaceae	*Briza subaristata**	-	
Poaceae	*Bromus cartharticus**	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	

Family	Scientific name	Common name	Species recorded by Gunninah only (2015)
Stackhousiaceae	*Stackhousia viminea*	-	
Poaceae	*Stenotaphrum secundatum**	Buffalo Grass	
Asteraceae	*Taraxacum officinale**	Dandelion	
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.* Canopy density varies from moderate to sparse (see Photo 3-1 to 3-7).

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.

This community occupies 6.06 ha throughout the site. The western half has more gaps at present due to a lack of native ground layer having been recently ploughed, while the eastern half is more intact.

***Photo 3-1 , 3-2, 3-3, 3-4, 3-5*, left to right, centre line through quadrat 1 to quadrat 5. Note the heavily disturbed and almost absent ground layer post ploughing.**

Photo 3-6 – Slashed groundlayer in the centre of the eastern portion of the site

Photo 3-7 – Ploughed ground layer 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 microtuberosum.*

Photo 3-8 – Dam adjacent to the northern boundary in eastern portion of the site

Photo 3-9 – 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 3-10 shows an example along the access driveway.

Photo 3-10 – 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
Mistletoebird	*Dicaeum hirundinaceum*		O W

Common name	Scientific name	Method observed	
		Gunninah 2014-15	*TBE* Oct-Nov 2017
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*	✓	
Large 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
Southern 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

Common name	Scientific name	Method observed	
		Gunninah 2014-15	*TBE* Oct-Nov 2017
Delicate Skink	*Lampropholis delicata*	✓	O
Eastern Water Dragon	*Intellagama lesueurii*	✓	
Weasel Skink	*Saproscincus mustelinus*	✓	
Amphibians			
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 3-1 - Flora and fauna survey effort and results

4. ECOLOGICAL ASSESSMENT

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 2013/2016).*

The study area is approximately 500 m 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 threatened flora species that may occur. Due to this disturbance of the soil, it was expected that threatened flora were unlikely to be found. The habitat potential in the eastern portion was quite limited within the central parts, but possibly better quality 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 flora species observed within the study area 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, 2018, 2021) 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 A 2-1 (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 This species was not observed within the study area

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 was heavily degraded by prior slashing and the study area is not suitable any longer.

This population is not represented within the study area.

(c) Threatened ecological communities (NSW)

One (1) critically endangered ecological community (CEEC) – Cumberland Plain Woodland – was observed within the subject site;

- Cumberland Plain Woodland

6.06 ha of Cumberland Plain Woodland occurs within the study area.

The proposed vegetation clearing within the entire study area would likely impact 2.74 ha of poor-quality Cumberland Plain Woodland. The eastern portion zoned E2 would see retention of 3.32 ha of disturbed vegetation.

This community has 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 / BC 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 / BC 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
- 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
- Wingecarribee Swamp

None of the aforementioned wetland communities are present within the study area, therefore they do not require any further consideration.

In accordance with the NSW DPI - Office of Water - Guidelines for Controlled Activities a standardised buffer of 40m applies to endangered wetland 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) shall be 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.

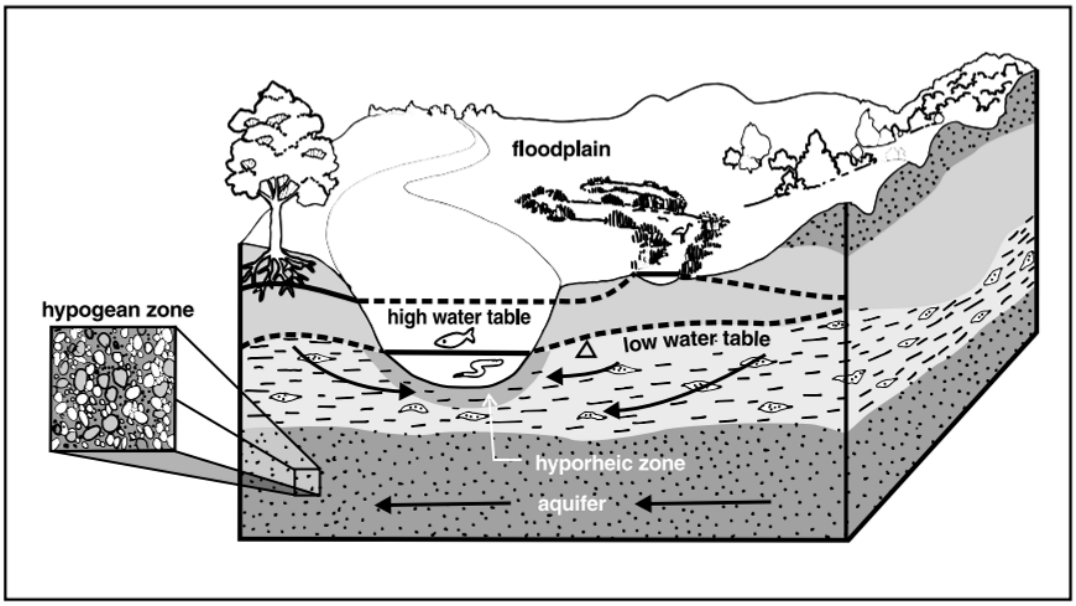

Figure 4-1 - Alluvial groundwater system discharging into a river

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, therefore further consideration of GDEs is not required.

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 10 km radius of the site. These species have been considered for the presence of suitable habitat and potential to occur within 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 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 to occur as there is suitable habitat within the study area. Despite detailed targeted searches, this species 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 4-3 displays as a flowchart.

In each of the 5 quadrats, native groundcover does not exceed 5% except in quadrat no. 3. In no. 3 it was measured at 10%. In comparison to the exotic or introduced species, native species made up much less than 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 DAWE under the *EPBC Act* will therefore not be required.

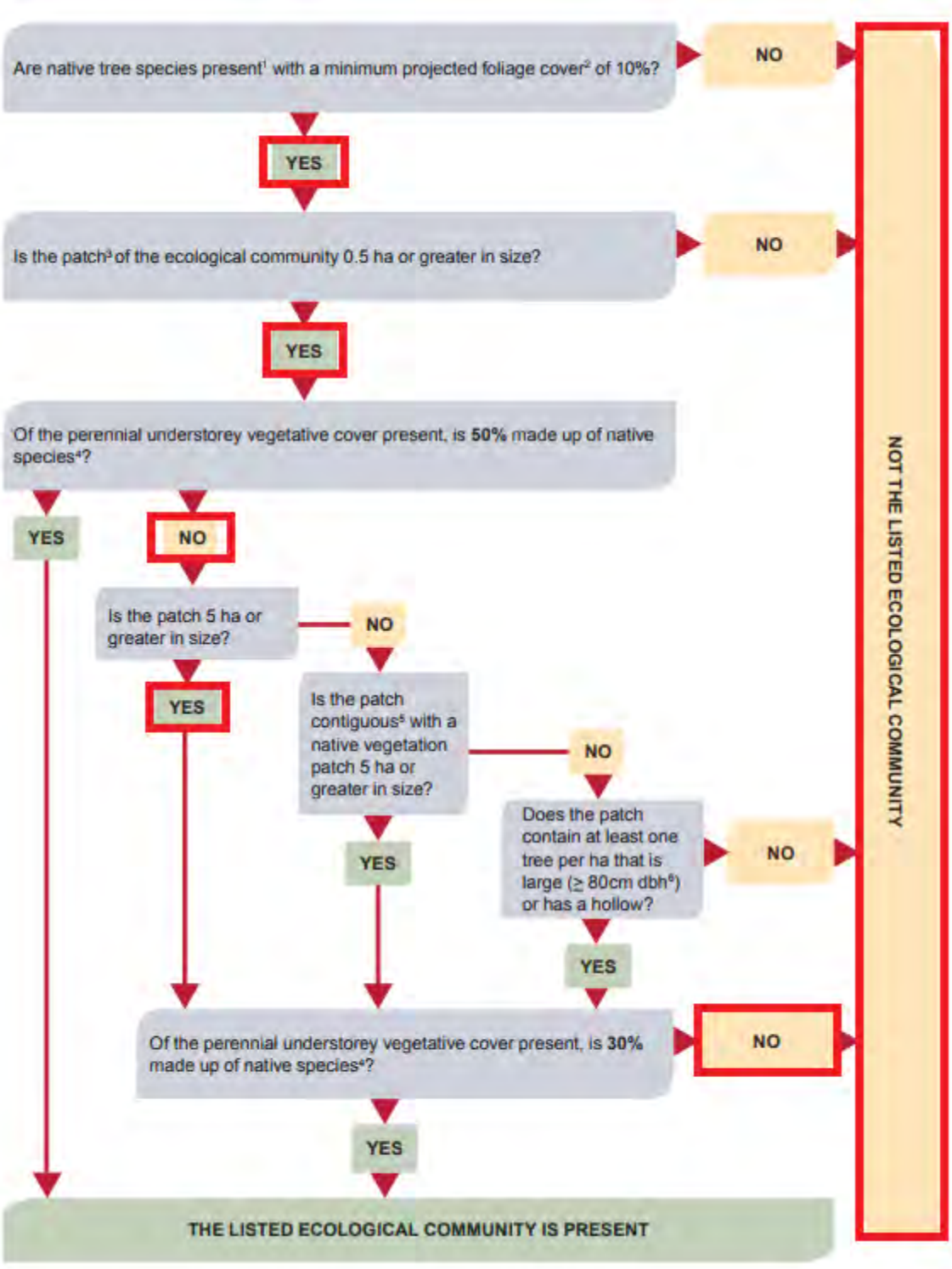

Figure 4-2 – Flowchart for determination of Cumberland Plain Shale Woodland and Shale-Gravel Transition Forest

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 3-1 shows locations of habitat trees.

One large hollow 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 3 km 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, Southern 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 bat 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 E2 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, 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, 2018) 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
Large Bentwing-bat	V	recorded
Southern 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 and an assessment of likely occurrence for these species are provided in Appendix 2.

Four (4) state listed threatened fauna species including Greater Broad-nosed Bat (*Scoteanax rueppellii*), Southern Myotis (*Myotis macropus*), Large 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 Large 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 trees containing hollows are inspected for use by any threatened microbat species and the presence of such hollows are retained in-situ with appropriate buffers wherever possible, or compensatory habitat such as appropriately sized nest boxes are installed within nearby retained vegetation.

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 10 km of the study area or expected to occur.

(c) SEPP (Koala Habitat Protection) 2021

The proposal was submitted at the time SEPP 44 was active, an assessment was completed and determined that the site did not contain Core Koala Habitat and no further Koala Assessment was required.

Since then the Koala Habitat Protection SEPP 2019 was enacted, repealed and replaced by SEPP (Koala Habitat Protection) 2021.

Does the Koala Habitat Protection SEPP 2021 apply?

In local government areas with no approved Koala Plan of Management, the Koala SEPP 2021 applies if:

- the size of the land, including any adjoining parcels of land under the same ownership, is more than 1 hectare **- YES**
- your property is within a local government area the Koala SEPP applies to (see the Koala SEPP 2021 for a list of council areas) – **YES City of Campbelltown**
- the development you propose requires development consent from council **- YES**

Koala SEPP 2021 does not apply to land zoned RU1 primary production, RU2 rural landscape or RU3 forestry unless you are in the Sydney Metropolitan Area (Blue Mountains, Campbelltown, Hawkesbury, Ku-Ring-Gai, Liverpool, Northern Beaches, Hornsby, Wollondilly LGAs) or the Central Coast LGA where the Koala SEPP 2021 applies to all zones.

Instead, State Environmental Planning Policy (Koala Habitat Protection) 2020 applies to all other RU1, RU2 and RU3 or equivalent zoned land.

The Koala SEPP 2021 applies unless an approved Koala Plan of Management is in force. If you are in a local government area with an approved Koala Plan of Management, your development application must be consistent with that plan. This applies to land of any size, not just land of more than 1 hectare. The Campbelltown Comprehensive Koala Plan of Management 2018 applies to this site.

A separate Koala assessment report has been prepared in accordance with the Campbelltown Comprehensive Koala Plan of Management 2018 to assess compliance with the required development controls.

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 criterion 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 proposed vegetation removal.

(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 10 km radius of the subject site. The habitat potential of migratory fauna species is considered in 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 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, will not cause any segmentation, fragmentation or isolation of this local connectivity. This is demonstrated in Figure 4-4 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, Southern Myotis, Large 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 proposed vegetation removal will not likely inhibit or reduce local movements for any of these remaining flying species.

Figure 4-3 – Local connectivity

5. CONCLUSION

Travers bushfire & ecology has been engaged to undertake a flora and fauna assessment for a concept proposal within Lot 71, DP 706546, 71 St. Andrews Road, Varroville.

Ecological survey and assessment have 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*), Southern Myotis (*Myotis macropus*), Large 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 Large 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 vegetation removal 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 proposed vegetation removal 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 DAWE 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 2.74 ha of Cumberland Plain Woodland within the study area
- 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 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 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.

- Residual impacts of the proposed vegetation removal 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 vegetation removal.

- 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 E2 lands to the south-east of the powerline easement.

- Target weed control is to be undertaken across all retained E2 lands to improve the condition of the ground layer and assist in natural regeneration as well as reduce competition 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 or tracks of vehicles or machinery. 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 vegetation clearing area 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 or alternatively hollows are to be re-located or replaced with nest boxes of a similar size within adjoining retained vegetation. The same inspections and protections are required for any hollow-bearing trees located within E2 area to the south-east of the powerline easement.

- 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 the E2 conservation area to the south-east of the powerline easement. Nest boxes may be constructed to replace a removed hollow however a relocated/refurbished natural hollow is preferred for use by threatened microbat species. Constructed boxes should be constructed entirely 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 a 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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APPENDIX 1. FAUNA SURVEY METHODOLOGIES

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 1.4 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 (*Phascolarctos 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 1 ha.

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 water’s 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 eye-shine 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 viewed 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)

APPENDIX 2. HABITAT ASSESSMENT

Table A 2-1 provides an assessment of potential habitat within the subject site for state and nationally listed threatened flora species recorded within 10 km on the Atlas of NSW Wildlife (DPIE) or indicated to have potential habitat present within 10 km on the *EPBC Act* Protected Matters Tool.

Table A 2-1 – Threatened flora habitat assessment

Scientific name DATABASE SOURCE	*TSC Act*	*EPBC Act*	Growth form and habitat requirements	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	
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 DPIE 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
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 DPIE 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

Scientific name DATABASE SOURCE	*TSC Act*	*EPBC Act*	Growth form and habitat requirements	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	
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 DPIE 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
Eucalyptus scoparia DPIE	E1	V	Smooth-barked tree only known from vicinity of Bald Rock.	x	x	-	-	x	x
Genoplesium baueri DPIE 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 juniperina subsp. *juniperina* DPIE	V	-	Erect to spreading shrub 0.5-1.5m tall. Grows on laterite and Tertiary alluvium. Distribution limits St Marys-Londonderry-Prospect.	x	x	-	-	x	x
Grevillea parviflora subsp. *parviflora* DPIE 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 DPIE	E1	-	Multi-stemmed shrub to 70cm. Grows on hillsides and riverbanks. Confined to Georges and Nepean Rivers and believed extinct.	x	x	-	-	x	x

Scientific name DATABASE SOURCE	*TSC Act*	*EPBC Act*	Growth form and habitat requirements	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	
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
Hibbertia puberula DPIE EPBC	E1	-	Found in the central coast botanical subdivision in sandy soil often associated with sandstone. Has not been collected for over 40 years	x	x	-	-	x	x
Hibbertia sp. Bankstown EPBC	E4A	CE	Small prostate shrub known only from Bankstown airport. Occurs on tertiary alluvium floodplain communities of the Georges River.	x	x	-	-	x	x
Leucopogon exolasius DPIE 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
Leucopogon fletcheri subsp. *fletcheri* DPIE	E1	-	Shrub to 1.8m high growing in woodland on lateritic soils. Distribution limits N-St Albans S-Springwood.	x	x	-	-	x	x
Macadamia integrifolia EPBC	-	V	The species was known to occur in north-east New South Wales and was collected from Camden Haven, and there are specimens also from Lismore. This species grows in remnant rainforest, including complex mixed notophyll forest, and prefers partially open areas such as rainforest edges.	x	x	-	-	x	x
Maundia triglochinoides DPIE	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 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	
Melaleuca deanei DPIE 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 DPIE 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 DPIE 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 curviflora var. *curviflora* DPIE EPBC	V	V	Woody herb or sub-shrub to 0.2-1.2m high. Grows on Hawkesbury sandstone near shale outcrops. Distribution Sydney.	x	x	-	-	x	x
Pimelea spicata DPIE 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 DPIE 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 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	
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 DPIE	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 DPIE 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 DPIE 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 DPIE	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
Syzygium paniculatum DPIE EPBC	V	V	Small tree. Subtropical and littoral rainforest on sandy soil. Distribution limits N-Forster S-Jervis Bay.	x	x	-	-	x	x

Scientific name DATABASE SOURCE	*TSC Act*	*EPBC Act*	Growth form and habitat requirements	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	
Thelymitra sp. 'Kangaloon' (*Thelymitra kangaloonica*) EPBC	E4a	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 DPIE 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

DPIE	- 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
E4a or CE	- Denotes critically endangered listed species under the relevant Act

Table A 2-2 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* (DPIE) or indicated to have potential habitat present within 10km on the *EPBC Act* Protected Matters Tool.

Table A 2-2 – 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* DPIE 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.*	×	×	-	-	×	×
Red-crowned Toadlet *Pseudophryne australis* DPIE	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.*	×	×	-	-	×	×
Green and Golden Bell Frog *Litoria aurea* DPIE 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.*	×	×	-	-	×	×
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.*	×	×	-	-	×	×
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.*	×	×	-	-	×	×

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* DPIE	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.	×	×	-	-	×	×
Broad-headed Snake *Hoplocephalus bungaroides* DPIE EPBC	E	V	Sandstone outcrops, exfoliated rock slabs and tree hollows in coastal and near coastal areas. *Distribution Limit: N-Mudgee Park. S-Nowra.*	×	×	-	-	×	×
Freckled Duck *Stictonetta naevosa* DPIE	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.*	×	×	-	-	×	×
White-throated Needletail *Hirundapus caudacutus* EPBC	-	V	Airspace over forests, woodlands, farmlands, plains, lakes, coasts, towns; companies often forage along favoured hilltops and timbered ranges. Breeds Siberia, Himalayas, east to Japan. Summer migrant to eastern Australia. Distribution limit: N-Tweed Heads. S-South of Eden.	×	×	-	-	×	×

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 rice fields, drains in tussocky paddocks, occasionally saltmarsh, brackish wetlands. *Distribution Limit: N-North of Lismore. S- Eden.*	×	×	-	-	×	×
Spotted Harrier *Circus assimilis* DPIE	V	-	Utilises grassy plains, crops and stubble fields; saltbush, spinifex associations; scrublands, mallee, heathlands; open grassy woodlands. *Distribution Limit: N-Tweed Heads. S-South of Eden.*	×	✓	×	✓	unlikely	✓
White-bellied Sea Eagle (*Haliaeetus leucogaster*) DPIE	V	-	Occupies coasts, islands, estuaries, inlets, large rivers, inland lakes and reservoirs. *Sedentary; dispersive. N-Tweed Heads. S-South of Eden.*	×	×	-	-	×	×
Little Eagle *Hieraaetus morphnoides* DPIE	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.*	×	✓	✓	✓	✓	✓
Square-tailed Kite *Lophoictinia isura* DPIE	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.*	×	✓	×	✓	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	
Black Falcon *Falco subniger* DPIE	V	-	Inhabits plains, grasslands, foothills, timbered watercourses, wetland environs, crops; occasionally over towns and cities. *N-Tweed Heads. S-South of Eden.*	×	✓	×	×	Not likely	×
Bush Stone-curlew *Burhinus grallarius* DPIE	E	-	Utilises open forests and savannah woodlands, sometimes dune scrub, savannah and mangrove fringes. *Distribution Limit: N-Border Ranges National Park. S-Near Nowra.*	×	marginal	×	×	Not likely	×
Red Knot *Calidris canutus* DPIE	-	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.	×	×	-	-	×	×
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.*	×	×	-	-	×	×
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.*	×	×	-	-	×	×

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 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.*	×	×	-	-	×	×
Gang-gang Cockatoo *Callocephalon fimbriatum* DPIE	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.*	×	×	-	-	×	×
Glossy Black-Cockatoo *Calyptorhynchus lathami* DPIE	V	-	Open forests with *Allocasuarina* species and hollows for nesting. *Distribution Limit: N-Tweed Heads. S-South of Eden.*	×	×	-	-	×	×
Little Lorikeet *Glossopsitta pusilla* DPIE	V	-	Inhabits forests, woodlands; large trees in open country; timbered watercourses, shelterbeds, and street trees. *Distribution Limit: N-Tweed Heads. S-South of Eden*.	×	✓	×	✓	✓	✓

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	
Swift Parrot *Lathamus discolour* DPIE EPBC	E	E	Inhabits eucalypt forests and woodlands with winter flowering eucalypts. *Distribution Limit: N-Border Ranges National Park. S-South of Eden*.	×	✓	✓	✓	✓	✓
Turquoise Parrot *Neophema pulchella* DPIE	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.*	×	✓	×	×	unlikely	✓
Barking Owl *Ninox connivens* DPIE	V	-	Inhabits principally woodlands but also open forests and partially cleared land and utilises hollows for nesting. Distribution limit: N-Border Ranges National Park. S-Eden.	×	×	-	-	×	×
Powerful Owl *Ninox strenua* DPIE	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* DPIE	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	×

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	
Brown Treecreeper *Climacteris picumnus victoriae* DPIE	V	-	Occupies eucalypt woodlands, open woodland lacking a dense understorey with fallen dead timber. Distribution limit: (Sub species victoriae) Central NSW west of Great Div. Cumberland Plains, Hunter Valley, Richmond, Clarence, and Snowy River Valleys.	×	×	-	-	×	×
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* DPIE	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* DPIE 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.*	×	✓	×	×	Not likely	×
Black-chinned Honeyeater *Melithreptus gularis gularis* DPIE	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.*	×	✓	×	×	Not likely	×
Varied Sittella *Daphoenositta chrysoptera* DPIE	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*.	×	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* DPIE	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.*	×	✓	✓	✓	✓	✓
Hooded Robin *Melanodryas cucullata cucullata* DPIE	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.*	×	×	-	-	×	×
Scarlet Robin *Petroica boodang* DPIE	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.*	×	✓	×	×	Not likely	×
Flame Robin *Petroica phoenicea* DPIE	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.*	×	✓	×	×	Not likely	×

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	
Spotted-tailed Quoll *Dasyurus maculatus* DPIE 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.*	×	×	-	-	×	×
Koala *Phascolarctos cinereus* DPIE 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.*	×	✓	×	×	Not likely	×
Eastern Pygmy Possum *Cercatetus nanus* DPIE	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.*	×	×	-	-	×	×
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.*	×	×	-	-	×	×

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	
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.*	×	×	-	-	×	×
Grey-headed Flying-fox *Pteropus poliocephalus* DPIE 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.*	×	✓	✓	✓	✓	✓
Yellow-bellied Sheathtail-bat *Saccolaimus flaviventris* DPIE	V	-	Rainforests, sclerophyll forests and woodlands. *Distribution Limit: N-North of Walgett. S-Sydney.*	✓	-	-	-	-	✓
Eastern Coastal Free-tail Bat *Micronomus norfolkensis* DPIE	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.*	×	✓	✓	✓	✓	✓

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	
Large-eared Pied Bat *Chalinolobus dwyeri* DPIE 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* DPIE	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* DPIE	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.*	×	✓	✓	✓	✓	✓
Large Bentwing-bat *Miniopterus orianae oceanensis* DPIE	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.*	✓	-	-	-	-	✓
Southern Myotis *Myotis macropus* DPIE	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.*	✓	-	-	-	-	✓

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 Broad-nosed Bat *Scoteanax rueppellii* DPIE	V	-	Inhabits areas containing moist river and creek systems, especially tree lined creeks. *Distribution Limit: N-Border Ranges National Park. S-Pambula.*	✓	-	-	-	-	✓
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.*	×	×	-	-	×	×
Cumberland Plain Land Snail *Meridolum corneovirens* DPIE	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.*	×	marginal	✓	✓	low	✓

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	
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
Australian Grayling *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

DPIE	- 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
E4a or CE	- Denotes critically endangered listed species under the relevant Act
NOTE:	This field is not considered if no suitable habitat is present within the subject site 'records' refer to those provided by the *Atlas of NSW Wildlife* 'nearby' or 'recent' records are species specific accounting for home range, dispersal ability and life cycle

Table A 2-3 provides an assessment of potential habitat within the subject site for nationally *protected* migratory fauna species recorded within 10 km on the *EPBC Act* Protected Matters Tool. Nationally *threatened* migratory species are considered in Table A2-2.

Table A 2-3 – 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.	×	-	-
White-bellied Sea Eagle (*Haliaeetus leucogaster*)	Coasts, islands, estuaries, inlets, large rivers, inland lakes, reservoirs. *Sedentary; dispersive.*	×	-	-
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.*	✓	×	-
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.*	×	-	-
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.*	×	-	-
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*.	×	-	-
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.	×	-	-

Common name *Scientific name*	Preferred habitat *Migratory breeding*	Suitable habitat present (✓)	Recorded on site (✓)	Comments
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.*	×	-	-
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.*	×	-	-
Great Egret (*Ardea alba*)	Shallows of rivers, estuaries; tidal mudflats, freshwater wetlands; sewerage ponds, irrigation areas, larger dams, etc. *Dispersive; cosmopolitan.*	✓	×	-
Cattle Egret (*Ardea ibis*)	Stock paddocks, pastures, croplands, garbage tips, wetlands, tidal mudflats, drains. *Breeds in summer in warmer parts of range including NSW*.	✓	×	-
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.*	✓	×	-
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.*	✓	×	-

APPENDIX 3. 7 PART TEST

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 survey results and ecological assessment provided in Sections 3 and 4 of this report and should be read as such. The potential impact is for the removal of 2.74 ha of disturbed vegetation.

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
Large Bentwing-bat	V	recorded	Direct – on recorded foraging area
Southern 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

Common Name	*BC Act*	Potential to occur	Potential impact
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
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*), Southern 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 creek lines 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 Southern 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 Southern Myotis predominantly forages along creek lines 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-bats 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 E2 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 E2 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 10 km 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 detailed 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. 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) CEEC – 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 Varroville 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 north-western portion amounts to 2.57 ha and 3.49 ha in the eastern portion.

The proposed rezoning to R2 for the western portion and E2 in the eastern portion would see the removal of 2.74 ha of disturbed Cumberland Plain Woodland vegetation within the study area. This will remove only 0.17 ha of vegetation within the south-eastern portion and will also retain approximately 3.32 ha of similar Cumberland Plain Woodland vegetation within the south-eastern portion.

The south-eastern portion is likely to be subject to the installation of stormwater devices, a short access road and a dwelling with APZ. These impacts would equate to the removal of 0.17 ha of vegetation, however there is potential for a total of approximately 3.32 ha to be protected and restored.

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 are mostly zoned E2. The recently developed lots to the north are part of the south-west growth centres area. The zoning of E2 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 total impact of 2.74 ha upon an extensive remnant in the locality containing better condition vegetation will not isolate or fragment the CEEC, 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 proposed vegetation removal would have an estimated impact upon 2.57 ha within the lands west of the powerline easement and limited impact of 0.17 ha on the CPW within the south-eastern portion which will retain 3.32 ha of CPW.

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, Large Bentwing-bat, Southern 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 6.06 ha of disturbed native vegetation. The proposed vegetation removal is likely to remove a total of 2.74 ha of disturbed native vegetation within the site. The vegetation to be impacted will have partial to good quality habitat for the aforementioned species. A total of 3.32 ha of this CPW vegetation will be retained within the south-eastern portion of the site.

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 will not cause any segmentation, fragmentation or isolation of this local connectivity. This is demonstrated in Figure 4-4 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, Southern Myotis, Large 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 proposed vegetation removal 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 area of impact associated with the proposed vegetation removal 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 is a critically endangered ecological community, 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 protected within adjoining 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 and fence lines.

(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 proposed vegetation removal 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*)		✓	
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*)		✓	

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?		
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*)	✓		
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 proposed vegetation removal, 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 impact, or increase the effects of 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) a total of 2.74 ha of Cumberland Plain Woodland. Restoration of the retained 3.32 ha of CPW within the proposed E2 lands and offsetting is recommended to mitigate the clearing of vegetation.

Competition and grazing by the feral European rabbit

It is expected that the proposed vegetation removal will increase 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 by displacing the Bell Miners into additional areas.

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.

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.

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.

***Invasion of native plant communities by Scotch Broom* (*Cytisus scoparius*)**

This species is present on the subject site. The proposed vegetation removal may provide an opportunity to ameliorate the effect of this key threatening process by the application of suitable weed control measures.

***Invasion of native plant communities by Lantana* (*Lantana camara*)**

This species is present on the subject site. The proposed vegetation removal may provide an opportunity to ameliorate the effect of this key threatening process by the application of suitable weed control measures.

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.

Invasion of native plant communities by African Olive (*Olea europaea* subsp. *cuspidata*)

This species is present on the subject site. The proposed vegetation removal may provide an opportunity to ameliorate the effect of this key threatening process by the application of suitable weed control measures.

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 north-western portions of the study area. 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, Southern 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 of 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 proposed vegetation removal 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 proposed vegetation removal 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.

APPENDIX 4. EPBC IMPACT CRITERIA

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) 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.

Our Ref: 18GAT03FF

16 June 2021

GAT and Associates Pty Ltd
Suite 15 Level 1
469-475 Parramatta Road
LEICHHARDT NSW 2040

Attention: Mr. Gerard Turrisi

Dear Gerard

Re: Addendum Koala Assessment Report - SEPP 2021 (Koala Habitat Protection) for Lot 71 DP 706546, St Andrews Road, Varroville NSW

This addendum Koala Assessment Report has been prepared by Mr Geoffrey Coates (Fauna Ecologist) to update the Koala assessment provided within Section 4.3.4 of the Flora and Fauna Assessment Report (BDAR - *Travers bushfire & ecology*, 2021) taking into consideration the requirements of the SEPP 2021 (Koala Habitat Protection) and the Comprehensive Koala Plan of Management (CKPoM) for Campbelltown.

SEPP (Koala Habitat Protection) 2021

The *State Environmental Planning Policy (Koala Habitat Protection) 2021* was made and commenced on 17 March 2021.

The Koala SEPP 2021 reinstates the policy framework of SEPP Koala Habitat Protection 2019 to 83 Local Government Areas (LGA) in NSW. At this stage:

- In nine of these LGAs – Metropolitan Sydney (Blue Mountains, Campbelltown, Hawkesbury, Ku-Ring-Gai, Liverpool, Northern Beaches, Hornsby, Wollondilly) and the Central Coast LGA – Koala SEPP 2021 applies to **all zones**.
- In all other identified LGAs, Koala SEPP 2021 **does not apply** to land zoned RU1 Primary Production, RU2 Rural Landscape or RU3 Forestry.

For all RU1, RU2 and RU3 zoned land outside of the Sydney Metropolitan Area and the Central Coast, Koala SEPP 2020 continues to apply. This is an interim measure while new land management and private native forestry codes are developed in line with the NSW Government's announcement on 8 March 2021.

The principles of the Koala SEPP 2021 are to:

- Help reverse the decline of koala populations by ensuring koala habitat is properly considered during the development assessment process.
- Provide a process for councils to strategically manage koala habitat through the development of koala plans of management.

The Koala SEPP 2021 applies to all zones of the City of Campbelltown unless an approved Koala Plan of Management is in force. The Campbelltown Comprehensive Koala Plan of Management 2018 applies to this site. The development application must be consistent with that plan. This applies to land of any size, not just land of more than 1 hectare.

Comprehensive Koala Plan of Management (Campbelltown)

An approved Comprehensive Koala Plan of Management (CKPoM) for Campbelltown was prepared by Dr Stephen Phillips (*Biolink*) in 2018. Compliance with the CKPoM will constitute compliance with the provisions of SEPP 2021 (Koala Habitat Protection).

The study area is currently zoned E3 Environmental Management. The proposal is for the rezoning of the lands to the north-western side of the powerline easement and subsequent residential subdivision. The proponents are intending to offset the impacts through the NSW Biodiversity Offsets Scheme. The project is however being assessed under the transitional provisions of the *TSC Act*.

The remaining lands on the south-eastern side of the powerline easement are to be zoned as E2 Environmental Conservation and 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 *BC Act*.

Future works within the E2 lands will also include a single dwelling with associated works and 10m wide APZ, a constructed access road, and a stormwater detention basin.

In response to the need to provide a secondary access for evacuation in the event of a bushfire in accordance with Planning for Bushfire Protection 2019, a road is proposed to connect the existing subdivision off Grantham Crescent. The proposed road and the existing subdivision is the subject of this addendum. The entire study area encompasses approximately 14.72 hectares, while the development footprint will encompass approximately 7.81 hectares.

The road proposal will result in the removal of 254 trees within the proposed subdivision lands and access roads. The locations of these trees are shown in Figure 3, with the specifications of each tree recorded in Appendix 1 (Table 2).

Figure 1 - Study Area

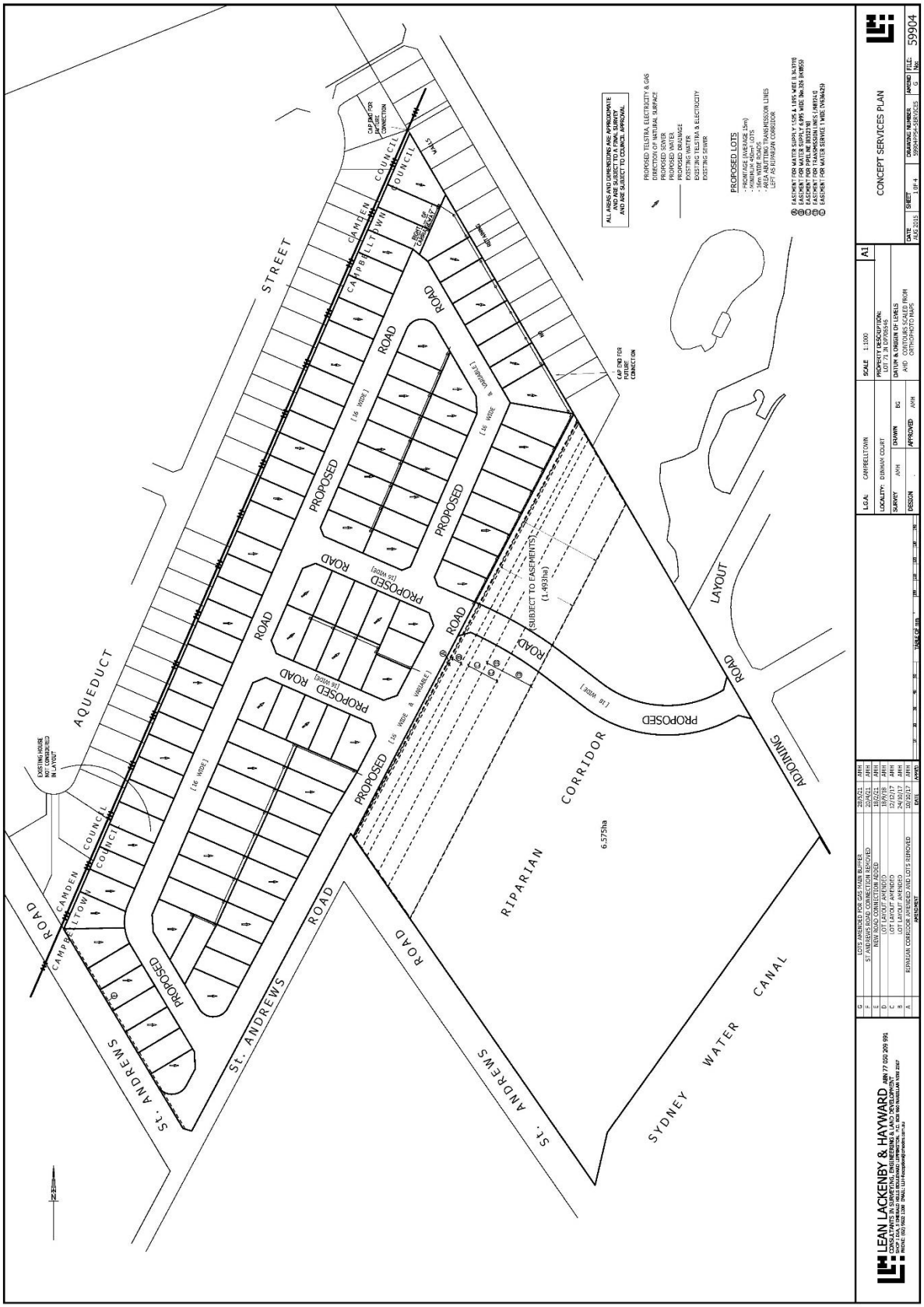

Figure 2 – Concept Residential Subdivision

Figure 3 – Preferred Koala Feed Trees (PKFT)
(PKFT species are represented with red dots. All other trees are represented with white dots).

An approved Comprehensive Koala Plan of Management (CKPoM) for Campbelltown was prepared by Dr Stephen Phillips (*Biolink*) in 2018. Compliance with the CKPoM will constitute compliance with the provisions of SEPP 2021 (Koala Habitat Protection).

Development Assessment Framework (CKPoM)

In accordance with 6.2.2 Assessment and control standards

(i) A DA for any land the subject of Clause 6.1 (reproduced below) above must include an assessment of the proposed development against the flowchart located in Figure 6.

(ii) Council cannot approve a DA that does not conform to the required controls and standards arising from this part unless:

a) there are proven to be extenuating circumstances

b) the overarching objectives of the Plan are not unduly compromised

c) any proposed deviation has the support of the KMC.

With consideration to the application of the Development Assessment Framework in Figure 6.1) the following process and criteria is of most relevance:

1. The study area is located within the Campbelltown LGA;
2. The study area has an area of > 1 hectare;
3. The proposal will require the removal of vegetation, namely 254 trees that form approximately 7.81 ha of highly modified Cumberland Plain Woodland;
4. The study area is not mapped as 'Core Koala Habitat' on Figure 5.1 of the CKPoM;
5. The study area encompasses areas identified as 'Potential Koala Habitat' on Figure 5.1 of the CKPoM;
6. A Koala Activity Assessment Report (KAAR) is required in accordance with Section 6.3.2.
7. The CKPoM specifies that the KAAR is to employ the methodology outlined in Appendix B of the CKPoM. This methodology includes a survey in accordance with the Spot Assessment Technique (SAT) described by Phillips and Callaghan (2011). This is to be undertaken in a grid-based layout.

   One SAT incorporates a survey of 30 trees for Koala activity. With 254 trees, this would permit for 8 SATs within the development proposal. No SAT technique was undertaken during tree survey on 15th or 20th April 2021 for the Flora and Fauna Assessment Report. Survey did however include a search for activity below each of the trees present. No Koala activity was recorded from this survey.

   Given the extent of nearby core Koala habitat along the Georges River Reserve and demonstrated from historical records, Koalas periodically disperse and take up temporary habitat within the remaining remnant fragments in the nearby urban landscape to the south-east. The site would not be expected to contribute to any established 'Core Koala Habitat' within the locality and activity levels will likely be less than 10%.
8. Based on activity level of less than 10%, the DA would be required to conform to the planning controls for Potential Koala Habitat (described in full under Section 6.4 of the CKPoM). As this is a planning proposal, these controls would be applied at the subdivision DA. The following types of controls may apply to be assessed at the subdivision DA:

(a) Retention of PKFTs and shelter trees, as demonstrated by the applicant to the satisfaction of the council
(b) All new swimming pools must incorporate a design component such as a shallow ramp or other feature that will enable egress by koalas; and/or a stout rope (> 50 mm diameter), one end of which must be secured to a stable poolside fixture, the other end of which must trail in the pool. Without contravening provisions of the Swimming Pools Act 1992, fencing must also be of a type that prevents access to the pool area by koalas (eg not be of timber or have timber posts or have shrubs and trees within 1m of either side of the fence that would allow koalas to climb over).
(c) On any new residential lots arising from the subdivision of land, the keeping of domestic dogs will be either prohibited or subject to a covenant; imposing a legal requirement to install a dog-proof yard, whether the prospective owner has the immediate intention of owning a dog or not, as well as additional requirements designed to deter Koalas from yards which could potentially house dogs in the future.
(d) Fencing of residential lots must not impede the movement of koalas. Fences that are not supported by this Plan, include (but are not limited to): colourbond panel fencing, barbed wire fencing, solid brick fencing (>1m high), steel fencing (>30cm gaps between rails)
(e) Road design standards and/or approved vehicle calming devices (eg speed humps, roundabouts, chicanes and wildlife activated signage) must be incorporated on any new roads created through residential subdivision with a maximum speed of 40km/hr.
(f) Protection of existing Koalas from disturbance as a result of clearing or other earthworks

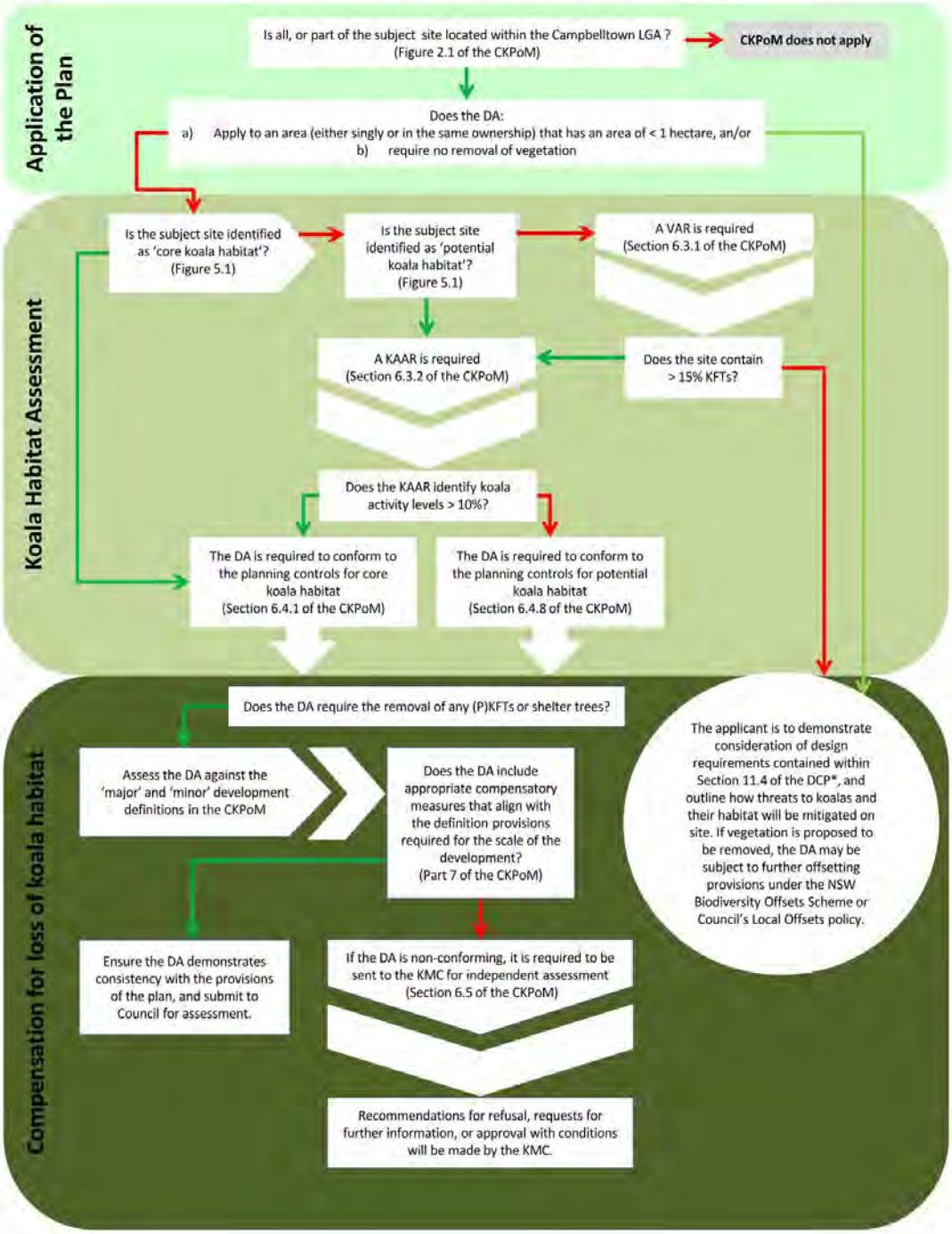

Figure 6.1: Development Assessment framework flowchart

9. The proposal is classified as 'major' development as specified in the Comprehensive Koala Plan of Management (CKPoM) for Campbelltown.
10. Under 'Major Development' criteria (Section 7.1), where a proponent chooses to seek the removal of PKFTs or shelter trees in accordance with a DA, provision must be made to compensate for the loss of the associated habitat. This will be to either:

    a) enter into a legally binding agreement with Council to make a monetary contribution towards the Koala Habitat Rehabilitation Program detailed in Part 8 of the CKPoM, or

    b) enter into a legally binding agreement with Council to undertake rehabilitation works in areas identified by the Koala Rehabilitation Program detailed in Part 8 of the CKPoM. This will include payment of a Compensation Guarantee in the form of a Bank Bond which will be released once the required works have been implemented in accord with the agreement. The purpose of a Compensatory Guarantee is to allow Council to implement the required works in the event that the proponent is unable or unwilling to comply.

    The amount of the monies referred to above will be based on the value of the required 'compensation units' (CU) (for every cm of DBH or part thereof) arising from the total number and size of PKFTs and shelter trees that will be removed, as follows:

(i) Small	(DBH < 100mm)	8 CU/mm of DBH
(ii) Medium	(DBH > 100<300mm)	15 CU/mm of DBH
(iii) Large	(DBH > 300mm)	25 CU/mm of DBH

    The value of a CU as at the date of commencement of the Plan is $1.00, this value to be adjusted annually using the CPI increase for the 12 months prior to the review date.

    Based on the above, the removal of the 183 PKFTs would require a contribution or bond of $2,114,100 under the CKPoM.

Campbelltown Council have a tree replacement policy with a requirement to offset the loss of trees with planted trees at a ratio of 8:1. From this policy alone, the minimum number of planted CPW trees required would be 2,032. The replanting of these trees could be undertaken in the lands zoned E2. Any trees that cannot be feasibly planted within the E2 lands may then form part of a monetary compensation or offset revegetation area.

Koala Foraging Tree and CPW Revegetation Areas

A suggested location for offsetting removal of trees would be within the proposed E2 lands. This would serve to strengthen the CPW already in existence, and limit the need for wildlife (including Koalas) to disperse into the proposed sub-division. Appropriate fencing would also be recommended around the outer perimeter of the CPW area to deter Koala movements onto surrounding roads and urban areas containing dogs.

Records of Koala within a 10 km radius of the site are shown on Figure 4. While there have been no official records of Koalas on this particular site, there are records of Koalas moving through the urban landscape over the years, particularly from the Georges River to the south-east. This highlights the potential for Koalas to actively take up residence where sufficient feed trees and opportunity to overlap ranges between sexes occur.

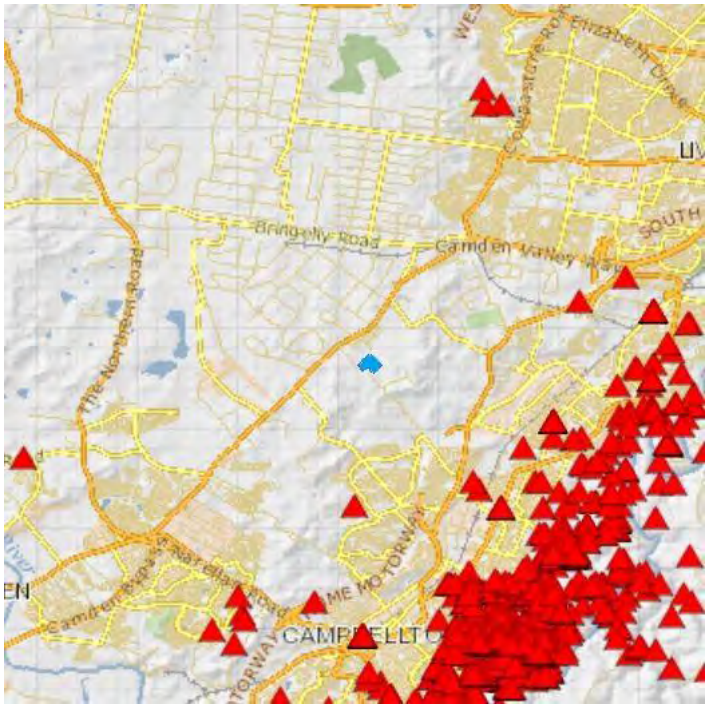

Figure 4 – Localised Koala Records (study area in blue)

(Source: *Bionet* 2021)

Recommendations

Travers bushfire & ecology recommends that a vegetation management plan be prepared at the time of a DA identifying the locations of planting within the proposed E2 lands and to specify the vegetation management works to compensate for the loss of foraging trees caused by the future subdivision. This can be used as a means of providing appropriate revegetation offsets or a Koala offset contribution where the required offset planting cannot be provided.

Selective street planting may also be used as a supplementary measure where the planting can be demonstrated to be safely integrated into open landscapes. In this case high quality foraging species known to be of lower safety risk should be used such as Tallowwoods (*Eucalyptus microcorys*).

If you require any further information, please do not hesitate to the contact the undersigned on (02) 4340 5331 or at info@traversecology.com.au

Yours faithfully

Michael Sheather-Reid
Managing Director - ***Travers bushfire & ecology***

Travers bushfire & ecology **employs Bushfire Planning and Design (BPAD) Accredited Practitioners**

Travers bushfire & ecology **employs Accredited BioBanking and Biodiversity Assessors**

Appendix 1. Trees Designated for Removal

The following table provides details of trees designated for removal under the proposed subdivision and road.

Table 2 – Trees designated for removal.

Tree Number	Scientific Name	Common Name	Diameter at Chest Height (cm)
001	*Eucalyptus fibrosa*	Broad-leaved Ironbark	47/48
002	*Eucalyptus fibrosa*	Broad-leaved Ironbark	57
003	*Eucalyptus moluccana*	Grey Box	56
004	*Eucalyptus fibrosa*	Broad-leaved Ironbark	52
005	*Eucalyptus fibrosa*	Broad-leaved Ironbark	50
006	*Eucalyptus fibrosa*	Broad-leaved Ironbark	55
007	*Eucalyptus fibrosa*	Broad-leaved Ironbark	55
008	*Eucalyptus fibrosa*	Broad-leaved Ironbark	60
009	*Eucalyptus fibrosa*	Broad-leaved Ironbark	65
010	*Eucalyptus fibrosa*	Broad-leaved Ironbark	75
011	*Eucalyptus longifolia*	Woollybutt	60
012	*Eucalyptus longifolia*	Woollybutt	50
013	*Eucalyptus fibrosa*	Broad-leaved Ironbark	11/32/41
014	*Eucalyptus fibrosa*	Broad-leaved Ironbark	49/42
015A	*Eucalyptus moluccana*	Grey Box	52/47
015B	*Eucalyptus moluccana*	Grey Box	67
016	*Eucalyptus moluccana*	Grey Box	53
017	*Eucalyptus moluccana*	Grey Box	32
018	*Eucalyptus fibrosa*	Broad-leaved Ironbark	26
019	*Eucalyptus fibrosa*	Broad-leaved Ironbark	36
020	*Eucalyptus fibrosa*	Broad-leaved Ironbark	40/40
021	*Eucalyptus moluccana*	Grey Box	43
022	*Eucalyptus moluccana*	Grey Box	52
023	*Eucalyptus moluccana*	Grey Box	72
024	*Eucalyptus moluccana*	Grey Box	32/38
025	*Eucalyptus moluccana*	Grey Box	45
026	*Eucalyptus moluccana*	Grey Box	28/39
027	*Eucalyptus moluccana*	Grey Box	35
028	*Eucalyptus moluccana*	Grey Box	38
029	*Eucalyptus moluccana*	Grey Box	45
030	*Eucalyptus moluccana*	Grey Box	45
031	*Eucalyptus moluccana*	Grey Box	48
032	*Eucalyptus moluccana*	Grey Box	42
033	*Eucalyptus moluccana*	Grey Box	50
034	*Eucalyptus moluccana*	Grey Box	46
035	*Eucalyptus moluccana*	Grey Box	46
036	*Eucalyptus moluccana*	Grey Box	31
037	*Eucalyptus moluccana*	Grey Box	47
038	*Eucalyptus moluccana*	Grey Box	51
039	*Eucalyptus fibrosa*	Broad-leaved Ironbark	52
040	*Eucalyptus moluccana*	Grey Box	42
041	*Eucalyptus moluccana*	Grey Box	30
042	*Eucalyptus fibrosa*	Broad-leaved Ironbark	27/32
043	*Eucalyptus fibrosa*	Broad-leaved Ironbark	36

Tree Number	Scientific Name	Common Name	Diameter at Chest Height (cm)
044	*Eucalyptus moluccana*	Grey Box	29
045	*Eucalyptus moluccana*	Grey Box	28
046	*Eucalyptus moluccana*	Grey Box	40
047	*Eucalyptus moluccana*	Grey Box	42
048	*Eucalyptus moluccana*	Grey Box	36
049	*Eucalyptus fibrosa*	Broad-leaved Ironbark	39
050	*Eucalyptus moluccana*	Grey Box	44
051	*Eucalyptus moluccana*	Grey Box	30
052	*Eucalyptus moluccana*	Grey Box	52
053	*Eucalyptus moluccana*	Grey Box	40
054	*Eucalyptus moluccana*	Grey Box	55/48
055	*Eucalyptus fibrosa*	Broad-leaved Ironbark	52
056	*Eucalyptus moluccana*	Grey Box	38
057	*Eucalyptus moluccana*	Grey Box	35
058	*Eucalyptus moluccana*	Grey Box	30
059	*Eucalyptus fibrosa*	Broad-leaved Ironbark	51
060	*Eucalyptus moluccana*	Grey Box	32
061	*Eucalyptus moluccana*	Grey Box	35
062	*Eucalyptus moluccana*	Grey Box	46
063	*Eucalyptus moluccana*	Grey Box	46
064	*Eucalyptus fibrosa*	Broad-leaved Ironbark	58
065	*Eucalyptus moluccana*	Grey Box	40
066	*Eucalyptus moluccana*	Grey Box	54
067	*Eucalyptus moluccana*	Grey Box	51
068	*Eucalyptus moluccana*	Grey Box	50
069	*Eucalyptus moluccana*	Grey Box	35
070	*Eucalyptus moluccana*	Grey Box	34
071	*Eucalyptus moluccana*	Grey Box	34
072	*Eucalyptus moluccana*	Grey Box	33
073	*Eucalyptus moluccana*	Grey Box	59
074	*Eucalyptus moluccana*	Grey Box	35
075	*Eucalyptus moluccana*	Grey Box	90
076	*Eucalyptus moluccana*	Grey Box	44
077	*Eucalyptus fibrosa*	Broad-leaved Ironbark	60
078	*Eucalyptus fibrosa*	Broad-leaved Ironbark	65
079	*Eucalyptus fibrosa*	Broad-leaved Ironbark	62
079	*Eucalyptus moluccana*	Grey Box	35
080	*Eucalyptus moluccana*	Grey Box	45
081	*Eucalyptus moluccana*	Grey Box	30
082	*Eucalyptus moluccana*	Grey Box	40
083	*Eucalyptus moluccana*	Grey Box	45
084	*Eucalyptus moluccana*	Grey Box	46
085	*Eucalyptus moluccana*	Grey Box	48/53
086	*Eucalyptus moluccana*	Grey Box	36
087	*Eucalyptus moluccana*	Grey Box	41
088	*Eucalyptus fibrosa*	Broad-leaved Ironbark	62
089	*Eucalyptus moluccana*	Grey Box	43
090	*Eucalyptus fibrosa*	Broad-leaved Ironbark	43
091	*Eucalyptus fibrosa*	Broad-leaved Ironbark	52
092	*Eucalyptus fibrosa*	Broad-leaved Ironbark	52
093	*Eucalyptus fibrosa*	Broad-leaved Ironbark	50
094	*Eucalyptus moluccana*	Grey Box	56
095	*Eucalyptus fibrosa*	Broad-leaved Ironbark	51

Tree Number	Scientific Name	Common Name	Diameter at Chest Height (cm)
096	*Eucalyptus fibrosa*	Broad-leaved Ironbark	54
097	*Eucalyptus fibrosa*	Broad-leaved Ironbark	48
098	*Eucalyptus moluccana*	Grey Box	52
099	*Eucalyptus fibrosa*	Broad-leaved Ironbark	40
100	*Eucalyptus moluccana*	Grey Box	45
101	*Eucalyptus moluccana*	Grey Box	26
102	*Eucalyptus moluccana*	Grey Box	35
103	*Eucalyptus moluccana*	Grey Box	55
104	*Eucalyptus moluccana*	Grey Box	65
105	*Eucalyptus fibrosa*	Broad-leaved Ironbark	17/35
106	*Eucalyptus fibrosa*	Broad-leaved Ironbark	45/46
107	*Eucalyptus moluccana*	Grey Box	50/50
108	*Eucalyptus moluccana*	Grey Box	46
109	*Eucalyptus moluccana*	Grey Box	80
110	*Eucalyptus moluccana*	Grey Box	34
111	*Eucalyptus fibrosa*	Broad-leaved Ironbark	60
112	*Eucalyptus moluccana*	Grey Box	29
113	*Eucalyptus moluccana*	Grey Box	30
114	*Eucalyptus moluccana*	Grey Box	58
115	*Eucalyptus moluccana*	Grey Box	35
116	*Eucalyptus moluccana*	Grey Box	45
117	*Eucalyptus moluccana*	Grey Box	33
118	*Eucalyptus moluccana*	Grey Box	48
119	*Eucalyptus moluccana*	Grey Box	20/43
120	*Eucalyptus moluccana*	Grey Box	55
121	*Eucalyptus moluccana*	Grey Box	55
122	*Eucalyptus moluccana*	Grey Box	40
123	*Eucalyptus moluccana*	Grey Box	38
124	*Eucalyptus fibrosa*	Broad-leaved Ironbark	45
125	*Eucalyptus fibrosa*	Broad-leaved Ironbark	53
126	*Eucalyptus moluccana*	Grey Box	50
127	*Eucalyptus fibrosa*	Broad-leaved Ironbark	40
128	*Eucalyptus moluccana*	Grey Box	30
129	*Eucalyptus moluccana*	Grey Box	36
130	*Eucalyptus moluccana*	Grey Box	63
131	*Eucalyptus moluccana*	Grey Box	30/14
132	*Eucalyptus moluccana*	Grey Box	35
133	*Eucalyptus moluccana*	Grey Box	54
134	*Eucalyptus moluccana*	Grey Box	40
135	*Eucalyptus moluccana*	Grey Box	25
136	*Eucalyptus moluccana*	Grey Box	38
137	*Eucalyptus moluccana*	Grey Box	22/35
138	*Eucalyptus moluccana*	Grey Box	35/38
139	*Eucalyptus moluccana*	Grey Box	40
140	*Eucalyptus moluccana*	Grey Box	40
141	*Eucalyptus moluccana*	Grey Box	58
142	*Eucalyptus moluccana*	Grey Box	60
143	*Eucalyptus moluccana*	Grey Box	35
144	*Eucalyptus moluccana*	Grey Box	28/37/16
145	*Eucalyptus fibrosa*	Broad-leaved Ironbark	31
146	*Eucalyptus moluccana*	Grey Box	33
147	*Eucalyptus fibrosa*	Broad-leaved Ironbark	38/29
148	*Eucalyptus bosistoana*	Coast Grey Box	60

Tree Number	Scientific Name	Common Name	Diameter at Chest Height (cm)
149	*Eucalyptus moluccana*	Grey Box	30
150	*Eucalyptus moluccana*	Grey Box	27
151	*Eucalyptus moluccana*	Grey Box	38
152	*Eucalyptus moluccana*	Grey Box	33
153	*Eucalyptus moluccana*	Grey Box	36
154	*Eucalyptus moluccana*	Grey Box	39
155	*Eucalyptus fibrosa*	Broad-leaved Ironbark	50
156	*Eucalyptus moluccana*	Grey Box	33
157	*Eucalyptus moluccana*	Grey Box	40
158	*Eucalyptus moluccana*	Grey Box	40
159	*Eucalyptus moluccana*	Grey Box	30
160	*Eucalyptus moluccana*	Grey Box	40
161	*Eucalyptus moluccana*	Grey Box	39
162	*Eucalyptus moluccana*	Grey Box	30
163	*Eucalyptus moluccana*	Grey Box	47
164	*Eucalyptus moluccana*	Grey Box	54
165	*Eucalyptus moluccana*	Grey Box	40
166	*Eucalyptus moluccana*	Grey Box	35
167	*Eucalyptus moluccana*	Grey Box	22/41/36
168	*Eucalyptus moluccana*	Grey Box	35
169	*Eucalyptus fibrosa*	Broad-leaved Ironbark	54
170	*Eucalyptus moluccana*	Grey Box	45
171	*Eucalyptus moluccana*	Grey Box	45
172	*Eucalyptus moluccana*	Grey Box	50
173	*Eucalyptus bosistoana*	Coast Grey Box	55
174	*Eucalyptus moluccana*	Grey Box	46
175	*Eucalyptus moluccana*	Grey Box	32/30
176	*Eucalyptus moluccana*	Grey Box	52
177	*Eucalyptus moluccana*	Grey Box	50
178	*Eucalyptus moluccana*	Grey Box	46
179	*Eucalyptus moluccana*	Grey Box	64
180	*Eucalyptus bosistoana*	Coast Grey Box	55
181	*Eucalyptus moluccana*	Grey Box	55
182	*Eucalyptus fibrosa*	Broad-leaved Ironbark	48
183	*Eucalyptus fibrosa*	Broad-leaved Ironbark	50
184	*Eucalyptus fibrosa*	Broad-leaved Ironbark	48
185	*Eucalyptus fibrosa*	Broad-leaved Ironbark	37/42
186	*Eucalyptus moluccana*	Grey Box	49
187	*Eucalyptus fibrosa*	Broad-leaved Ironbark	49
188	*Eucalyptus moluccana*	Grey Box	40
189	*Eucalyptus moluccana*	Grey Box	43
190	*Eucalyptus moluccana*	Grey Box	53
191	unknown	N/A	55
192	unknown	N/A	65
193	*Eucalyptus fibrosa*	Broad-leaved Ironbark	53
194	*Eucalyptus fibrosa*	Broad-leaved Ironbark	50
195	*Eucalyptus fibrosa*	Broad-leaved Ironbark	55
196	*Eucalyptus moluccana*	Grey Box	68
197	*Eucalyptus moluccana*	Grey Box	50
198	*Eucalyptus moluccana*	Grey Box	60
199	*Eucalyptus moluccana*	Grey Box	40/43
200	*Eucalyptus moluccana*	Grey Box	55
201	*Eucalyptus moluccana*	Grey Box	45

Tree Number	Scientific Name	Common Name	Diameter at Chest Height (cm)
202	unknown	N/A	54
203	*Eucalyptus fibrosa*	Broad-leaved Ironbark	54
204	*Eucalyptus fibrosa*	Broad-leaved Ironbark	64
205	*Eucalyptus fibrosa*	Broad-leaved Ironbark	49
206	*Eucalyptus fibrosa*	Broad-leaved Ironbark	54
207	unknown	N/A	56
208	*Eucalyptus moluccana*	Grey Box	46
209	*Eucalyptus moluccana*	Grey Box	30/35
210	*Eucalyptus moluccana*	Grey Box	60
211	*Eucalyptus moluccana*	Grey Box	50
212	*Eucalyptus moluccana*	Grey Box	47
213	*Eucalyptus moluccana*	Grey Box	60
214	*Eucalyptus moluccana*	Grey Box	40
215	*Eucalyptus moluccana*	Grey Box	32/33
216	*Eucalyptus moluccana*	Grey Box	47
217	*Eucalyptus moluccana*	Grey Box	48
218	*Eucalyptus moluccana*	Grey Box	45
219	*Eucalyptus moluccana*	Grey Box	45
220	*Eucalyptus moluccana*	Grey Box	40
221	*Eucalyptus moluccana*	Grey Box	55
222	*Eucalyptus fibrosa*	Broad-leaved Ironbark	45
223	*Eucalyptus moluccana*	Grey Box	54
224	*Eucalyptus fibrosa*	Broad-leaved Ironbark	50
225	*Eucalyptus moluccana*	Grey Box	38
226	*Eucalyptus moluccana*	Grey Box	45
227	*Eucalyptus fibrosa*	Broad-leaved Ironbark	56
228	*Eucalyptus moluccana*	Grey Box	45
229	*Eucalyptus moluccana*	Grey Box	48
230	*Eucalyptus moluccana*	Grey Box	54
231	*Eucalyptus moluccana*	Grey Box	34
232	*Eucalyptus moluccana*	Grey Box	46
233	*Eucalyptus moluccana*	Grey Box	39
234	*Eucalyptus fibrosa*	Broad-leaved Ironbark	35
235	*Eucalyptus moluccana*	Grey Box	40
236	*Eucalyptus tereticornis*	Forest Red Gum	33
237	*Eucalyptus tereticornis*	Forest Red Gum	41
238	*Eucalyptus tereticornis*	Forest Red Gum	33
239	*Melaleuca decora*	White Feather Honeymyrtle	31
240	*Eucalyptus eugenioides*	Thin-leaved Stringy Bark	34
241	*Eucalyptus eugenioides*	Thin-leaved Stringy Bark	29
242	*Eucalyptus tereticornis*	Forest Red Gum	39
243	*Eucalyptus eugenioides*	Thin-leaved Stringy Bark	54
244	*Eucalyptus moluccana*	Grey Box	34
245	*Eucalyptus moluccana*	Grey Box	42
246	*Eucalyptus moluccana*	Grey Box	53
247	*Eucalyptus moluccana*	Grey Box	31
248	*Eucalyptus moluccana*	Grey Box	49
249	*Eucalyptus moluccana*	Grey Box	32
250	*Eucalyptus moluccana*	Grey Box	32
251	*Eucalyptus moluccana*	Grey Box	35
252	*Eucalyptus tereticornis*	Forest Red Gum	42

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

10 June 2021

Ref 21066

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 1 Location
Figure 2 Site
Figure 3 Road Hierarchy
Figure 4 Existing Traffic Controls

1. INTRODUCTION

This report has been prepared to accompany an amended planning proposal for a residential subdivision to be located at Lot 71 in DP706546 (Figures 1 and 2).

The amended design seeks to address conditions of approval provided by *the Department of Planning, Industry and Environment* during the gateway determination process, including those relating to traffic, reproduced below:

> *1. (c) provide further commentary on Planning Priority W5 of the Western District Plan, in relation to access to public transport*
>
> *2. (d) Traffic and Parking Assessment: consider the availability of the additional road access being provided through the East Leppington Precinct, and if this connection is not viable, amend the assessment and proposal accordingly.*

The nature of the Planning Proposal remains unchanged, and 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 has however been slightly amended due to its connection to the Cornish site being no longer available (LEC 2018/314478), and will therefore make the following changes:

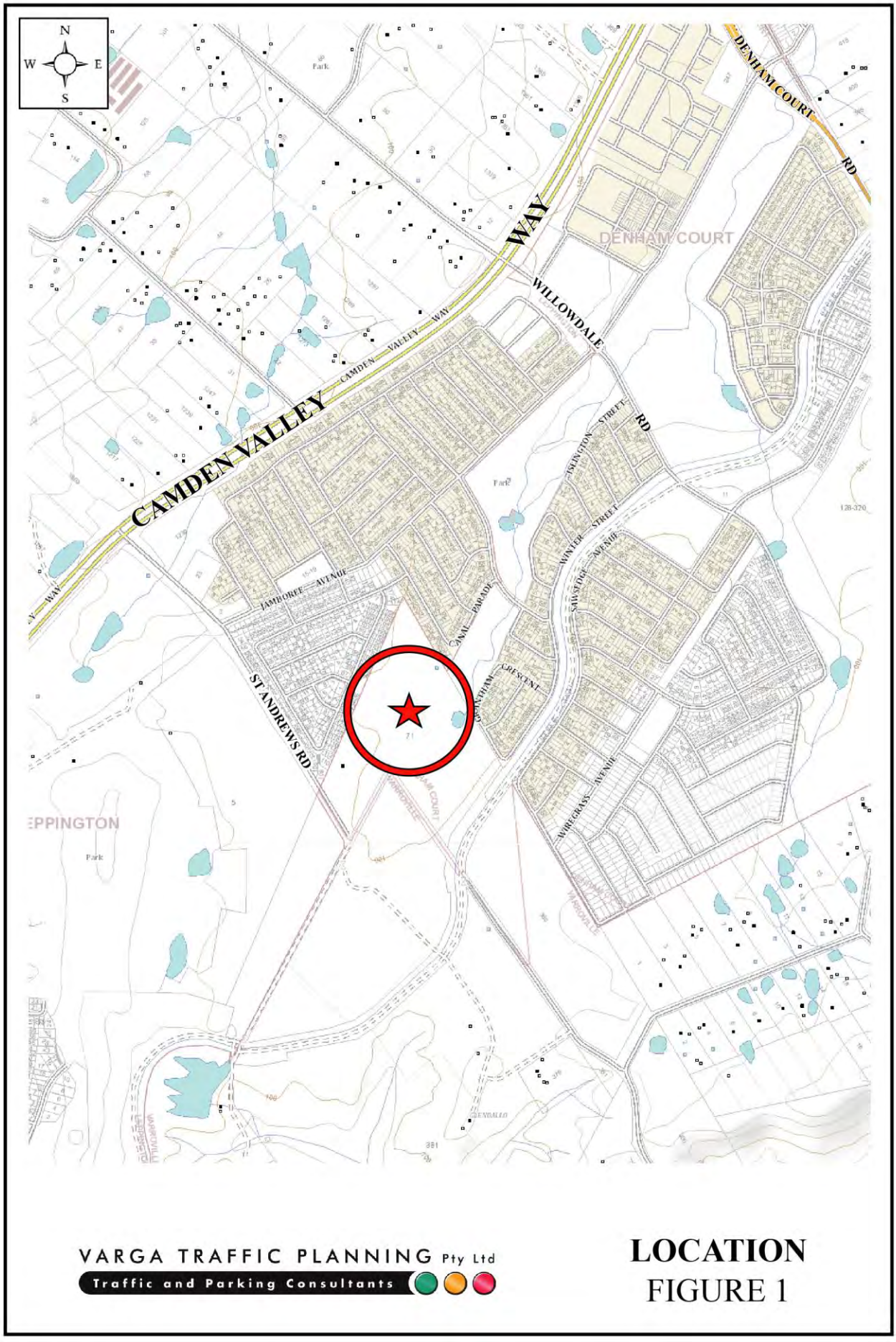
- 111 new residential allotments (an increase of 13 residential allotments compared to the original planning proposal due to revised subdivision layout)

- construction of a new local road network which will connect with St Andrews Road and also with Grantham Crescent within the adjacent established residential subdivision.

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.


N
W
E
S
CAMDEN VALLEY WAY
CAMDEN VALLEY WAY
DENHAM COURT RD
DENHAM COURT
WILLOWDALE
ISLINGTON STREET
RD
WINTER STREET
SAWSEDGE AVENUE
JAMBOREE AVENUE
CANAL PARADE
GRENFELL CRESCENT
ST ANDREWS RD
WIREGRASS AVENUE
EPPINGTON
Park
VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants
LOCATION
FIGURE 1

N
W
E
S
RIDGE
SQ
PARK
RD
HEATH
RD
WAY
WILLOWDALE
RD
CAMDEN VALLEY
WAY
SCOUT
RESOLUTION
ST
PATROL
CUB
NAVIGATOR
BADEN POWELL
ST
AVE
VENTURER
ST
JAMBOREE
PROMISE
AVE
MINDARIE
ROVER
ST
PDE
OFF TAKE
AVE
MORANBAH
ST
PENSTOCK
ST
COVENTRY
ST
ROOP
TONARA
PALMER
ST
TURNER
ST
CONDUIT ST
JAMBOREE
CANAL
ST
WOOLGEN PARK
RD
CAMDEN VALLEY
ST ANDREWS
RD
AQUEDUCT
ARROWHEAD
AVE
AQUEDUCT
PDE
CALDER
ST
GRANTHAM
LEOPOLD ST
WINTER
CRT
AVE
SAWSEDGE
SORGHUM ST
WIREGLASS AVE
CANAL
ST ANDREWS
RD
SYDNEY WATER
Road Closure / Unformed Road
Unsealed Road
VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants
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 111 new residential allotments. The proposed new allotments will have an average frontage of 15m and an average lot size of 300m^2.

A new local road network is proposed with a road reservation width of 16 metres which will connect with St Andrews Road, plus another road link with a road reservation width of 18 metres to connect with Grantham Crescent within the adjacent established residential subdivision.

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

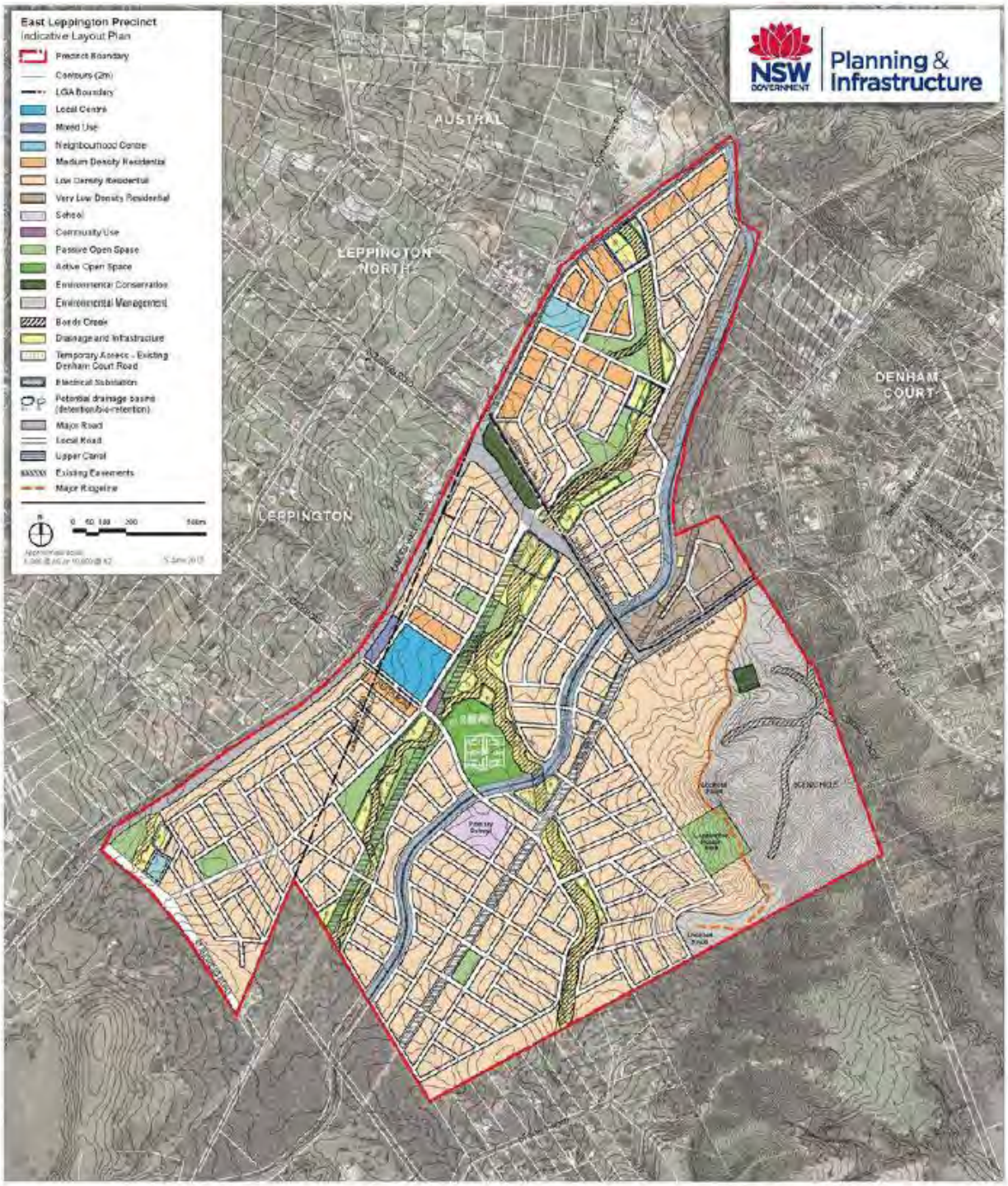
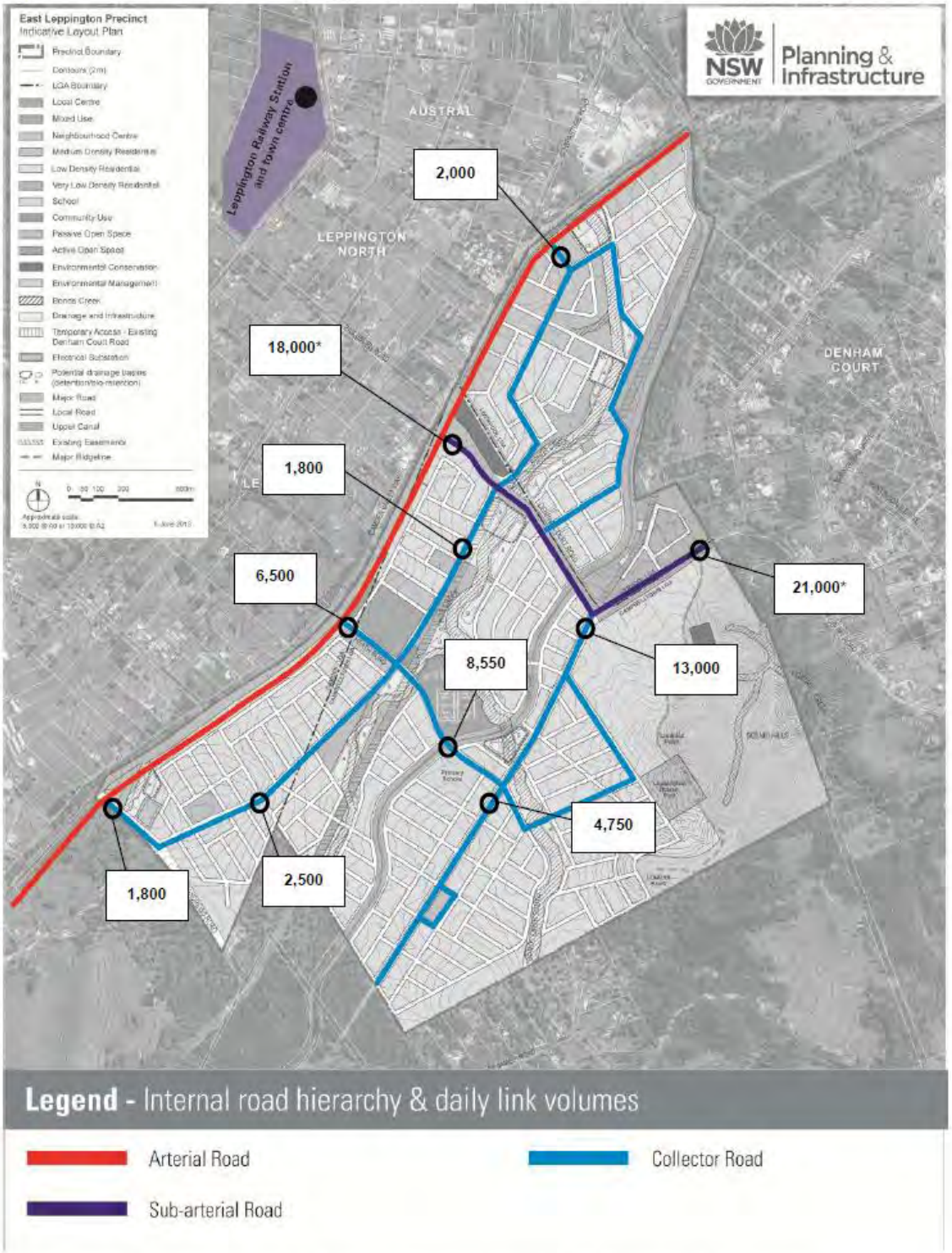
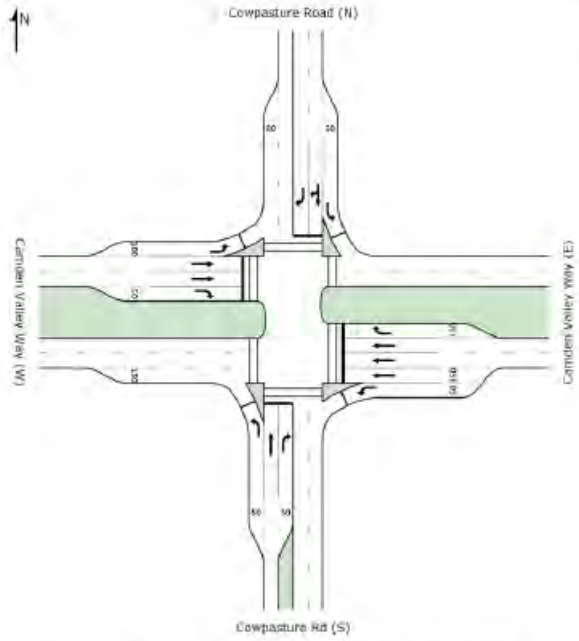


Figure 5.2 Internal Road Hierarchy & Daily Link Volumes (2036 – 10 year design horizon)

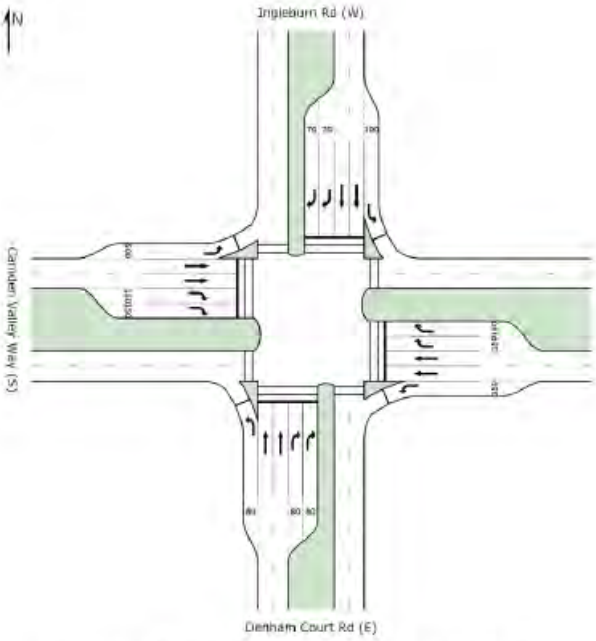


*East Leppington Precinct development traffic plus 2036 forecast background traffic of approximately 10,000 daily trips

Figure 5.5 SIDRA Intersection Layouts

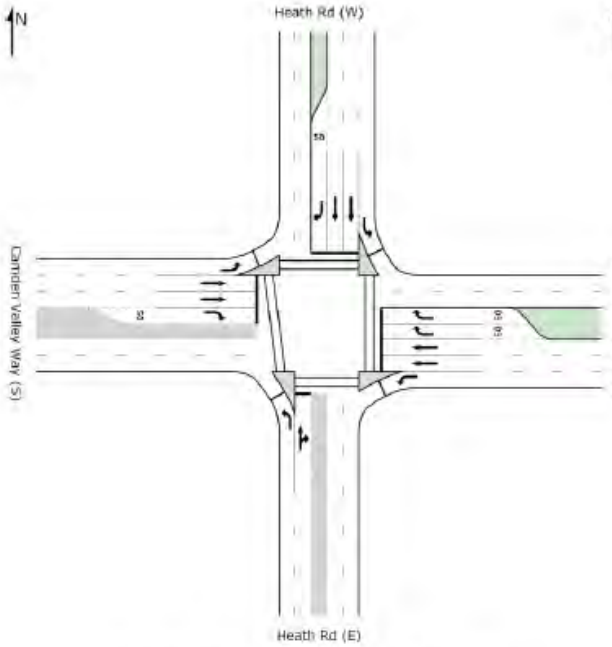


Camden Valley Way / Cowpasture Road

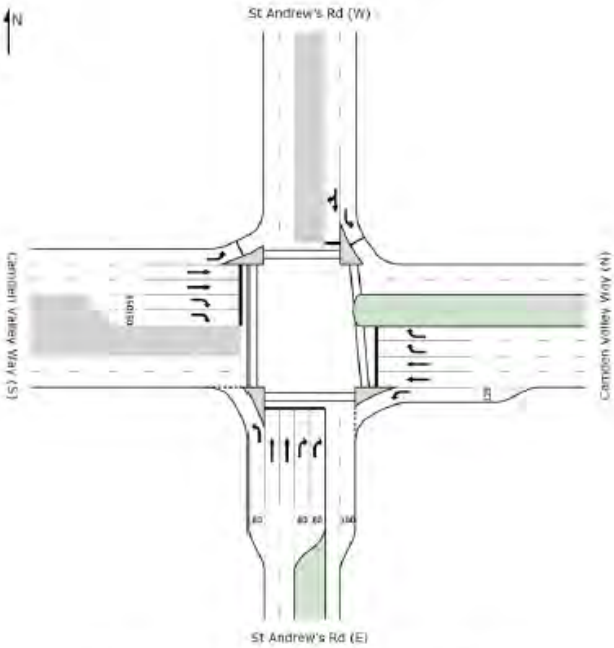


Camden Valley Way / Denham Court Road

East Leppington Precinct



Camden Valley Way / Heath Road

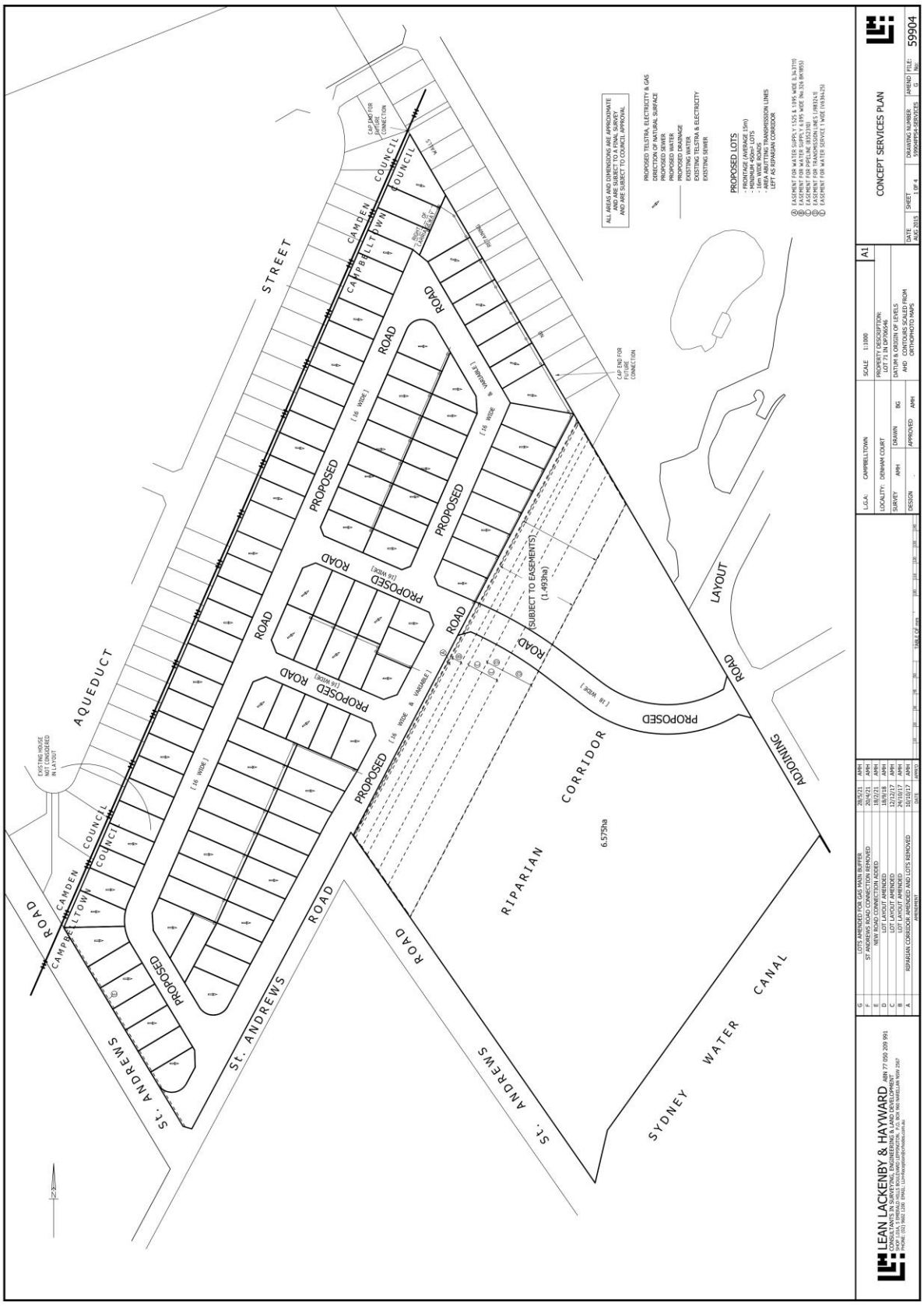


Camden Valley Way / St Andrew's Road

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
LEAN LACKENBY & HAYWARD
PROPOSED LOTS
- FRONTAGE (AVERAGE 15m)
- MINIMUM 450m² LOTS
- 1 SUPER LOT (6.575ha)
- AREA ABUTTING TRANSMISSION LINES
LEFT AS RIPARIAN CORRIDOR
PROPOSED TELSTRA, ELECTRICITY & GAS
DIRECTION OF NATURAL SURFACE
PROPOSED SEWER
PROPOSED WATER
PROPOSED DRAINAGE
EXISTING WATER
EXISTING TELSTRA & ELECTRICITY
EXISTING SEWER
ALL AREAS AND DIMENSIONS ARE APPROXIMATE AND ARE SUBJECT TO A FINAL SURVEY AND ARE SUBJECT TO COUNCIL APPROVAL
CAMPBELLTOWN COUNCIL
CAMDEN COUNCIL
AQUEDUCT
ROAD
PROPOSED
ROAD
ST. ANDREWS
RIPARIAN CORRIDOR
6.575ha
SYDNEY WATER CANAL
ADJOINING LAYOUT
[SUBJECT TO EASEMENTS] (1.493ha)
EXISTING HOUSE NOT CONSIDERED IN LAYOUT
CAP OFF FOR FUTURE CONNECTION
59904

CONCEPT DRAINAGE & ON SITE DETENTION/WSUD
LEAN LACKENBY & HAYWARD
PROPOSED LOTS
- FRONTAGE (AVERAGE 15m)
- MINIMUM 450m² LOTS
- MIN. WIDTH 12m
- AREA ABUTTING TRANSMISSION LINES LEFT AS RIPARIAN CORRIDOR
LEGEND
DESCRIPTION
EXISTING
PROPOSED
ROAD
RIPARIAN CORRIDOR
(SUBJECT TO EASEMENTS) 1.493ha²
ADDITIONAL LAYOUT
SYDNEY WATER CANAL
ST. ANDREWS ROAD
CAMDEN COUNCIL
CAMPBELLTOWN COUNCIL
AQUEDUCT
DENHAM COURT
CAMPBELLTOWN
1:1000
A1
DATE OCT 2017
SHEET 2 of 4
DRAWING NUMBER 59904dr01.dgn
AMEND FILE No: 59904

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.

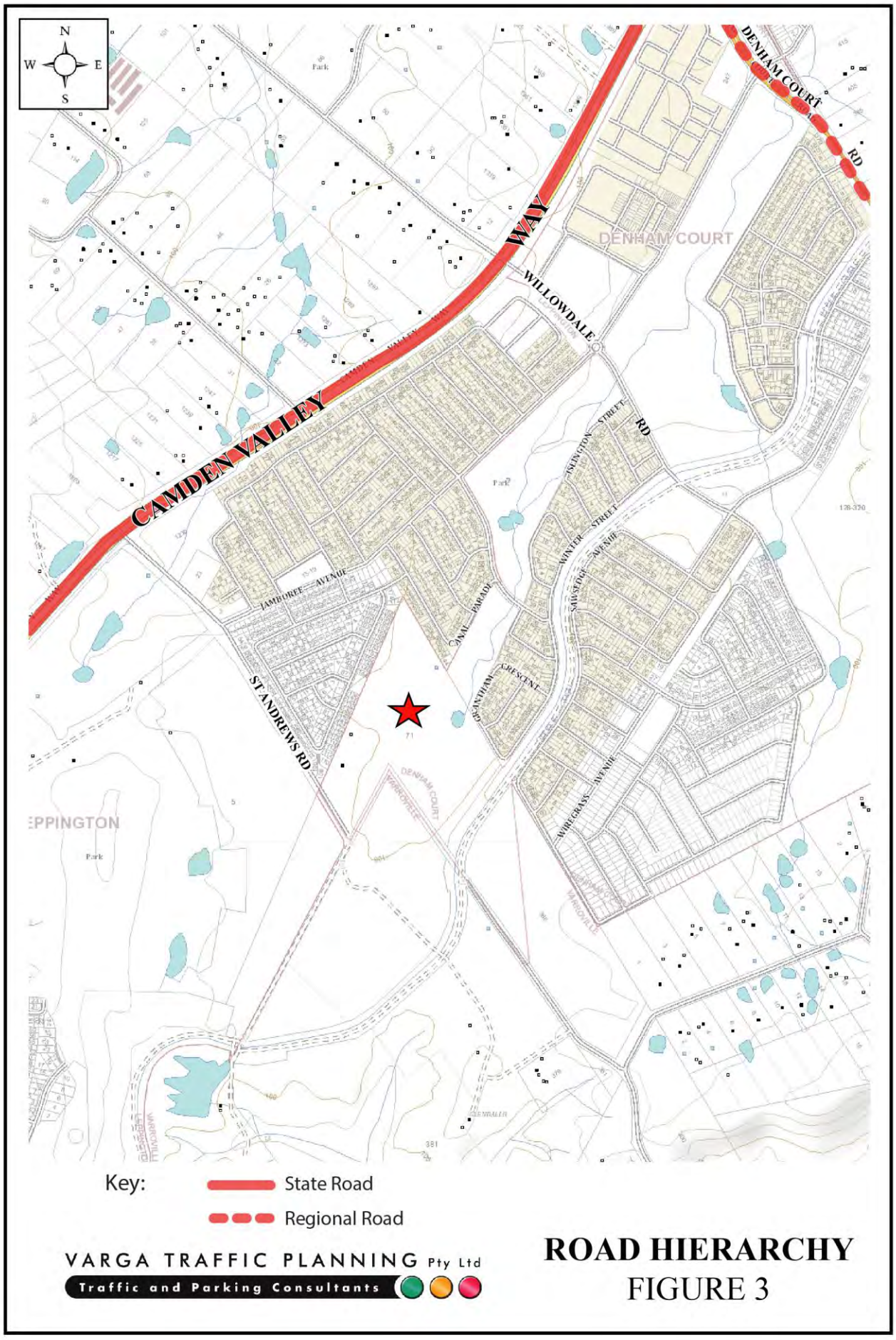
Camden Valley Way is classified by the RMS as a *State Road* and provides the key east-west road link in the area, linking Hume Highway, M7 and M5 interchanges at Prestons, near Liverpool, Camden, Narellan and Harrington Park. It has recently been upgraded to carry two traffic lanes in each direction 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
WILLOWDALE
ISLINGTON STREET
RD
WINTER STREET
AVENUE
SAWTOOTH
JAMBOREE AVENUE
CANAL PARADE
BRANCHAM CRESCENT
ST ANDREWS RD
WIREGRASS AVENUE
DENHAM COURT
EPPINGTON
Park
Key:
State Road
Regional Road
VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants
ROAD HIERARCHY
FIGURE 3

N
W
E
S
RIDGE
PARK
RD
HEATH RD
WAY
80
CAMDEN VALLEY
WOOLGEN PARK
RD
WAY
CAMDEN VALLEY
ST ANDREWS
RD
50
JAMBOREE
CONDUIT ST
AQUEDUCT
ARROWHEAD AVE
CANAL
PDE
SYDNEY WATER
ST ANDREWS
RD
CANAL
Key:
Right-Turn Bay
Traffic Signal
50
Speed Limit
VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants
EXISTING TRAFFIC CONTROLS
FIGURE 4

Western City District Plan – Planning Priority W5

The Western City District Plan is a 20-year plan to manage growth in the context of economic, social and environmental matters to achieve the 40-year vision for Greater Sydney.

Planning Priority W5 deals with providing housing supply, choice and affordability, with access to jobs, service and public transport.

With regards to public transport accessibility, the site is located within 6 to 9 minutes driving distance to the Leppington Railway Station which has the following facilities:

- rail service for the T2 Inner West and Leppington Line and T5 Cumberland Line which provide train services between Richmond, Parramatta and the Sydney CBD

- bus routes 841, 855, 856 and 858 providing high frequency services in the peak hours to Narellan, Liverpool and Oran Park

- 872 formal at-grade commuter parking spaces.

In addition to the above, *Transport for NSW (TfNSW)* is delivering additional commuter car parking spaces at Leppington Station involving the construction of a multi-storey commuter car park providing up to 1,000 additional commuter parking spaces, and is expected to be completed by mid-2021.

These commuter car spaces provide FREE parking for up to 18 hours under the Transport Park & Ride program, and are specifically designed to cater for the surrounding growth precincts.

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 111 outlined in the planning proposal yields a traffic generation potential of approximately 106 vehicle trips per hour (vph) during the AM peak hour and 110 vph during the PM peak hour. This is likely to comprise approximately 21 vph IN/85 vph OUT during the AM peak hour, and 88 vph IN/22 vph OUT during the PM peak hour.

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 13 vph IN/51 vph OUT in the AM peak hour, and approximately 53 vph IN/13vph OUT during the PM peak hour using St Andrews Road, and approximately 3 vph IN/13 vph OUT in the AM peak hour, and approximately 13 vph IN/3vph OUT during the PM peak hour using either Willowdale Drive or Denham Court Road.

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.

A new local road link is also proposed to connect with Grantham Crescent within the adjacent established residential subdivision.

Vehicular access to/from the site will also be available via Denham Court Road to connect with Campbelltown Road. Other local road links are also available via Raby Road to connect with Campbelltown.

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 or other local road links using Denham Court Road or Rabbi Road.

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 with a road reservation width of 16 metres which will connect with St Andrews Road, consistent with the East Leppington Precinct road hierarchy requirements.

Furthermore, another road link with a road reservation width of 18 metres is proposed to connect with Grantham Crescent within the adjacent established residential subdivision. It is noted that this secondary road is a result of Rural Fire Service (RFS) requirements and not necessary from a traffic engineering perspective whereby the connection to St Andrews Road will remain the preferable route for future residents to get on Camden Valley Way, irrespective whether or not this secondary access is provided.

The planning proposal will also 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 111 residential allotments with a new internal road network

- the planning proposal is within a short 6 to 9 minutes driving distance to Leppington Station with substantial amount of FREE commuter parking

- 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.

Appendix G Social Impact Assessment prepared by Judith Stubbs & Associates

Social Infrastructure Assessment

Proposed Rezoning:
71 St Andrews Road Varroville

11 June, 2021

This report has been prepared for

Gat and Associates

by

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1 Executive Summary

1.1 Overview

JSA has been commissioned by Gat and Associates to conduct a social infrastructure assessment (SIA) with respect to a planning proposal for 71 St Andrews Road, Varroville.

A number of changes are currently being sought to the planning controls for 71 St Andrews Road, Varroville. The proposed planning controls are:

- Rezone the site to part R2 Low Density Residential and part E3 Environmental Management; and
- A height limit of 9m; and
- A minimum lot size of 300m²; and
- Residential dwelling density: 15 dwellings/hectare.

Based on a concept services plan,[1] the changes are expected to yield 110 residential lots.

As such, this report investigates:

- Existing and proposed social infrastructure in the locality;
- The adequacy of existing and proposed social infrastructure with regard to appropriate benchmarks; and
- The additional demand for social infrastructure arising from the planning proposal.

1.2 Changes in Population

The planning proposal will result in an increase of the population of the East Leppington Precinct by 331-334 people in 110 dwellings, a 2% increase on the expected population of 14,493 identified in the *Social Infrastructure and Open Space Assessment* (SIOSA) for the East Leppington Precinct.

1.3 Section 7.11 Contributions

The *Campbelltown Local Infrastructure Contributions Plan (2018)* applies to all land within Campbelltown LGA excluding Section 7.11 contributions for Glenfield Urban Release Area and Menangle Park Urban Release Area.

Under the plan, the proposed subdivision will attract $2.4 million in contributions,[2] of which $1.4 million is attributable to open space and recreation facilities, $0.1 million is attributable to cycleways and $0.4 million is attributable to community facilities.

[1] Concept Services Plan, Amendment G, August 2015
[2] 111 lots X 3.16 people per lot X $6,942.74 = $2,435,235.82

We are advised that the position of Campbelltown Council is that Section 7.11 contributions will not be expended within the proposed development, such as by accepting open space or other works as a contribution in kind.

1.4 Open Space and Community Facilities

1.4.1 Connectivity

There is currently good public transport connectivity to Leppington Station and Willowdale Shopping Centre from the relatively high frequency bus service 814 in Jamboree Ave, 550 - 800 metres from the proposed development. Connectivity to the regional road network via Camden Valley Way, around 850 metres from the proposed development.

Pedestrian and cycling connectivity of the proposed subdivision to Willowdale Park, Willowdale Shopping Centre and East Leppington Public School could be improved if a pedestrian path and cycleway were provided to connect to Canal Parade.

There are two options available for this. The first is via the proposed and existing RE1 zoned corridor to the north east of the site, however we are advised that Council is not supportive of building a connection within the reserve to the north east of the development, and if open space is provided as community title land within the development, public access will be restricted.

The second option is via a proposed road shown on the subdivision plan which connects to Grantham Crescent. This allows for connection to Canal Parade via walkways accessed from Grantham Crescent, and this route will not require the cooperation of Council.

1.4.2 Open Space

There is likely to be a shortage of local open space, including sporting fields, at the level of East Leppington Precinct as identified in the SIOSA. This shortfall is a result of decisions made during planning for the East Leppington Precinct, and exists irrespective of the proposal. The shortfall of open space will not be exacerbated by the development (and will be ameliorated on a person per hectare basis for the precinct) provided the open space identified below is provided within the development.

The Planning Proposal will generate a demand for 9,500 m^2 of open space due to increased population, and this could be provided as part of the proposed RE1 and SP2 Local Drainage areas identified in the amended land zoning map. We are advised that the drainage easement has an area of 1.49 ha, and this could constitute the open space. This would be an appropriate location for open space as it is close to the proposed subdivision, and is also a logical extension of existing open space. If Council is not prepared to take ownership of the land, the land could be provided as community title for those owning land within the development. Enhancement should be provided to part of the land to provide a pocket park, including landscaping, walkways, seating and a children's playground; and a level mowed area of football field size would provide opportunities for ball games and the like.

There is an opportunity for Council to enhance access to open space generally within East Leppington Precinct by providing access to Varroville Reserve through construction of the missing

portion of St Andrews Road, and enhancement of Varroville Reserve combined with connectivity to East Leppington could address the shortfall in local open space and sporting fields within East Leppington more generally.

1.4.3 Community Facilities

The East Leppington Precinct appears to be well supplied with community facilities with the exception of a Neighbourhood Centre.

While it appears to be the intention of various planning documents that a neighbourhood level multi-purpose community centre of around 600-620sqm be constructed to service East Leppington Precinct, such a facility has not been provided or identified for future provision in any relevant contributions plan.

This shortfall is not triggered by the proposal, and the development will provide $0.4 million in Section 7.11 Contributions for Council to put towards community facilities. The shortfall is a result of planning and expenditure decisions made by Campbelltown City Council.

1.5 Overall Impacts and Potential Mitigations

The planning proposal will have a small marginal impact on demand for services and open space within the East Leppington Precinct. The demand for additional open space can be accommodated within the RE1 and SP2 (Local Drainage) areas shown as part of the proposal. Pedestrian and cycling connectivity can be improved if a pedestrian path and cycleway were provided to connect to Canal Parade or Grantham Crescent.

There are opportunities for the developer to provide public open space, enhancements to open space, and cycleway and pedestrian connectivity as works in kind in lieu of Section 7.11 contributions.

1.6 Recommendations

Recommendation 1

The consent authority investigates opportunities for the developer to provide open space, enhancement of open space, and cycling and pedestrian connectivity in lieu of Section 7.11 contributions.

Recommendation 2

That Campbelltown City Council note the demand for a neighbourhood centre in the East Leppington Precinct and investigate opportunities for provision of such a centre using 7.11 contributions.

Recommendation 3

That Campbelltown City Council note the shortfall in local open space and sports fields in the East Leppington Precinct and investigate opportunities for improved connectivity to Varroville Reserve and enhancement of the Reserve.

2 Background

2.1 Context to Proposed Zoning Changes

2.1.1 South West Growth Centre & East Leppington Precinct

The **South West Growth Centre** is located within the local government areas of Liverpool, Campbelltown and Camden. It covers approximately 17,000 hectares, comprising 18 precincts, and is expected to accommodate 110,000 new homes and a population of 300,000 people at its completion in around 30 years.

The **East Leppington Precinct** lies within the eastern part of the South West Growth Centre, to the east of Camden Valley Way. It is adjacent to the Precincts of Leppington and Leppington North. Its north eastern boundary is formed by the Sydney Catchment Authority's Sydney Water Supply Channel. East Leppington is the sixth precinct to be released in the South West Growth Centre, after Edmondson Park, Oran Park, Turner Road, Austral and Leppington North.

The East Leppington Precinct covers 463 ha and straddles the Council boundaries of Campbelltown (65%), Liverpool (23%) and Camden (13%). It is equidistant from Liverpool City Centre (15 kms to the north east), and Campbelltown City Centre (15 kms to the south).

Around three quarters of the Precinct is owned by Stockland Corporation, and comprises rural uses. The remainder consists of smaller rural enterprises, rural residential properties, market gardens, bushland and other rural holdings.

Under the *South West Growth Centre Structure Plan*, East Leppington Precinct is expected to accommodate around 4,400 dwellings and 14,500 new residents, as well as two to three neighbourhood centres along major roads. Major infrastructure in the region includes the South West Rail Link (which passes just north of the Precinct), the Leppington Major Centre to the northwest, railway stations at Leppington and Edmondson Park, and a range of district and regional level facilities within Leppington and Leppington North Precincts.[3]

2.1.2 Description of 71 St Andrews Road Varroville

Seventy one St Andrews Road sits within the State Suburb of Denham Court in Campbelltown LGA, and immediately adjoins the State Suburbs of Leppington and Varroville.

The site is currently zoned E3 (Environmental Management) under Campbelltown LEP 2015 and has a minimum lot size of 100 ha. Residential uses permitted with consent include Dwelling houses and Dual occupancies (attached).

Seventy one St Andrews Road is immediately adjacent to the East Leppington precinct of the South West Growth Centre to the north west, north and north east and development, if approved, will be

[3] Elton Consulting (2013) *Social Infrastructure and Open Space Assessment*: East Leppington Precinct, prepared for the NSW Department of Planning and Environment, pgs 3-5.

an extension of the precinct. To the west is E2 (Environmental Conservation) zoned land within Camden LGA, and to the south is E3 (Environmental Management) zoned land within Campbelltown LGA.

The site (Lot 71/DP706546) is around 14 ha in area. The site is generally cleared and currently contains a house with the balance of the site used for grazing sheep and cattle.

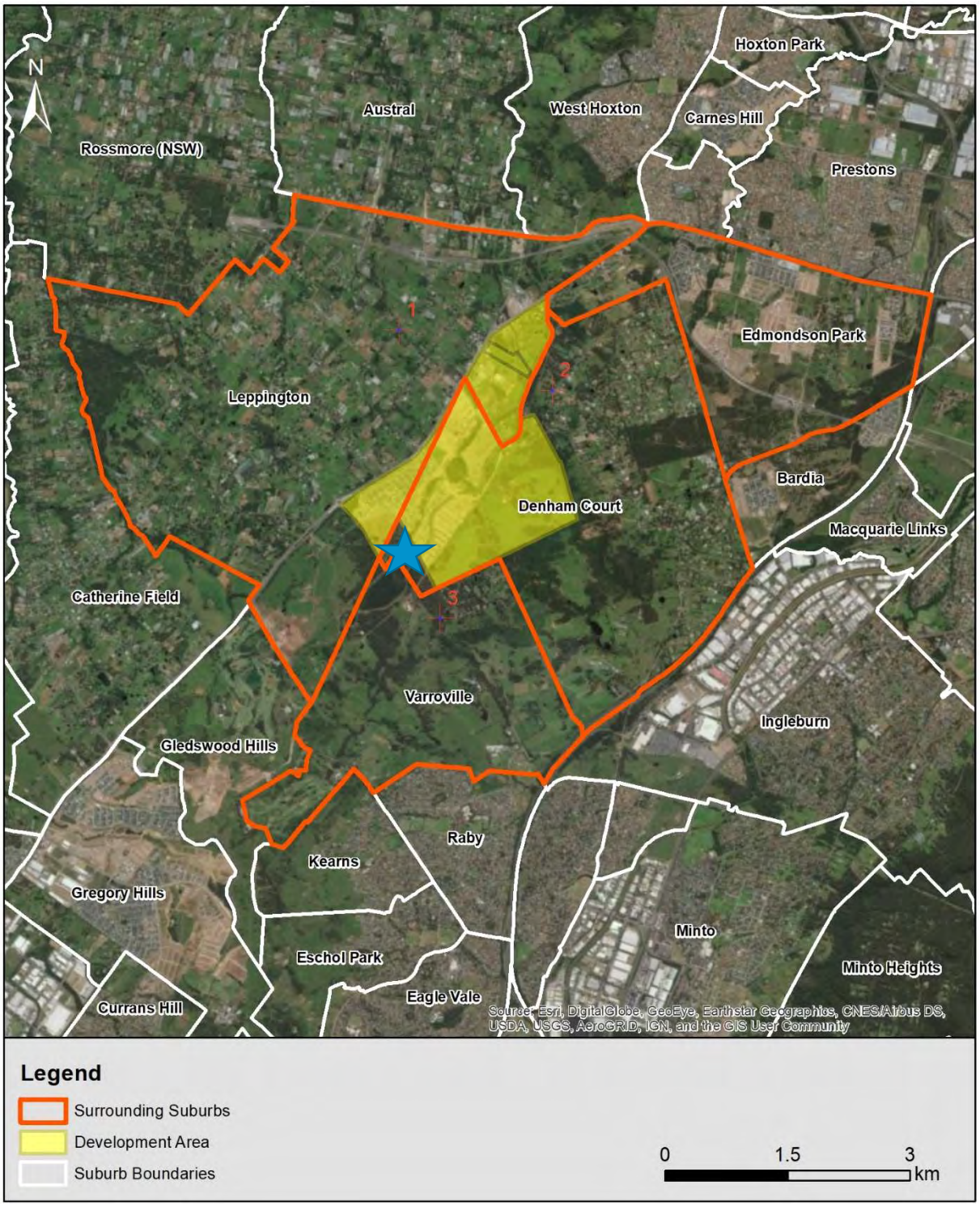

Figure 2-1 East Leppington Precinct and Surrounding State Suburbs (site shown with star)
Source: Judith Stubbs and Associates January 2021, Google Earth and ABS (2016) Census

2.2 Overview of Proposed Changes

A number of changes are currently being sought to the planning controls for 71 St Andrews Road Varroville. The proposed planning controls are:

- Rezone the site to part R2 Low Density Residential, part E2 Environmental Conservation, part RE1 Public Recreation and part Special Purposes – Drainage; and
- A height limit of 9m; and
- A minimum lot size of 300m²; and
- Residential dwelling density: 15 dwellings/hectare.

Based on a concept services plan,[4] the changes are expected to yield 110 residential lots.

These changes and their potential implications are looked at in more detail in **Section 8** below.

2.3 Scope of Work

A gateway determination for the planning proposal to rezone land at 71 St Andrews Road Varroville identified a number of amendments required to the planning proposal prior to public exhibition. These included:

> *(b) confirm that adequate social infrastructure is in place, identify these facilities including active and passive open space, and the availability to future residents;*[5]

As such, this Social Infrastructure Assessment undertakes the following scope of work:

- A review of documentation to understand and describe the proposal, and the strategic and statutory planning context;
- Mapping and statistical analysis of the socio-economic, service and land use context within which the development is occurring, including a site visit;
- Understanding the likely demography of the proposed development, using relevant data and information from the Applicant and secondary sources, as well as 'proxy' developments where possible; and
- Assess provision of social infrastructure against appropriate normative standards, make appropriate recommendations and report.

[4] Concept Services Plan, Amendment G, August 2015
[5] Gateway Determination Planning Proposal (Department Ref: PP_2020_CAMPB_004_00)

3 Review of Social Infrastructure and Open Space Assessment

3.1 Overview

A *Social Infrastructure and Open Space Assessment* (SIOSA) for the East Leppington Precinct was prepared for the NSW Department of Planning and Infrastructure by Elton Consultants in 2013. The report provides demographic analysis and assessment of the social infrastructure required to support residential development within the East Leppington Precinct of Sydney's South West Growth Centre. It was one of a number of specialist technical studies required to inform the planning process for the precinct.

Relevant findings of the SIOSA have been outlined below as a context to this Social Infrastructure Assessment.

3.2 Review of Findings with respect to Community facilities, services and open space

3.2.1 Principles and Approach

Elton's SIOSA sets out a range of principles for the planning, location and design of community facilities and open space. I consider these to be in accordance with good planning practice and to be reasonable with regard to level of provision.

In terms of **community facilities** this includes timely provision to ensure early access by future residents; efficient use of resources; clustering of facilities within hubs; physical and transport accessibility; multipurpose design rather than single use; and equity of access.

Principles relating to the provision of **recreational facilities and open space** include public ownership to ensure public access; that they cater for a diversity of uses and users; adequate provision to avoid impacts on surrounding facilities and communities; quality considerations above quantity; physical and visual linkages; universal access; distribution across an area according to local, district and regional hierarchy; that they complement natural features and topography; retain flora and fauna habitat; embed CPTED principles in design; and protect areas of environmental and cultural importance. [6]

[6] Elton Consulting (2013) *Social Infrastructure and Open Space Assessment*: East Leppington Precinct, prepared for the NSW Department of Planning and Environment, pgs 12-13.

The SIOSA also sets out social planning principles with regard to the provision of **community facilities** in terms of the local, district and regional hierarchy, which are also in line with good social planning practice. This includes:

- The range of facilities that should be provided at the **local level** around 5-10 minutes' walk and for a population 5,000 to 15,000 people (e.g. general store, child care, primary school, meeting spaces and neighbourhood centre, medical practice, etc);
- Facilities to be provided at a **district level** that are more specialised and service a wider catchment of around 15,000 to 50,000 people (e.g. high school, specialty shops, branch library, sporting and recreational complexes, community health facilities; facilities for particular target groups such as older people, people with a disability, CALD groups, young people; emergency services, etc);
- **Sub-regional and regional level** services comprising major facilities for 50,000 to 100,000+ people, including major health facilities; tertiary education facilities; major cultural and civic facilities; major recreation and sporting facilities such as stadiums, regional park, botanic gardens, etc.[7]

The SIOSA also adopts a hierarchy of **open space provision**, which again appears to be reasonable. These are:

- **Regional Park**, which provides for active and passive needs of the wider population who may travel from a 15-25 kilometre radius catchment. Space requirement: 25 hectares minimum;
- **District Park**, which provides for active and passive needs of the precinct and a wider catchment area within 10-20 minutes' drive. Space requirement: 5-10 hectares;
- **Local Park Active**, which provide for a suburb catchment only. Space requirement: 3-5 hectares per park;
- **Passive recreation**, which provides for passive recreation at the neighbourhood level. Space requirement: 0.2-2.5ha per park;
- **Active local open space**, which is mainly a destination park with competition standard sports facilities and amenities, and passive recreation and social areas;
- **Passive local open space**, including informal play spaces area for community/family gatherings with kick about area but no formal sports markings.

The SIOSA also considers open space needs related to Conservation Areas, Riparian Zones, and Linkages (providing for walking and cycling between residential areas and facilities, along conservation areas, etc).

[7] Elton Consulting (2013) *Social Infrastructure and Open Space Assessment*: East Leppington Precinct, prepared for the NSW Department of Planning and Environment, pgs 13-14.

3.2.2 Assessment of provision

With regard to **local and district social infrastructure**, the SIOSA finds that the East Leppington Precinct contains no existing community facilities, services or open space which might be used or adapted for use by the future population of the Precinct.

Although there are some **local level facilities and open space areas** located in adjacent areas, these are not within local walking distance for the future East Leppington population and have been provided to meet the needs of their local catchments. As such, they generally will not have capacity to also meet the needs of the future East Leppington population.

In time, as the adjacent Growth Centre precincts develop, some of their existing facilities are likely to be redeveloped to meet the needs of their future populations. Any spare capacity which currently exists in facilities and open space within Camden and Liverpool LGAs is likely to be taken up by population growth in other release areas already approved. This means that **future demand for local and district level facilities, services and open space will need to be addressed by new social infrastructure to be provided within the East Leppington Precinct**.

The needs of the future East Leppington population for **regional level facilities, services and open space** were also considered. The SIOSA found that this need will be met by existing facilities and open space and by those proposed to be developed within the North Leppington Precinct. As such, it considered that there will be **no need to provide any regional facilities or open space within the East Leppington Precinct**.

Chapters 6 and 7 of the SIOSA provide a detailed analysis of the community facility and open space requirements for the East Leppington Precinct.

3.2.3 Recommendations in SIOSA for Future Provision

Recommendations for **local and district level community facilities** to be located within the East Leppington Precinct include:

- One public primary school, to be provided by DEC;
- Neighbourhood level retail services for daily needs;
- A neighbourhood level multi-purpose community centre of around 600 - 620sqm, as a base for local community activities and services, to be owned and managed by Campbelltown Council;
- Possibly three or four child care centres to be provided by the private sector, depending on size and supply in nearby areas;
- Places of worship, according to local demand and with sites purchased through the market;
- Local medical centre / GPs, according to market demand and accommodated in commercial premises;
- Residential aged care facilities, with sites to be acquired through the market.

Recommendations for **local and district level open space and recreation facilities** to be located within the East Leppington Precinct include:

- About 41.02 hectares of local and district open space, based on the Liverpool and Campbelltown Councils' standard of 2.83 ha/1000 people. This open space would be owned and maintained by Liverpool, Camden and Campbelltown Councils;
- Two district/key suburb parks, focused on the area near Leppington House Park and in the north-east of the Precinct;
- Local parks within walking distance of most dwellings;
- Two sports parks with double playing fields and sports courts (5 hectares each);
- Five playgrounds for young children – two in the district parks and in three local playgrounds;
- A network of walking and cycling trails along the creek line and linking to the wider network, particularly to the Leppington Major Centre.

The SIOSA notes that the actual rate of provision proposed within the Indicative Layout Plan (ILP version 12.6) of 26.0197ha falls well short of the recommended quantum based on the application of the Council and DPI standard (41.02 ha). The actual rate of provision is equivalent to only 1.79 ha/1000 persons, compared to the adopted standard of 2.83 ha/1000. This shortfall includes both informal/passive open space and active open space for sporting facilities, and occurs across each of the LGA components of the Precinct.

It also notes that only one double playing field is proposed, in contrast to the two recommended; and that while there may be existing capacity within sports grounds in nearby suburbs of Campbelltown, 'these existing facilities will not be locally accessible to the East Leppington population'. As such, the SIOSA concludes that 'the proposed under provision of sporting fields in the precinct has the risk of impacting on sports fields in adjoining precincts and LGAs, which are closer to East Leppington. It also has the risk of diminishing opportunities for physical activity and an interest in participating in sports.' [8]

The SIOSA considers that,

> The proposed low rate of provision of open space and sporting facilities is of concern from an open space and recreation planning perspective, as we believe that an insufficient quantum of open space will be provided in the precinct to meet the future needs of the East Leppington population. Demand will therefore be placed on resources and facilities in adjacent areas, which have not been planned to cope with this. The low rate of provision also sets an unfortunate precedent for the planning of future precincts within the Growth Centre.[9]

[8] Elton Consulting (2013) *Social Infrastructure and Open Space Assessment*: East Leppington Precinct, prepared for the NSW Department of Planning and Environment, p. 2.
[9] Elton Consulting (2013) *Social Infrastructure and Open Space Assessment*: East Leppington Precinct, prepared for the NSW Department of Planning and Environment, p. 2.

The SIOSA finds that **regional active and informal open space** will be catered for in the Western Sydney Parklands, and the regional aquatic and indoor recreation facility within the adjacent Leppington Town Centre.

(Active and passive open space required and the areas proposed to be provided are set out in Table 8.1 and Map 2 of the SIOSA, whilst Table 8.2 identifies the land that will be required for community facilities and schools).

4 Policy and Statutory Context

4.1 Overview

A range of policies provide guidance for the planning and delivery of social infrastructure (community facilities, human services and open space) for the development of the subject lot in the context of East Leppington Precinct. These include:

- Greater Sydney Region Plan
- East Leppington Precinct Planning
- State Environmental Planning Policy (Sydney Region Growth Centres) 2006
- Relevant Strategies and Plans of Campbelltown City Council

Relevant issues contained in these policies are outlined below.

4.2 Greater Sydney Region Plan

The *Greater Sydney Region Plan*[10] presents a vision and innovative actions for managing Greater Sydney's growth and enhancing its status as one of the most liveable global cities. The plan identifies three cities in Greater Sydney including the Western Parkland City, containing the East Leppington Precinct.

In new communities – in land release areas – a large part of the growth is to come from a new urban corridor from Greater Macarthur in the south west, through Bringelly and Penrith in the west to Rouse Hill in the north west.

The plan identifies new neighbourhoods (land release) and emerging centres at Leppington and Oran Park in the South West Growth Area.

The following strategies are relevant to this Social Infrastructure Assessment:

- Strategy 6.1: Deliver social infrastructure that reflects the needs of the community now and in the future.
- Strategy 7.1: Deliver healthy, safe and inclusive places for people of all ages and abilities that support active, resilient and socially connected communities by:
    - providing walkable places at a human scale with active street life
    - prioritising opportunities for people to walk, cycle and use public transport
    - co-locating schools, health, aged care, sporting and cultural facilities
    - promoting local access to healthy fresh food and supporting local fresh food production.

[10] Greater Sydney Commission (2018) *Greater Sydney Regional Plan*

4.3 East Leppington Precinct Planning

The Department of Planning, Industry and Environment has also released information on planning for East Leppington Precinct within the context of planning for the South West Priority Growth Area.[11] East Leppington Precinct was rezoned for urban development in two stages – the plan for East Leppington (Liverpool Part) was finalised in August 2014, while the Camden and Campbelltown Part Precinct was finalised in March 2013.

The Department states that, releasing land for housing means that 'Sydneysiders will have access to a range of homes that suit different needs, budgets and lifestyle choices', which 'also helps to place downward pressure on housing prices.'[12]

The new revitalised community at East Leppington will benefit from up to 4,450 new homes and the delivery of local amenities close to transport options, including:

- A new local centre and village centre
- 26 hectares of open space and recreation areas
- new primary school and community centre
- retention of Scenic Hills area
- upgrades to major roads, including Camden Valley Way and Denham Court Road
- Leppington House archaeological site protected as a local park
- protection of Existing Native Vegetation, Cumberland Plain Woodland and a threatened species.
- improved connections to encourage walking and cycling.

It also notes that East Leppington will 'benefit from its close proximity to Leppington Station and proposed Leppington Major Centre, which will provide access to jobs, shopping, entertainment, community and government services'.[13]

4.4 State Environmental Planning Policy (Sydney Region Growth Centres) 2006

4.4.1 Overview of Relevant Controls

State Environmental Planning Policy (Sydney Region Growth Centres) 2006 provides the statutory planning framework for identified Growth Centres including the South West Regional Growth Centre, and establishes the broad planning controls for their development.

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[11] https://www.planning.nsw.gov.au/Plans-for-your-area/Priority-Growth-Areas-and-Precincts/South-West-Growth-Area/East-Leppington accessed 6 April 2021.
[12] *ibid*
[13] *ibid*

The aims of the SEPP include to:

- Enable the establishment of vibrant, sustainable and liveable neighbourhoods that provide for community well-being and high quality local amenity
- Provide controls for the sustainability of land in those growth centres that has conservation value
- Provide for the orderly and economic provision of infrastructure in and to those growth centres.

Appendix 8: Campbelltown Growth Centres Plan applies to land within the **East Leppington Precinct**.

The Aims of the Precinct Plan under clause 1.2 are:

- to make development controls for land that will ensure the creation of quality environments and good design outcomes,
- to protect and enhance environmentally sensitive natural areas and cultural heritage,
- to provide for recreational opportunities,
- to provide for multifunctional and innovative development that encourages employment and economic growth,
- to promote housing choice and affordability,
- to provide for sustainable development,
- to promote pedestrian and vehicle connectivity.

4.5 Local Strategies

4.5.1 Campbelltown City Community Facilities Strategy

The *Campbelltown City Community Facilities Strategy* (2018) guides the planning and delivery of community facilities within Campbelltown LGA.

It sets out a geographical hierarchy, with the subject site being within the Bardia – East Leppington Precinct of the North Western District. The North Western District and the Bardia – East Leppington precinct includes the East Leppington Precinct and growth areas within Liverpool LGA.

The strategy sets out benchmarks for the provision of community facilities.

A major undersupply of regional facilities is identified for communities on the western side of the M31 and the strategy notes that provision of infrastructure will need to consider location of anticipated community facilities in Camden and Liverpool LGA to avoid overlap of district facilities.

The population of the North West District is expected to grow by around 20,000 people between 2016 and 2036. Significant shortfalls are identified in district facilities including 2 Multi-Purpose

Community Centres, 1 Placed Based Library, 2 Community Arts Centres, 2 Performing Arts Centres and a Multi-Purpose Recreation Facility.

The population of the Bardia – East Leppington Precinct is expected to grow by around 10,000 people between 2016 and 2036. Significant shortfalls are identified in facilities including 2 Neighbourhood Centres/Community Halls, 1 Community Art Space and 1 Community Health Centre.

4.5.2 Campbelltown Open Space Strategic Plan

The *Campbelltown Open Space Strategic Plan* (2018) is a high level strategic document that assists in developing an integrated and balanced response to the demands of existing and future Public Open Space needs in the Campbelltown LGA, in order to best meet the needs of the community now and into the future.

The Plan's focus areas and guiding principles include:

1 Strengthening the existing Open Space network: connected, functional, accessible, sustainable

1.1 Campbelltown's Open Space areas are part of an integrated and connected network.

1.2 Campbelltown's Open Space areas are of an appropriate size, shape and slope and many areas can be adapted to support a range of activities experiences and settings.

1.3 Campbelltown's Open Space is accessible and safe, visually appealing and easy to interpret.

1.4 Campbelltown's Open Space is managed sustainably to maximise the protection of the local environmental values.

2 Managing the existing Open Space network: integrated, predictive, proactive

2.1 The management of Campbelltown's Open Space is well coordinated.

2.2 Upgrades and improvements to Campbelltown's Open Space are based on well developed policies, plans and strategies.

2.3 Council takes the initiative in ensuring that Open Space is actively managed and well maintained, with clear procedures and protocols.

3 Preparing for future Open Space: planning, responding, funding, anticipation

3.1 Council develops the appropriate plans and strategies for future Open Space.

3.2 Council proactively responds to external plans and submissions that will directly or indirectly affect Open Space.

3.3 Council is able to fund the existing and proposed Open Space to meet the community needs.

3.4 Council will prepare for the future and develop Open Space concepts to help drive that future.

4 Involving the community in Open Space: communication, education, participation

4.1 Information on Campbelltown's Open Space is readily available and conveyed to

the community.

4.2 Council actively works with the community to raise awareness and understanding of issues related to Open Space.

4.3 The Campbelltown community is encouraged to be involved in the management of the existing Open Space and planning for future Open Space.

4.5.3 Campbelltown Draft Open Space and Land Review Strategy

The *Campbelltown Draft Open Space and Land Review Strategy* (2018) contains an audit of open space provision across Campbelltown LGA. Compared to a standard of 2.83 ha per 1,000 people, Campbelltown LGA has 9.2 ha of RE1 zoned open space per 1,000 people.

A summary table showing open space provision by suburb does not identify Denham Court (the suburb covering the East Leppington Precinct within Campbelltown LGA), noting however that relevant zoning maps show an area of about 26 ha in Varroville zoned RE1 and in public ownership.[14]

4.5.4 Campbelltown Local Infrastructure Contributions Plan

The *Campbelltown Local Infrastructure Contributions Plan (2018)* applies to all land within Campbelltown LGA excluding Section 7.11 contributions for Glenfield Urban Release Area and Menangle Park Urban Release Area.

Under the plan, the proposed subdivision will attract $2.4 million in contributions,[15] of which $1.4 million is attributable to open space and recreation facilities, $0.1 million is attributable to cycleways and $0.4 million is attributable to community facilities.

The plan does not identify any works within the suburb of Denham Court.

The implications of these strategies and plans are discussed in relation to relevant social infrastructure provision at various points below.

[14] Campbelltown LEP 2015 Map LZN 007 and Red Square data base.
[15] 111 lots X 3.16 people per lot X $6,942.74 = $2,435,235.82

5 Site Visit of East Leppington Precinct & Surrounds

5.1 Overview

JSA carried out a visit of the proposal site, new release areas within the East Leppington precinct and Leppington Station on 1 April 2021, in order to have a better understanding of the proposal site and its surrounds as well as to observe the nature of the similar new development areas in the precinct, particularly housing types and open space areas around new local commercial centres.

The figure below shows the site in the context of nearby services and facilities.

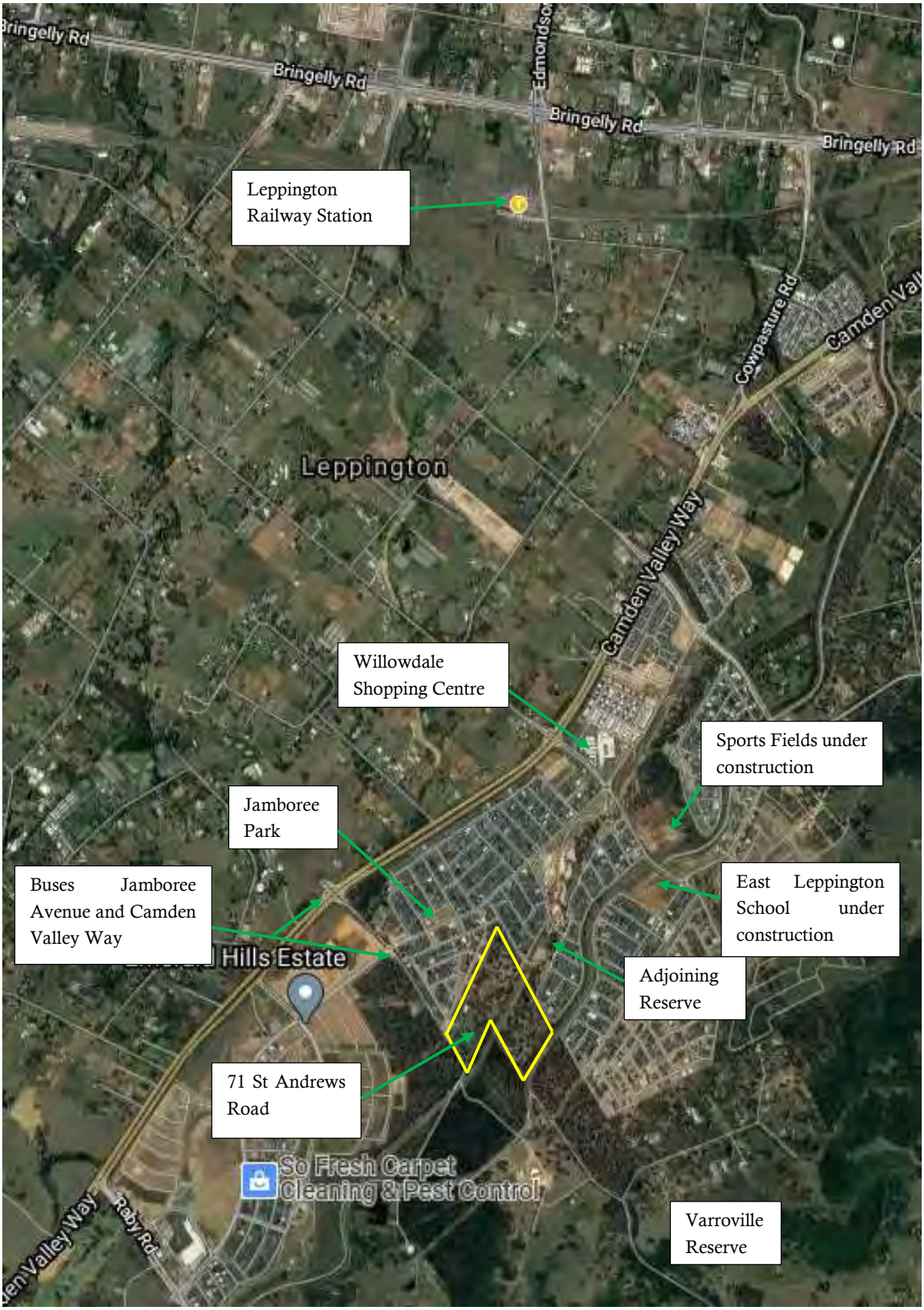


Figure 5.1: East Leppington Precinct & Surrounds

Source: JSA, Google Maps 2021

5.2 Proposal site

The proposal site, 71 St Andrews Road Varroville, is currently accessed from St Andrews Road. The site contains a dwelling house with the balance of the site partly cleared and used for grazing.

Figure 5.2: The site looking north west towards existing dwelling

Source: JSA, Site Visit 202

Figure 5.3: The site looking north along power lines easement

Source: JSA, Site Visit 2021

5.3 Willowdale Shopping Centre

The Willowdale Shopping Centre is accessed from Willowdale Drive and includes a Coles supermarket, Liquorland, dental surgery, kebab shop, tobacconist, café, men's barber, pharmacy, medical centre, real estate and restaurant. The shopping centre is about 2 km drive from 71 St Andrews Road.

Figure 5.4: Willowdale Shopping Centre

Source: JSA, Site Visit 2021

5.4 Schools

East Leppington Public School is currently under construction on the corner of Willowdale Drive and Commissioners Drive. The School is about 2.3 km drive from 71 St Andrews Road using the existing road network.

Figure 5.5: East Leppington Public School (under construction)
Source: JSA, Site Visit 2021

5.5 Parkland

The nearest park to 71 St Andrews Road is Jamboree Park at the intersection of Jamboree Avenue and Palaver Street. The park is 6,800 m^2 and contains passive open space, a children's playground and picnic facilities. There is an adjoining reserve between Canal Parade, Grantham Crescent and Baden Powell Avenue. The reserve is about 2.6 ha and has a minor level of enhancement including landscaping and walking paths.[16] There is a large reserve in Varroville, however this has not been developed and lacks connectivity to East Leppington Precinct.

[16] Areas from RedSquare mapping,

Figure 5.6: Jamboree Park

Source: JSA, Site Visit 2021

Figure 5.7: Reserve near Canal Parade looking towards the site

Source: JSA, Site Visit 2021

5.6 Cycleway

There is a cycleway along Jamboree Avenue providing access between St Andrews Road and Willowdale Shopping Centre and a cycleway along St Andrews Road northwest of Jamboree Avenue which connects to the cycleway along Camden Valley Way. No cycleway access to Leppington Station was identified.

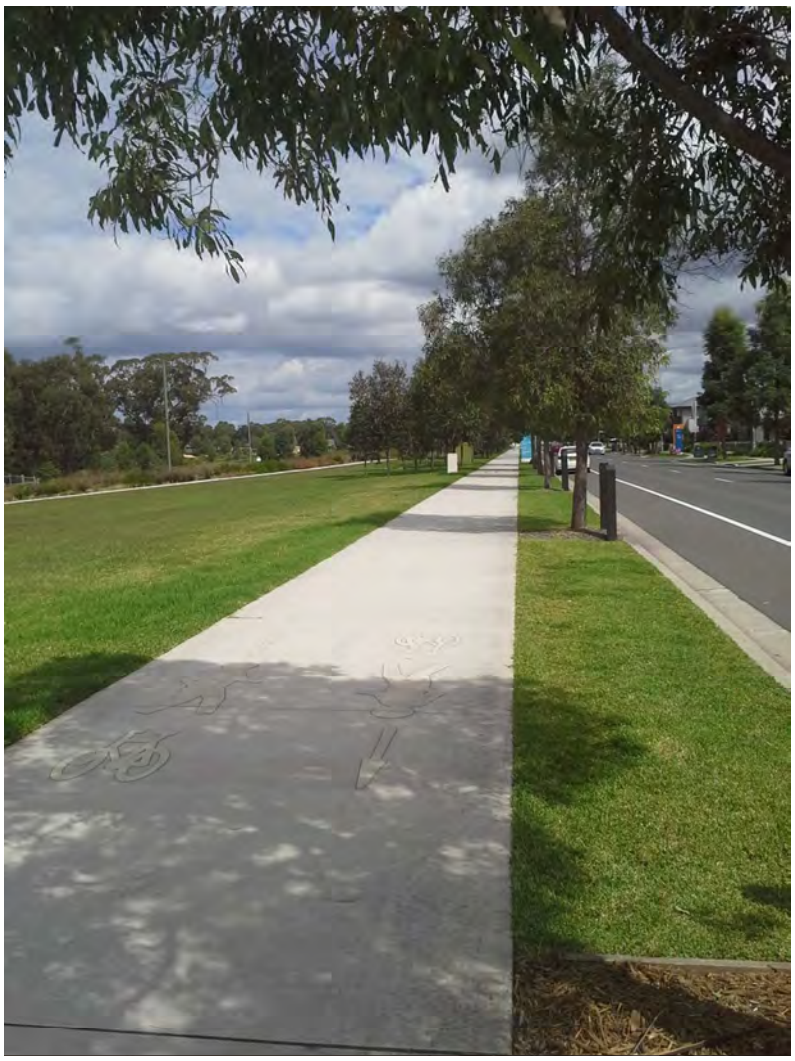


Figure 5.8: Cycleway Jamboree Avenue

Source: JSA, Site Visit 2021

5.7 Bus Services

Bus service 841, Narellan to Leppington via Gregory Hills, operates from bus stops in Jamboree Avenue. The service can be accessed from an eastbound bus stop around 800 metres walk near Konara Street (bus stop ID 217919) and a westbound bus stop around 550 metres walk near St Andrews Road (bus stop ID 217920). The service operates between 6.00 am and midnight Monday to Sunday, providing two services per hour through the day and four services per hour in weekday peak periods.

The service provides access to Willowdale Shopping Centre (5 minutes) and to Leppington Station (10 minutes).

Bus service 857, Narellan to Liverpool, operates from bus stops in Camden Valley Way. The service can be accessed from a northbound bus stop around 950 metres walk near St Andrews Road (bus stop ID 217944) and a southbound bus stop around 850 metres walk near St Andrews Road (bus stop ID 217943). The service operates between 6.00 am and midnight Monday to Sunday, providing five services per weekday to Liverpool and six return services, with reduced services on weekends.

The service provides access to Liverpool CBD (about 45 minutes).

5.8 Leppington Station

Leppington Station is a 5 km drive from the proposal site. Leppington Station is the terminus of the South West Rail Link providing access to the T2 Inner West & Leppington line and the T5 Richmond to Leppington line as well as multiple bus services. Services on the T2 line provide access to Sydney City and Liverpool, with services operating between 3.00 am and midnight. There are typically two services per hour, with greater frequency during peak periods. Services on the T5 line provide access to Parramatta and Liverpool, with services operating between 6.00 am and midnight. There are typically two services per hour.

Leppington Station is within the Leppington Major Centre precinct and whilst currently surrounded largely by open land and very low density semi-rural properties, the indicative layout plan for the precinct show that it will be surrounded by mixed use, retail core, civic precinct, retail/commercial areas, business park and commuter car parking.[17]

The provision of commuter car parking at Leppington Station is currently inadequate as local streets were largely parked out in all directions. A multi storey car park is currently under construction.

[17] Austral and Leppington North Precincts, Indicative Layout Plan, 2013, accessed online 25/02/2020 at https://www.planning.nsw.gov.au/-/media/Files/DPE/Maps/map-austral-and-leppington-north-indicative-layout-plan-2013-05-10.pdf?la=en.

Figure 5.9: Leppington Station entrance

Source: JSA, Site Visit 2021

Figure 5.10: Commuter Parking, Leppington Station

Source: JSA, Site Visit 2021

6 Demographic Context

The subject site is the State Suburb of Denham Court. The suburb has grown substantially over the past decade or so – from 328 people in 2006 to 1,981 people in 2016. Further land has been released since 2016 and a final population of around 15,000 is expected for the East Leppington Precinct.[18]

Seventy one St Andrews Road Varroville is also adjoined by the State Suburbs of Leppington and Varroville.

An overview of selected demographic indicators for each of these areas and the combined suburbs of Denham Court, Leppington, Varroville and Edmondson Park is provided below, and in more detail at Appendix A. This is to better understand the socio-economic and housing context within which the development of East Leppington Precinct, and 71 St Andrews Road is occurring.

6.1 Selected Demographic Indicators

As would be expected from the stage of urban development, the population of Edmondson Park is younger than average, far more likely to be living in households made up of Couples with Children, in larger households, and to be home purchasers. It has one-fifth the average rate of social housing. The suburb is relatively socially advantaged with regard to ABS Indexes of social wellbeing, and has a higher than average household income compared with other the other suburbs analysed and Greater Sydney. It is likely that the profile of the subject lot, and of areas within East Leppington Precinct, would initially resemble that of Edmondson Park as they are progressively completed.

All suburbs reviewed share a range of characteristics, including being predominantly owner occupied, made up of separate houses, having high rates of car ownership, and low rates of unemployment and disability (apart from Varroville). They generally have a very low average rate of social housing, with only Denham Court approaching the rate of Greater Sydney. Like Edmondson Park, Denham Court is quite socially advantaged on aggregate (SEIFA) measures, whilst Varroville and Leppington are closer to the middle rank on these measures.

In line with their more advantaged SEIFA scores, the occupational profiles of Edmondson Park and Denham Court are quite similar to Greater Sydney compared with the other two suburbs, in particular Varroville, which has a higher rate of people employed in trades, clerical and sales work. Apart from Varroville, the industry profiles of the other three suburbs are also quite similar to Greater Sydney, although 7% of Leppington's workforce was engaged in Agriculture (less than 1% for Greater Sydney).

Varroville's profile is quite different to the other areas in a number of respects, in particular, its much older than average age structure, high rate of disability (likely related to age), high rate of outright home ownership, and quite different occupational and industry profile.

[18] Elton Consulting 2013 *op cit.*

7 Projected Population of 71 St Andrews Road Varrowville

7.1 Population

Based on the Concept Services Plan,[19] the proposed planning controls are expected to yield 110 residential lots, each containing one dwelling house. The existing dwelling house is understood to be replaced by a proposed R2 zoned area fronting Grantham Crescent, East Leppington, giving a net gain of 110 dwelling houses.

The table below shows typical occupation for separate houses in Camden and Campbelltown LGAs at the 2016 census.

Table 7.1: Occupation rates for separate houses for selected areas

	Total Persons (separate houses)	Number of occupied private dwellings (separate houses)	Vacancy rate (separate houses)	People per dwelling (adjusted for vacants)
Campbelltown LGA	128,391	40,787	4.4%	3.01
Camden LGA	73,265	23,122	4.2%	3.04

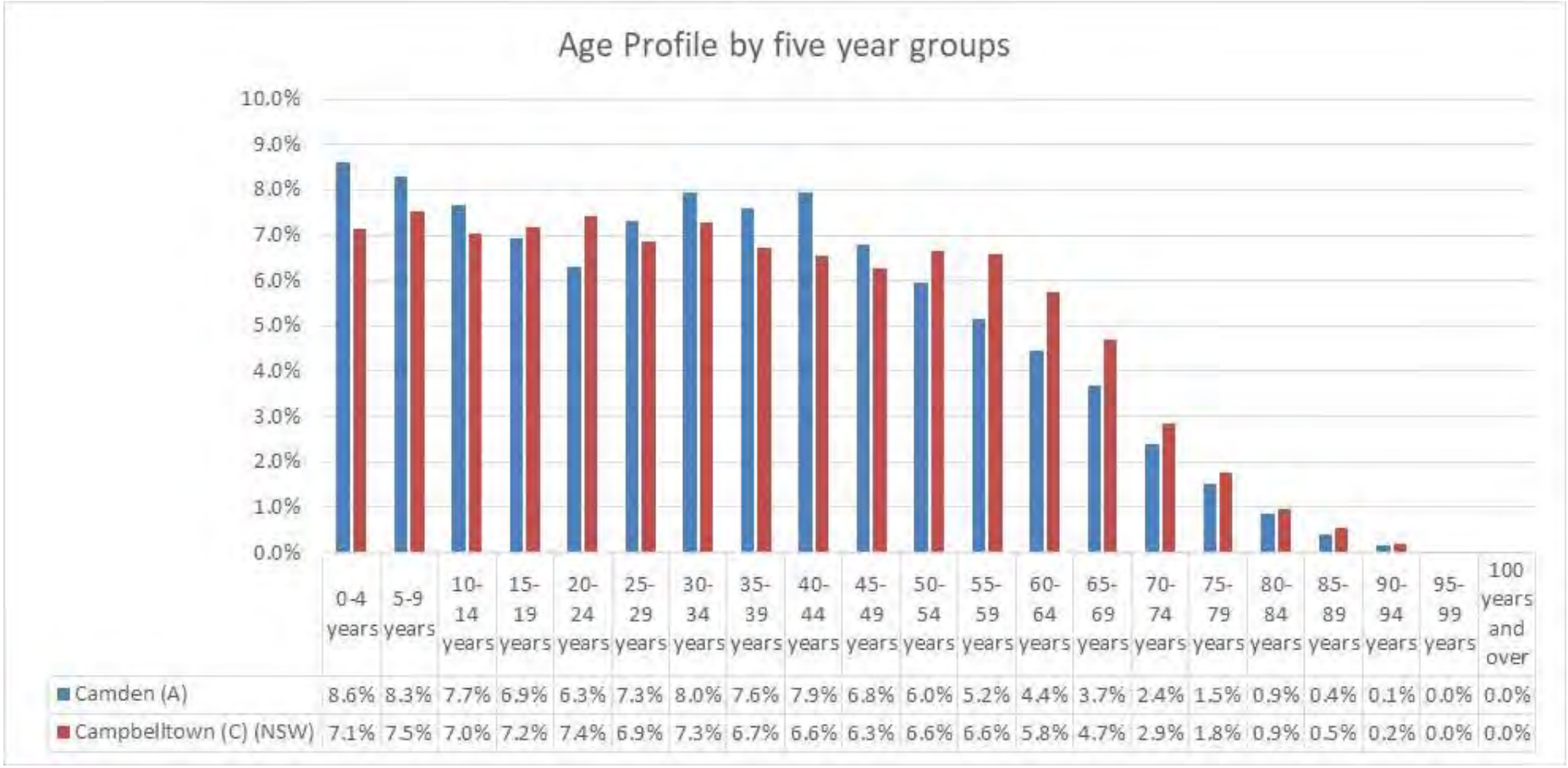
Source: ABS Census 2016

Based on these occupation rates, the 110 residential lots are expected to increase the population in the locality by 331-334 people.

7.2 Demography

The graphs below show selected demographic indicators for the development based on the proxies of people living in separate houses in Camden and Campbelltown LGAs.

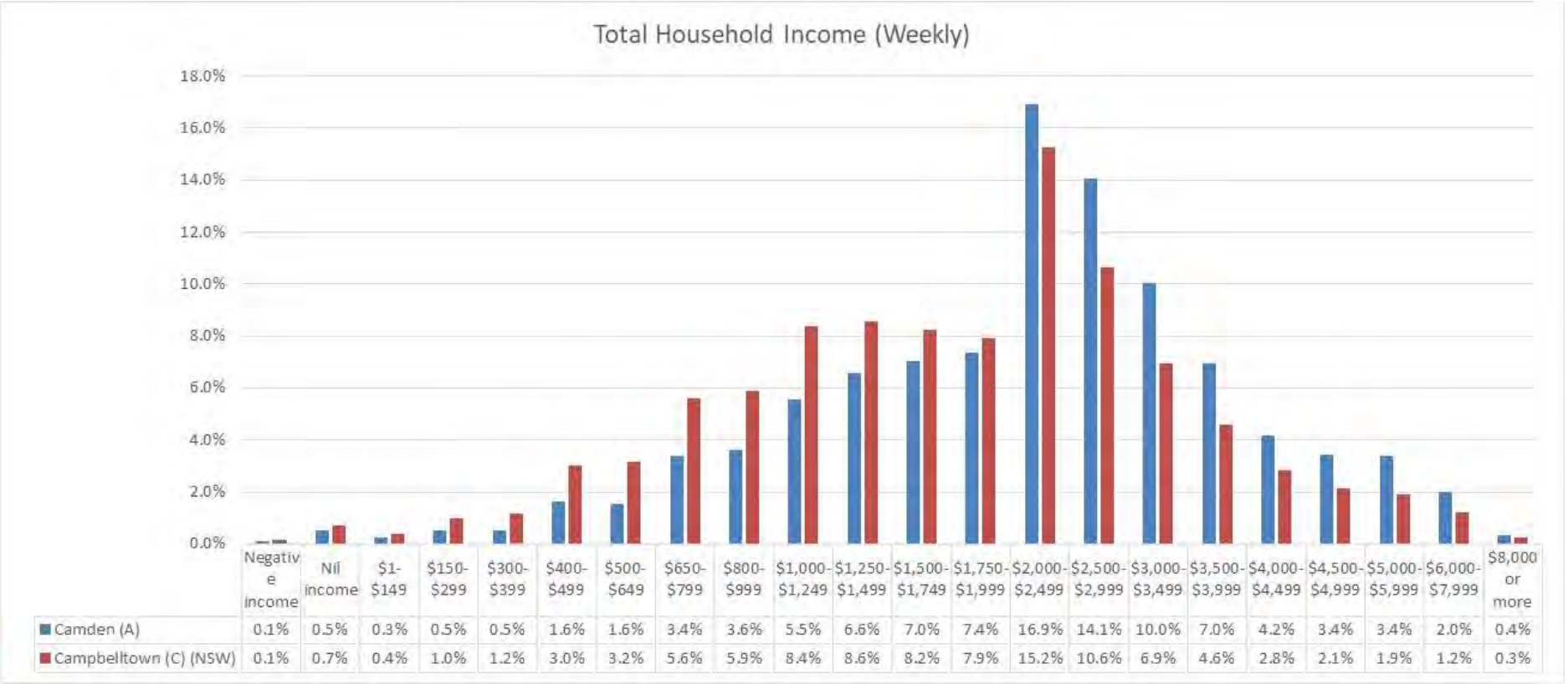
[19] Concept Services Plan, Amendment E, August 2015



	0-4 years	5-9 years	10-14 years	15-19 years	20-24 years	25-29 years	30-34 years	35-39 years	40-44 years	45-49 years	50-54 years	55-59 years	60-64 years	65-69 years	70-74 years	75-79 years	80-84 years	85-89 years	90-94 years	95-99 years	100 years and over
Camden (A)	8.6%	8.3%	7.7%	6.9%	6.3%	7.3%	8.0%	7.6%	7.9%	6.8%	6.0%	5.2%	4.4%	3.7%	2.4%	1.5%	0.9%	0.4%	0.1%	0.0%	0.0%
Campbelltown (C) (NSW)	7.1%	7.5%	7.0%	7.2%	7.4%	6.9%	7.3%	6.7%	6.6%	6.3%	6.6%	6.6%	5.8%	4.7%	2.9%	1.8%	0.9%	0.5%	0.2%	0.0%	0.0%

Figure 7-1: Age Profile for people in separate houses in Camden and Campbelltown LGAs

Source: JSA calculations 2021, ABS Census of Population and Housing 2016



	Negative income	Nil income	$1-$149	$150-$299	$300-$399	$400-$499	$500-$649	$650-$799	$800-$999	$1,000-$1,249	$1,250-$1,499	$1,500-$1,749	$1,750-$1,999	$2,000-$2,499	$2,500-$2,999	$3,000-$3,499	$3,500-$3,999	$4,000-$4,499	$4,500-$4,999	$5,000-$5,999	$6,000-$7,999	$8,000 or more
Camden (A)	0.1%	0.5%	0.3%	0.5%	0.5%	1.6%	1.6%	3.4%	3.6%	5.5%	6.6%	7.0%	7.4%	16.9%	14.1%	10.0%	7.0%	4.2%	3.4%	3.4%	2.0%	0.4%
Campbelltown (C) (NSW)	0.1%	0.7%	0.4%	1.0%	1.2%	3.0%	3.2%	5.6%	5.9%	8.4%	8.6%	8.2%	7.9%	15.2%	10.6%	6.9%	4.6%	2.8%	2.1%	1.9%	1.2%	0.3%

Figure 7-2: Total Household Income for people in separate houses in Camden and Campbelltown LGAs

Source: JSA calculations 2021, ABS Census of Population and Housing 2016

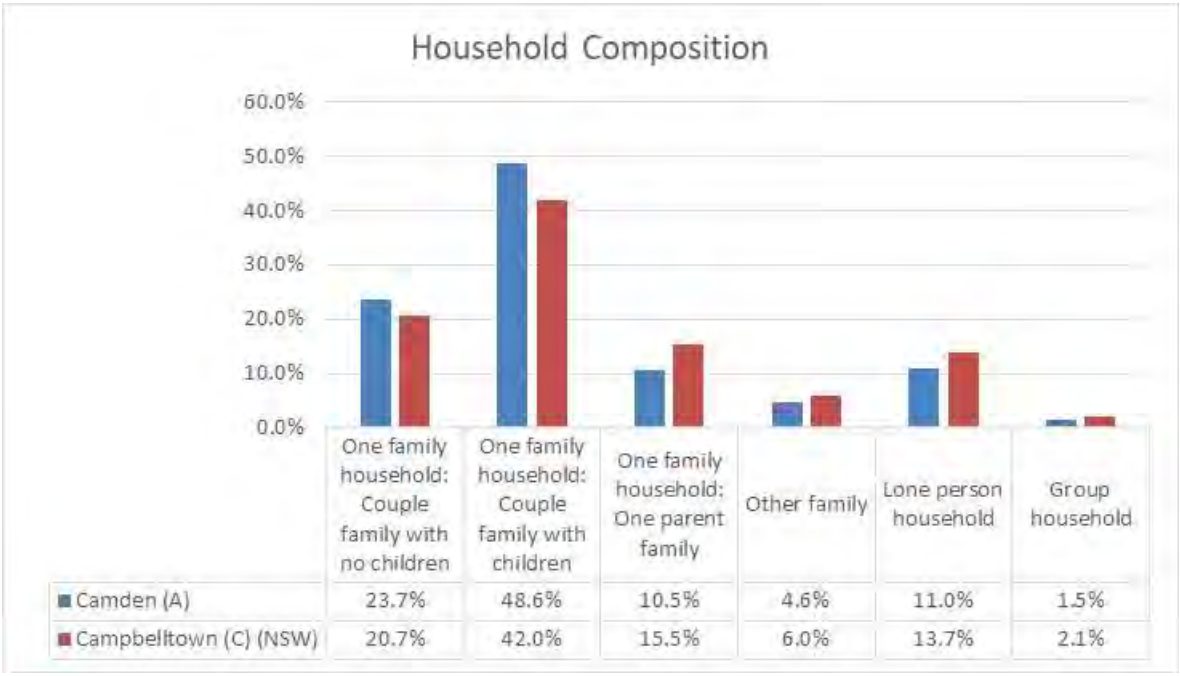


Figure 7-3: Household composition for separate houses in Camden and Campbelltown LGAs
Source: JSA calculations 2021, ABS Census of Population and Housing 2016

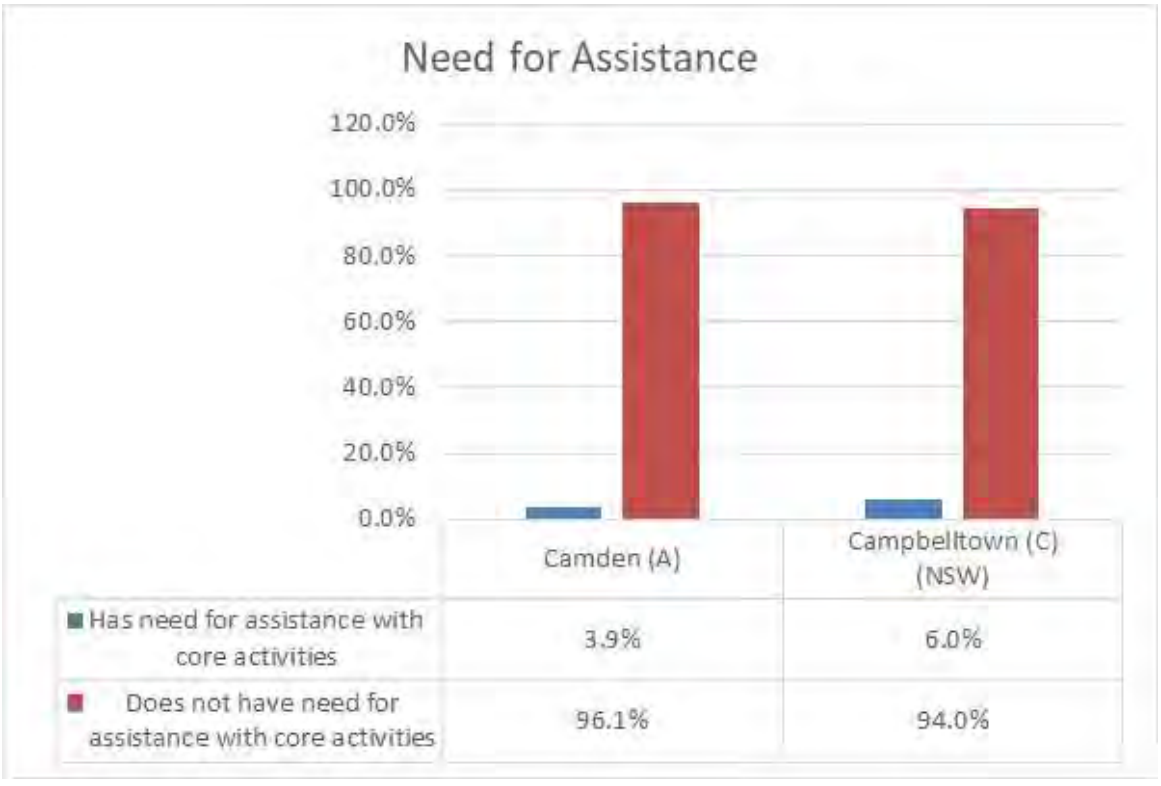


Figure 7-4: Need for assistance for people in separate houses in Camden and Campbelltown LGAs
Source: JSA calculations 2021, ABS Census of Population and Housing 2016

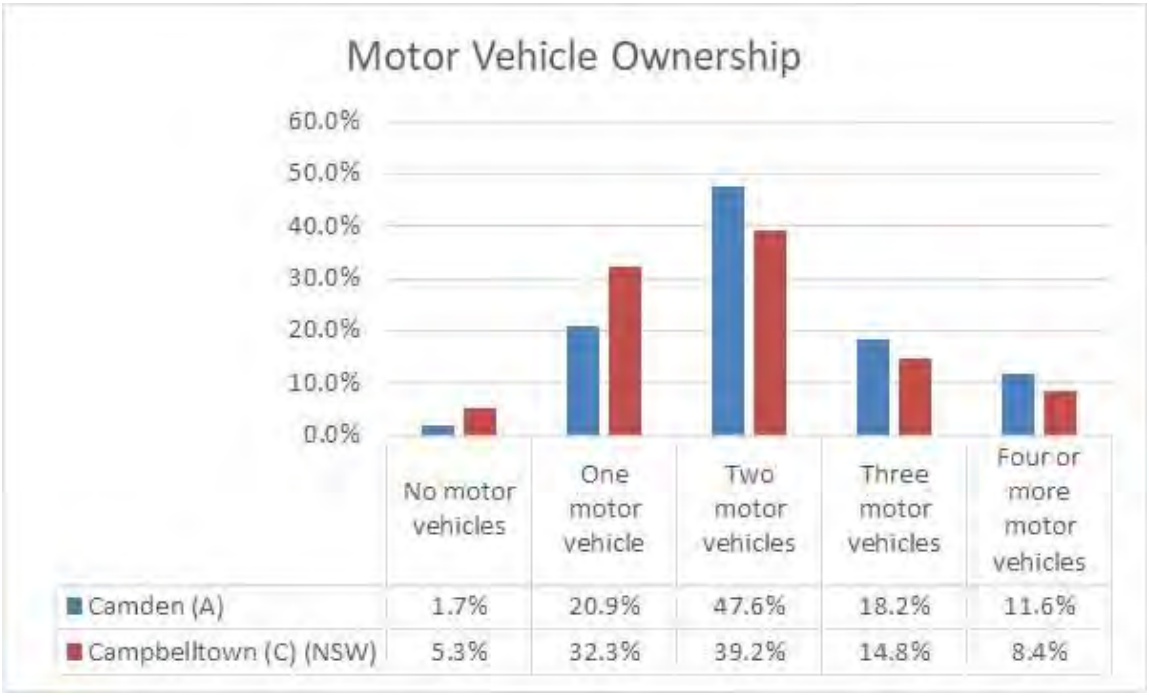


Figure 7-5: Motor vehicle ownership for separate houses in Camden and Campbelltown LGAs

8 Need for, and provision of, relevant community facilities, open space and transport against normative standards

Provision of community facilities will generally be undertaken by Campbelltown City Council, and funded from Section 7.11 and 7.12 contributions and/or under voluntary planning agreements. The provision of additional services would be expected to reflect increased demand from increases in population and to be geographically focussed on areas experiencing growth.

It is beyond the scope of this Social Impact Assessment to consider the provision of facilities at an LGA wide level, however an assessment has been made of the likely demand to be generated by the proposed development for key social infrastructure if the Planning Proposal is approved.

The Campbelltown Local Infrastructure Contributions Plan 2018 reports benchmarks for community facilities in Table 18, and these have been adopted with regard to the assessment below.

The table below shows standards for community facilities and these standards have been adopted for evaluation of social impacts and to estimate additional provision of services and facilities.

For Council facility planning purposes, the site is within the Campbelltown North West District and within the Bardia – East Leppington Precinct.

Using .id projections, the Campbelltown North West District has a 2016 population of 33,478 and a projected 2036 population of 52,939; and the Bardia – East Leppington Precinct has a 2016 population of 3,703 and a projected 2036 population of 15,795.[20]

Based on the assessment below, the site is generally well serviced with regard to community facilities and transport, however there is likely to be a shortage of local open space, including sporting fields, at the level of East Leppington Precinct as identified in the SIOSA. The Planning Proposal will generate a demand for 9,500 m^2 of open space due to increased population and this could be provided as part of the proposed RE1 and SP2 Local Drainage areas identified in the amended land zoning map.

There is an opportunity for Council to increase access to Varroville Reserve through construction of the missing portion of St Andrews Road.

While it appears to be the intention of various planning documents that a neighbourhood level multi-purpose community centre of around 600 - 620sqm be constructed to service East Leppington Precinct, such a facility has not been provided or identified for future provision in any relevant contributions plan.

Pedestrian and cycling connectivity of the proposed subdivision to Willowdale Park, Willowdale Shopping Centre and East Leppington Public School could be improved if a pedestrian path and cycleway were provided to connect to Canal Parade via the proposed and existing RE1 zoned

[20] Campbelltown City Community Facilities Strategy March 2018 pages 25 and 27.

corridor to the north east of the site, noting that the concept subdivision plan shows a proposed road connecting to Grantham Crescent which could also provide this access.

Table 15.1: Community Service and Facility Planning Standards and Provision

Service or facility	Standard	Reference[21]
Community and Cultural Services		
Community Centre and Community Development	• One Neighbourhood centre per 20,000 people with a minimum size of 500 m^2 (0.025 m^2 per person). • One Multipurpose Community Centre (MPCC) per 45,000 people with a minimum size of 1,250 m^2 (0.028 m^2 per person). Likely to require space for community activities, play groups, older persons activities, community health and meetings and community events, performances, community arts and the like. Large and small spaces with appropriate configuration, as well as linked outdoor and fenced spaces are likely to be required. May include youth space, though this is often better provided separately. • Community development worker/s	Campbelltown Local Infrastructure Contributions Plan 2018 Table 20.
Civic and Cultural facilities	Access required	N/A
Library	• Branch library for 45,000 people • One regional library per LGA with a population trigger of 150,000 people. • Provide 42 m^2 per 1,000 people	Campbelltown Local Infrastructure Contributions Plan 2018 Table 18 and Campbelltown City Community Facilities Strategy March 2018 pages 13 and 14. NSW Library and Information Association

[21] See application of standards in Stubbs, J (1994), *West Dapto New Release Area Social Plan*, Wollongong City Council; and Stubbs, J (1987) *Narellan New Release Area Social Plan/ Section 94 Plan*, Camden Council; Bonnyrigg Redevelopment Social Impact Assessment (JSA 2008);

Service or facility	Standard	Reference[21]
		Children and Young People
Facilities and services for young people	• Community transport to provide access to existing youth centres from early stages of development • Youth activities including a Youth Worker at population threshold of 5,000 e.g. as part of Neighbourhood Centre or outreach from Council Youth Centre • Youth facility at population threshold of 15-20,000 • Youth friendly outdoor spaces (e.g. skate park, half-court basketball court, meeting spaces) also need to be provided.	**DOCS Guideline/West Dapto Social Plan**
Long Day Care Centre	• One place per 8 children aged 0-4 years • Detailed planning is required given the likely demography, and need and mechanism for provision of childcare (private or community provision). Hours of operation are likely to be an issue for commuters.	ABS Child Care 4402.0 June 2014 (JSA estimate of actual rate) DOCS Guideline/West Dapto Social Plan
Pre-Schools	• One place per 10 children aged 0-4 years • Detailed planning is required given the likely demography, and need for provision of childcare.	DOCS Guideline/West Dapto Social Plan
Out of School Care	• 1: 5,000 people • Could be provided with Public Primary School.	DOCS Guideline/West Dapto Social Plan
Family Day Care	• 1 Scheme per 5,000 population • Should be provided as a baseline service	Former DCHS Guideline/West Dapto Social Plan
Private schools	• N/A	
Education facilities	• One public primary school per 2,000-2,500 new dwellings – land take needs to be determined in early planning stages • One public high school per 6,000-7,500 new dwellings – land take needs to be determined in early planning stages	DET (no longer published) DET (no longer published)

Service or facility	Standard	Reference[21]
Older People		
Facilities and services for older people	• Seniors Centre or activity space in Multi-purpose Community Resource Centre (MPCC), depending on demographic mix.	Bonnyrigg SIA
Residential Aged Care services	• The aged care provision ratio comprises 78 residential care places, 45 home care places and 2 restorative care places (including transition care and short-term restorative care places) per 1,000 people aged 70 years and over.	Australian Government Department of Health, 2018-19 Aged Care Approval Round: Essential Guide, Pg 10. Department of Health 2018-19 Aged Care Approval Round
Aged Care and Assessment Team	• Access required – negotiations with relevant providers required for future service provision	N/A
Home and Community Care	• Access required – negotiations with relevant providers required for future service provision	N/A
Health and Welfare Services		
Public and Community Health Services	**Access required that may include:** • Outreach community health services at a population threshold of 3-5,000 people including early childhood, generalist community health, allied health and psychiatric/counselling/social work services and youth health; • Provision of Satellite Community Health Centre at population threshold of 10-15,000 people; • Public hospital beds at a ratio of 3:1,000 people (0.25 Paediatric; 0.35 Obstetrics; 0.15 Psychiatric; 2.25 Medical/surgical) within 30 minutes' drive of development.	NSW Department of Health /West Dapto Social Plan
General Practitioners	• 0.96 GPs Fulltime work equivalent (FEW) per 1,000 people • 3.07 GPs FWE per 1,000 people over 50 years	Department of Health & Aging 2007, actual average rates for NSW.

Service or facility	Standard	Reference[21]
Dental Services	• 1:2,500 people at a population threshold of 2,500 people	NSW Department of Health /West Dapto Social Plan
Pharmacy	• 1:2,500 people at a population threshold of 2,500 people	NSW Department of Health /West Dapto Social Plan
Mental Health Services	• Access required as well as provision for community services noted above, adequate space needs to be provided for private practitioners	N/A
Allied Health Services	• Access required – as well as provision for community services noted above, adequate space needs to be provided for private practitioners, e.g. for Occupational Therapists, Physiotherapists, Speech Pathologists, etc.	N/A
Community Support and Welfare Services	• Access required	N/A
Justice and Emergency Services	• Access required	
Places of worship	• Access required	
Recreation and Open Space		
Open space	• 2.0 ha of open space per 1,000 residents • 0.83 ha of sports fields per 1,000 residents • Split is 80% local open space and 20% district open space	No benchmark in Council Documents. The measure of 2.83 ha per 1,000 residents is widely used, see for example Liverpool Contribution Plan 2009, page 52.
Entertainment facilities	• Access required	
Shops and commercial services	• Access required	
Regional sports facilities	• Access required including considerations of public transport	

Service or facility	Standard	Reference[21]
Public and community transport	• Adequate public transport should be provided	
Police	• Police presence at 10,000 threshold, e.g. shopfront, may be required • Police station at 20,000 population threshold	
Ambulance	• Ambulance station at 20,000 population threshold, though need may be serviced by existing services	
Fire Services	• Likely to be serviced by existing facilities, but consideration required.	

Table 15.2: Evaluation of facilities proposed against above standards /service requirements

Service or facility	JSA assessment and Recommendation
Community and Cultural Services	
Community Centre and Community Development	Currently there is no district level Community Hall and Community Centre in the North West District,[22] and the 2016 population was below the threshold for such a facility. The 2036 demand is for one centre with an area of 1,482 m^2.[23] This is a future shortfall of one centre. The SIOSA found that the need for regional facilities within the East Leppington Precinct will be met by those proposed to be developed within the North Leppington Precinct within the adjacent Liverpool LGA. No funds for community centres in relevant areas are collected under Liverpool Contributions Plan 2014 - East Leppington Precinct. Camden Growth Areas Contributions Plan Amendment 1 (Leppington and Leppington North) allows for a regional community facility to be constructed to the north of Leppington Station. The regional facility is understood to meet the demand from the East Leppington Precinct. Currently there is no Community Hall or Community Centre in the Bardia – East Leppington Precinct.[24] In 2016, the population was below the threshold for such a facility and is below the threshold for 2036, noting that demand is likely understated due to the geography considered. The SIOSA identified a need for a neighbourhood level multi-purpose community centre of around 600 - 620sqm, as a base for local community activities and services, to be owned and managed by Campbelltown Council. No funds are collected for such a facility under Campbelltown Local Infrastructure Contributions Plan 2018. East Leppington Precinct Planning identifies a new primary school and community centre, however a community centre does not appear to be part of the East Leppington Public School currently under construction.[25]
Civic and Cultural facilities	Civic and Cultural facilities are available in Campbelltown CBD including the Campbelltown Arts Centre and Old Town Hall Theatre.
Library	The precinct does not meet the population threshold for a branch library and a branch library is not identified in the SIOSA. Library facilities are available at the H. J. Daley Library in Campbelltown, about 18 kms away by car or at

[22] Campbelltown City Community Facilities Strategy March 2018 page 26.
[23] 52,939 X .028 m^2 = 1,482 m^2.
[24] Campbelltown City Community Facilities Strategy March 2018 page 27.
[25] https://www.schoolinfrastructure.nsw.gov.au/content/infrastructure/www/projects/d/denham-court-public-school.html accessed 8 April 2021.

Service or facility	JSA assessment and Recommendation
	Eagle Vale Library, 8 kms away. The Contributions plan shows an expansion of the H. J. Daley Library of 5,034 m^2 by 2028.
Children and Young People	
Facilities and services for young people	There are limited youth facilities available in Campbelltown LGA with a Youth Centre in Minto. The nearest skate park is at Macquarie Fields Skate Park, Macquarie Fields, about 16 kms by road.
Long Day Care Centre	The development is expected to contain 29 people aged 0-4 at completion with a demand for 3 childcare places. Based on current trends, childcare is likely to be provided commercially in response to demand.
Pre-Schools	As noted above, one place per 10 children aged 0-4 years is an appropriate standard, which would be a demand for 3 places by completion of the development. Based on current trends, pre-schools are likely to be provided commercially in response to demand.
Out of School Care	Out of School Care is expected to be provided with the new East Leppington Public School in response to demand.
Family Day Care	Campbelltown City Council offers Family Day Care in Campbelltown, and additional services would be expected in response to increases in demand.
Private schools	There are no private schools in the locality. Other private schools in the area are accessible by public transport.
Education facilities: **Public Primary School**	The nearest public primary school is East Leppington Public School (currently under construction and expected to be open in 2021), about 2.3 km from the proposed development by car, foot or bicycle. Due to proximity, older students are unlikely to be eligible for a school travel pass. The SIOSA identified a need for one public primary school within the East Leppington Precinct.
Education facilities: **Public Secondary School**	The nearest public secondary school is Robert Townson High School at Thunderbolt Drive, Raby. The school is about 7 kms by car. A bus service is available at from stops in Jamboree Avenue.
Older People	
Facilities and services for older people	We have not identified any specific programs for older people in Campbelltown LGA.
Residential Aged Care services	The over 70 population of the development will be 21 people, equivalent to a demand for around 2 residential places to allow aging in place. Campbelltown SA3 is identified as Category 2 (where 1 is highest need) with regard to the 2020-

Service or facility	JSA assessment and Recommendation
	21 Aged Care Approvals Round. At 30 June 2020, there were 1,277 allocated and 933 operational places, equivalent to 95 allocated and 69 operational places per 1,000 people aged 70 and over, compared to a target of 78 places.
Aged Care and Assessment Team	In the context of Campbelltown LGA, the incremental impact of the proposed development is likely to be minimal with regard to assessment and demand for services.
Home and Community Care	In the context of Campbelltown LGA, the incremental impact of the proposed development is likely to be minimal with regard to assessment and demand for services.
Health and Welfare Services	
Public and Community Health Services	Public hospital facilities are available at Campbelltown Hospital, around 23 minutes by car. Liverpool Hospital is accessible by public transport, with a trip of about 1 hour from buses in Camden Valley Way.
General Practitioners	There is a medical practice nearby in Willowdale Shopping Centre.
Dental Services	Dental services are available nearby in Willowdale Shopping Centre.
Pharmacy	A pharmacy is available nearby in Willowdale Shopping Centre.
Mental Health Services	A range of services are available at Campbelltown Hospital and privately within Campbelltown CBD.
Allied Health Services	A range of services are available at Campbelltown Hospital and privately within Campbelltown CBD.
Community Support and Welfare Services	In the context of Campbelltown LGA, the incremental impact of the proposed development is likely to be minimal with regard to assessment and demand for services.
Justice and Emergency Services	In the context of Campbelltown LGA, the incremental impact of the proposed development is likely to be minimal with regard to assessment and demand for services.
Places of worship	In the context of Campbelltown LGA, the incremental impact of the proposed development is likely to be minimal with regard to assessment and demand for services.
Recreation and Open Space	

Service or facility	JSA assessment and Recommendation
Open space	Open space has been estimated using a search of Council's Park/Sports Ground locator with areas taken from EAC RedSquare data base. Areas are approximate as identification of parcels related to Parks and Sports Grounds is not always obvious. At the level of Campbelltown LGA, the Campbelltown Local Infrastructure Contributions Plan 2018 identifies a total of 1,446 hectares of land zoned RE1 Public Recreation (page 28). Based on a 2036 population of 273,550, 774 ha of open space will be required, so that at the LGA level there is a surplus of open space for the foreseeable future. However open space is not evenly distributed. The SIOSA identifies 1.79 ha of local space per 1,000 persons within the East Leppington Precinct, compared to a benchmark of 2.26 ha per 1,000 persons. It also identifies a shortfall in sports fields. Based on population estimates above, the Planning Proposal will generate a demand for 9,500 m^2 of open space due to increased population. The nearest park to the site is Jamboree Park at the corner of Jamboree Avenue and Palaver Street, with an area of 6,800 m^2. This park has a high level of embellishment, with children's playground, seating, picnic facilities and landscaping. There is an adjoining reserve between Canal Parade, Grantham Crescent and Baden Powell Avenue. The reserve is about 2.6 ha and has a minor level of enhancement including landscaping and walking paths. Sporting fields are under construction at the intersection of Willowdale Drive and Winter Street, about 2 kms from the site. A children's playground is found at Mawson Park, about 800 metres from the site.
Entertainment Facilities	Entertainment facilities are available in Campbelltown CBD, MacArthur shopping centre and Liverpool CBD including cinemas, clubs, pubs and restaurants. Campbelltown CBD and MacArthur shopping centre are accessible from the proposed development by car and Liverpool CBD is accessible by car or public transport.
Shops and commercial services	A range of shops and commercial services are available in Willowdale Shopping Centre, about 2 kms away, and an extensive range is available in Campbelltown CBD, MacArthur shopping centre and Liverpool CBD. Campbelltown CBD and MacArthur shopping centre are accessible from the proposed development by car and Liverpool CBD is accessible by car or public transport.
Regional sports facilities	The SIOSA found that the need for regional sports facilities will be met by existing facilities and open space and by those proposed to be developed within the North Leppington Precinct.
Transport	

Service or facility	JSA assessment and Recommendation
Public and community transport	The development is serviced by bus stops in Jamboree Avenue, 800 metre walk from the site, and in Camden Valley Way, about 950 metres walk from the site. Services from Jamboree Avenue operate between Narellan and Leppington, providing access to Willowdale Shopping Centre and Leppington Railway Station. Services from Camden Valley Way provide access to Liverpool CBD and station. Buses are in Jamboree Avenue are available twice hourly and at higher frequencies during peak periods. Buses in Camden Valley Way provides five services daily. destinations. Leppington Station is 5 km from the site and provides a twice hourly or better service to Liverpool, Parramatta and Sydney City.
Emergency Services	
Police	Police are available at Campbelltown Police Station, 65 Queen Street Campbelltown. In the context of Campbelltown LGA, the incremental impact of the proposed development is likely to be minimal with regard to assessment and demand for services.
Ambulance	Ambulance is available at 100 Parkside Crescent Campbelltown. In the context of Campbelltown LGA, the incremental impact of the proposed development is likely to be minimal with regard to assessment and demand for services.
Fire Services	Fire Services are available at 162 Greenway Drive, Horningsea Park. In the context of the region, the incremental impact of the proposed development is likely to be minimal with regard to assessment and demand for services.

Source: JSA 2020

Appendix A: Selected Demographic Indicators (Graphs)

Persons per Dwelling

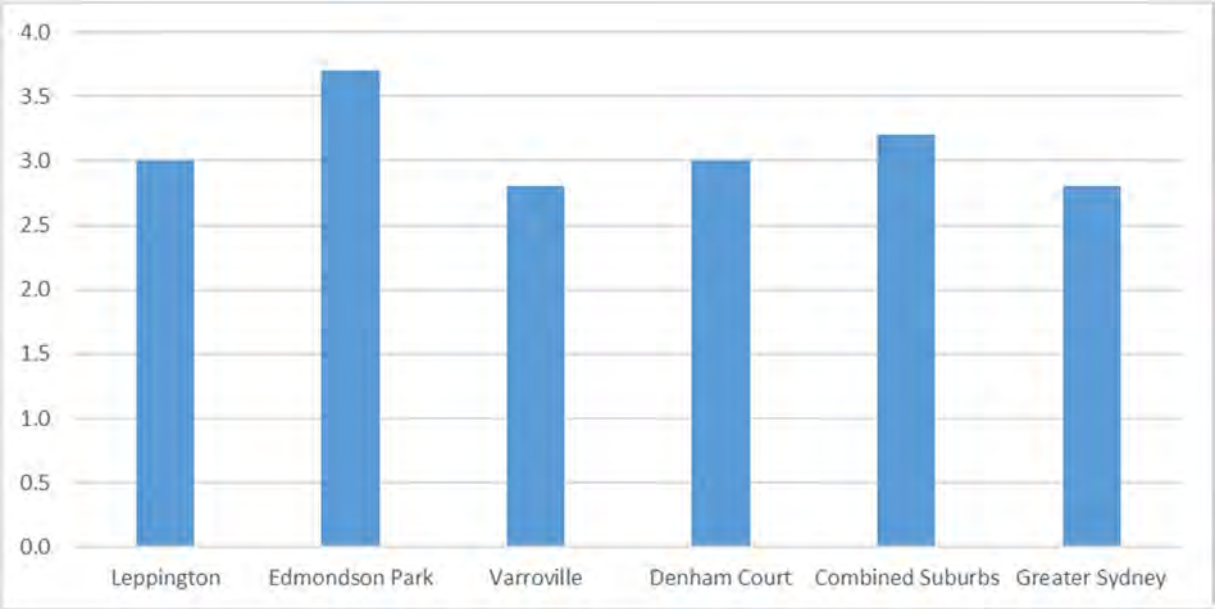
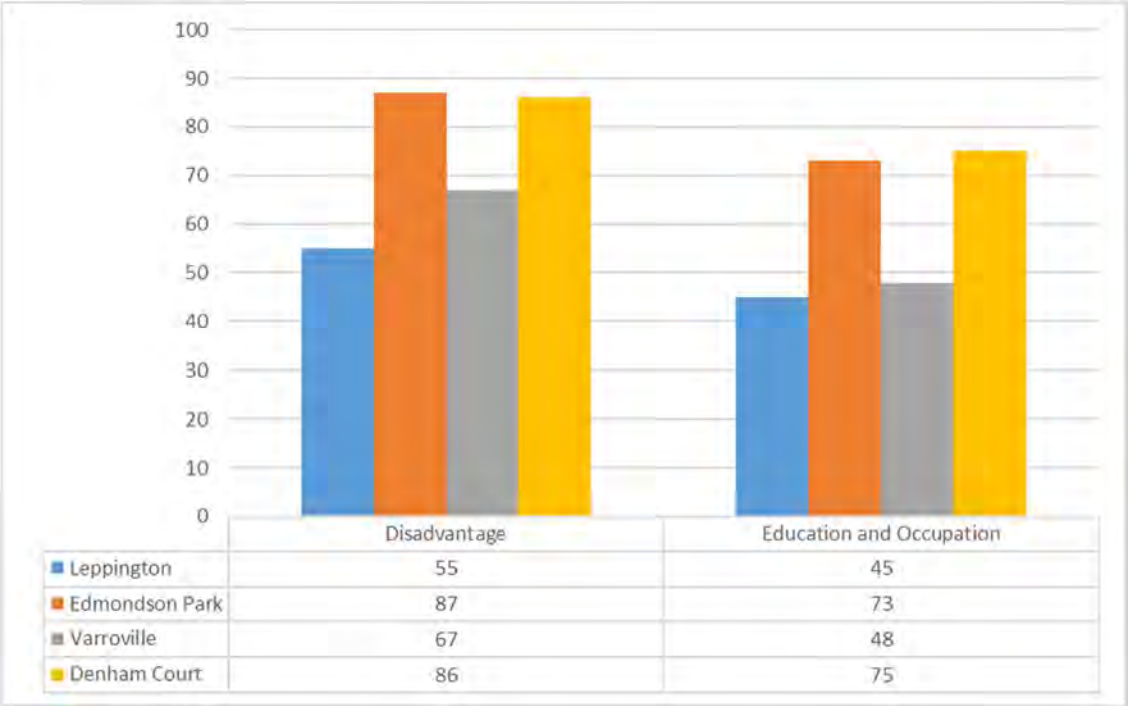


Figure 0-1: Number of persons per dwelling for Selected Suburbs and Greater Sydney
Source: JSA 2020, calculations based on data from ABS Census of Population and Housing 2016

Relative Socio-Economic Status



	Disadvantage	Education and Occupation
Leppington	55	45
Edmondson Park	87	73
Varroville	67	48
Denham Court	86	75

Figure 0-2: Index of Relative Socio-economic Disadvantage and Index of Education and Occupation for Selected Suburbs

Source: ABS Socio-Economic Indexes for Australia (SEIFA) 2016

Median Household Income

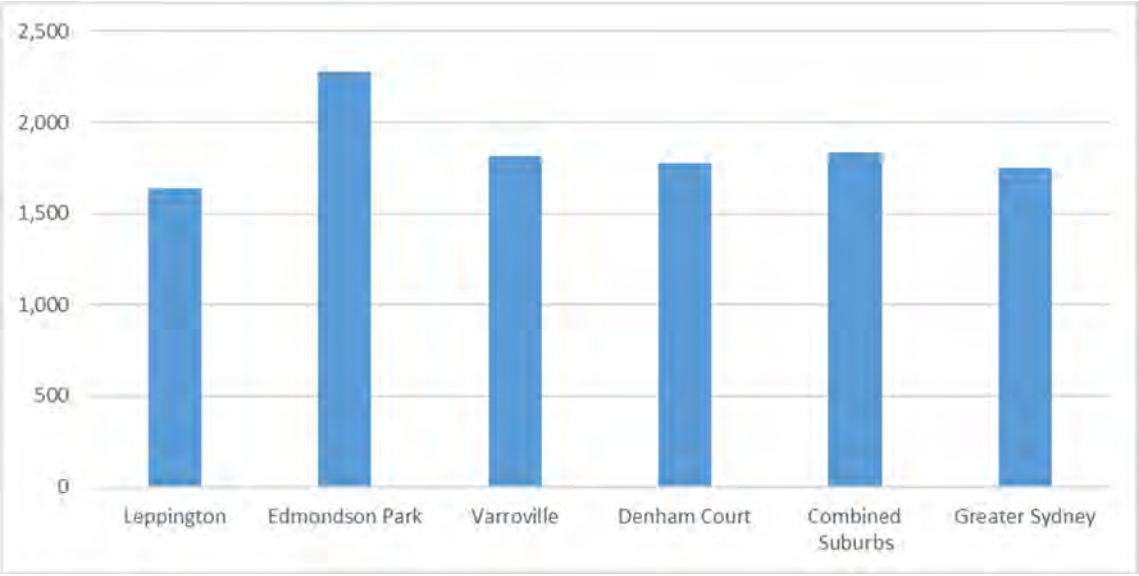


Figure 0-3: Median household income for Selected Suburbs and Greater Sydney

Source: JSA 2020, calculations based on data from ABS Census of Population and Housing 2016

Median Age and Age Structure

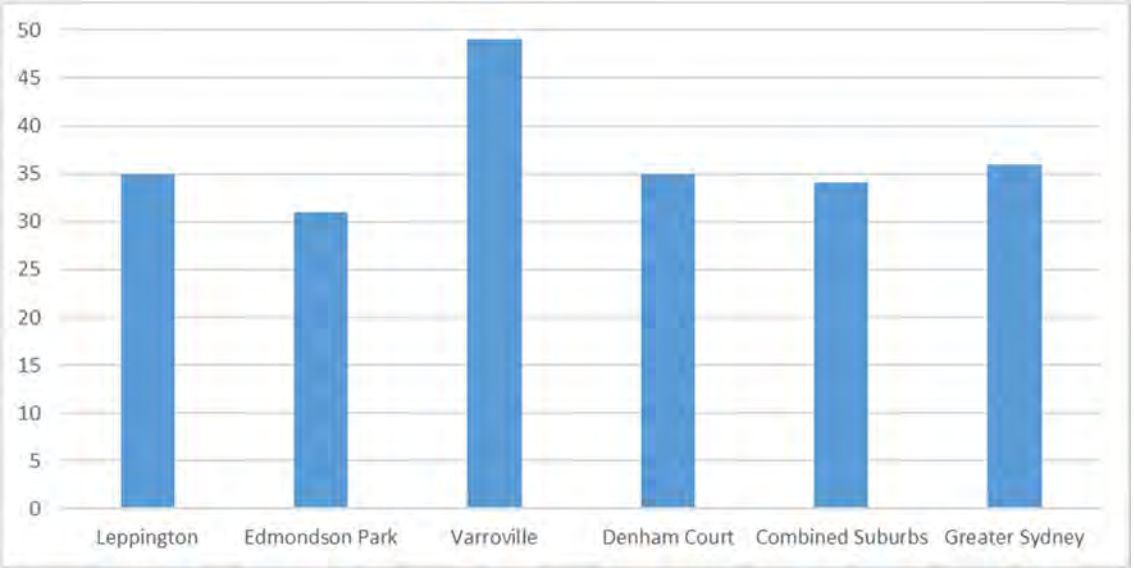
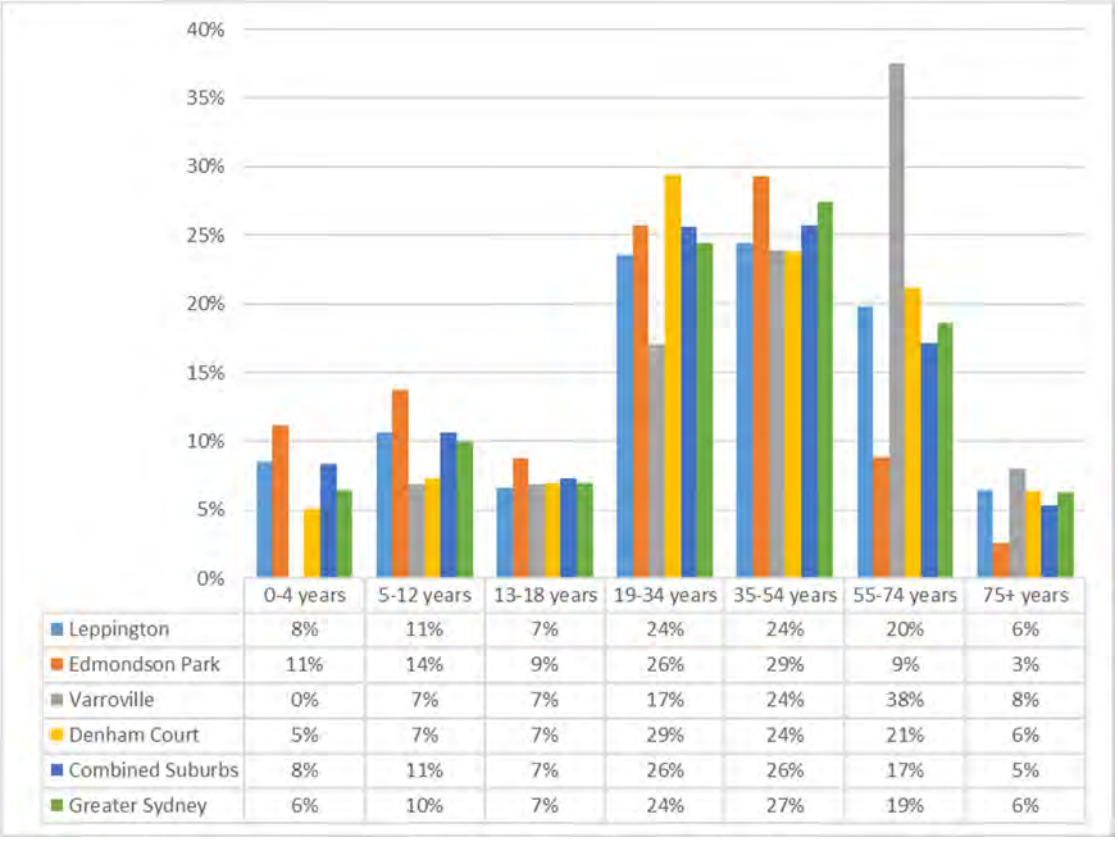


Figure 0-4: Median age of persons for Selected Suburbs and Greater Sydney
Source: JSA 2020, calculations based on data from ABS Census of Population and Housing 2016



	0-4 years	5-12 years	13-18 years	19-34 years	35-54 years	55-74 years	75+ years
Leppington	8%	11%	7%	24%	24%	20%	6%
Edmondson Park	11%	14%	9%	26%	29%	9%	3%
Varroville	0%	7%	7%	17%	24%	38%	8%
Denham Court	5%	7%	7%	29%	24%	21%	6%
Combined Suburbs	8%	11%	7%	26%	26%	17%	5%
Greater Sydney	6%	10%	7%	24%	27%	19%	6%

Figure 0-5: Age of persons in Selected Suburbs and Greater Sydney
Source: JSA 2020, calculations based on data from ABS Census of Population and Housing 2016

Need for Assistance with Core Activities

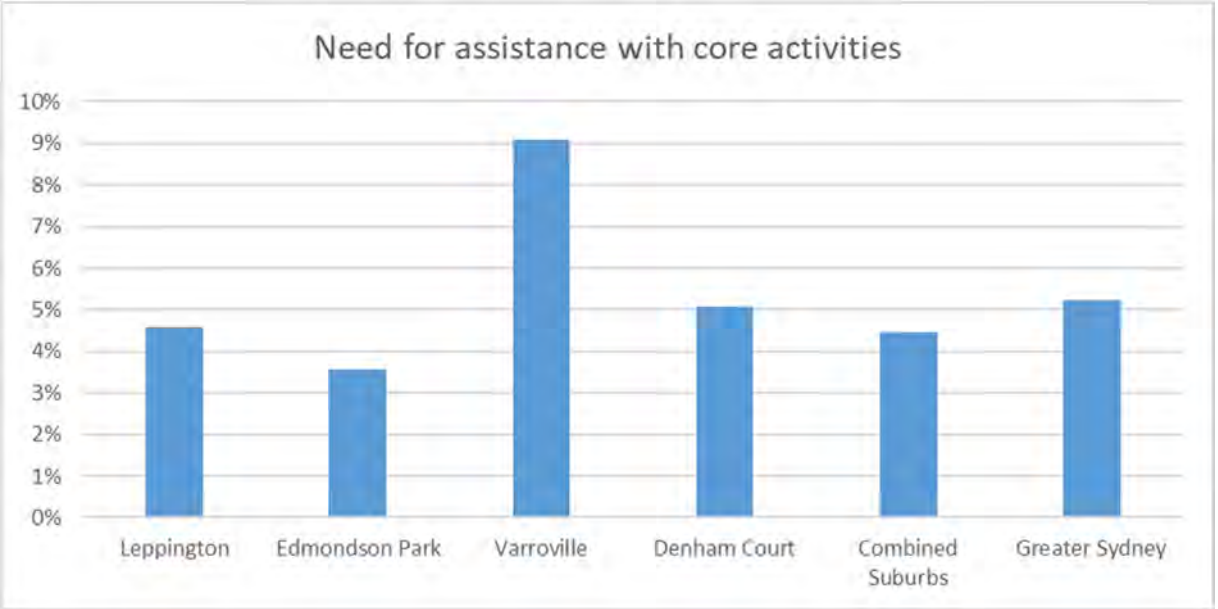
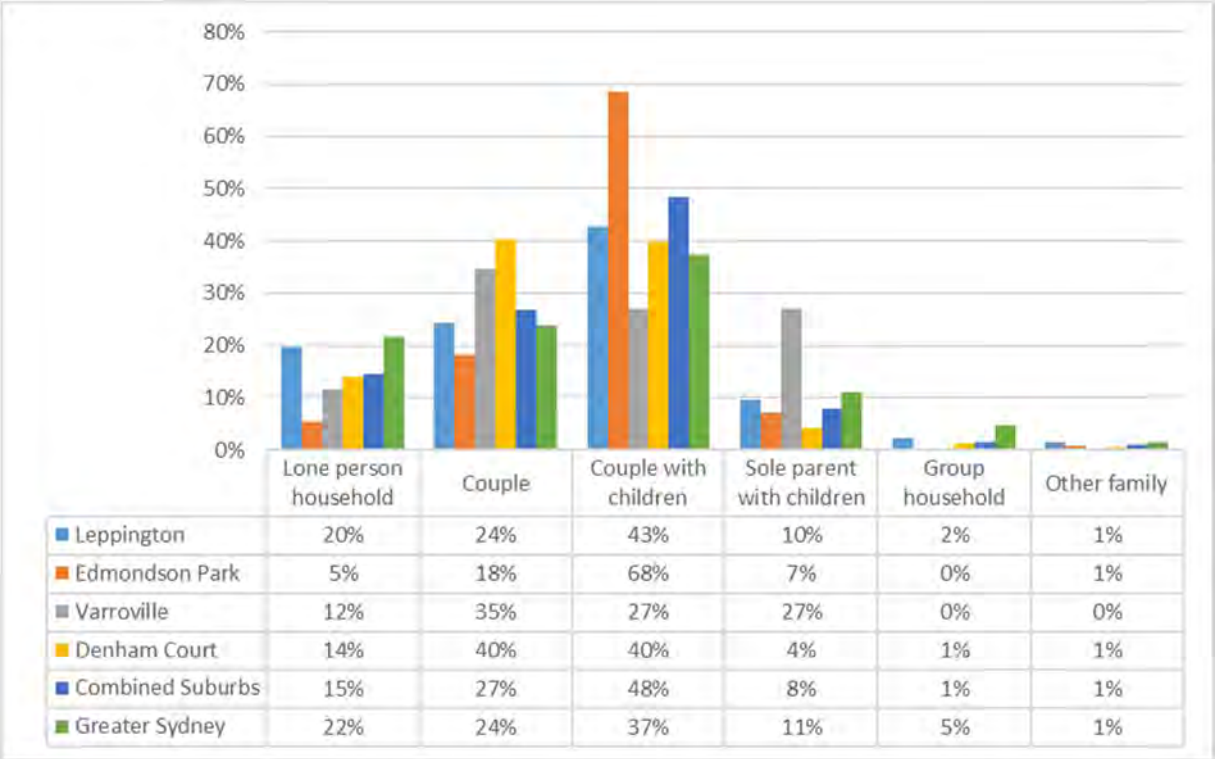


Figure 0-6: Need for Assistance with Core Activities for Selected Suburbs and Greater Sydney
Source: JSA 2020, calculations based on data from ABS Census of Population and Housing 2016

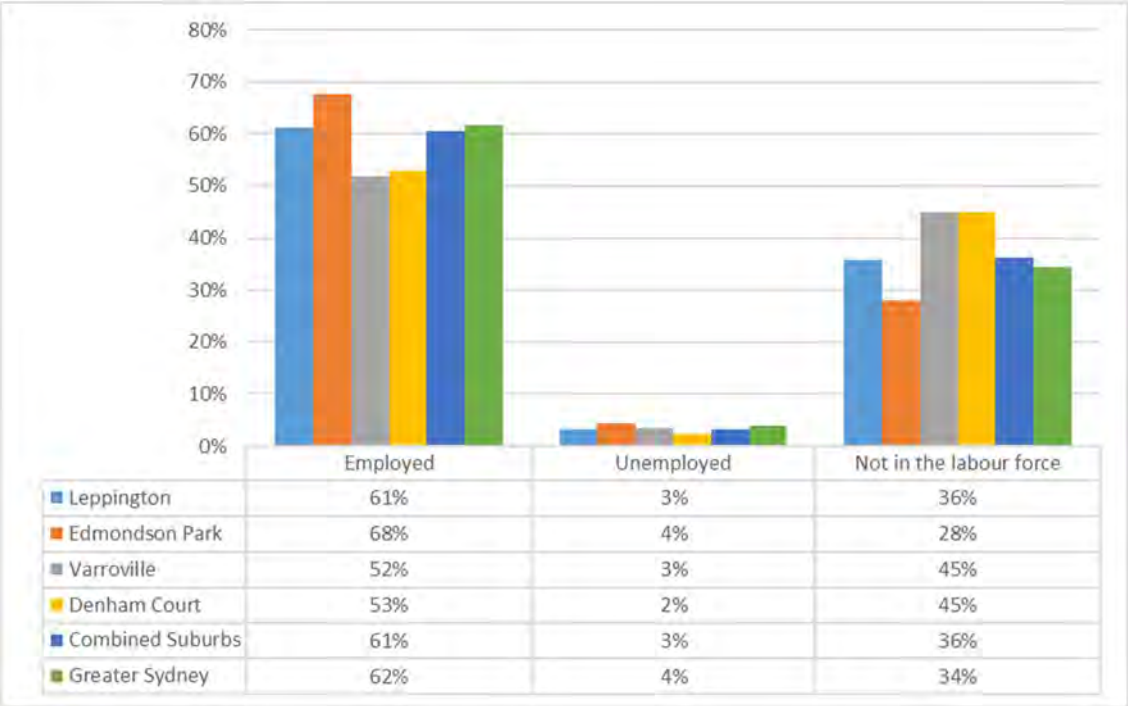
Household Type



	Lone person household	Couple	Couple with children	Sole parent with children	Group household	Other family
Leppington	20%	24%	43%	10%	2%	1%
Edmondson Park	5%	18%	68%	7%	0%	1%
Varroville	12%	35%	27%	27%	0%	0%
Denham Court	14%	40%	40%	4%	1%	1%
Combined Suburbs	15%	27%	48%	8%	1%	1%
Greater Sydney	22%	24%	37%	11%	5%	1%

Figure 0-7: Household Type for Selected Suburbs and Greater Sydney
Source: JSA 2020, calculations based on data from ABS Census of Population and Housing 2016

Employment (Occupation and Industry) Profile



	Employed	Unemployed	Not in the labour force
Leppington	61%	3%	36%
Edmondson Park	68%	4%	28%
Varroville	52%	3%	45%
Denham Court	53%	2%	45%
Combined Suburbs	61%	3%	36%
Greater Sydney	62%	4%	34%

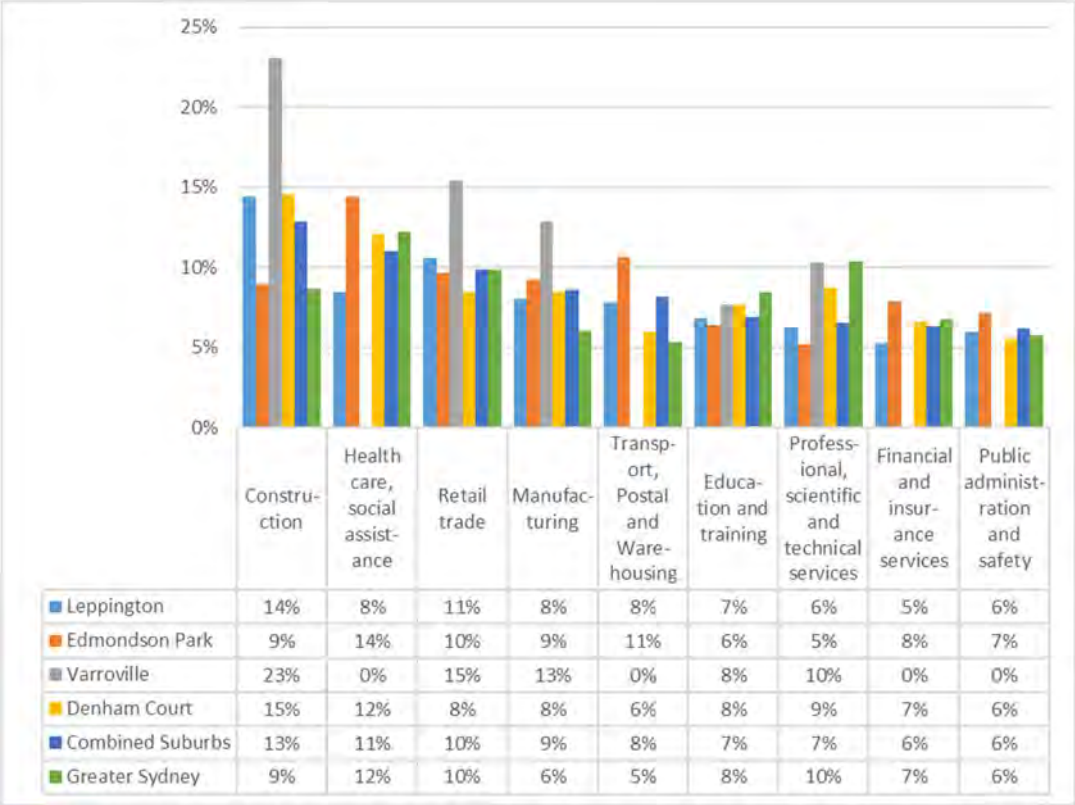
Figure 0-8: Employment Status for Selected Suburbs and Greater Sydney

Source: JSA 2020, calculations based on data from ABS Census of Population and Housing 2016

	Managers	Profess-ionals	Techni-cians and trade workers	Commun-ity and personal service workers	Clerical and administ-rative workers	Sales workers	Machinery operators and drivers	Labourers
Leppington	18%	16%	15%	7%	17%	9%	10%	9%
Edmondson Park	12%	25%	12%	9%	15%	10%	10%	8%
Varroville	20%	10%	20%	8%	25%	18%	0%	0%
Denham Court	16%	22%	13%	7%	19%	8%	7%	6%
Combined Suburbs	16%	20%	14%	8%	17%	9%	9%	8%
Greater Sydney	14%	27%	12%	10%	15%	9%	6%	8%

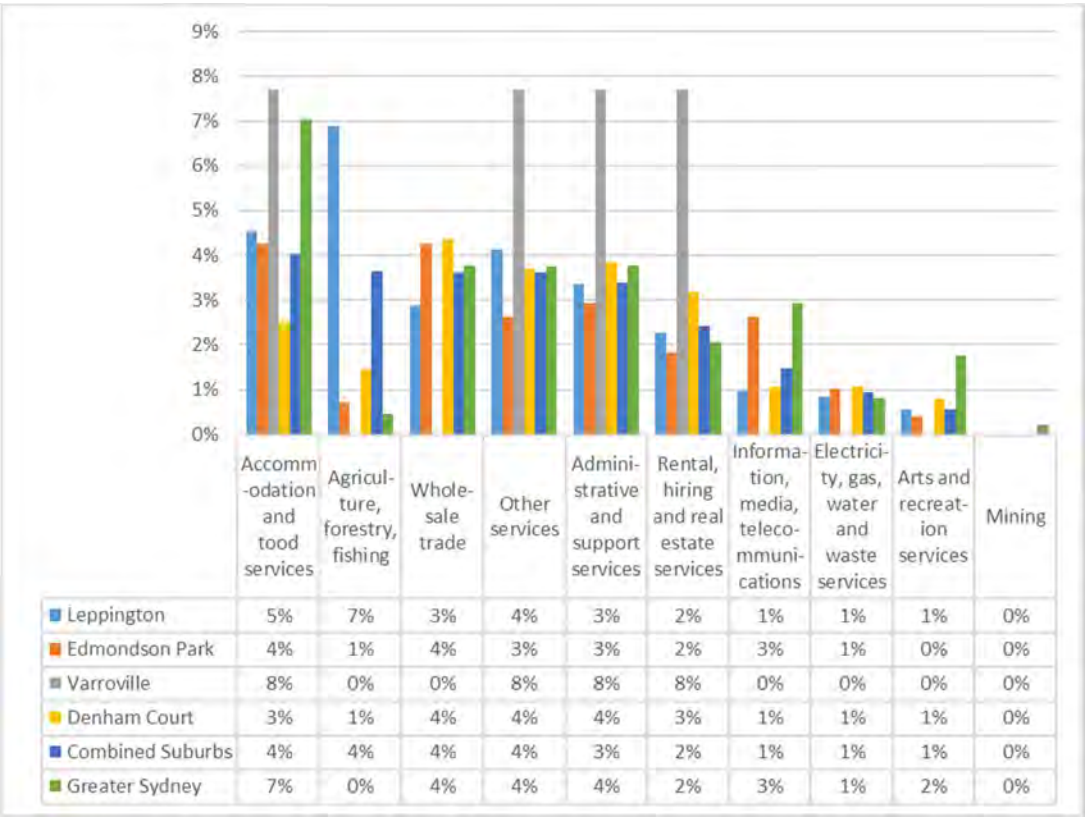
Figure 0-9: Occupational Status for Selected Suburbs and Greater Sydney

Source: JSA 2020, calculations based on data from ABS Census of Population and Housing 2016



	Construction	Health care, social assistance	Retail trade	Manufacturing	Transport, Postal and Warehousing	Education and training	Professional, scientific and technical services	Financial and insurance services	Public administration and safety
Leppington	14%	8%	11%	8%	8%	7%	6%	5%	6%
Edmondson Park	9%	14%	10%	9%	11%	6%	5%	8%	7%
Varroville	23%	0%	15%	13%	0%	8%	10%	0%	0%
Denham Court	15%	12%	8%	8%	6%	8%	9%	7%	6%
Combined Suburbs	13%	11%	10%	9%	8%	7%	7%	6%	6%
Greater Sydney	9%	12%	10%	6%	5%	8%	10%	7%	6%

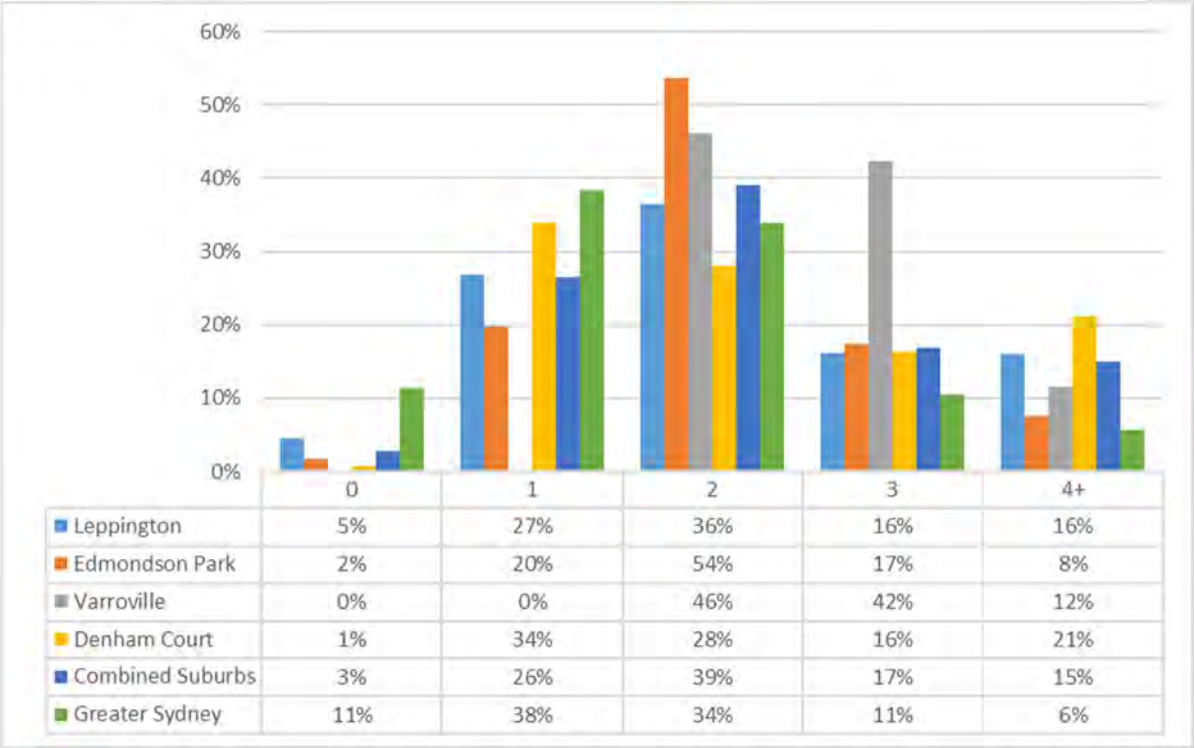
Figure 0-10: Industry of Employment for Selected Suburbs and Greater Sydney (Pt 1)
Source: JSA 2020, calculations based on data from ABS Census of Population and Housing 2016



	Accommodation and food services	Agriculture, forestry, fishing	Wholesale trade	Other services	Administrative and support services	Rental, hiring and real estate services	Information, media, telecommunications	Electricity, gas, water and waste services	Arts and recreation services	Mining
Leppington	5%	7%	3%	4%	3%	2%	1%	1%	1%	0%
Edmondson Park	4%	1%	4%	3%	3%	2%	3%	1%	0%	0%
Varroville	8%	0%	0%	8%	8%	8%	0%	0%	0%	0%
Denham Court	3%	1%	4%	4%	4%	3%	1%	1%	1%	0%
Combined Suburbs	4%	4%	4%	4%	3%	2%	1%	1%	1%	0%
Greater Sydney	7%	0%	4%	4%	4%	2%	3%	1%	2%	0%

Figure 0-11: Industry of Employment for Selected Suburbs and Greater Sydney (Pt 2)
Source: JSA 2020, calculations based on data from ABS Census of Population and Housing 2016

Vehicle Ownership



	0	1	2	3	4+
Leppington	5%	27%	36%	16%	16%
Edmondson Park	2%	20%	54%	17%	8%
Varroville	0%	0%	46%	42%	12%
Denham Court	1%	34%	28%	16%	21%
Combined Suburbs	3%	26%	39%	17%	15%
Greater Sydney	11%	38%	34%	11%	6%

Figure 0-12: Vehicle Ownership for Selected Suburbs and Greater Sydney (Pt 1)

Source: JSA 2020, calculations based on data from ABS Census of Population and Housing 2016

Appendix H Aboriginal Cultural and Heritage Assessment prepared by AMBS Ecology & Heritage

71 St Andrews Road, Varroville
Aboriginal Cultural Heritage Assessment

Prepared by AMBS Ecology & Heritage
for GAT & Associates

Draft

June 2021

AMBS Reference: 20896

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Approved by:	Christopher Langeluddecke, Director Aboriginal Heritage, AMBS Ecology & Heritage

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1 Introduction

AMBS Ecology & Heritage (AMBS) has been commissioned by GAT and Associates to prepare an Aboriginal Cultural Heritage Assessment (ACHA) for a proposed rezoning of 71 St Andrews Road, Varroville (the study area) (Figure 1.1).

An Aboriginal Heritage Due Diligence assessment of the study area was undertaken by AMBS in March 2021 as per the requirements of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010a). The assessment identified landscape features in the study area that have potential to contain Aboriginal objects and as such it was recommended that an ACHA for the proposed development be undertaken.

1.1 The Study Area & Proposed Development

The study area is located at 71 St Andrews Road, Varroville and comprises Lot 71 DP706546. It is located approximately 8.8km north of Campbelltown, in the Scenic Hills, and in the Campbelltown Local Government Area (LGA). Residential development borders the study area to the west, north and east, and vacant land is located to the south.

The proposed development includes rezoning the site from E3 Environmental Management to part R2 Low Density Residential; part E2 Environmental Conservation; part RE1 Public Recreation and part Special Purposes – Drainage. The proposed residential development will include creation of residential lots, and installation of internal roads, stormwater management, and other infrastructure. The development will require two external road access connections due to bushfire evacuation requirements (Figure 1.2 and Figure 1.3).

1.2 Methodology

This report is consistent with the principles and guidelines of the *Burra Charter: The Australian ICOMOS Charter for the conservation of places of cultural significance 2013*. It has been prepared in accordance with current heritage best practice and the guidelines of Heritage New South Wales, Department of Premier and Cabinet (Heritage NSW), as specified the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011), the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* and the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (Department of the Environment, Climate Change and Water NSW (DECCW) 2010b; 2010c).

The key heritage requirements for this assessment are to:

- undertake a review of existing information on the Aboriginal heritage values and archaeology of the area;
- consult with representatives of the local Aboriginal community to ensure their involvement and input into the Aboriginal heritage assessment, description of Aboriginal heritage values, and heritage impact management and mitigation;
- undertake an archaeological survey and Aboriginal heritage assessment of the proposed development area; and
- develop appropriate impact mitigation options and recommendations for the development, based on an understanding of scientific and cultural heritage significance, in line with Heritage NSW guidelines and archaeological best practice.

1.3 Authorship

This report has been prepared by AMBS Heritage Consultant Petra Balanzategui and AMBS Director Aboriginal Heritage Christopher Langeluddecke.

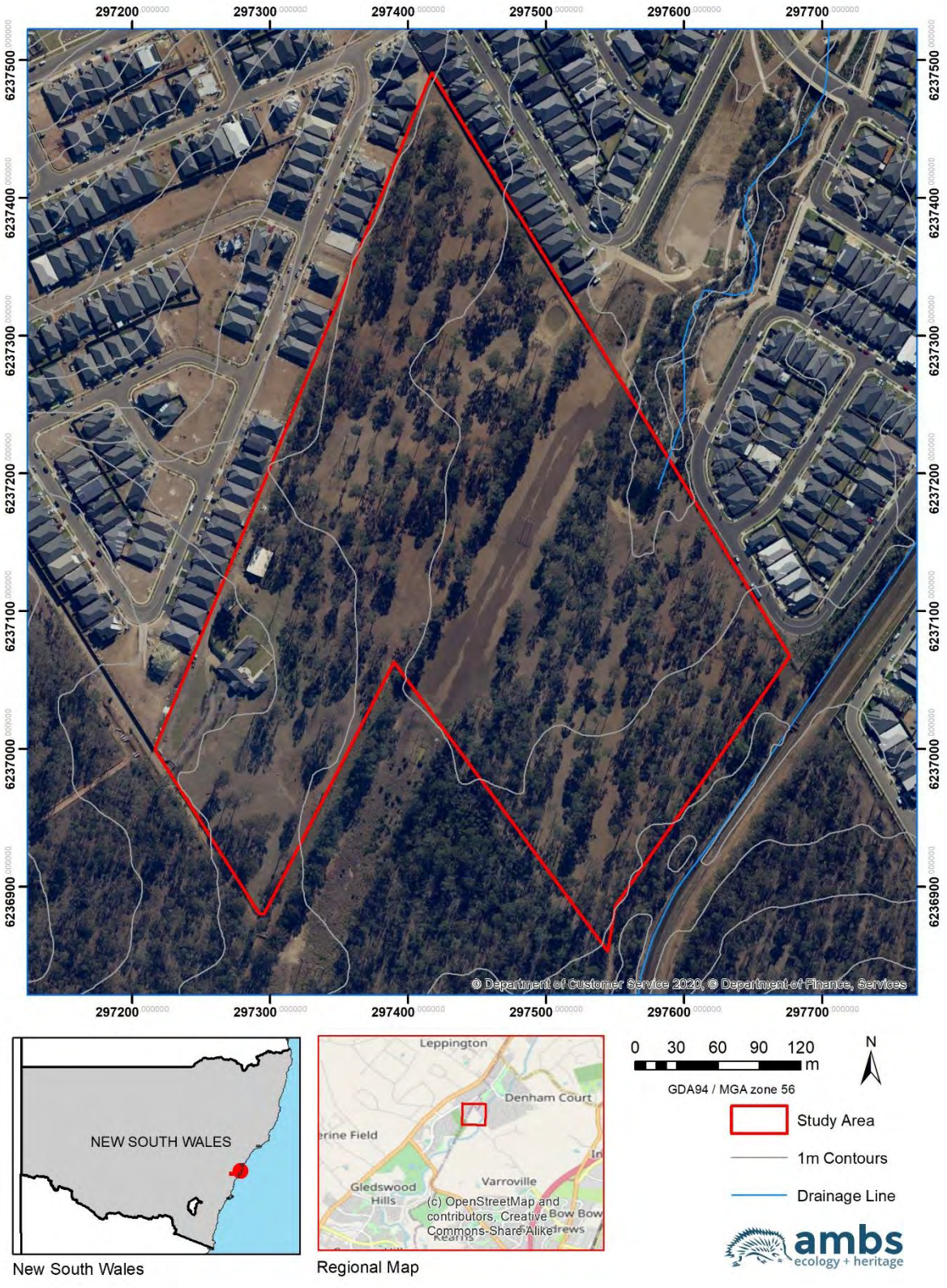


Figure 1.1 The location of the study area.

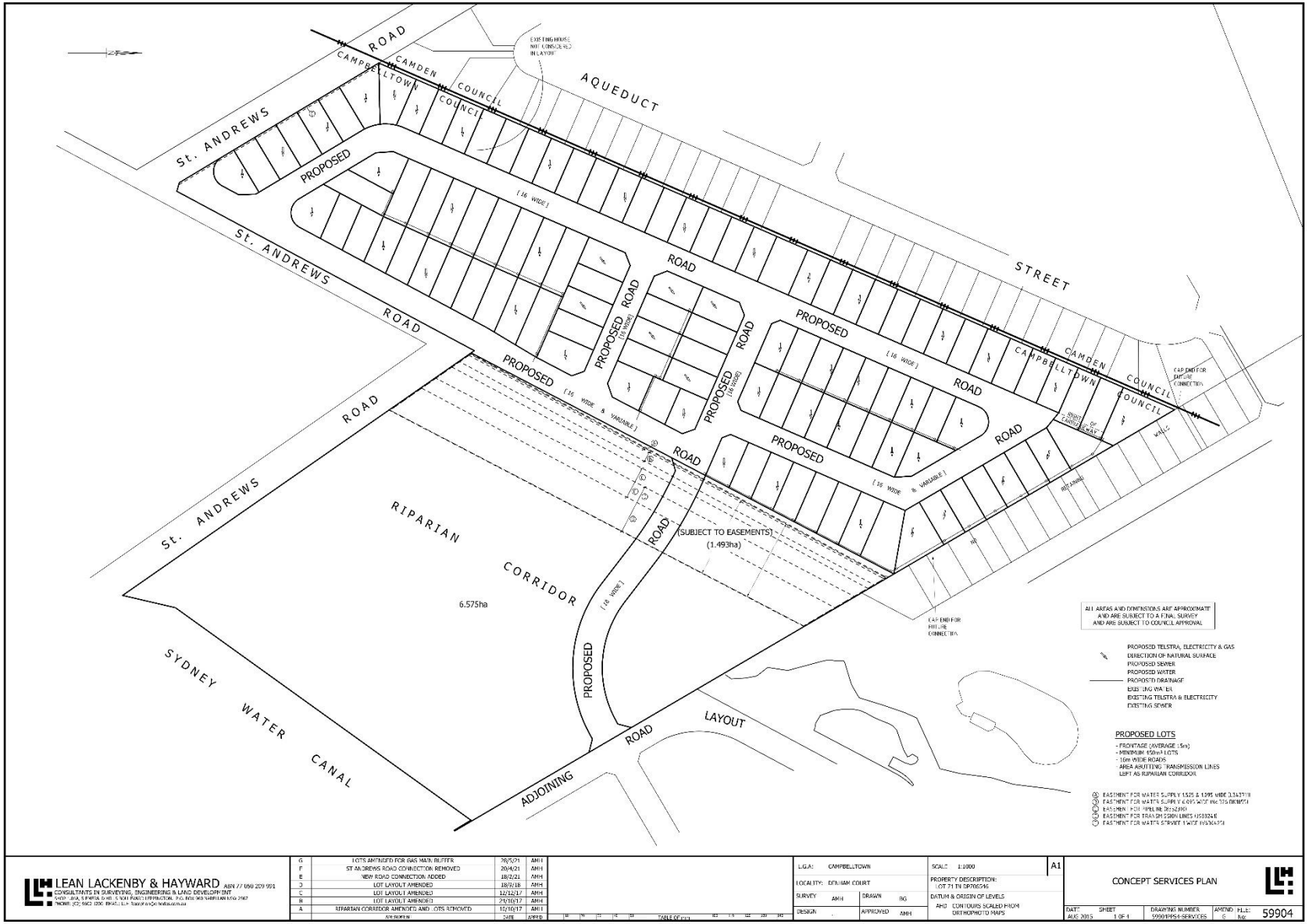


Figure 1.2 Proposed development plan of the study area.

Figure 1.3 Proposed development plan of the study area with aerial photo underlay.

2 Statutory Context

2.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) aims to protect and manage places of national environmental significance. Several heritage lists, including the National Heritage List (NHL) and the Commonwealth Heritage List (CHL), are addressed by the EPBC Act. The NHL lists places that have outstanding value to the nation, while the CHL includes items and places owned or managed by Commonwealth agencies. Ministerial approval is required for controlled actions which would have a significant impact on items and places on the NHL or CHL.

There are no Aboriginal heritage items or places listed on the NHL or CHL within the study area or its vicinity.

2.2 National Parks and Wildlife Act 1974 & National Parks and Wildlife Amendment Regulation 2010

The *National Parks and Wildlife Act 1974* (NPW Act) specifies that the Director-General of the National Parks and Wildlife Service (NPWS; now Heritage NSW) is responsible for the care, control and management of various natural and cultural areas, including Aboriginal places and objects throughout NSW. Under this Act, all Aboriginal Objects are protected regardless of significance or land tenure. Such Aboriginal Objects include pre-contact features like scarred trees, middens and open camp sites, and post-contact features such as Aboriginal fringe camps. The Act also protects Aboriginal Places, which can only be declared by the Minister administering the NPW Act; these are defined as being a place that is or was of *special significance with respect to Aboriginal culture.*

There are no declared Aboriginal Places within the study area, however there are several AHIMS sites located in close vicinity, see Section 5.3.1.

Under Section 90 of the NPW Act, it is an offence to destroy, deface, damage or desecrate an Aboriginal Object or Aboriginal Place, unless an AHIP has been issued by the Conservation and Regional Delivery Division and Communities and Greater Sydney Division of Heritage NSW. The Act requires that reasonable precautions and due diligence be undertaken to avoid impacts on Aboriginal Objects.

The *National Parks and Wildlife Amendment Regulation 2010* excludes activities carried out in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* from the definition of harm in the NPW Act, meaning that test excavations may be carried out in accordance with this Code of Practice, without requiring an AHIP. The Regulation also outlines Aboriginal community consultation requirements as detailed in the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*, and a Due Diligence Code of Practice which specifies activities that are low impact, thus providing a defence to the strict liability offence of harming an Aboriginal object.

2.2.1 Aboriginal Heritage Information System

The Aboriginal Heritage Information Management System (AHIMS) is part of the regulatory framework for the implementation of the NPW Act. Maintained by Heritage NSW, the AHIMS includes a database of Aboriginal heritage sites, items, places and other objects that have been reported to Heritage NSW, as well as site cards describing Aboriginal sites registered in the database and associated Aboriginal heritage assessment reports. Section 89A of the NPW Act requires individuals and corporations to notify Heritage NSW of the location of Aboriginal sites identified during field investigations, regardless of land tenure or any likely impacts to such sites.

Nevertheless, the AHIMS is not a comprehensive list of all Aboriginal heritage sites in NSW; it only includes information that has been reported to Heritage NSW. The accuracy of site co-ordinates in the database therefore varies depending on the method used to record locations.

The results of an extensive AHIMS search for the local area are presented in Section 5.3.1.

2.3 Heritage Act 1977

The *Heritage Act 1977* protects heritage places, buildings, works, moveable objects, precincts and archaeological sites that are important to the people of NSW. Items that have particular importance to the State of NSW are listed on the State Heritage Register (SHR). Such items can include those of Aboriginal and non-Aboriginal heritage significance.

There are no Aboriginal heritage items or places in the vicinity of the study area listed on the SHR.

2.4 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) regulates land use planning and development in NSW, including the making of environmental planning instruments (EPIs). The two types of EPIs are State Environment Planning Policies (SEPPs), which cover areas of State or regional environmental planning significance; and Local Environmental Plans (LEPs), which cover LGAs. SEPPs and LEPs identify and provide for the protection of local heritage items and heritage conservation areas. The study area is located within the City of Campbelltown LGA.

2.4.1 Campbelltown Local Environmental Plan 2015

Part 5, Clause 5.10 Heritage Conservation of the Campbelltown LEP is consistent with current heritage best practice guidelines. It provides for the protection of environmental heritage, the heritage significance of heritage items and heritage conservation areas (including associated fabric, settings and views), archaeological sites, Aboriginal objects and Aboriginal places of heritage significance. Schedule 5 Environmental Heritage does not include any Aboriginal objects or Aboriginal places of heritage significance. The Upper Canal System (Item No. I01373) is located adjacent to the study area and is listed for its state significance.

3 Aboriginal Community Consultation

Archaeological and heritage management best practice requires that representatives of the local Aboriginal community are included as stakeholders in decisions concerning any heritage objects, archaeological places or Sacred Sites within the study area. In addition, assessments of cultural significance, the values of a site to the Aboriginal community itself, can only be carried out by the relevant Aboriginal communities.

Aboriginal community consultation is an integral part of the Aboriginal cultural heritage assessment process, and this project has been undertaken in accordance with Heritage NSW *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (Appendix A). The aims of the consultation process are to:

- provide the opportunity for the local Aboriginal community to provide input into identifying cultural heritage values and be involved in the heritage assessment process;
- provide the opportunity for representatives of the local Aboriginal community to inspect the study area with the aim of identifying Aboriginal sites and areas of archaeological and cultural sensitivity;
- identify the Aboriginal cultural heritage significance of the study area;
- integrate Aboriginal heritage values into the heritage assessment; and
- provide an opportunity for the local Aboriginal community to comment on the heritage management strategy and proposed outcome.

In accordance with Heritage NSW requirements, a public notice was placed in *The Daily Telegraph* on 20 March 2021. The advertisement sought expressions of interest for participation in the Aboriginal community consultation process for this project. The closing date for registrations was 3 April 2021.

The following organisations were contacted on 18 March 2021, requesting notification by 1 April 2021 of any Aboriginal organisations who may wish to register as stakeholders, or to pass on contact information regarding the project to any potential stakeholders of whom they may be aware:

- Native Title Services Corporation (NTSCorp)
- Greater Sydney Local Land Services (LLS)
- Office of the Registrar, Aboriginal Land Rights Act (ORALRA)
- National Native Title Tribunal (NNTT)
- Campbelltown City Council
- Tharawal Local Aboriginal Land Council (LALC)
- Heritage NSW

ORALRA replied on 18 March 2021 stating that they received the correspondence from AMBS. NNTT replied on 19 March 2021 stating that there are no Native Title Determination Applications, Determinations of Native Title, or Indigenous Land Use Agreements over site area. On 22 April 2021 Heritage NSW provided a list of Aboriginal parties who may have knowledge relevant to determining the cultural significance of Aboriginal objects and/or places in the City of Campbelltown LGA.

Heritage NSW identified the following individuals and organisations as potential additional stakeholders. The identified organisations and individuals were contacted by letter or email on 6 April 2021, inviting them to register as stakeholders by 20 April 2021:

- Tharawal Local Aboriginal Land Council
- Darug Custodian Aboriginal Corporation
- Darug Tribal Aboriginal Corporation
- Darug Aboriginal Cultural Heritage Assessments
- Darug Land Observations
- Darug Aboriginal Land Care
- A1 Indigenous Services
- Cubbitch Barta
- Gunjeewong Cultural Heritage Aboriginal Corporation
- Corroboree Aboriginal Corporation
- Murra Bidgee Mullangari Aboriginal Corporation
- Muragadi Heritage Indigenous Corporation
- Bidjawong Aboriginal Corporation
- Kamilaroi Yankuntjatjara Working Group
- Wurrumay Pty Ltd
- Warragil Cultural Services
- Tocomwall
- D'harawal Mens Aboriginal Corporation
- Amanda Hickey Cultural Services
- Dhinawan Culture & Heritage Pty Ltd
- Gunyuu
- Walbunja
- Badu
- Goobah Developments
- Wullung
- Yerramurra
- Nundagurri
- Murrumbul
- Jerringong
- Pemulwuy CHTS
- Bilinga
- Munyunga
- Wingikara
- Minnamunnung
- Walgalu
- Thauaira
- Dharug
- Gulaga
- Biamanga
- Callendulla
- Murramarang
- DJMD Consultancy
- Butucarbin Aboriginal Corporation
- Didge Ngunawal Clan
- Ginninderra Aboriginal Corporation
- Garrara Aboriginal Corporation
- Duncan Falk Consultancy
- Wailwan Aboriginal Group
- Guntawang Aboriginal Resources Incorporated
- Barking Owl Aboriginal Corporation
- Yulay Cultural Services
- Thoorga Nura
- Barraby Cultural Services
- Yurrandaali Cultural Services
- Darug Boorooberongal Elders Aboriginal Corporation
- B.H. Heritage Consultants
- Ngambaa Cultural Connections
- Goodradigbee Cultural & Heritage Aboriginal Corporation
- Mura Indigenous Corporation
- Aragung Aboriginal Cultural Heritage Site Assessments
- Waawaar Awaa Aboriginal Corporation
- Clive Freeman
- Galamaay Cultural Consultants (GCC)
- Wori Wooilywa
- James Davis
- Gilay Consultants

The following organisations notified AMBS that they wished to be involved in the project as Registered Aboriginal Parties:

- Yulay Cultural Services
- Kamilaroi Yankuntjatjara Working Group
- Cubbitch Barta
- Darug Custodian Aboriginal Corporation
- Freeman and Marx Pty Ltd
- Ngambaa Cultural Connections
- Gulaga
- ARAGUNG Aboriginal Cultural Heritage Site Assessments
- Tharawal Local Aboriginal Land Council
- Gilay Consultants
- Murra Bidgee Mullangari Aboriginal Corporation
- Wori Wooilywa

- Gunjeewong Cultural Heritage Aboriginal Corporation
- Corroboree Aboriginal Corporation
- Butucarbin Cultural Heritage Assessments
- A1 Indigenous Services
- Barraby Cultural Services

Information about the proposed project and proposed heritage assessment methodology, along with an invitation to provide any cultural knowledge relevant to the assessment was sent to each of the registered Aboriginal parties on 20 April 2021 requesting feedback and information by 18 May 2021. Darug Custodian Aboriginal Corporation and Kamilaroi Yankuntjatjara Working Group replied on 21 April 2021 confirming their support for the assessment methodology. On 26 April 2021 A1 Indigenous Services returned a completed Aboriginal Community Feedback Form agreeing with the methodology. On 29 April Kamilaroi Ngambaa Cultural Connections confirming their support for the assessment methodology.

Tharawal LALC, Cubbitch Barta, Kamilaroi Yankuntjatjara Working Group, Darug Custodian Aboriginal Corporation, and Murra Bidgee Mullangari Aboriginal Corporation, were invited to participate in the archaeological survey conducted on 25 May 2021. Representatives of Murra Bidgee Mullangari, Kamilaroi Yankuntjatjara Working Group, Cubbitch Barta and Darug Custodian Aboriginal Corporation participated in the archaeological survey with AMBS. Tharawal LALC were unable to participate due to timing and staffing constraints. Details of survey participants are presented in Section 6

A draft of this assessment will be provided to all RAPs for their review and comment, and this section will be finalised following community feedback and input.

4 Environmental Context

Environmental factors of the local landscape can inform an understanding of past human occupation of an area. Analysing the nature of the local landscape, specifically factors which affect patterns of past human occupation including topography, geology, soils, hydrology and vegetation, contributes to predictive modelling of archaeological sites, contextualises archaeological material and enables the interpretation of past human behavioural patterns.

4.1 Soils & Geology

The study area is located within the Blacktown soil landscape (Figure 4.3) which is characterised by shallow to moderately deep (>100cm) hardsetting mottled texture contrast soils, and red and brown podzolic soils on crests grading to yellow podzolic soils on lower slopes and in drainage lines. Erosion is minimal and minor sheet and gully erosion may occur where surface vegetation is not maintained. The limitations of the Blacktown soil landscape include seasonal waterlogging, water erosion hazard and surface movement potential (Chapman and Murphy 1989:39-42).

The geological formation of the Blacktown soil landscape is the Wianamatta Group of Ashfield Shale consisting of laminate and dark grey siltstone, and Bringelly Shale consisting of shale with occasional calcareous claystone, laminate and infrequent coal, and Minchinbury Sandstone consisting of fine to medium-grained quartz lithic sandstone. Outcrops of shale do not occur naturally on the surface, however, may occur where soils have been removed (Chapman and Murphy 1989:40).

4.2 Vegetation

The study area has been extensively cleared of native vegetation since European settlement, and current vegetation comprises regrowth. Such clearing of vegetation would have impacted the integrity of archaeological deposits and would have removed any trees modified (scarred or carved) by Aboriginal people in the past. Vegetation of the Blacktown soil landscape comprises almost completely cleared open-forest and open-woodland (dry sclerophyll forest). Original vegetation was dominated by *Eucalyptus tereticornis* (forest red gum), *E. crebra* (narrow-leaved ironbark), *E. moluccana* (grey box) and *E. maculata* (spotted gum). Individual trees or small stands of *E. sideroxylon* (mugga ironbark) sometimes occured on crests (Chapman and Murphy 1989:40).

Figure 4.1 Regrowth trees of an age not likely to bear evidence of cultural modification.

Figure 4.2 Stands of regrowth Eucalypt within the study area.

4.3 Topography & Hydrology

The Blacktown soil landscape is characterised by gently undulating rises on Wianamatta Shale with local relief measuring 10-30m and slopes generally >5% but occasionally up to 10%. The study area is located to the west of the Georges River catchment area, with the Georges River located 7.6km south east at its nearest point. The Sydney Upper Canal Water Supply (Upper Canal), an early water supply canal built in the 1880s and still in use today, is located adjacent to the south eastern boundary of the study area. The Upper Canal comprises a "system of tunnels, aqueducts, open canals and dams designed to supply water diverted from the Nepean River to the reservoir at Prospect through a fully gravity-fed channel" (Davies 2011:63). A dam fed by this canal is situated in the eastern extent of the study area. Bunbury Curran Creek is located 3km south east of the study area and Rileys Creek is located 1.9km south west.

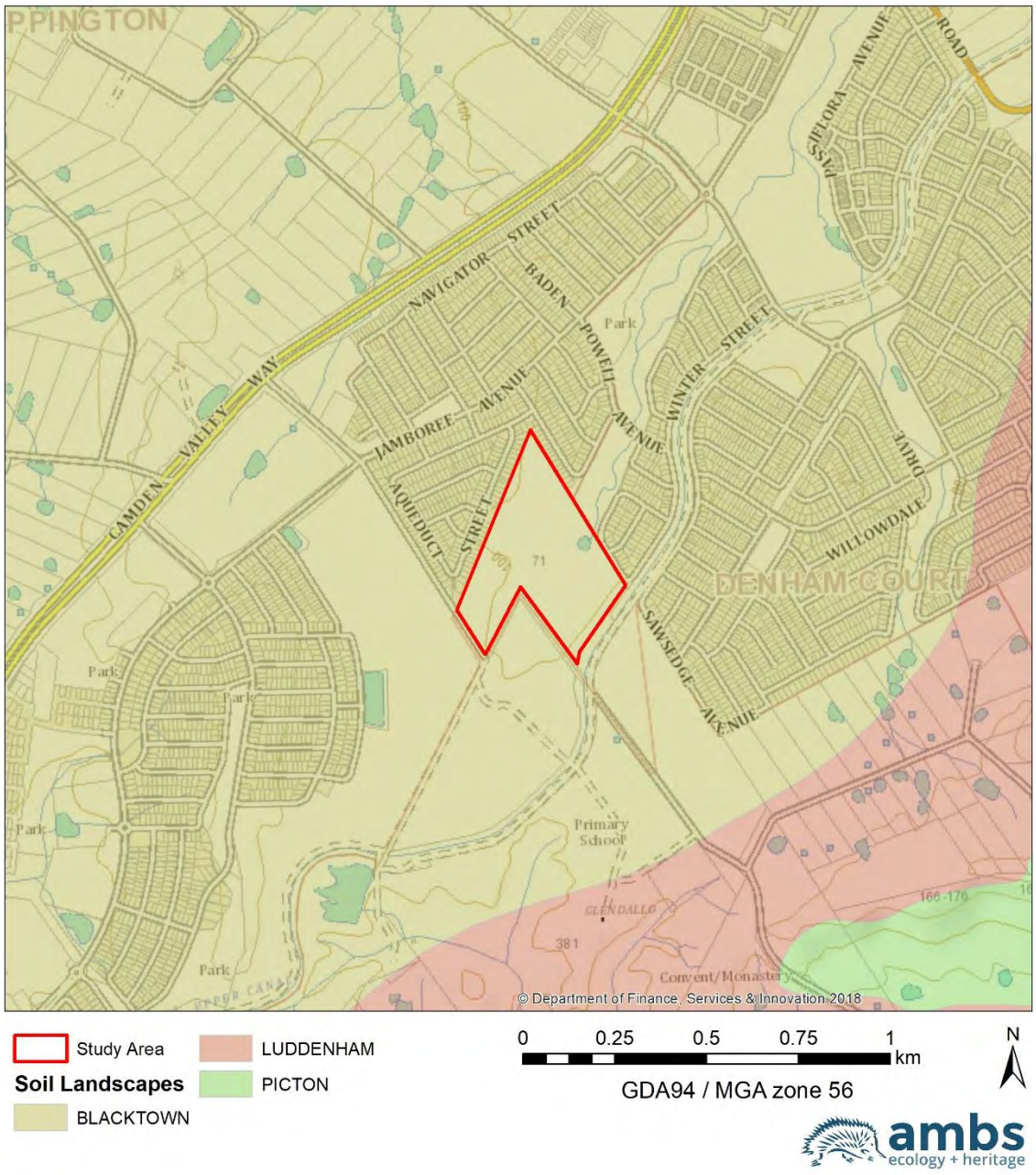


Figure 4.3 Soil landscapes of the study area and its vicinity.

4.4 Land Use & Disturbance

In 1809, Governor Lachlan Macquarie granted 400ha of land to Robert Townson, a scientist and scholar, who named his estate Varro Ville after the Roman writer Marcus Terentius Varro. On the estate, he constructed a sandstone colonial mansion, a vineyard, and a farm for raising sheep and cattle. Townson's intent was to transform Varro Ville into "an exemplar of agricultural pursuit" (State Heritage Register 2021). Opposite Varro Ville, Chief constable, farmer and businessman Andrew Thompson acquired 405ha of land which he named St Andrews (Byrnes 1967). St Andrews Road, the main road of now Varroville, was once the route of an old farm track that bordered the St Andrews property (Campbelltown City Council 1995).

During a tour of the area in 1810, Governor Lachlan Macquarie recorded that Varro Ville and St Andrews had "by far the finest soil and best pasturage" that he had seen and "the grounds were beautiful and bounded by a large creek of brackish water called Bunbury Curran" (State Heritage Register 2021).

St Andrews was advertised for sale in the Sydney Gazette on 24 October 1812 as "Twelve hundred and forty Acres of good Grazing Land, 30 of which are cleared, and in rich arable condition, with a good House, Yards, &c" (Sydney Gazette and New South Wales Advertiser 1812:4). In early 1837, Varro Ville was acquired by explorer, Captain Charles Sturt who maintained the kitchen garden, orchard and vineyard, established dams and modified a watercourse (State Heritage Register 2021). In 1858, the Varro Ville estate was acquired by Alfred Cheeke who used it to develop a successful horse stud farm. Following Cheeke's death in 1876, subsequent owners leased out portions of land for dairy farming, which had become the leading industry in Campbelltown (Dictionary of Sydney 2008).

Varroville became the official suburb name in 1976, comprising the area between Raby and Denham Court. In 1972, Varroville was included in the *Central Hills Scenic Protection Lands* and as such has remained semi-rural and largely undeveloped (Dictionary of Sydney 2008).

The study area has been cleared of native vegetation, and current vegetation comprises mostly regrowth Eucalypt. A man-made dam, fence lines and access roads have been established within the study area. The study area has been moderately impacted by vegetation clearing and subsequent sheet erosion, past agricultural use and the development of associated infrastructure.

5 Aboriginal Heritage Context

This section describes the nature of the known Aboriginal archaeology of the study area, based upon a review of relevant archaeological reports and publications, and a search and review of previously recorded sites in the Heritage NSW AHIMS database. This review and discussion allow for the development of a predictive model for potential Aboriginal sites within the study area. Summary descriptions of site features are provided in Table 5.1.

Table 5.1 Description of Aboriginal heritage site features (OEH 2012:8-10).

Site Type	Description
Aboriginal Ceremony and Dreaming	Spiritual/story places, which may not include physical evidence of previous use of the place, e.g., natural unmodified landscape features, ceremonial/spiritual areas, men's/women's sites, dreaming (creation) tracks, marriage places.
Aboriginal Resource and Gathering	Places related to everyday activities such as food gathering or hunting, or collection/manufacture of materials/goods for use or trade.
Art	May be found in shelters, overhangs or across rock formations. Techniques may include painting, drawing, scratching, carving/engraving, pitting, conjoining or abrading. A range of binding agents or natural pigments obtained from clays, charcoal and plants may have been used.
Artefact	Object(s) such as stone tools, and associated flaked material, spears, manuports, grindstones, discarded stone flakes, modified glass or shell, which provide evidence of Aboriginal use of the area.
Burial	Pre- or post-contact burial of an Aboriginal person, which may occur outside of designated cemeteries and may or may not be marked by stone cairns/carvings/mounds, e.g. in caves or sand areas, along creek banks etc.
Ceremonial Ring	Raised earth ring(s) associated with ceremony.
Conflict	Sometimes referred to as massacre sites, these are places where confrontations occurred between Aboriginal and non-Aboriginal people, or between different Aboriginal groups.
Earth Mound	Round or oval-shaped mounded deposit containing baked clay lumps, ash and charcoal, and often black or dark grey sediment. Deposit may be compacted or loose and ashy, and may contain various economic remains such as mussel shell, bone or stone artefacts. Occasionally may contain burials.
Fish Trap	Modified area in a watercourse where fish were trapped for short-term storage and gathering.
Grinding Groove	Groove(s) in a rock surface resulting from the manufacture of stone tools such as ground edge hatchets and spears; or rounded depressions resulting from grinding of seeds and grains.
Habitation Structure	Structures built by Aboriginal people for short- or long-term shelter. May include historic camps of contemporary significance. More temporary structures are commonly preserved away from the NSW coastline. Smaller structures may make use of natural materials such as branches, logs and bark sheets, or manufactured materials such as corrugated iron. May include archaeological remains of a former structure such as a chimney/fireplace, raised earth building platform, excavated pits, rubble mounds etc.
Hearth	Cultural deposit usually containing charcoal and sometimes marked by hearth stones. May also contain heat-treated stone fragments.
Modified Tree (Scarred or Carved)	Scarred trees show modification marks resulting from cutting of bark from the trunk for foot holds; for use in the production of shields, canoes, boomerangs, burials shrouds etc; or for medicinal purposes. Carved trees have had the heartwood of the tree intentionally carved to form a permanent marker, which may indicate ceremonial use/significance of a nearby area, or which may have functioned as territorial or burial markers.
Non-Human Bone and Organic Material	Object(s) found within Aboriginal cultural deposits such as fish or mammal bones, ochres, or cached objects which may otherwise have broken down such as resin, twine, dilly bags, nets etc.
Ochre Quarry	Source of ochre used for ceremonial occasions, burials, trade and artwork.
Potential Archaeological Deposit (PAD)	Area where Aboriginal objects are considered likely to occur below the ground surface.
Shell	Accumulation/deposit of shellfish from beach, estuarine, lacustrine or riverine species resulting from Aboriginal gathering and consumption, usually found in association with other objects like stone tools, fish bones, charcoal, fireplaces/hearths or burials. May vary greatly in size and components.

Stone Arrangement	Human-produced arrangements of stone usually associated with ceremonial activities; used as markers for territorial limits; or used to mark/protect burials.
Stone Quarry	Source of (usually) good quality stone, which is quarried and used in the manufacture of stone tools.
Waterhole	Source of fresh water for Aboriginal groups, which may have traditional ceremonial or dreaming significance, and which may also be used to the present day as a rich resource gathering area, e.g., waterbirds, eels, clays, reeds etc.

5.1 Historical and Ethnographic Context

It should be noted all ethnographic information about Aboriginal people before European occupation has chiefly been written by European sources, most notably by early European settlers, and should be understood in that context. At the time of European settlement, the Aboriginal people of the greater Sydney region were organised into named territorial groups. Those groups local to the study area are likely to have spoken the Dharawal (Tharawal) language. Speakers of the Dharawal language extended from the south side of Botany Bay along the coast as far as the Shoalhaven River, from the coast to the Georges River and Appin, and possibly as far west as Camden (Attenbrow 2010:34). Linguist R.H Mathews recorded:

> *Thurrawal (Dharawal) speaking people formerly spread over the south-east coast of New South Wales from Port Hacking to Jervis Bay and extended inland for a considerable distance* (Mathews cited in Attenbrow 2010:33).

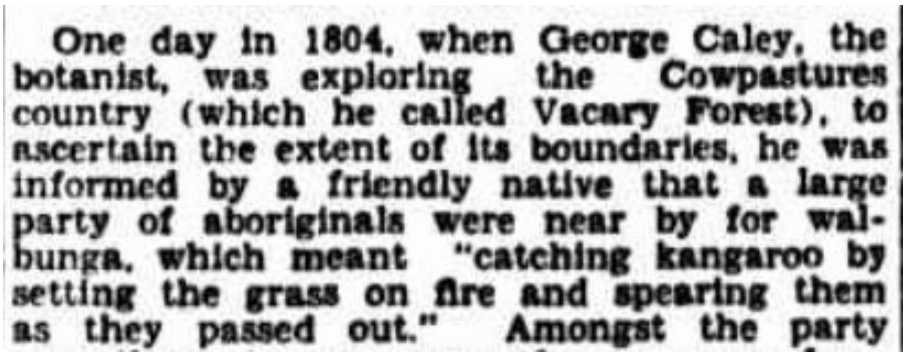
Within six months of the European settlement of Botany Bay in 1788, two bulls and four cows escaped from the colony and headed west to the rich, fertile grasslands on the southwest side of the Cumberland Plain (Liston 1988:49-50). The Dharawal observed these strange creatures and painted them on the wall of a sandstone rockshelter (now known as 'Bull Cave' located at Kentlyn). As depicted in the rockshelter, the animals had no horns and had been polled to prevent injury during the voyage from Cape Town. The paintings in Bull Cave most likely date to the first years of European settlement as the offspring of these animals had horns when rediscovered in 1795 (when the area was dubbed the Cowpastures) (Liston 1988:50).

Several descriptions of Dharawal people were provided at European settlement. Lieutenant David Collins described the Aboriginal men of the Cowpastures as:

> *short, stocky, strong and superbly built. The painting on their bodies, resembling some kinds of coats of mail, added even more to their martial attitude…* (Collins cited in Organ 1990:134)

In 1804, whilst ascertaining the extent of the Cowpastures, botanist George Caley interacted with a group of Dharawal people (Figure 5.1):

> *…he was informed by a friendly native that a large party of aboriginals were nearby for walbunga, which meant "catching kangaroo by setting grass on fire and spearing them as they passed out"* (The Sydney Morning Herald 1930:15).



One day in 1804, when George Caley, the botanist, was exploring the Cowpastures country (which he called Vacary Forest), to ascertain the extent of its boundaries, he was informed by a friendly native that a large party of aboriginals were near by for wal-bunga, which meant "catching kangaroo by setting the grass on fire and spearing them as they passed out." Amongst the party

Figure 5.1 Text by P.M.M in the Sydney Morning Herald on Thursday 27 February 1930 (The Sydney Morning Herald 1930:15).

On Friday 16 November 1810, Governor Macquarie and his wife visited the Cowpastures where they met several Dharawal people:

> *We came in the Carriage all the way, through a very fine rich Country and open Forest, and on the way to our Ground we met two or three small parties of the Cow-Pastures Natives- the Chief of whom in this Part is named Koggie; who with his wife Nantz, and his friends Bootbarrie, Young Bundle, Billy, and their respective Wives, came to visit us immediately on our arrival at Bundie* (Macquarie 2010:6).

On Sunday 18 November, they again met Dharawal people whilst exploring the Cowpastures:

> *after resting ourselves there a little while and taking some refreshment, we all set out to see Manangle a fine extensive Farm of 2000 acres belonging to Mr. Walter Davidson, Situated on the Banks of the Nepean, and distant only about three miles from our Camp South East of it. It is a beautiful Situation and excellent rich Land for both Tillage and Pasture, with a fine large Lagoon in the Center of it, which is called Manangle, and is the native name of this Farm.*
>
> *In the Evening Koggie, the Native Chief of the Cow-Pasture Tribe, and his wife and half a dozen more Natives, favored us with an Extraordinary sort of Dance after their own manner, and with which we were all very much pleased. They were treated a Glass of Spirits each, before they began the Dance, with which they were much pleased and which had a wonderful good effect on their spirits in performing their Dance.*
>
> *The following are the names of the Natives (not including some children) who honored us with their company and attendance during our stay at Bundie: – Vizt. – Koggie and his two wives Nantz and Mary, Bootbarrie & his wife Mary, Young Bundle, Mandagerry, Jindle and Bill: Total 9 grown up Persons, besides 4 or 5 Children of different ages.*
>
> *During this day's Excursion we were attended by some of the Natives, one of whom amused us very much by climbing up a high Tree to catch a Guanna, [sic] which he did in a very dextrous manner* (Macquarie 2010:9).

5.2 Regional Heritage Context

Aboriginal occupation of the Sydney region is likely to have spanned at least 20,000 years, although dates of more than 40,000 years have been claimed for artefacts found in gravels of the Cranebrook Terrace on the Nepean River (Nanson et al. 1987; Stockton 2009; Stockton & Holland 1974). Late Pleistocene occupation sites have been identified on the fringes of the Sydney basin and from rock shelter sites in adjoining areas. Dates obtained from these sites were 14,700 BP at Shaws Creek in the Blue Mountain foothills (Kohen et al. 1984), c.15,000-c.11,000 BP at on a levee near Pitt Town adjacent to the Hawkesbury River (Williams et al. 2012), c.11,000 BP at Loggers

Shelter in Mangrove Creek (Attenbrow 1980, 2004), and c.20,000 BP at Burrill Lake on the South Coast (Lampert 1971). The majority of sites in the Sydney region, however, date to within the last 5,000 years, with some researchers proposing that occupation intensity increased from this period (Kohen 1986; McDonald 1994); although Williams has recently argued that this is part of a longer trend in stepwise population growth and diversification of economic activity evident in south east Australia from the Early to Mid-Holocene (Williams 2013). This increase in sites may reflect an intensity of occupation which was influenced by rising sea levels, which stabilised approximately 6,500 years ago. Older occupation sites along the now submerged coastline would have been flooded, with subsequent occupation concentrating on and utilising resources along the current coastlines and in the changing ecological systems of the hinterland (Attenbrow 2010:55-56).

At the time of European settlement, the Aboriginal people of the Sydney region lived in local clans. The Aboriginal history of the Campbelltown/Liverpool area was compiled as a Bicentennial project by Liston (1988). This study documents interactions between Europeans and the Tharawal people from the early 18th century. Traditionally, this area was thought to be close to the intersection of a number of language group (tribal) boundaries. Language groups include the Dharug who inhabited much of the Cumberland Plain between the Blue Mountains and the coast, the Tharawal who ranged from the coast westwards towards Camden, and the Gandangara who inhabited areas westward and southwest of the Tharawal and into the Blue Mountains. The Tharawal people and other Aboriginal groups continue to be active in the Campbelltown area (Liston 1988).

The spread of urban development across the Cumberland Plain, particularly over the last few decades, has meant that archaeological investigations have intensified with the need for environmental impact assessments. Most archaeological investigations conducted within this framework have been restricted by small study areas (as defined by individual developments) and limited project briefs. As a result, the Cumberland Plain has become the most intensively investigated archaeological landscape in Australia. The studies carried out over these decades of development in the west provide a broad picture of the archaeological context of the region.

A number of predictive models relating to Aboriginal occupation patterns and site locations have been formulated through archaeological investigations in the Cumberland Plain (Haglund 1980; Kohen 1986; Smith 1989). More recent works have contributed to refining these models (Australian Museum Business Services 2000, 2002; Jo McDonald Cultural Heritage Management [JMCHM] 1997, 1999, 2001a; McDonald 1999). However, it should be noted that archaeological investigations still reveal site information in contradiction to the current, general predictive model for the area, and it is expected that further archaeological work will continue to refine the model.

The most common site types found on the Cumberland Plain are open artefact scatters and open camp sites, followed by scarred trees and isolated finds. Shelter sites and grinding grooves are also found, although mainly around the periphery of the Plain in sandstone geology. Key trends are summarized below:

- site frequency and density are directly related to the location of sites within the landscape;
- complex sites are usually located close to permanent water sources, with major confluences being a key requirement for occupation sites, and would have been used intensively by larger groups, or used repeatedly by smaller groups over a longer period of time;
- sites with large numbers of artefacts can occur on ridge tops and hill crests;
- sites situated in alluvial soils retain the potential for stratified deposits;
- Potential Archaeological Deposits (PADs) are most likely to be located along valley floors and low slopes in well-drained areas; and surface artefact distribution does not accurately reflect the composition or density of subsurface archaeological deposits. Some areas with few or no surface manifestations have often been shown to contain subsurface archaeological deposits.

- artefact scatters are most commonly linked to the close proximity of permanent water sources in areas such as creek and river banks and alluvial flats. The majority of these sites are located within 100m of permanent fresh water;
- artefact assemblages generally comprise a small proportion of formal tool types with the majority of assemblages dominated by unretouched flakes and debitage;
- high concentrations of artefacts are more likely to be located within resource rich areas;
- silcrete is the dominant raw material used for tool manufacture, followed by chert (also known as tuff). Silcrete sources are located in the north western Cumberland Plain at places such as St Marys, Plumpton Ridge, Marsden Park, Schofields, Riverstone, Deans Park, Llandilo and Ropes Creek. Other raw materials include indurated mudstone from Nepean River gravels, quartz, porphyry and hornfels which may be derived from Rickabys Creek gravels, and basalt;
- stands of remnant old growth vegetation retain the potential for scarred trees to be present; however, large scale land clearance of the plain in general means that such stands of vegetation are rare; and
- evidence of post-contact camp sites may be located in close proximity to early European houses and farms, or official buildings.

5.3 Local Archaeological Context

There have been a number of archaeological investigations previously undertaken in the vicinity of the study area. The information summarised below is based on reports that have been registered with the Heritage NSW AHIMS, and which are most relevant and informative to the archaeological background of the current project.

In 2003, Biosis Research was commissioned by St Hilliers to undertake an Aboriginal archaeological assessment of a proposed secondary school site at Horningsea Park, approximately 5.5km north west of the current study area. The assessment was required to accompany a DA for the proposed project. An extensive AHIMS search undertaken by Biosis Research did not identify any Aboriginal heritage sites within the study area, however no previous archaeological assessments had been previously conducted. Archaeological survey was undertaken on 11 April 2003 which did not identify any Aboriginal heritage sites. Ground surface visibility was significantly limited due to thick grass coverage, and as such the archaeological potential of the study area could not be determined. As such, Biosis Research recommended that further archaeological investigation in the form of test excavations be undertaken to determine if there was sub-surface archaeological deposit present.

East Leppington is located on the eastern side of Camden Valley Way, approximately 1.2km north west of the current study area. Navin Officer surveyed East Leppington in 2008, and identified 60 Aboriginal heritage sites. Following the survey, Godden Mackay Logan (GML) undertook test excavations throughout the area to inform management strategies for the proposed East Leppington residential development. The excavations recovered 519 stone artefacts (predominantly of silcrete, silicified tuff and quartz) from 533 test units comprising a total of 133.25m^2, sampling each landform within the area. The highest numbers of artefacts were located on flats/terraces and lower slopes adjacent to Bonds Creek and Bonds Creek South; artefact density and raw material variation tended to increase with stream order. On hilltops or ridge crests, artefacts were present in slightly higher numbers than background scatter, whereas this was not generally the case on mid-slopes. There was evidence of microlithic (backed artefacts comprised 5% of the artefact assemblage) and bipolar (bipolar flaking was evident on 2.5% of artefacts) technologies, and heat-shattered artefacts tended to be more common in association with higher order streams, possibly indicating more intensive use of hearths in these areas. The proportion of artefacts manufactured on silcrete, and of microlithic and bipolar artefacts, also seemed to increase with stream order. It was suggested that these creek-side areas were occupied deliberately and repeatedly over thousands of years, by Aboriginal clan groups. Subsequent

salvage archaeological excavations recovered a further 7,533 cultural stone objects, and identified twelve ground ovens and numerous hearth features (Owen 2015:77).

In 2014, Archaeological and Heritage Management Solutions (AHMS) prepared an Archaeological Technical Report (ATR) for residential development at Emerald Hills Estate, Leppington (330m west of the current study area) for Macarthur Developments. The ATR presents background research, desktop analysis, archaeological survey, test excavation and post-excavation analysis of data. Archaeological survey was undertaken by AHMS and Aboriginal representatives on 22 November 2012. Seven flaked stone artefacts were identified during the survey, and all were located on soil exposures. Archaeological test excavations were recommended by AHMS due to "ineffectiveness of the field survey and discrepancies between the regional models and the observed archaeological distributions" (AHMS 2014:41). Excavation was undertaken from 15 April to 9 May 2013, and a total of 273 test units were excavated. A total of 102 artefacts were recovered, and two dense concentrations of artefacts were recovered from two ridgelines. The artefact assemblage included 78 silcrete, 7 quartz, 6 tuff, 4 quartzite, 3 chert, 3 FGS, 1 rhyolite and 1 clear quartz. It was determined that these artefacts were either a by-product of stone tool manufacturing or were carried into the study area. The highest amount of artefacts were identified on the creek terrace, 35m from the creek. Based on these results, AHMS recommended that top soil stripping of the study area be monitored to allow cultural salvage of any Aboriginal objects, and that the 103 Aboriginal objects be reburied on country, within the study area. It was recommended that the client apply for an AHIP application to allow full extent of the sites to be harmed, however opportunities be considered with regard to options to avoid, minimise or mitigate Aboriginal objects (AHMS 2014:1-72).

In 2018, AMBS Ecology and Heritage were commissioned by Gran Associates Australia on behalf of Amity College to prepare an ACHA for the proposed Amity College Leppington Campus, located 2km north of the current study area. An extensive search of the AHIMS database identified 38 previously recorded Aboriginal sites in the local area, but none within the study area. Archaeological survey undertaken on 28 August 2018 identified no Aboriginal sites, places or objects, or areas of potential Aboriginal archaeological sensitivity within the study area or immediate surrounds. The area had been disturbed by land clearing, impacts from construction of residential buildings, outbuildings and a shed, and by agricultural impacts from market gardens and animal grazing. Further, no Aboriginal cultural issues or sensitivities associated with the study area were identified by the RAPs consulted with during the assessment. It was therefore considered unlikely that the proposed Amity College Leppington Campus development would impact Aboriginal heritage values, and there were no additional constraints to the proposed development arising from considerations of Aboriginal cultural heritage and archaeology. It was recommended that the proposed development proceed with due caution (AMBS Ecology and Heritage 2018:1-45).

In 2018, Biosis was commissioned by TSA Management to prepare an ACHA for the proposed Leppington Public School Development, located 640m north east of the current study area. The ACHA was to be included with a *Specialist Consultant Studies Compendium* to accompany an EIS for the project. An extensive AHIMS search undertaken by Biosis identified two AHIMS sites located within the proposed project area (AHIMS sites #45-5-4234 and #45-5-3472). Archaeological survey undertaken on 14 November 2018 revisited the AHIMS site locations, however, did not reidentify artefactual remains. A high level of disturbance was observed in the study area. An AHIP (#1132182) had been previously issued for the AHIMS sites in 2013 to Stockland Development, and collection of these sites had been authorised. Biosis determined that prior collection of these AHIMS sites may have been undertaken. Biosis recommended that TSA Management contact the AHIP holder (Stockland Development) to confirm whether AHIMS sites #45-5-4234 and #45-5-3472 had been subject to collection. If it was confirmed that the AHIMS sites had been collected, Biosis

recommended that TSA Management proceed to follow the conditions of the AHIP, and that no further archaeological investigation was required (Biosis 2018:1-30).

5.3.1 Registered Aboriginal Sites

An extensive search of the AHIMS database was undertaken on 07 February 2021 (AHIMS client service ID #566437), which identified 74 registered Aboriginal sites within the following coordinates: Datum: GDA94/MGA Zone 56, Eastings: 296500 - 298500, Northings: 6236000 - 6238000. No Aboriginal heritage sites have previously been recorded within the study area. Isolated artefact sites are the most frequently recorded site type in the local area, followed by artefact scatter sites. The AHIMS search results are presented in Figure 5.2 and Figure 5.3, summarised in Table 5.2 and discussed below.

Table 5.2 AHIMS Registered Aboriginal sites in the vicinity of the study area.

Site Type	Number of Sites Present	Percentage
Resource and Gathering	1	1.35%
Artefact Reburial	1	1.35%
Artefact Scatter	14	18.92%
Isolated Artefact	58	78.38%
Total	**74**	**100%**

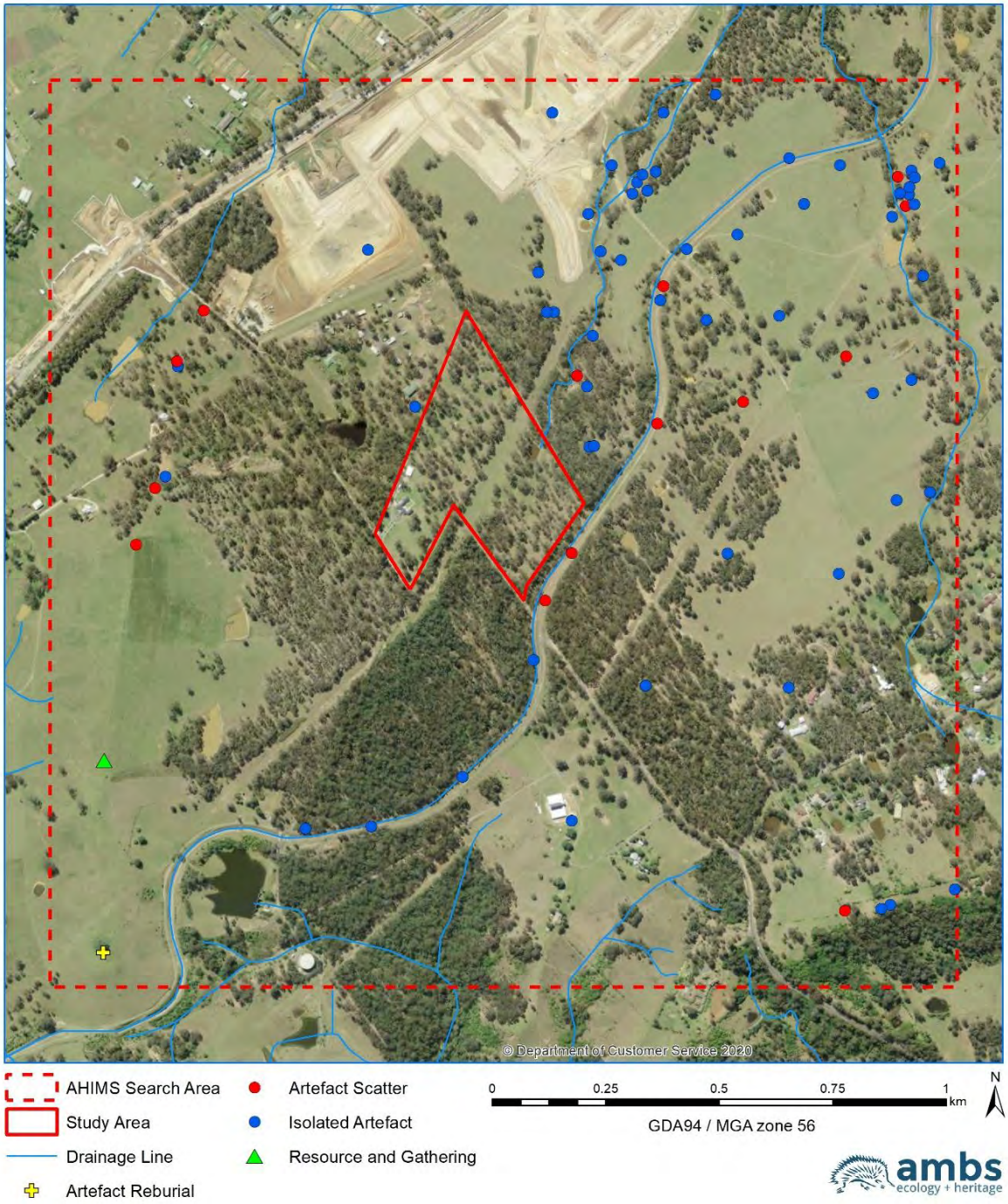


Figure 5.2 AHIMS sites in the vicinity of the study area.

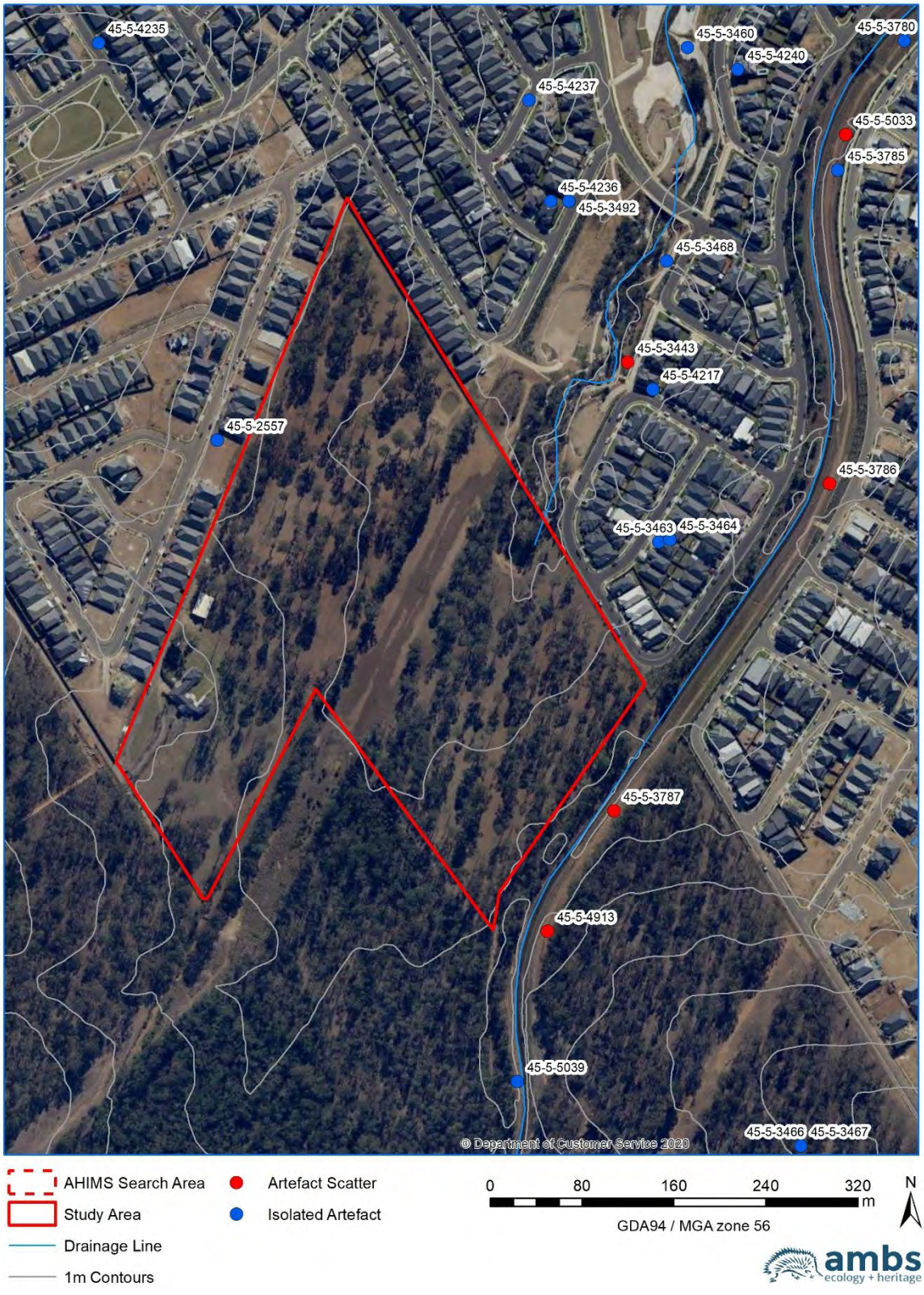


Figure 5.3 Detail of AHIMS sites in close proximity to the study area.

The nearest previously recorded site is AHIMS site #45-5-2557, an artefact scatter located just outside of the western boundary of the study area. The site was recorded in 1999 by C. Carter during archaeological survey and monitoring of the Eastern Gas Pipeline, and it was identified within the proposed pipeline easement. The site measured approximately 20m by 10m and was noted as being disturbed due to previous grading and dumping.

AHIMS sites #45-5-3786 and #45-5-3787 were recorded by Biosis in 2009 during an Aboriginal archaeological assessment of the Camden Gas Project. Site #45-5-3787 is a site located approximately 20m east of the study area, and although the site is registered as an isolated find on the AHIMS database, the site card reveals that it is in fact an artefact scatter. The site is located in a soil exposure on the eastern side of the Upper Canal access track and 80m from a first order creek. The artefacts were identified on an access track and along an eroding spoil heap from the excavation of a drain close to the fence line. At least 50 artefacts were present in the area, however due to time constraints, only a selection of varying materials and artefact types were recorded in detail on the site card. A high level of disturbance had occurred in the area however Biosis determined that there was a moderate likelihood on further cultural material to be present within the vicinity of the site. Six artefacts were recorded on the site card, including one silcrete scraper, four silcrete flakes, one mudstone flaked piece and one mudstone flake. #45-5-3786 is an artefact scatter comprising one silcrete core and one silcrete flaked piece, although it too is erroneously recorded on AHIMS as an isolated artefact. The site was identified on a soil exposure between an access track and fence line, on a lower slope, 250m from a first order creek. Biosis determined that there was low potential for further cultural material to occur in a disturbed context.

AHIMS sites #45-5-4235, #45-5-4236, #45-5-4237 and #45-5-4240 were recorded by GML in 2012 during an archaeological survey for the proposed East Leppington Growth Centre. All sites were described as a low density of artefacts, and that their locations “had been used for occasional activities resulting in a deposit of stone artefacts”. GML determined unlikely for all sites to contain a high-density sub-surface deposit and further excavations were deemed unwarranted.

#45-5-5033 is a scatter of two artefacts (incorrectly recorded in the AHIMS database as an isolated artefact) and isolated artefact site #45-5-5039 recorded by Extent Heritage in 2018, during an ACHA for proposed works of the Upper Canal. #45-5-5039 is located approximately 100m south of the study area and #45-5-5033 is located approximately 400m north east. #45-5-5033 comprises two silcrete cores, measuring 32mm length, 30mm width and 25mm depth, and 25mm length, 20mm width and 12mm width. Extent determined the site had low subsurface archaeological potential and low archaeological significance. #45-5-5039 comprises one chert flake, measuring 28mm length, 20mm width and 7mm depth. Extent Heritage determined that the isolated find site had low subsurface archaeological potential and low archaeological significance. It would not be impacted by proposed works.

Several AHIMS sites in the vicinity of the study area were recorded by Heritage Concepts in 2007, and the site card descriptions are as follows. AHIMS site #45-5-3492 is an isolated find located approximately 170m north east of the study area. The artefact was identified in an erosion scour on slightly higher ground in a swampy area west of a man-made dam. It was described as a red silcrete broken distal flake, measuring 9mm by 28mm by 3mm. AHIMS site #45-5-3443 is an artefact scatter located approximately 150m north east of the study area. The artefacts were identified in an area spanning 26m by 10-15m and were eroding out of the creek bank and on the flat above the creek line. The creek bank measured 1.4m in depth and contained a light brown/yellow clay loam topsoil, and a medium to heavy clay subsoil. A total of 84 artefacts were recorded, and artefact material included silcrete, quartz, chert and basalt, and artefact types included flakes, flaked pieces, cores, debitage, one anvil stone and one possible hammerstone. AHIMS sites #45-5-3463 and #45-5-3464 are isolated finds located approximately 80m east of the study area. #45-5-3463 is a red silcrete flake measuring 43mm by 26mm by 13 mm. It was identified

on a slope, near an erosion scour that appeared to be the result of a sheet wash. #45-5-3464 is an orange/yellow chert broken backed blade measuring 30mm by 9mm by 4mm. It was identified on a mid-slope location near an erosion scour that appeared to be the result of vehicle access.

AHIMS sites #45-5-3466 and #45-5-3467 are isolated finds located approximately 370m south east of the study area. #45-5-3466 is a ground edged basalt axe measuring 130mm by 60mm by 30mm. The axe had been placed at the foot of a nearby tree out of the immediate impact of ploughing. #45-5-3467 is a red silcrete flake measuring 30mm by 8mm by 5mm. It was identified near the top of a slope in an open pastureland recently ploughed, in a light brown clay loam topsoil.

5.4 Discussion and Aboriginal Heritage Site Prediction Modelling

No Aboriginal heritage sites, objects or places have previously been recorded in the study area. A number of isolated artefact and artefact scatter sites have been recorded in close proximity to the study area, including a scatter of at least 50 artefacts approximately 80m east of the study area (AHIMS site #45-5-3787), and a scatter approximately 20m west of the study area (AHIMS site #45-5-2557). The most common sites previously recorded in the local area are isolated find sites followed by artefact scatter sites. The Georges River and its tributaries would have been a source of freshwater and food for Aboriginal people. A review of existing information on the Aboriginal heritage values and archaeology of the area identified that the study area has undergone moderate disturbance as a result of vegetation clearing, agricultural use and establishment of associated infrastructure.

On the basis of the registered archaeological sites in the region, and review of previous archaeological studies, the following conclusions can be drawn regarding the potential presence and location of Aboriginal heritage sites within the landscape of the study area.

- Stone artefact sites are found in all environmental contexts but are most readily identified through surface survey in areas where vegetation is limited, and ground surface visibility is high.
- Stone artefact scatters may occur in all landform contexts throughout the region, although water is often the defining characteristic in distribution patterns. From the body of research throughout the region and within the broader state context, it is generally accepted that people tended to camp in proximity to water, resources or vantage points, with camping occurring more frequently the more permanent the water source. Sites associated with ephemeral water sources are fewer, and are likely to contain evidence of more localised, less repeated use.
- Regional trends indicate that artefact scatters are most commonly linked to the close proximity of permanent water sources in areas such as creek and riverbanks and alluvial flats, and the majority of these sites are located within 100m of permanent fresh water. Although the study area is not located within 100m of permanent fresh water, a large number of isolated finds and artefact scatter sites have been found in close proximity. As such, there is potential for stone artefact sites to exist within the study area.
- Stands of remnant old growth vegetation retain the potential for scarred trees to be present; however, large scale land clearance means that such stands of vegetation are rare. Wide scale vegetation clearance has resulted in the removal of native vegetation and current vegetation comprises regrowth. As such there is limited potential for mature trees of an age suitable to retain evidence of Aboriginal cultural modification to survive across most of the study area. Culturally scarred trees may be present where uncleared remnant mature native trees are present in the study area.
- Sandstone outcropping is unlikely to occur in the study area and as such it is unlikely that stone quarry sites, axe grinding grooves, stone engravings/art, and shelter sites exist within the study area.

- No burial sites have previously been located in the local area. Due to past disturbance, burials and ceremonial sites (including stone arrangements) are unlikely to be present in the study area or in close proximity.

6 Archaeological Survey

An Aboriginal archaeological survey and assessment of the study area was undertaken on Tuesday 25 May 2021 by AMBS archaeologists Matthew Byron and Petra Balanzategui, and RAP representatives Ryan Johnson of Murra Bidgee Mullangari, Ralph Hampton of Kamilaroi Yankuntjatjara Working Group, Bec Chalker of Cubbitch Barta and Lana Wedgewood of Darug Custodian Aboriginal Corporation. Tharawal LALC had been invited to participate in the archaeological survey but were unable to attend on the day.

6.1 Survey Methodology

The archaeological survey comprised a pedestrian inspection of the entire study area, focusing on areas of ground surface exposure. The fieldwork methodology, archaeological context, proposed development and potential impacts were discussed with the Aboriginal community representatives during fieldwork and plans of the proposed works were made available to guide the survey. The survey aimed to identify whether Aboriginal sites, places, or objects are present within the study area, or whether there was potential for areas of Aboriginal archaeological sensitivity to be present.

Photographs of the study area were taken using an Olympus TG-4 digital camera, and survey track logs were recorded using Garmin Oregon 750t handheld GPS units. Where Aboriginal artefacts were encountered, notes were to be made regarding their type, size, and material; and descriptions of the site were to be recorded including the environmental setting and details of any disturbance to archaeological material in the site's vicinity.

6.2 Survey Results

No Aboriginal sites, objects or places were identified within the study area or immediate surrounds during the archaeological survey. The survey targeted areas of visibility, and Survey Units were recorded in accordance with Heritage NSW guidelines and are presented in Figure 6.1.

The study area is located on a simple slope and flat landform which is consistent with the Blacktown soil landscape. Ground visibility was consistently low across the study area, ranging from 0-20%, mainly due to thick grass, weeds and leaf litter, as demonstrated in Figure 6.12. Although there are mature regrowth trees present throughout the study area, the majority were not of an age suitable to bear evidence of Aboriginal cultural scarring and no evidence of cultural scarring was observed on the older trees inspected. Consistent with the Blacktown soil landscape, regrowth vegetation in the study area included *Eucalyptus tereticornis* (forest red gum), *E. crebra* (narrow-leaved ironbark), *E. moluccana* (grey box) and *E. maculata* (spotted gum). A natural drainage line is situated adjacent to the western fence line of Survey Unit 4 and runs towards the dam and north of the dam to the northern fence line. No stone outcrops with potential to retain Aboriginal rock art or grinding sites were observed. Soil exposures were inspected for cultural materials, but none were identified (Figure 6.6 and Figure 6.11). Soil types varied throughout the study area, with the western extent comprising a brownish-red silty clay (Figure 6.6) and the eastern extent comprising a brown silty clay. Soil was waterlogged in proximity to the natural drainage line and was considerably drier in the western and eastern extents. Soil compaction and erosion has occurred throughout the study area, most likely from land clearing and movement of cattle and sheep.

Figure 6.1 Survey units recorded in the study area

Survey Unit 1 comprises a flat landform located in the south western extent of the study area. Extensive vegetation clearing has occurred, and current vegetation comprises a maintained grass lawn, intentional garden plantings and regrowth trees (Figure 6.3). A high level of disturbance has occurred in this survey unit, due to the construction of a residence, outbuildings, a vegetable garden, an asphalt driveway, electric fence lines and a dam (Figure 6.3). The residence,

outbuildings, gardens and associated infrastructure are located in the western extent of the survey unit, and an unsealed access track extends from the asphalt driveway to beyond the shed in the north western corner of the survey unit. The natural topography has been further levelled for the construction of the residence and outbuildings. Soil exposures observed in this survey unit contained a large amount of imported rock, gravel and building materials, and small amounts of ceramic, as depicted in Figure 6.4. Ground visibility was 10%, and was mostly limited by the asphalt driveway, buildings and vegetation. Survey Unit 2 is located adjacent to Survey Unit 1 and comprises a flat landform in the southwestern extent of the study area. Fence lines have been erected on the boundary of this unit, and a dam has been established in the southern extent, resulting in a moderate level of disturbance. Vegetation clearing has occurred in the past, and current vegetation comprises regrowth trees and thick grass. Ground visibility was significantly limited by this grass (10%) and soil exposures were infrequent.

Survey Unit 3 comprises a simple slope landform encompassing the north and north western extent of the study area (Figure 6.5). The area is bordered by fence lines and a dam has been established in the north eastern extent. An unsealed access track runs from the gate in the south western corner along the fence towards the north western corner. Another track is situated along the eastern fence line, heading towards the man-made dam. Building materials and wooden crates have been stored sporadically throughout the survey unit, as seen in Figure 6.7. Soil exposures, particularly along the western fence line, contained imported rock, gravel and building materials, and small amounts of ceramic. Extensive vegetation clearing has occurred, and the area has been grazed by sheep and cattle, resulting in soil compaction and erosion. Current vegetation comprises mature regrowth trees, thick grass and weeds, which significantly impacted ground visibility (15%). Mature regrowth trees were not of an age suitable to bear evidence of Aboriginal cultural scarring and no evidence of cultural scarring was observed on the older trees inspected. Survey Unit 4 is a flat landform located in the middle of the study area, comprising an electrical services easement and fence lines (Figure 6.8). Vegetation has been entirely cleared and only grass remains. A high level of disturbance has occurred from initial vegetation clearing and ongoing maintenance, the construction of the easement, and subsequent erosion.

Survey Unit 5 is a simple slope landform encompassing the south eastern extent of the study area. The area is bordered by fence lines and a dam has been established in the north western corner. A natural drainage line is present adjacent to the western fence line, and soil is waterlogged through this area. North of the dam, the soil is significantly waterlogged and has been further impacted by cattle (Figure 6.10). The survey unit has been cleared of vegetation in the past and has been grazed by sheep and cattle, resulting in soil compaction and erosion. Current vegetation comprises regrowth trees and grass, and a thick concentration of trees is present in the southern extent (Figure 6.13). Ground visibility (10%) was significantly limited by this vegetation, in particular grass, leaf litter and moss. Mature regrowth trees were not of an age suitable to bear evidence of Aboriginal cultural scarring and no evidence of cultural scarring was observed on the older trees inspected. Soil exposures were observed for cultural materials; however, none were found. Consistent with disturbance in Survey Unit 1 and 3, some of the soil exposures contained traces of imported rock, gravel, building material and ceramic.

Limited ground surface visibility due to vegetation throughout the study area restricted the effectiveness of the archaeological survey, and as such it was not possible to reliably identify the presence of surface Aboriginal artefact sites. Previously recorded AHIMS sites in the region have been identified on similar landforms to those found in the study area, such as low rises and simple slopes. In particular, a scatter of at least 50 artefacts is located approximately 80m east of the study area adjacent to the Upper Canal (AHIMS site #45-5-3787), and a scatter is located approximately 20m west of the study area (AHIMS site #45-5-2557), suggesting that there is potential for Aboriginal artefact sites to be present in the study area, potentially in a subsurface context.

Given it was not possible to predict the presence or extent of any subsurface Aboriginal archaeological deposits through archaeological survey alone, archaeological test excavations would be an appropriate measure to allow an understanding of the heritage of the study area, and to determine appropriate heritage impact management options for any future development of the study area. A proposed archaeological test excavation methodology and sampling strategy prepared in accordance with the Heritage NSW Code of Practice is detailed in Section 9.2.

Figure 6.2 Fence line, gate and shed on a flat landform in Survey Unit 1. View to north.

Figure 6.3 Man-made dam, thick grass and regrowth trees on a flat landform in Survey Unit 2. View to south east.

Figure 6.4 Introduced rock, gravel and building material along the western fence line in Survey Unit 1 and Survey Unit 3.

Figure 6.5 Simple slope landform in Survey Unit 3. As depicted in the image, the landform rises to the east/south east. View to north east.

Figure 6.6 Brownish-red silty clay identified in the western extent of the study area, consistent with the Blacktown soil landscape.

Figure 6.7 Wooden crates being stored in Survey Unit 3. View to north east.

Figure 6.8 Flat landform and electrical power easement in Survey Unit 4. View to south.

Figure 6.9 Man-made dam and regrowth trees in Survey Unit 5. View to south.

Figure 6.10 Significantly waterlogged soil in the north western corner of Survey Unit 5. View to east.

Figure 6.11 Brown silty clay identified in Survey Unit 5, consistent with the Blacktown soil landscape.

Figure 6.12 Ground visibility was significantly limited in majority of the study area due to thick grass, weeds and leaf litter.

Figure 6.13 Concentration of mature regrowth trees in the south eastern extent, typical of the Blacktown soil landscape. View to south.

6.2.1 Survey Coverage & Landforms

Survey coverage data was gathered during the archaeological field survey to allow analysis of ground exposure and visibility, as adverse observation conditions can affect the detection of Aboriginal sites and material. This data does not reflect the extent of the study area that was physically surveyed but represents an estimate of the area of ground surface examined and presents an estimate of the effectiveness of the survey, given environmental conditions and ground visibility. Survey coverage data and the survey transect units are presented in Figure 6.1 and **Error! Reference source not found.**Table 6.1.

Table 6.1 Landform summary.

Landform	Landform Area (m^2)	Area Effectively Surveyed (m^2)	% of Landform Effectively Surveyed	Number of sites	Number of artefacts or features
Flat	44,943	143.65	0.75%	0	0
Simple slope	94,684	4641.10	9.75%	0	0

Table 6.2 Survey Coverage

Survey Unit	Landform	Description	Survey Unit Area (m^2)	Visibility %	Exposure %	Effective coverage area (m^2)	Effective coverage	Photograph
1	Flat	Southwestern portion of the study area comprising a flat landform. A residence, outbuildings, asphalt driveway, garden and fence lines have been established. The natural topography has been further levelled for the construction of the residence and outbuildings. Visibility was low due to grass, and soil exposures contained imported rock, gravels, building material and ceramic. Land clearing has occurred, and current vegetation includes regrowth trees, grass and intentional garden plantings. A high level of disturbance has occurred for the construction of the residence, outbuildings, fence lines and asphalt driveway, landscaping for the garden, and establishment of the dam.	9,028	5%	5%	22.57	0.25%	**Figure 6.14 Flat landform with residence, outbuildings and garden. View to north.**
2	Flat	Southwestern extent of the study area comprising a flat landform. Fence line and a dam have been established. Visibility was significantly limited due to grass and soil exposures were infrequent. Vegetation clearing has occurred in the past, and thick grass and regrowth trees remain. A moderate level of disturbance has occurred for the development of the fence lines and dam.	24,211	5%	10%	121.05	0.5%	**Figure 6.15 Flat landform with fence lines and man-made dam. View to north east.**

Survey Unit	Landform	Description	Survey Unit Area (m^2)	Visibility %	Exposure %	Effective coverage area (m^2)	Effective coverage	Photograph
3	Simple slope	North and northwestern section of the study area comprising a simple slope landform. Fence lines and a man-made dam have been established. Two unsealed access tracks are present along the western and eastern boundaries. Vegetation clearing has occurred, and the land has been grazed by cattle and sheep. Current vegetation includes mature regrowth trees, grass and weeds. No evidence of cultural scarring was observed on the older trees inspected. Visibility was significantly low due to thick grass and leaf litter. No cultural materials were identified in soil exposures. Soil exposures were restricted by imported rock, gravels, building material and ceramic. As such, exposure percentage was higher than visibility percentage.	46,219	15%	25%	1,733	3.75%	**Figure 6.16 Simple slope landform with grazed land, mature regrowth trees and thick grass. View to east.**

Survey Unit	Landform	Description	Survey Unit Area (m^2)	Visibility %	Exposure %	Effective coverage area (m^2)	Effective coverage	Photograph
4	Flat	The middle portion of the study area comprising a flat landform. An electrical services easement has been established through this area, as well as fence lines. Vegetation has been cleared and is maintained so that and only low grasses and weeds remain. No soil exposures were observed.	11,704	0%	0%	0	0%	**Figure 6.17 Flat landform with electrical power easement. View to south.**
5	Simple slope	Southeastern section of the study area comprising a simple slope landform. A man-made dam and fence lines have been established and the land has been grazed by sheep and cattle. Vegetation clearing has occurred in the past, and current vegetation comprises mature regrowth trees, grass and weeds. No evidence of cultural scarring was observed on the older trees inspected Ground visibility was significantly low mainly due to thick grass and leaf litter. No cultural materials were identified in soil exposures. Soil exposures were limited by imported rocks, gravels, building materials and ceramics, and moss.	48,465	20%	30%	2,907	6%	**Figure 6.18 Simple slope landform with grazed land, mature regrowth trees and thick grass. View to south.**

6.2.2 Disturbance

For the purpose of assessing archaeological potential, the level of disturbance within the study area has been estimated. Four categories have been assigned to distinguish levels of disturbance (Table 6.3). The associated impacts of past land use practices on the archaeological resource are summarised for each category.

Table 6.3 Categories of Disturbance

Level of Disturbance	Type of Disturbance	Impact on Archaeological Resource
None	No effective disturbance of natural ground surface	*In situ* archaeological deposits may be present
Low	Limited vegetation clearance; stock grazing	Archaeological material should retain some spatial integrity although localised displacement may be expected
Moderate	Complete vegetation clearance; pasture/cultivation (ploughing); minor to moderate erosion	Archaeological materials may be present, although localised spatial displacement and artefact damage are likely; *in situ* deposits may remain below plough zone
High	Removal of topsoil for urban and industrial development; irrigation; Road works; infrastructure construction; landscaping; landfill; and severe erosion	While archaeological sites may be destroyed, remnant dispersed archaeological material may survive; the context of such material may be unknown.

Archaeological survey of the study area identified that it has been subjected to varying levels of disturbance associated with initial vegetation clearing, and agricultural and residential use of the property. Vegetation clearing has occurred throughout the entirety of the study area, and existing vegetation comprises regrowth trees, grass and weeds, a maintained lawn, and intentional garden plantings. A high level of disturbance has occurred in Survey Unit 1 due to construction of the residence, outbuildings, asphalt driveway and fence lines. Additional disturbance has occurred for levelling of the natural topography for the residence, and landscaping of the garden. A moderate level of disturbance has occurred in Survey Unit 2 due to the development of fence lines and the dam. A moderate level of disturbance has occurred in Survey Unit 3 as a result of animal grazing, the construction of the dam and fence lines, and ongoing use of access tracks. A high level of disturbance has occurred in Survey Unit 4 due to the establishment of an electrical services easement and fence lines. A moderate level of disturbance has occurred in Survey Unit 5 due to animal grazing and the construction of the dam and fence lines.

The archaeological survey has identified that the entirety of the study area has been subjected to disturbance, mostly from initial land clearing, and ongoing use and maintenance of the property for residential and agricultural purposes. Overall, the study area is considered to have experienced a moderate level of disturbance.

6.3 Discussion of Survey Results

No Aboriginal sites, objects or places, or areas of potential Aboriginal archaeological sensitivity were identified within the study area or immediate surrounds during the archaeological survey. Ground visibility was consistently low across the study area, ranging from 0-20%, mainly due to thick grass and weeds, and leaf litter. Based on the results of the archaeological survey, the predictive model for Aboriginal heritage sites and the varying levels of ground disturbance within the study area, it is considered the study area does have potential to retain Aboriginal objects or subsurface archaeological deposits.

Moderate and high levels of disturbance have occurred in the study area due to vegetation clearing, and development of the residence, outbuildings and associated infrastructure, electrical services easement, dams, fence lines and unsealed access tracks. Additional disturbance has

occurred from landscaping and levelling for the construction of the residence. Current vegetation in the study area comprises mature regrowth trees, grass, weeds and intentional garden plantings. Mature regrowth trees were not of an age suitable to bear evidence of Aboriginal cultural scarring and no evidence of cultural scarring was observed on the older trees inspected. Soil exposures were observed for cultural materials; however, none were found. Most soil exposures were obstructed by imported rock, gravel, building materials and ceramic.

Consistently low ground visibility in the study area hindered the efficiency of the archaeological survey and as such it was not possible to properly determine the presence or extent of Aboriginal artefact sites. As detailed in Section 5.3.1, previously recorded AHIMS sites in the vicinity, have been identified on similar landforms to those found in the study area, such as low rises and simple slopes. These sites have been identified in disturbed contexts and have yielded large numbers of Aboriginal stone artefacts. In particular, a scatter of at least 50 artefacts is located approximately 80m east of the study area adjacent to the Upper Canal (AHIMS site #45-5-3787), and a scatter is located approximately 20m west of the study area (AHIMS site #45-5-2557). Given that it was not possible to predict the presence or extent of any subsurface Aboriginal archaeological deposits during the survey, it was determined that archaeological test excavations would be an appropriate measure to allow an understanding of the heritage of the study area, and to determine appropriate heritage impact management options for any future development of the study area.

7 Assessment of Heritage Significance

A primary step in the process of Aboriginal cultural heritage management is the assessment of significance. Heritage significance relating to Aboriginal sites, objects and places in NSW is assessed in accordance with the criteria defined in the Heritage NSW guidelines and cultural significance is identified by Aboriginal communities. The Heritage NSW Code of Practice states that archaeological values should be identified, and their significance assessed using criteria reflecting best practice assessment processes as set out in the Burra Charter (DECCW 2010:21).

The criteria for assessing Aboriginal heritage significance are derived from the Burra Charter criteria of aesthetic, historic, scientific, social or spiritual value, for assessing cultural significance for past, present and future generations (Article 1.2). Therefore, the Heritage NSW guidelines for assessing significance require consideration of the following aspects of heritage sites:

- *Research Potential: does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or state's natural and cultural history?*
- *Representativeness: how much variability (outside and/or inside the subject area) exists, what is already conserved, how much connectivity is there?*
- *Rarity: is the subject area important in demonstrating a distinctive way of life, custom process, land-use, function or design no longer practiced? Is it in danger of being lost or of exceptional interest?*
- *Education potential: does the subject area contain teaching sites or sites that might have teaching potential?* (OEH 2011:10)

Not all sites are equally significant and not all are worthy of equal consideration and management. The significance of a site is not fixed for all time; what is considered as significant at the time of assessment may change as similar items are located, more research is undertaken, and community values change. This does not lessen the value of the heritage approach but enriches both the process and the long-term outcomes for future generations as the nature of what is conserved and why also changes over time (Pearson and Sullivan 1995:7).

7.1 Assessment against Criteria

This assessment of heritage values against the Heritage NSW heritage assessment criteria is informed by the results of the environmental and heritage context, the predictive model for Aboriginal sites in the region, consultation with the local Aboriginal community, and the results of archaeological recording, monitoring and survey. Aboriginal heritage sites are considered to be of heritage significance if they meet one or more of the following criteria:

> *Does the subject area have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons? – social value*

This criterion concerns the value(s) of a site or feature to a particular community or cultural group, in this case the local Aboriginal community. Aspects of social significance are relevant to sites, items and landscapes that are important, or have become important, to the local Aboriginal community. This importance involves both traditional links with specific areas as well as an overall concern by Aboriginal people for sites and landscapes generally and their future protection. Assessments of social value can only be made by the relevant Aboriginal communities.

Consultation undertaken to date with representatives of the local Aboriginal community has indicated that while the study area itself does not have any specific cultural significance, the wider area does. RAPs consulted with during the archaeological survey showed a special association to

the local area due to their involvement with Aboriginal heritage sites in the close vicinity. The study area is therefore considered to have moderate social value for Aboriginal heritage.

To be finalised following completion of Aboriginal community consultation process.

> *Is the subject area important to the cultural or natural history of the local area and/or region and/or state? – historic value*

The study area is considered to have archaeological potential for intact or substantial Aboriginal heritage deposits. Such deposits, if present, would likely be representative of similar Aboriginal sites in the region and throughout NSW. The study area is considered to have low historic value for Aboriginal heritage.

> *Does the subject area have potential to yield information that will contribute to an understanding of the cultural or natural history of the local area and/or region and/or state? – Scientific (archaeological) value*

It was not possible to definitively identify the presence or extent of any subsurface Aboriginal archaeological deposits during the archaeological survey due to limited surface visibility. Although the study area has been disturbed, there is potential for disturbed or relatively intact archaeological deposits to be present, which may demonstrate the long history of Aboriginal occupation in the region. Previously recorded AHIMS sites in the vicinity, have been identified on similar landforms to those found in the study area, such as low rises and gentle slopes. These sites have been identified in disturbed contexts and have yielded large numbers of Aboriginal stone artefacts. Further archaeological investigation of the study area has potential to contribute to an understanding of the cultural history of the local area. As such, should intact or relatively undisturbed archaeological deposits prove to be present in the study area, they are considered to have moderate scientific (archaeological) value, based on the assessed level of disturbance and potential to answer research questions about the cultural history of the local Aboriginal people.

Is the subject area important in demonstrating aesthetic characteristics in the local area and/or region and/or state? – Aesthetic value

The study area is considered to have archaeological potential for intact or substantial Aboriginal heritage deposits. The study area is located within the Scenic Hills which is described as "a vast tract of gently rolling hills and valleys that cradle the city of Campbelltown and provide its scenic backdrop" (Scenic Hills Association 2019). However, the study area itself is moderately disturbed and is unlikely to resemble the pre-contact landscape of the local area. Mature regrowth trees within the study area are consistent with the Blacktown soil landscape and comprise native species of *Eucalyptus tereticornis* (forest red gum), *E. crebra* (narrow-leaved ironbark), *E. moluccana* (grey box) and *E. maculata* (spotted gum). The study area is therefore considered to have low aesthetic value for Aboriginal heritage.

7.1.1 Summary statement of significance

It was not possible to definitively identify the presence or extent of any subsurface Aboriginal archaeological deposits during the archaeological survey due to limited surface visibility, and several Aboriginal heritage sites have been previously recorded in the vicinity. As such, there is archaeological potential for subsurface Aboriginal heritage deposits to be present. The study area is considered to have low historic value for Aboriginal heritage, and moderate social, scientific (archaeological) and aesthetic value for Aboriginal heritage.

8 Assessment of Heritage Impact

The following section assesses the impacts of the of the proposed development at 71 St Andrews Road, Varroville on the significance of the Aboriginal heritage values of the study area. Implementation of the development should observe the principles of the Burra Charter, which define standards of best practice for the conservation and management of heritage places. The aim of conservation is to preserve the cultural significance of a place. The assessment of heritage impact is based on the currently available project design and may need to be reassessed should the design be altered. As per the Heritage NSW Code of Practice, a summary of Aboriginal heritage impacts is presented in Table 8.1.

It was not possible to determine the extent or significance of subsurface archaeological deposits in the study area through archaeological survey alone, and as such proposed development works have potential to impact any subsurface Aboriginal heritage objects, such as stone artefacts, which may be present. The creation of residential lots and associated infrastructure, and internal/external roads will require excavation and the use of heavy machinery and has potential to cause crushing impacts to any Aboriginal artefacts present. Excavation of the soil surface for land clearing, levelling and landscaping and gardening will directly impact any subsurface archaeological deposits which may be present in the study area. Stormwater management has potential to cause sub-surface disturbance and directly impact any existing Aboriginal heritage.

Table 8.1 Aboriginal heritage impact assessment summary.

Proposed Works	Site Number	Type of Harm	Degree of Harm	Consequence of Harm
Land clearance and levelling	n/a	Direct	Partial	Partial loss of value. Land clearing and levelling has potential to impact the ground surface, and heavy machinery used has potential to cause crushing impacts.
Creation of residential lots and associated infrastructure	n/a	Direct	Partial	Partial loss of value. Construction has potential to have a direct impact on any archaeological deposits present, and heavy machinery used has potential to cause crushing impacts.
Creation of internal and external roads	n/a	Direct	Partial	Partial loss of value. Construction has potential to have a direct impact on any archaeological deposits present, and heavy machinery used has potential to cause crushing impacts.
Landscaping and gardening	n/a	Direct	Partial	Partial loss of value. Excavation of the soil surface in the study area has potential to impact any subsurface archaeological deposits which may be present.
Stormwater management	n/a	Direct	Partial	Partial loss of value. Excavation of the soil surface in the study area has potential to impact any subsurface archaeological deposits which may be present.

9 Conclusions and Recommendations

Any excavation of the natural soil surface within the study area for the proposed development has potential to impact subsurface Aboriginal archaeological deposits. Determination of appropriate mitigation measures should seek to offset potential impacts to the Aboriginal cultural heritage values of the site. In order to identify appropriate impact management and mitigation options for the study, archaeological test excavations should be undertaken to establish the presence, extent, integrity and significance of any archaeological deposit prior to works being undertaken.

9.1 Recommendations

The following recommendations are based on the statutory requirements, the background review of the environmental and Aboriginal heritage context of the study area, predictive modelling, Aboriginal community consultation, the archaeological survey, and current heritage best practice in accordance with the Heritage NSW guidelines and Burra Charter.

Archaeological survey undertaken for this assessment concluded that it was not possible to predict the presence of extent of any subsurface Aboriginal archaeological deposits due to limited surface visibility. Previously recorded AHIMS sites in the vicinity, have been identified on similar landforms to those found in the study area, such as low rises and simple slopes, and these sites have yielded large numbers of Aboriginal stone artefacts. Further archaeological investigation is required to determine the nature and extent of any subsurface archaeological deposits. Archaeological test excavations as per the Code of Practice would be an appropriate measure to allow an understanding of the heritage of the study area, and to determine appropriate heritage impact management options for any future development of the study area.

Test excavations may be carried out as part of detailed investigations undertaken for the project's Development Application. In the event that the test excavations confirm that Aboriginal heritage objects are present and will be impacted by the works, the development will require an Aboriginal Heritage Impact Permit (AHIP), which can be applied for following approval of the DA.

Recommendation 1

There is potential for subsurface Aboriginal archaeological deposits to exist within the study area and as such, a program of archaeological test excavations should be carried out in accordance with Section 3.1 of the Heritage NSW Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales *(DECCW 2011), to confirm the presence, extent and integrity of the potential archaeological deposit.*

Archaeological and heritage management best practice requires that representatives of the local Aboriginal community are included as stakeholders in decision concerning any objects or places of significance within the study area. In addition, assessments of cultural significance, the values of a site to the Aboriginal community itself, can only be carried out by the relevant Aboriginal communities.

Recommendation 2

Any future cultural heritage and archaeological assessment of the study area should include an appropriate level of consultation with the Aboriginal community, in accordance with the Heritage NSW Aboriginal Cultural Heritage Consultation Requirements for proponents 2010 *(DECCW).*

9.2 Proposed Test Excavation Sampling Strategy

To allow an understanding of the heritage of the study area, and to determine appropriate heritage impact management options for future development, AMBS recommends that archaeological test.

excavations be undertaken to further investigate the study area, as per the Heritage NSW *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010). Archaeological test excavations should be undertaken to ascertain if subsurface Aboriginal heritage objects are present within landforms of potential archaeological sensitivity. Following excavations, an ACHA detailing the findings of the excavations and providing management recommendations to guide future development must be prepared in line with Heritage NSW requirements. In accordance with Heritage NSW Aboriginal community consultation requirements, the identified RAPs must be consulted with throughout the project to inform understanding of the context and values of any Aboriginal sites, objects and places that are located on the proposed project impact area, to assess their cultural significance, and to develop management options for recommendation in the ACHA.

Under the Heritage NSW Code of Practice, manual archaeological test excavation is allowed without an AHIP in order to collect information about the nature and extent of sub-surface Aboriginal objects, providing that the excavations are undertaken strictly in accordance with the methodology described in the Code of Practice.

In line with the Code of Practice, AMBS recommends that manual excavation of no more than 30 50cm^2 test pits within the study area be undertaken, at 20m intervals along linear transects (Figure 9.1). Archaeological test pits should be positioned across the simple slope and flat landforms and along the proposed road alignment, allowing a suitable level of archaeological sampling. The total test excavation would comprise no more than 0.5% of the study area. Where the test pit location is obviously disturbed or inaccessible, test pit locations should be relocated no more than 5m along the linear transect. If the area of disturbance is such that the pit cannot be relocated to avoid it, that pit should not be excavated.

As per Requirement 16a of the Code of Practice, the first test pit would be excavated in 5cm units. Dependent on the nature of the sediments observed in the initial test pit, subsequent test pits would be excavated as stratigraphic units or 10cm arbitrary units (whichever is smaller). Test pits would be manually excavated to the base of the identified Aboriginal object-bearing units and continue to confirm that soils below are culturally sterile, or to a point where it is no longer physically possible or safe to manually excavate.

In order to adequately characterise the nature of the Aboriginal archaeological site as per Requirement 17 of the Code of Practice, where significant archaeological deposits or features are identified, additional tests pits may be excavated adjacent to the initial pits to allow an appropriate level of assessment of the nature of the archaeological site. Additional pits will be combined as per the Code of Practice Requirement 16a (5) and will not comprise an excavated area of more than 3m^2 in any one instance. Any additional test pits excavated would not comprise salvage excavations, and are intended to allow investigation of the nature, extent, integrity and significance of the deposit.

Where appropriate, stratigraphic sections of excavated pits would be drawn detailing the stratigraphy and features within the excavated deposit and all units will be photographed, prior to and during excavation. Soil and carbon samples would be collected where appropriate, and measurements of the pH of soils would be made. Excavated soils would be wet or dry sieved as appropriate through nested 8mm and 5mm sieves, and all pits would be backfilled on completion of the excavation using excavated or sterile soils. All Aboriginal objects excavated would be bagged immediately upon recovery and placed into bags labelled using permanent marker with the test pit and unit from which they were excavated.

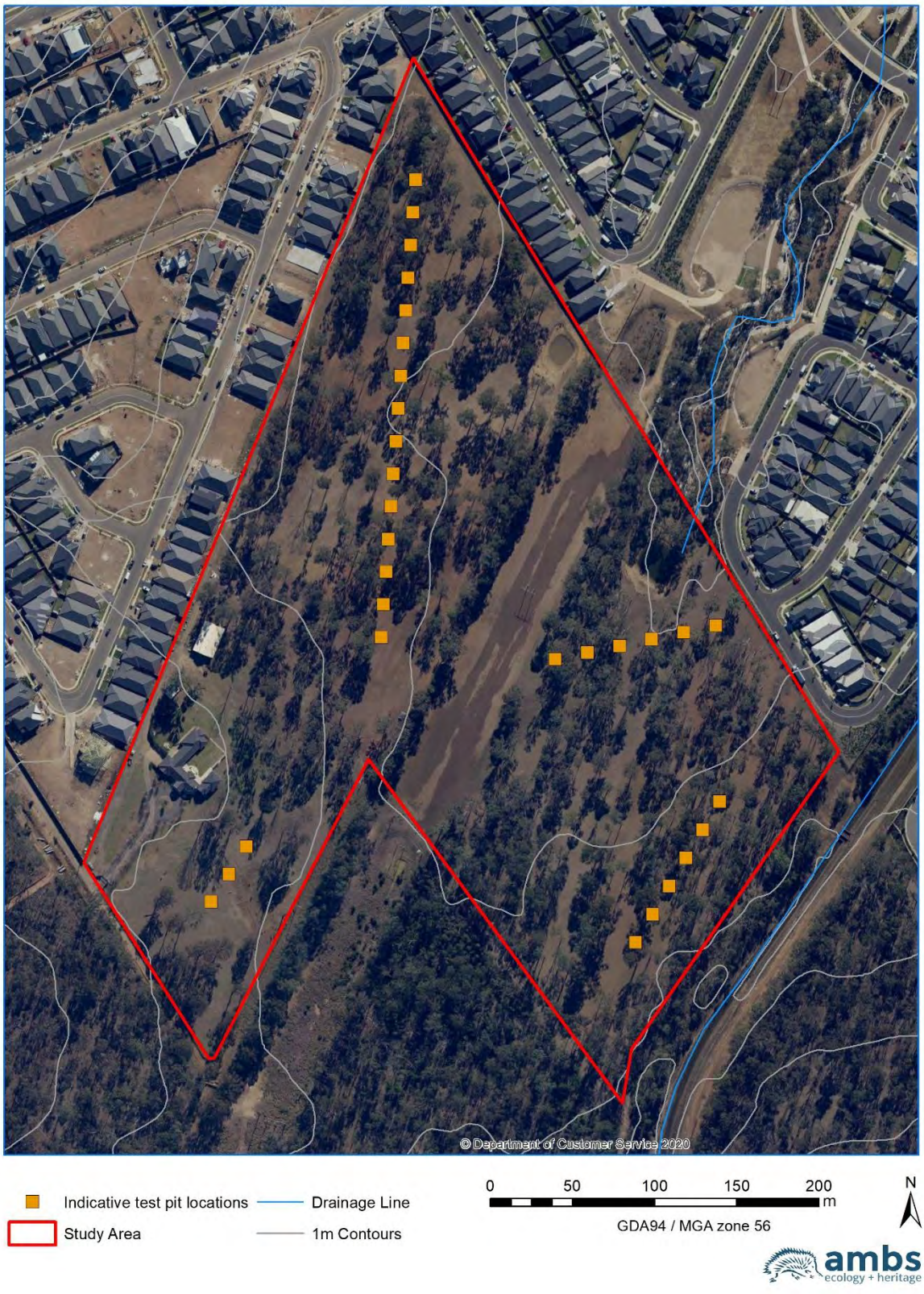


Figure 9.1 Indicative test pit locations within the study area to sample landforms and proposed development impact areas.

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Appendix A: Aboriginal Community Consultation

Stage 1 Notification of Project Proposal

Proof of newspaper advertisement
Agency correspondence
Correspondence with Aboriginal Parties
Registration of interest

Stage 2 Presentation of Information about the Project and Stage 3 Gathering information about Cultural Significance

Proposed Methodology
Written feedback provided by Aboriginal Parties

Stage 4 Review of draft cultural heritage assessment report

Correspondence with Aboriginal parties
Draft report feedback provided by Aboriginal parties

Aboriginal Community Consultation Log

Stage 1 Notification of Project Proposal

Proof of newspaper advertisement – published 20 March 2021 in the Daily Telegraph.

NOTICE OF ABORIGINAL CONSULTATION

ST ANDREWS ROAD, VARROVILLE

An Aboriginal Cultural Heritage Assessment is proposed for 71 St Andrews Road, Varroville, for works associated with proposed rezoning of the site by Petrin Holdings Pty Ltd (nominated contact via GAT & Associates, gat@gatassoc.com.au).

Aboriginal people who hold cultural knowledge and wish to be consulted for this assessment are invited to register an expression of interest by 3 April 2021 by email to matt@ambs.com.au or by post to Attn: Matt Byron, AMBS Ecology & Heritage, Unit 14, 1 Hordern Place, Camperdown NSW 2050.

The assessment is to be prepared in accordance with Heritage NSW, Department Premier and Cabinet guidelines and is required in support of the proposed development, and to provide guidance for the appropriate management of Aboriginal cultural values throughout the planning process. Aboriginal community consultation as per Heritage NSW requirements in NSW may be used to assist in the preparation of an application for an AHIP for developments and assist the Director General of DPC in consideration and determination of an AHIP application.

Agency correspondence

Request for a list of known Aboriginal stakeholders

Matthew Byron <matt@ambs.com.au> 18 March 2021 at 18:01
To: Chris Langeluddecke <chris@ambs.com.au>
Bcc: gtonna@ntscorp.com.au, information@ntscorp.com.au, megan.mebberson@oralra.nsw.gov.au, adminofficer@oralra.nsw.gov.au, heritagemailbox@environment.nsw.gov.au, s.service@lls.nsw.gov.au, heritage@tharawal.com.au, reception@tharawal.com.au, council@campbelltown.nsw.gov.au

AMBS Ecology & Heritage has been engaged to prepare an Aboriginal Cultural Heritage Assessment for works associated with the proposed rezoning of 71 St Andrews Road, Varroville. The Proponent for the project is Petrin Holdings Pty Ltd (nominated contact GAT & Associates, gat@gatassoc.com.au). The assessment is to be prepared in accordance with Heritage NSW, Department of Premier and Cabinet guidelines and is required to provide guidance for the appropriate management of Aboriginal cultural values throughout the planning process.

Could you please provide AMBS with a list of all known local Aboriginal people who may be interested in being consulted on this project, and who hold knowledge relevant to determining the cultural significance of Aboriginal objects and places, in accordance with the *Aboriginal Cultural heritage consultation requirements for proponents 2010* by **1 April 2021**, to enable us to contact potential stakeholders prior to the close of the notification period.

If you are unable to provide such personal information, could you please pass on this letter to any potential local Aboriginal stakeholders of whom you are aware, so that they may register their interest with AMBS directly.

Potential stakeholders are invited to register their interest in the project with AMBS directly by email to matt@ambs.com.au or by post to: *Attn: Matt Byron, AMBS Ecology & Heritage, Unit 14, 1 Hordern Place, Camperdown NSW 2050.*

A map indicating the location of the project area is attached for your reference and thank you very much for your time and assistance.

Should you require any additional information or if I can be of assistance in any way please contact me on (02) 9518 4489 or email matt@ambs.com.au.

Yours sincerely,
Matt Byron
Heritage Consultant

ambs ecology & heritage
Unit 14, 1 Hordern Place Camperdown NSW 2050 - http://ambs.com.au
matt@ambs.com.au - 02 9518 4489

Study Area.jpg
5223K

Request for Search of Tribunal Registers

Matthew Byron <matt@ambs.com.au> 18 March 2021 at 18:47
To: GeospatialSearch@nntt.gov.au, Chris Langeluddecke <chris@ambs.com.au>

Please find attached a request for a search of the Tribunal Registers, being undertaken to assist Aboriginal community consultation in accordance with the Heritage NSW *Aboriginal Cultural heritage consultation requirements for proponents 2010*. The search is being submitted in support of an Aboriginal Cultural Heritage Assessment being carried out by AMBS Ecology & Heritage and has been commissioned by Petrin Holdings Pty Ltd (nominated contact GAT & Associates, gat@gatassoc.com.au)

The search is being undertaken in order to identify any known local Aboriginal people who may be interested in being consulted regarding an assessment of 71 St Andrews Road, Varroville and who hold knowledge relevant to determining the cultural significance of Aboriginal objects and places. If you are unable to provide personal contact information for potential stakeholders, please feel free to pass on this letter to any potential local Aboriginal stakeholders of whom you are aware, so that they may register their interest with AMBS directly by email to matt@ambs.com.au or by post to: Attn: Matt Byron, AMBS Ecology & Heritage, Unit 14, 1 Hordern Place, Camperdown NSW 2050.In addition to the search request, a map showing the location of the study area is attached.

AMBS understands that NNTT has taken steps to remove itself from the formal list of sources for information about Indignous groups in development areas. However, we remain obligated to pass on this formal request by the Heritage NSW Aboriginal community consultation requirements, and we do apologise for any inconvenience.

Should you require any additional information or if I can be of assistance in any way please feel free to contact us.

Kind Regards,

Matt Byron
Heritage Consultant

ambs ecology & heritage
Unit 14, 1 Hordern Place Camperdown NSW 2050 - http://ambs.com.au
matt@ambs.com.au - 02 9518 4489

Request for a list of known Aboriginal stakeholders

Megan Mebberson <Megan.Mebberson@oralra.nsw.gov.au> 18 March 2021 at 18:04
To: Matthew Byron <matt@ambs.com.au>

Received Matt

Megan Mebberson

Senior Manager

Office of the Registrar *Aboriginal Land Rights Act 1983*

P: (02) 8633 1266 **M:** 0459 880 794

E: megan.mebberson@oralra.nsw.gov.au

PO Box 5068 PARRAMATTA NSW 2124

www.oralra.nsw.gov.au

(Pls note I work Tuesday – Thursday)

OFFICE OF THE REGISTRAR
ABORIGINAL LAND RIGHTS ACT 1983 (NSW)

RE: SR21/427 - Request for Search of Tribunal Registers - SR21/427

Geospatial Search Requests <GeospatialSearch@nntt.gov.au> 19 March 2021 at 11:31
To: Matthew Byron <matt@ambs.com.au>
Cc: Chris Langeluddecke <chris@ambs.com.au>

UNCLASSIFIED

Native title search – *NSW Parcel – Lot 71 on DP706546*

Your ref: *71 St Andrews Road Varroville* - **Our ref:** *SR21/427*

Dear Matt Byron ,

Thank you for your search request received on 18 March 2021 in relation to the above area. Based on the records held by the National Native Title Tribunal as at 18 March 2021 it would appear that there are no Native Title Determination Applications, Determinations of Native Title, or Indigenous Land Use Agreements over the identified area.

Search Results

The results provided are based on the information you supplied and are derived from a search of the following Tribunal databases:

- Schedule of Native Title Determination Applications
- Register of Native Title Claims
- Native Title Determinations
- Indigenous Land Use Agreements (Registered and notified)

At the time this search was carried out, there were no relevant entries in the above databases.

Cadastral data as at: 01/02/2021

Parcel ID	Feature Area SqKm	Tenure	NNTT file number	Name	Category	Percent Selected Feature
71//DP706546	0.1402	FREEHOLD	No overlap			0.00%

For more information about the Tribunal's registers or to search the registers yourself and obtain copies of relevant register extracts, please visit our website.

Information on native title claims and freehold land can also be found on the Tribunal's website here: Native title claims and freehold land .

Please note: There may be a delay between a native title determination application being lodged in the Federal Court and its transfer to the Tribunal. As a result, some native title determination applications recently filed with the Federal Court may not appear on the Tribunal's databases.

The search results are based on analysis against external boundaries of applications only. Native title applications commonly contain exclusions clauses which remove areas from within the external boundary. To determine whether the areas described are in fact subject to claim, you

need to refer to the "Area covered by claim" section of the relevant Register Extract or Schedule Extract and any maps attached.

Search results and the existence of native title

Please note that the enclosed information from the Register of Native Title Claims and/or the Schedule of Applications is not confirmation of the existence of native title in this area. This cannot be confirmed until the Federal Court makes a determination that native title does or does not exist in relation to the area. Such determinations are registered on the National Native Title Register.

The Tribunal accepts no liability for reliance placed on enclosed information

The enclosed information has been provided in good faith. Use of this information is at your sole risk. The National Native Title Tribunal makes no representation, either express or implied, as to the accuracy or suitability of the information enclosed for any particular purpose and accepts no liability for use of the information or reliance placed on it.

Cultural Heritage Searches in NSW

The National Native Title Tribunal (the Tribunal) has undertaken steps to remove itself from the formal list of sources for information about indigenous groups in development areas. The existence or otherwise of native title is quite separate to any matters relating to Aboriginal cultural heritage. Information on native title claims, native title determinations and Indigenous Land Use Agreements is available on the Tribunal's website.

Interested parties are invited to use Native Title Vision (NTV) the Tribunal's online mapping system to discover native title matters in their area of interest. Access to NTV is available at http://www.nntt.gov.au/assistance/Geospatial/Pages/NTV.aspx

Training and self-help documents are available on the NTV web page under "Training and help documents". For additional assistance or general advice on NTV please contact GeospatialSearch@NNTT.gov.au

Additional information can be extracted from the Registers available at http://www.nntt.gov.au/searchRegApps/Pages/default.aspx

If you have any further queries, please do not hesitate to contact us via GeospatialSearch@NNTT.gov.au

Regards,

Geospatial Searches

National Native Title Tribunal | Perth

Email: GeospatialSearch@nntt.gov.au | **www.nntt.gov.au**

DPC RAP list for 71 Andrews Road, Varroville- Campbelltown local government area.

Barry Gunther <Barry.Gunther@environment.nsw.gov.au> 22 March 2021 at 10:53
To: "matt@ambs.com.au" <matt@ambs.com.au>

Hi Matt,

Please find attached the DPC RAP list for 71 Andrews Road, Varroville- Campbelltown local government area.

regards

-

Barry Gunther, Aboriginal Heritage Planner Officer

Heritage NSW, Community Engagement, Department of Premier and Cabinet

Level 6, 10 Valentine Ave, Parramatta | Locked Bag 5020 Parramatta 2124

NSW GOVERNMENT | Premier & Cabinet

T: 02 9995 6830 | barry.gunther @environmrnt.nsw.gov.au

NSW GOVERNMENT

Our reference: Doc21/210942

Matt Byron
Heritage Consultant
ambs ecology & heritage
Unit 14, 1 Hordern Place
Camperdown NSW 2050

22/03/2021

Dear Matt,

WRITTEN NOTIFICATION OF PROPOSAL AS REQUIRED UNDER DECCW ABORIGINAL CULTURAL HERITAGE CONSULTATION REQUIREMENTS FOR PROPONENTS 2010

Subject: 71 St Andrews Road, Varroville

Thank you for your correspondence dated 19 March 2021 to Heritage NSW (Department of Premier and Cabinet) regarding the above project.

Attached is a list of known Aboriginal parties for the proposed development at Campbelltown Local Government Area that Heritage NSW considers likely to have an interest in the activity.

Please note this list is not necessarily an exhaustive list of all interested Aboriginal parties.

Receipt of this list does not remove the requirement of a proponent/ consultant to advertise in local print media and contact other bodies seeking interested Aboriginal parties, in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (April 2010).

Under Section 4.1.6. of the Consultation Requirements, you must also provide a copy of the names of each Aboriginal person who registered an interest to the relevant Heritage NSW office and Local Aboriginal Land Council (LALC) within 28 days from the closing date for registering an interest.

Please note that the contact details in the list provided by Heritage NSW may be out of date as it relies on Aboriginal parties advising Heritage NSW when their details need changing. If individuals/companies undertaking consultation are aware that any groups contact details are out of date, or letters are returned unopened, please contact either the relevant stakeholder group (if you know their more current details) and/or Heritage NSW. AHIP applicants should make a note of any group they are unable to contact as part of their consultation record.

If you have any questions about this advice, please email: heritagemailbox@environment.nsw.gov.au or contact (02) 9873 8500.

Level 6, 10 Valentine Ave Parramatta NSW 2150 ■ Locked Bag 5020 Parramatta NSW 2124
P: 02 9873 8500 ■ E: heritagemailbox@environment.nsw.gov.au

Yours sincerely

Barry Gunther
Aboriginal Heritage Planner
Aboriginal Heritage Regulation Branch – South Heritage NSW

Attachment A:

Registered Aboriginal Interests DPC RAP List for the Campbelltown Local Government Area.

LIST OF ABORIGINAL STAKEHOLDERS FOR THE DEPARTMENT of PREMIER and CABINET (DPC) SOUTHERN REGION HELD BY DPC FOR THE PURPOSES OF THE OEH *ABORIGINAL CULTURAL HERITAGE CONSULTATION REQUIREMENTS FOR PROPONENTS 2010*

These lists are provided to proponents in accordance with section 4.1.2 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (the "Consultation Requirements") which commenced on 12 April 2010.

The consultation process involves getting the views of, and information from, Aboriginal people and reporting on these. It is not to be confused with other field assessment processes involved in preparing a proposal and an application. Consultation does not include the employment of Aboriginal people to assist in field assessment and/or site monitoring. Aboriginal people may provide services to proponents through a contractual arrangement however, this is separate from consultation. The proponent is not obliged to employ those Aboriginal people registered for consultation. Consultation as per these requirements will continue irrespective of potential or actual employment opportunities for Aboriginal people.

A copy of the Consultation Requirements can be found on the OEH website at:
http://www.environment.nsw.gov.au/resources/cultureheritage/commconsultation/09781ACHconsultreq.pdf.

Under the Consultation Requirements; a proponent is required to provide Aboriginal people who may hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or places as relevant to the proposed project area, with an opportunity to be involved in consultation. Section 3.3.1 of the Consultation Requirements states that Aboriginal people who can provide this information are, based on Aboriginal lore and custom, the traditional owners or custodians of the land that is the subject of the proposed project.

The Consultation Requirements also state that:

> *Traditional owners or custodians with appropriate cultural heritage knowledge to inform decision making who seek to register their interest as an Aboriginal party are those people who:*
> - *continue to maintain a deep respect for their ancestral belief system, traditional lore and custom*
> - *recognise their responsibilities and obligations to protect and conserve their culture and heritage and care for their traditional lands or Country*
> - *have the trust of their community, knowledge and understanding of their culture, and permission to speak about it.*

Please note: the placement of an organisation's name on any OEH Aboriginal stakeholder list for the Consultation Requirements does not override a proponent's requirement to also advertise in the local newspaper and to seek from other sources the names of any other Aboriginal people who may hold cultural knowledge as required under clause 60 of the National Parks and Wildlife Regulation 2019.

How to use this list

1. **Contact the organisations/individuals who have indicated an interest in the relevant LGA/s and invite them to register an interest in your project**

Do not reproduce the attached list in publicly available reports and other documents. Your report should only contain the names of the organisations and individuals who you have invited to register an interest in your project and those who have registered as stakeholders for your project.

Last updated 19 March 2021

Campbelltown Local Government Area

Organisation/ Individual	Contact Name	Email Address/ Fax / Phone	Postal Address	Additional Information
Tharawal Local Aboriginal Land Council	Robyn Straub (CEO)	(02) 46810059 ceo@tharawal.com.au reception@tharawal.com.au	PO Box 245 Thirlmere NSW 2572	
Darug Custodian Aboriginal Corporation	Leeanne Watson Justine Coplin	0414 962 766 justinecoplin@optusnet.com.au	PO Box 81, Windsor NSW 2756	
Darug Tribal Aboriginal Corporation		02 9622 4081	PO Box 441, Blacktown NSW 2148	
Darug Aboriginal Cultural Heritage Assessments	Gordon Morton	02 9410 3665 or 0422 865 831	Unit 9, 6 Chapman Avenue, Chatswood, NSW 2067	
Darug Land Observations	Jamie Workman and Anna Workman	0418 494 951 0413 687 279 darugiandobservations@gmail.com	PO Box 173, Ulladulla, NSW 2539	
Darug Aboriginal Land Care	Mark Dyer	0428 714 242 markdyer2005@live.com.au	PO Box 405 Donnside 2767 NSW	
A1 Indigenous Services	Carolyn Hickey	0411 650 057 cazadirect@live.com	10 Marie Pitt Place Glenmore Park 2745 NSW.	
Cubbitch Barta	Glenda Chalker	0427 218 425	55 Nightingale Rd, Pheasants Nest NSW 2574	
Gunjeewong Cultural Heritage Aboriginal Corporation	Cherie Carroll Turnise	0438 428 805 gunjeewong@yahoo.com.au	1 Bellvue Place, Portland NSW, 2847	
Corroboree Aboriginal Corporation	Marilyn Carroll-Johnson	0415911159 corroboreecorp@bigpond.com	PO Box 3340, Rouse Hill, NSW 2155	
Murra Bidgee Mullangari Aboriginal Corporation	Darleen Johnson Ryan Johnson	0490 051 102 0475565517 murrabidgeemullangari@yahoo.com.au	PO Box 3035 Rouse Hill NSW 2765	

Muragadi Heritage Indigenous Corporation	Jesse Johnson	0447 970 049 muragadi@yahoo.com.au	5 Hession Road, Nelson, NSW 2765	
Bidjawong Aboriginal Corporation	James Carroll	0433 224 324	PO Box 124, Round Corner, NSW 2158	
Kamilaroi Yankuntjatjara Working Group	Phil Khan	0434 545 982 philipkhan.acn@live.com.au	78 Forbes Street, Emu Plains, NSW 2750	
Wurrumay Pty Ltd	Kerrie Slater and Vicky Slater	0421077521 wurrumay@hotmail.com	89 Pyramid street, Emu Plains NSW 2750	
Warragil Cultural Services	Aaron Slater (Manager)	0481 280 067 Warragil_c.s@hotmail.com		
Tocomwall	Scott Franks	0404 171 544	PO Box 76, Caringbah NSW 1495	
D'harawal Mens Aboriginal Corporation	Elwyn Brown	0401920982	187 Riverside Drive, Airds NSW 2560	
Amanda Hickey Cultural Services	Amanda Hickey	0434 480 588 amandahickey@live.com.au	57 Gough st emu plains 2750	
Dhinawan Culture & Heritage Pty Ltd	Stephen Fields	0411232285 dhinawan.ch@gmail.com		
Gunyuu	Kylie Ann Bell	gunyuuchts@gmail.com		
Walbunja	Hika Te Kowhai	0402 730 612 walbunja@gmail.com		
Badu	Karla Lea Bond	0476 381 207	11 Jeffery Place, Moruya, NSW 2537	
Goobah Developments	Basil Smith	0405 995 725 goobahchts@gmail.com	66 Grantham Road, Batehaven NSW, 2536	
Wulung	Lee-Roy James Boota	0403 703 942	54 Blackwood Street, Gerringong, NSW, 2534	
Yerramurra	Robert Parson	yerramurra@gmail.com		
Nundagurri	Newton Carriage	nundagurri@gmail.com		
Murrumbul	Mark Henry	murrumbul@gmail.com		
Jerringong	Joanne Anne Stewart	0422 800 184 jerringong@gmail.com		
Pemulwuy CHTS	Pemulwuy Johnson	0425 066 100 pemulwuyd@gmail.com	14 Top Place, Mt Annan	
Bilinga	Simalene Carriage	bilingachts@gmail.com		
Munyunga	Kaya Dawn Bell	munyungachts@gmail.com		
Wingikara	Hayley Bell	wingikarachts@gmail.com		
Minnamunnung	Aaron Broad	0402 526 888	1 Waratah Avenue, Albion Park Rail NSW 2527	
Walgalu	Ronald Stewart	walgaluchts@gmail.com		
Thauaira	Shane Carriage	thauairachts@gmail.com		
Dharug	Andrew Bond	dharugchts@gmail.com		
Gulaga	Wendy Smith	gulagachts@gmail.com		
Biamanga	Bell Stoner	biamangachts@gmail.com		
Callendulla	Corey Smith	callendullachts@gmail.com		
Murramarang	Roxanne Smith	murramarangchts@gmail.com		
DJMD Consultancy	Darren Duncan	0410 510 397 darrenjohnduncan@gmail.com		
Butucarbin Aboriginal Corporation	Jennifer Beale	(02)9832 7167 butuheritage@gmail.com	PO Box E18, Emerton, NSW 2770	
Didge Ngunawal Clan	Lilie Carroll Paul Boyd	0426 823 944 didgengunawalclan@yahoo.com.au	33 Carlyle Crescent Cambridge Gardens NSW 2747	
Ginninderra Aboriginal Corporation	Steven Johnson and Krystle Carroll	0406991221 Ginninderra.corp@gmail.com	PO BOX 3143 Grose Vale NSW 2754	
Garrara Aboriginal Corporation	Raymond Ingrey	raymond@garrayu.org.au		
Duncan Falk Consultancy	Duncan Falk	0406 610 644 duncanfalk@hotmail.com	34 Robinia Drive, Bowral NSW 2576	
Wallwan Aboriginal Group	Philip Boney	0436 483 210		

		waarlan12@outlook.com		
Guntawang Aboriginal Resources Incorporated	Wendy Morgan	0414 964 657 9601 7183 Wemissa01@hotmail.com	113 Reservoir Road Mt Pritchard NSW 2170	
Barking Owl Aboriginal Corporation	Mrs Jody Kulakowski (Director)	0426 242 015 barkingowlcorp@gmail.com	2-65/69 Wehlow St. Mt Druitt	
Yulay Cultural Services	Arika Jalomaki (Manager)	yulayculturalservices@gmail.com 0481 251 385	28 Poplar Street North St Mary's NSW 2760	
Thoorga Nura	John Carriage (Chief Executive Officer)	0401 641 299 thoorganura@gmail.com	50B Hilltop Crescent, Surf Beach, 2536, NSW	
Barraby Cultural Services	Lee Field (Manager)	0431 314 892 barrabyculturalservices@gmail.com	10B Elphin Street, Tahmoor NSW 2573	
Yurrandaali Cultural Services	Bo Field (Manager)	0403 048 263 yurrandaali_cs@hotmail.com	6 Macgibbon Parade, Old Erowal Bay NSW 2540	
Darug Boorooberongal Elders Aboriginal Corporation	Paul Hand (chairperson)	0456786738 paulhand1967@gmail.com	PO.Box 14 Doonside NSW 2767	
B.H. Heritage Consultants	Ralph Hampton Nola Hampton	0435 785 138 0401 662 531 hamptonralph46@gmail.com kinghampton@77gmail.com	184 Captain Cook Drive Willmot 2770 NSW 95 Mount Ettalong Road Umina Beach 2257 NSW	
Ngambaa Cultural Connections	Kaarina Slater	0422 729 117 ngambaaculturalconnections@hotmail.com	6 Natchez Cresent, Greenfield Park NSW 2176	
Goodradigbee Cultural & Heritage Aboriginal Corporation	Caine Carroll	0410974236 goodradigbee1@outlook.com	1 Morilla Road, East Kurrajong NSW 2758	
Mura Indigenous Corporation,	Phillip Carroll	0448824188 mura.indigenous@bigpond.com	11 Nargal Street Flinders NSW 2529	
Aragung Aboriginal Cultural Heritage Site Assessments	Jamie Eastwood	0427793334 0298323732 James.eastwood@y7mail.com	33 Bulolo Drive Whalan NSW 2770	

Waawaar Awaa Aboriginal Corporation	Rodney Gunther Barry Gunther	Rodney Gunther – 0410580962 Barry Gunther – 0451 176 473 Waawaar.awaa@gmail.com	15 Bungonia Street Prestons NSW 2170	
Clive Freeman	Clive Freeman	Mob:0437721481 Home: 02-44421117 clive.freeman@y7mail.com	6 Dhugan Close Wreck Bay Aboriginal Community JBT 2540	
Galamaay Cultural Consultants (GCC)	Robert Slater	Mob: 0401 871 526 galamaay@hotmail.com	121 Robert Street, Tamworth NSW 2340	
Worl Woollywa	Daniel Chalker	worlwoollywa@gmail.com 0409006216	261 Mockingbird Rd Pheasants Nest NSW 2574	
James Davis	James Davis	jydcorp@hotmail.com 0423715395	2 Poplar Ave, Unanderra NSW 2526	
Gilay Consultants	Carol Slater	0478583665 cal.slater51@gmail.com	6 MacGibbon Parade, Old Erowal Bay NSW 2540	

Correspondence with Aboriginal parties

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment

Matthew Byron <matt@ambs.com.au> 6 April 2021 at 09:33
To: Chris Langeluddecke <chris@ambs.com.au>
Bcc: reception@tharawal.com.au, ceo@tharawal.com.au, justinecoplin@optusnet.com.au, darug_tribal@live.com.au, daruglandobservations@gmail.com, markdyer2009@live.com.au, cazadirect@live.com, kgchalker@bigpond.com, gunjeewong@yahoo.com.au, corroboreecorp@bigpond.com, murrabidgeemullangari@yahoo.com.au, muragadi@yahoo.com.au, philipkhan.acn@live.com.au, wurrumay@hotmail.com, Warragil_c.s@hotmail.com, scott@tocomwall.com.au, amandahickey@live.com.au, dhinawan.ch@gmail.com, gunyuuchts@gmail.com, walbunja@gmail.com, baduchts@gmail.com, goobahchts@gmail.com, wullunglb@gmail.com, erramurra@gmail.com, nundagurri@gmail.com, murrumbul@gmail.com, jerringong@gmail.com, pemulwuyd@gmail.com, bilingachts@gmail.com, munyungachts@gmail.com, wingikarachts@gmail.com, minnamunnung@gmail.com, walgaluchts@gmail.com, thauairachts@gmail.com, dharugchts@gmail.com, gulagachts@gmail.com, biamangachts@gmail.com, cullendullachts@gmail.com, murramarangchts@gmail.com, darrenjohnduncan@gmail.com, butuheritage@gmail.com, didgengunawalclan@yahoo.com.au, Ginninderra.corp@gmail.com, raymond@bariyu.org.au, duncanfalk@hotmail.com, waarlan12@outlook.com, Wenlissa01@hotmail.com, barkingowlcorp@gmail.com, yulayculturalservices@gmail.com, thoorganura@gmail.com, barrabyculturalservices@gmail.com, yurrandaali_cs@hotmail.com, paulhand1967@gmail.com, kinghampton@77gmail.com, hamptonralph46@gmail.com, ngambaaculturalconnections@hotmail.com, goodradigbee1@outlook.com, mura.indigenous@bigpond.com, James Eastwood <James.eastwood@y7mail.com>, Waawaar.awaa@gmail.com, clive.freeman@y7mail.com, galamaay@hotmail.com, woriwooilywa@gmail.com, jvdcorp@hotmail.com, cal.slater61@gmail.com

AMBS Ecology & Heritage has been commissioned by Petrin Holdings (nominated contact Dario Petrin, gat@gatassoc.com.au) to prepare an Aboriginal Cultural Heritage Assessment for works associated with the proposed rezoning of 71 St Andrews Road, Varroville. The assessment is to be prepared in accordance with Heritage NSW guidelines and is required as supporting documentation for the development. Aboriginal community consultation in NSW as per Office of Heritage NSW requirements may be used to assist in the preparation of an application for an AHIP for developments and assist the Director General of Heritage NSW in consideration and determination of an AHIP application.

Registration of Interest

AMBS has been informed that you may hold cultural knowledge relevant to the study area, and that you may have an interest in the proposed project. As per Stage 1 of the Heritage NSW *Cultural heritage consultation requirements for proponents 2010*, you are invited to register an interest in being consulted regarding the Aboriginal cultural heritage significance of the study area. A map showing the location of the study area is attached.

The closing date for registrations is 20 April 2021. In accordance with the Heritage NSW Cultural heritage consultation requirements, if you register, your name and contact details will be forwarded to Heritage NSW, unless you inform us that you do not want your details released.

Contact Details

If you would like to register an interest in being consulted for this project, please respond by email to matt@ambs.com.au, or by post to: *Attn: Matthew Byron, AMBS Ecology & Heritage, Unit 14, 1 Hordern Place, Camperdown, NSW 2050*

Should you require any additional information or if I can be of assistance in any way please feel free to contact me using the details below.

Regards,
Matt Byron
Heritage Consultant

ambs ecology & heritage

AMBS·Ref:→20896¶
¶
3/04/2021¶
→ ¶
¶
James·Carroll¶
PO·Box·124¶
Round·Corner·NSW·2158¶
¶
Dear·James,¶

71·St·Andrews·Road,·Varroville:·Aboriginal·Cultural·Heritage·Assessment¶

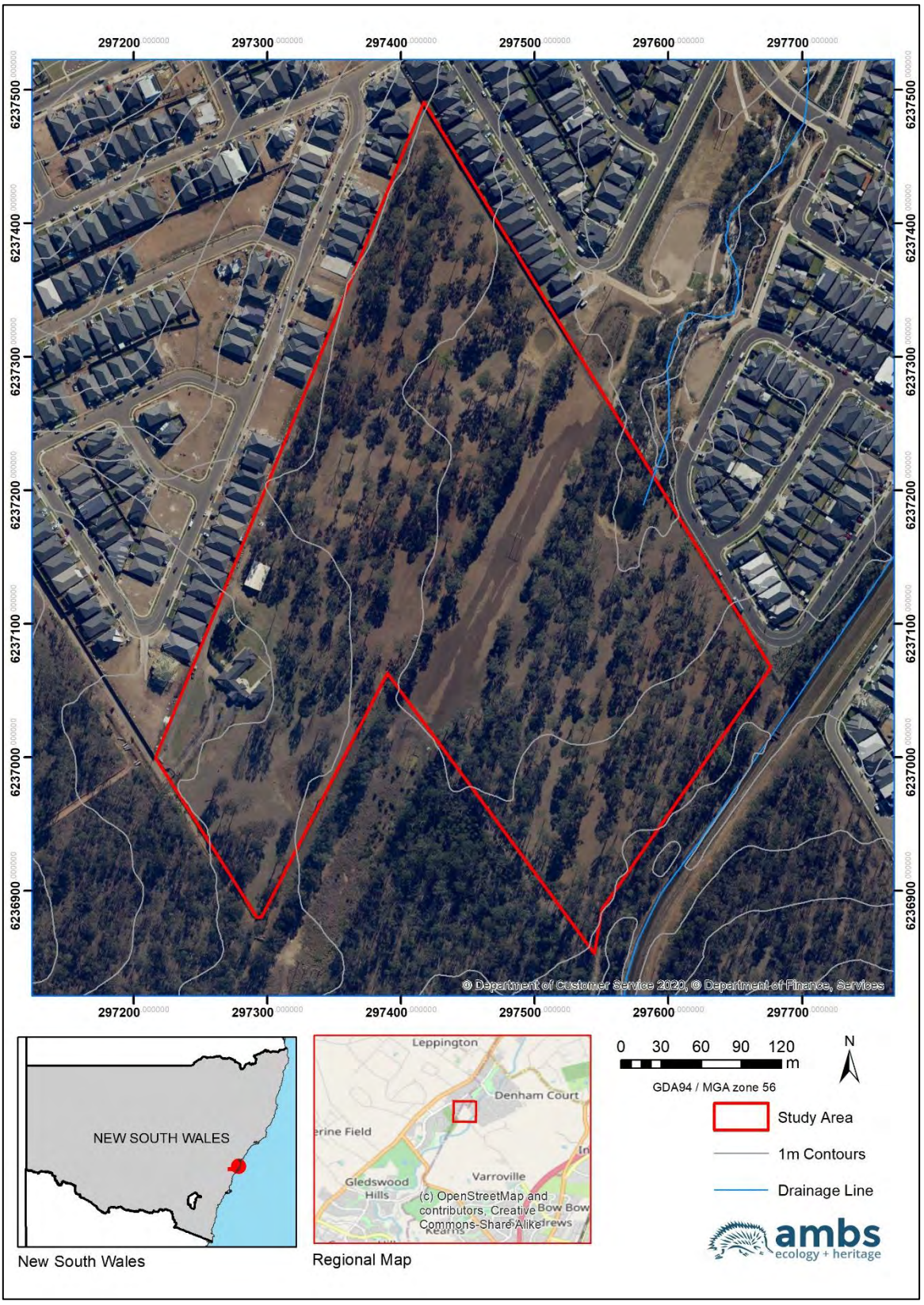
AMBS·Ecology·&·Heritage·has·been·commissioned·by·Petrin·Holdings·(nominated·contact·Dario·Petrin,·gat@gatassoc.com.au)·to·prepare·an·Aboriginal·Cultural·Heritage·Assessment·for·works·associated·with·the·proposed·rezoning·of·71·St·Andrews·Road,·Varroville.·The·assessment·is·to·be· prepared· in· accordance· with· Heritage· NSW· guidelines· and· is· required· as· supporting·documentation·for·the·development.°Aboriginal·community·consultation·in·NSW·as·per·Office·of·Heritage·NSW·requirements·may·be·used·to·assist·in·the·preparation·of·an·application·for·an·AHIP·for·developments·and·assist·the·Director·General·of·Heritage·NSW·in·consideration·and·determination·of·an·AHIP·application.¶

Registration·of·Interest¶

AMBS·has·been·informed·that·you·may·hold·cultural·knowledge·relevant·to·the·study·area,·and·that· you· may· have· an· interest· in· the· proposed· project.· As· per· Stage· 1· of· the· Heritage·NSW°*Cultural· heritage· consultation· requirements· for· proponents· 2010*,· you· are· invited· to·register·an·interest·in·being·consulted·regarding·the·Aboriginal·cultural·heritage·significance·of·the·study·area.·A·map·showing·the·location·of·the·study·area·is·attached.¶
¶
The·closing·date·for·registrations·is°**17·April·2021**.·In·accordance·with·the·Heritage·NSW·Cultural·heritage· consultation· requirements,· if· you· register,· your· name· and· contact· details· will· be·forwarded·to·Heritage·NSW,·unless·you·inform·us·that·you·do·not·want·your·details·released.¶

Contact·Details¶

If·you·would·like·to·register·an·interest·in·being·consulted·for·this·project,·please·respond·by·email·to°matt@ambs.com.au,·or·by·post·to:°*Attn:·Matthew·Byron,·AMBS·Ecology·&·Heritage,·Unit·14,·1·Hordern·Place,·Camperdown,·NSW·2050*°¶
°¶
Should·you·require·any·additional·information·or·if·I·can·be·of·assistance·in·any·way·please·feel·free·to·contact·me·using·the·details·below.¶
¶
Regards,¶
¶
Matthew·Byron¶
Heritage·Consultant·¶
AMBS·Ecology·&·Heritage¶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NEW SOUTH WALES
New South Wales
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Denham Court
Varroville
Gledswood Hills
(c) OpenStreetMap and contributors, Creative Commons-Share Alike
Regional Map
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GDA94 / MGA zone 56
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Study Area
1m Contours
Drainage Line
ambs
ecology + heritage

AMBS·Ref:→20896¶
¶
3/04/2021¶
→ ¶
¶
Gordon·Morton¶
Unit·9,·¶
6·Chapman·Avenue¶
Chatswood·NSW·2067¶
¶
Dear·Gordon,¶

71·St·Andrews·Road,·Varroville:·Aboriginal·Cultural·Heritage·Assessment¶

AMBS·Ecology·&·Heritage·has·been·commissioned·by·Petrin·Holdings·(nominated·contact·Dario·Petrin,·gat@gatassoc.com.au)·to·prepare·an·Aboriginal·Cultural·Heritage·Assessment·for·works·associated·with·the·proposed·rezoning·of·71·St·Andrews·Road,·Varroville.·The·assessment·is·to·be· prepared· in· accordance· with· Heritage· NSW· guidelines· and· is· required· as· supporting·documentation·for·the·development.°Aboriginal·community·consultation·in·NSW·as·per·Office·of·Heritage·NSW·requirements·may·be·used·to·assist·in·the·preparation·of·an·application·for·an·AHIP·for·developments·and·assist·the·Director·General·of·Heritage·NSW·in·consideration·and·determination·of·an·AHIP·application.¶

- ***Registration·of·Interest¶***

AMBS·has·been·informed·that·you·may·hold·cultural·knowledge·relevant·to·the·study·area,·and·that· you· may· have· an· interest· in· the· proposed· project.· As· per· Stage· 1· of· the· Heritage·NSW°*Cultural· heritage· consultation· requirements· for· proponents· 2010*,· you· are· invited· to·register·an·interest·in·being·consulted·regarding·the·Aboriginal·cultural·heritage·significance·of·the·study·area.·A·map·showing·the·location·of·the·study·area·is·attached.¶
¶
The·closing·date·for·registrations·is°**17·April·2021**.·In·accordance·with·the·Heritage·NSW·Cultural·heritage· consultation· requirements,· if· you· register,· your· name· and· contact· details· will· be·forwarded·to·Heritage·NSW,·unless·you·inform·us·that·you·do·not·want·your·details·released.¶

- ***Contact·Details¶***

If·you·would·like·to·register·an·interest·in·being·consulted·for·this·project,·please·respond·by·email·to°matt@ambs.com.au,·or·by·post·to:°*Attn:·Matthew·Byron,·AMBS·Ecology·&·Heritage,·Unit·14,·1·Hordern·Place,·Camperdown,·NSW·2050*°¶
°¶
Should·you·require·any·additional·information·or·if·I·can·be·of·assistance·in·any·way·please·feel·free·to·contact·me·using·the·details·below.¶
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Regards,¶
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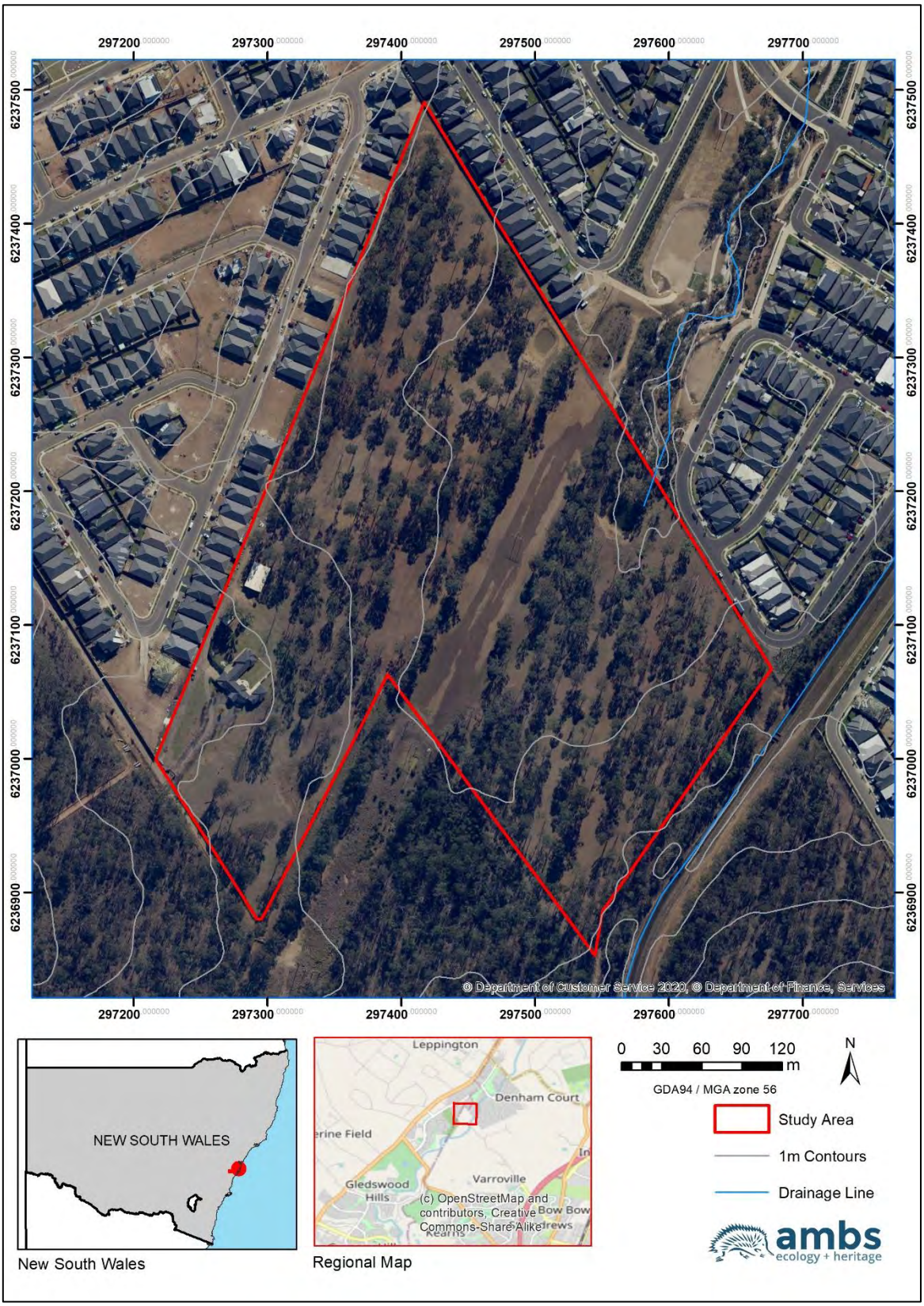
Matthew·Byron¶
Heritage·Consultant·¶
AMBS·Ecology·&·Heritage¶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ambs
ecology + heritage

AMBS·Ref:→20896¶
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3/04/2021¶
→ ¶
¶
Elwyn·Brown¶
187·Riverside·Drive¶
Airds·NSW·2560¶
¶
Dear·Elwyn,¶

71·St·Andrews·Road,·Varroville:·Aboriginal·Cultural·Heritage·Assessment¶

AMBS·Ecology·&·Heritage·has·been·commissioned·by·Petrin·Holdings·(nominated·contact·Dario·Petrin,·gat@gatassoc.com.au)·to·prepare·an·Aboriginal·Cultural·Heritage·Assessment·for·works·associated·with·the·proposed·rezoning·of·71·St·Andrews·Road,·Varroville.·The·assessment·is·to·be· prepared· in· accordance· with· Heritage· NSW· guidelines· and· is· required· as· supporting·documentation·for·the·development.°Aboriginal·community·consultation·in·NSW·as·per·Office·of·Heritage·NSW·requirements·may·be·used·to·assist·in·the·preparation·of·an·application·for·an·AHIP·for·developments·and·assist·the·Director·General·of·Heritage·NSW·in·consideration·and·determination·of·an·AHIP·application.¶

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°¶
Should·you·require·any·additional·information·or·if·I·can·be·of·assistance·in·any·way·please·feel·free·to·contact·me·using·the·details·below.¶
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Regards,¶
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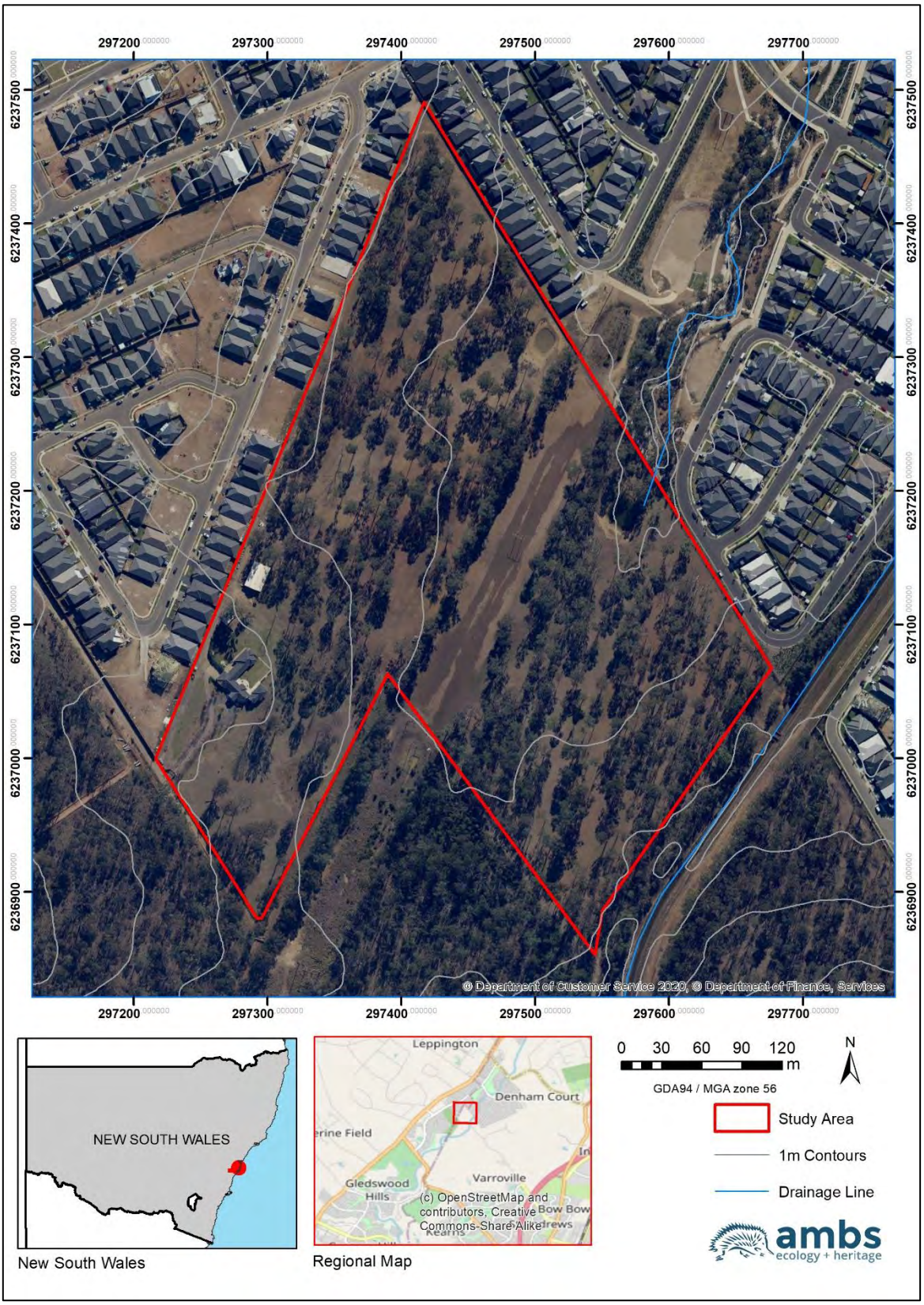
Matthew·Byron¶
Heritage·Consultant·¶
AMBS·Ecology·&·Heritage¶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GDA94 / MGA zone 56
Study Area
1m Contours
Drainage Line
ambs
ecology + heritage

Registration of interest

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment

Arika Jalomaki <yulayculturalservices@gmail.com> 6 April 2021 at 09:36
To: Matthew Byron <matt@ambs.com.au>

Dear Matthew,

Yulay Cultural service's would like to register our interest in the above project.

Kind regards,
Arika Jalomaki
Manager
0481 251 385
[Quoted text hidden]
—
Arika Jalomaki

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment

Clive Freeman <clive.freeman@y7mail.com> 6 April 2021 at 12:37
To: Matthew Byron <matt@ambs.com.au>

Hi Matt,

Freeman and Marx pty Ltd would like to register our interest in the project. We have very strong cultural knowledge and many years experience working in this Field, I am currently doing my Honors in Archaeology and my partner in almost finished a degree in Archaeology. We hold very divers Aboriginal knowledge from strong family connection across the south east, and are happy to share our experience with the project to support the identification of cultural significance.

Kind Regards

Clive Freeman
(M) 0437721481

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment

Glenda Chalker <kgchalker@bigpond.com> 6 April 2021 at 11:40
To: Matthew Byron <matt@ambs.com.au>

Matthew,

Could you please register an interest in the Varroville project for Cubbitch Barta.

Glenda Chalker

DARUG CUSTODIAN
ABORIGINAL CORPORATION

DARUG CUSTODIAN
ABORIGINAL
CORPORATION

PO BOX 81 WINDSOR 2756
PHONE: 0245775181 FAX: 0245775098
MOBILE: 0414962766 Justine Coplin
EMAIL: justinecoplin@optusnet.com.au

Attention AMBS **Date: 060421**

Subject: 71 St Andrews Road, Varroville

Dear Matthew

Our group is a non- profit organisation that has been active for over forty years in Western Sydney, we are a Darug community group with over three hundred members. The main aim in our constitution is the care of Darug sites, places, wildlife and to promote our culture and provide education on the Darug history.

The Varroville area is an area that our group has a vast knowledge of, we have worked and lived in for many years, this area is significant to the Darug people due to the connection of sites and the continued occupation. Our group has been involved in all previous assessments and works in this area as a traditional owner Darug group for the past 40 plus years.

Therefore, we would like to register our interest for full consultation and involvement in the above project area.

Please contact us with all further enquiries on the above contacts.

Regards

Justine Coplin

We acknowledge and pay respect to the Darug people,the traditional Aboriginal custodians of this land.

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment

Kaarina Slater <Ngambaaculturalconnections@hotmail.com> 6 April 2021 at 14:53
To: Matthew Byron <matt@ambs.com.au>

Ngambaa Cultural Connection would like to register an interest for the above project.

Experienced indigenous site officer & current insurances.

Cheers

Kaarina Slater

Manager

Regards,

Kaarina Slater
Director
Ngambaa Cultural Connections
0422 729 117

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment

philip khan <philipkhan.acn@live.com.au> 6 April 2021 at 11:34
To: Matthew Byron <matt@ambs.com.au>

Hi Matthew,

Thank you for informing us that **AMBS Ecology & Heritage** will be involved in an Aboriginal Cultural Heritage Assessment at **71 St Andrews Rd, Varroville** &, that you are inviting Aboriginal organisations to register, if they wish too be involved in the community consultation process.

As a senior Aboriginal person for the past 40yrs, I actively participate in the protection of the Aboriginal Cultural Heritage throughout the Sydney Basin, & particularly throughout Western Sydney, on behalf of Kamilaroi Yankuntjatjara Working Group I wish to provide to you my organisation's registration of interest.

I wish to be involved & participate in all levels of consultation/project involvement. I wish to attend all meetings, participate in available field work & receive a copy of the report.

I have attached a copy of Kamilaroi Yankuntjatjara Working group's Public Liability Insurance & Workers Compensation certificate.

Our Rates - $100 per hour, $400 half day & $800 full day (Exc. GST)

Our RAPS have up to 15yrs Cultural Heritage experience in – field work which involves manual excavation (digging), sieving , identifying artefacts, setting up transits, setting up equipment, packing equipment, site surveys & attending meetings.

Should you wish me to provide further information, please do not hesitate to contact me on 0434545982 or Stefeanie on 0451068480.

Kind Regards

Phil Khan

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment

Gulaga <gulagachts@gmail.com> 11 April 2021 at 19:42
To: Matthew Byron <matt@ambs.com.au>
Cc: Chris Langeluddecke <chris@ambs.com.au>

Thank you for the information. Can you please register Gulaga's interest in this project.

Kind Regards
Wendy Smith
Cultural Heritage Officer
Gulaga
0401 808 988

Response to invitation

James Eastwood <james.eastwood@y7mail.com> 12 April 2021 at 16:42
To: Matthew Byron <matt@ambs.com.au>

Dear Matthew
Thank you for your recent email invitation to register for Aboriginal community Consultation RE: 71 St Andrews Road Varrorville Aboriginal Cultural heritage Assessment .
Aragung Aboriginal Cultural Heritage Site Assessments Gladly accepts your invitation and would like to be considered for future involvement in all aspects of this project.

kind regards
Aragung
Jamie Eastwood

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment

Tharawal CEO <ceo@tharawal.com.au> 13 April 2021 at 09:22
To: Matthew Byron <matt@ambs.com.au>

Hi Matthew

Tharawal LALC would like to register our interest to be consulted on this project

Regards

Robyn

Robyn Straub

CEO

Tharawal Local Aboriginal Land Council

220 West Parade

Couridjah NSW 2571

T: (02) 46810059

ceo@tharawal.com.au

THARAWAL
LOCAL ABORIGINAL
LAND COUNCIL

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment

carolyn slater <cal.slater61@gmail.com> 18 April 2021 at 18:19
To: Matthew Byron <matt@ambs.com.au>

Hi Matt

Gilay Consultants would like to register their interest and be consulted in The Varroville Project. I would like to inform you I do not want my details released.

Thank You
Carolyn Slater

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment

Ryan Johnson <murrabidgeemullangari@yahoo.com.au> 19 April 2021 at 19:10
To: Matthew Byron <matt@ambs.com.au>

Hi Matthew
Please register our corporation for the above project, we have been doing aboriginal cultural heritage projects for over 26 years in and around the project area
Kind regards
Ryan johnson
0475565517

Re: 71 St Andrews Road, Varroville: Registration

Cherie Carroll Turrise <gunjeewong@yahoo.com.au> 20 April 2021 at 12:39
To: Matthew Byron <matt@ambs.com.au>, Chris Langeluddecke <chris@ambs.com.au>

Re: Registration 71 St Andrews Road, Varroville

Please register our corporation for full process on this project. We are aboriginal people. We are all Aboriginal Cultural Heritage Site Officers. We have our history & stories passed down by our Elders. We have assisted in surveys, salvage & consulting in with archaeologists over a vast number of years. We are experienced in the field of identifying artefacts, Including our learned history and knowledge passed down by our Elders. We appreciate the opportunity to be part of protecting and preserving our Aboriginal heritage. We are very proud of our heritage passed to us by our Elders and our Ancestors. We are therefore pleased with being a part of this research and provide our experience in cultural heritage input.
The potential to contain evidence of Aboriginal of actual occupation on the specific project area and provide cultural links to our past ancestors is of great value and significance.
Our organisation has a current public liability insurance policy and OHS compliant and all members hold white cards and all the required safety gear.
All our members are Aboriginal and very experienced in the identification of Aboriginal artefacts and we have consulted with numerous Archeologists in surveys including excavation/fieldwork. We are very passionate about land and conservation matters to which some of members are currently studying cultural heritage. We hold strong links to our our ancestors, our culture and our heritage.
Please note we do not want our details forwarded to LALC, please do not release our correspondence nor any details.
Please update Email:gunjeewong@yahoo.com.au
and phone number Mob: 0438 428 805. Please forward a copy of project to my postal address: 15 Burton Road PORTLAND NSW 2847 and to this email. Please remove any other phone numbers and emails as per ORIC website & OEH. My details have also been updated with all the relevant requirements.

Sincerely
Cherie (Carroll) Turrise
Aboriginal Heritage Custodian
Mob: 0438 428 805
Email: gunjeewong@yahoo.com.au
15 Burton Road
PORTLAND NSW 2847
Mob: 0438 428 805
Email: gunjeewong@yahoo.com.au

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment

Daniel chalker <woriwooilywa@gmail.com> 20 April 2021 at 12:27
To: Matthew Byron <matt@ambs.com.au>

Yarma Matt

Please find attached for registration at 71 St Andrews Road, Varroville.

Kind Regards

Daniel Chalker

Wori Wooilywa

P- 0409006216

Re: EOI 71 St Andrews Road, Varroville

Corrroboree Aboriginal Corporation <corroboreecorp@bigpond.com> 20 April 2021 at 12:41
To: matt@ambs.com.au

Re: EOI 71 St Andrews Road, Varroville

Please register Corroboree Aboriginal Corporation. My dad, grandparents, great grandparents and other family members have lived in the area and family currently reside in the areas and surrounding areas. We are registering in a full capacity. We are aboriginal people who are culturally aware. We have the necessary ability, awareness, experience, skills, insight and the knowledge to identify artefacts on field work. And as Aboriginal People we connect thru the land, thru our ancestors and our heritage. Therefore we are able participate on all levels. We have worked with many archaeologists across a broad landscape. We have consulted with your company on previous projects. We have all the relevant insurances and safety gear. We are all fit and adapt to a vast landscape.
Contact is preferred via email: ***corroboreecorp@bigpond.com.*** *The* contact number, email and contact person is also listed in the signature.
Please do not disclose any of our details to LALC nor publish our correspondence for LALC to peruse. Please only note our corporation details i.e. our name and only for registration purposes. As noted our details are not to be passed on/disclosed to LALC. We understand your need for confirmation of our corporations name on your lists for registered stakeholders, in that we have responded for inclusion, to participate on all levels. The use of our name as registered party, is fine, however non-disclosure of our actual correspondence, please. Just our name and contact details as registered stakeholders for your records and proponents. Thanks.

Kind regards
Marilyn Carroll-Johnson
Director
Corroboree Aboriginal Corporation
Mob: 0415911159
Ph: 0288244324
E: corroboreecorp@bigpond.com
Address: PO Box 3340
ROUSE HILL NSW 2155

Kind regards
Marilyn Carroll-Johnson
Director
Corroboree Aboriginal Corporation
Mob: 0415911159
Ph: 0288244324
E: corroboreecorp@bigpond.com
Address: PO Box 3340
ROUSE HILL NSW 2155

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment

Butucarbin Heritage <butuheritage@gmail.com> 21 April 2021 at 02:08
To: Matthew Byron <matt@ambs.com.au>

Hi Matthew,
On behalf of Butucarbin, I would like to register for the project in relation to St Andrews Road.

Kind regards,

On Tue, Apr 6, 2021 at 9:33 AM Matthew Byron <matt@ambs.com.au> wrote:
[Quoted text hidden]

–
Lovanna Gibson
Project Manager for Butucarbin Cultural Heritage Assessments
B.A Archaeology/Anthropology USYD
Juris Doctor UTS

Stage 2 Presentation of Information about the Project and Stage 3 Gathering information about Cultural Significance

Proposed Methodology

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment

Matthew Byron <matt@ambs.com.au> 20 April 2021 at 09:39
To: Chris Langeluddecke <chris@ambs.com.au>
Bcc: yulayculturalservices@gmail.com, philipkhan.acn@live.com.au, kgchalker@bigpond.com, justinecoplin@optusnet.com.au, clive.freeman@y7mail.com, ngambaaculturalconnections@hotmail.com, gulagachts@gmail.com, James Eastwood <James.eastwood@y7mail.com>, ceo@tharawal.com.au, cal.slater61@gmail.com, murrabidgeemullangari@yahoo.com.au

Thank you for registering your organisation's registration of interest in being involved in the process of community consultation for this proposed project. As you are aware AMBS Ecology & Heritage has been commissioned by Petrin Holdings (nominated contact Dario Petrin, gat@gatassoc.com.au) to prepare an Aboriginal Cultural Heritage Assessment for works associated with the proposed rezoning of 71 St Andrews Road, Varroville.

The assessment is to be prepared in accordance with Heritage NSW guidelines and is required as supporting documentation for a development application for the property. Aboriginal community consultation in NSW as per Heritage NSW requirements may be used to assist in the preparation of an application for an AHIP for developments and assist the Director General of Heritage NSW in consideration and determination of an AHIP application.

Stage 2: Project Information

The proponent's proposed development includes rezoning the site from E3 Environmental Management to part R2 Low Density Residential; part E2 Environmental Conservation; part RE1 Public Recreation and part Special Purposes – Drainage. The proposed residential development will include creation of residential lots, and installation of internal roads, stormwater management, and other infrastructure. The development will require two external road access connections due to bushfire evacuation requirements.

Stage 3: Information Gathering

AMBS propose to undertake a brief archaeological survey of the study area to identify and record any Aboriginal heritage sites present and assess their significance. The survey will be done on foot and will cover the entire study area, focusing on areas of ground surface exposure.

During and following the survey, representatives of the RAPs will be consulted to inform an understanding of the context and values of any Aboriginal sites, objects and places that are located on the proposed project site, to assess their cultural significance, and to develop management options for recommendation in the ACHA.

Contact Details

This letter presents information regarding the proposed project and methodology for this assessment. If you have any cultural concerns, perspectives, or assessment requirements regarding the proposed project, or if you would like to provide any information about the cultural significance of Aboriginal objects or places that may be present in the study area, please contact us within 28 days, by **18 May 2021**.

At this time, we would appreciate it if you could identify any protocols that your organisation wishes to be adopted into the information gathering process and assessment methodology, or any matters such as issues or areas of cultural significance that might affect, inform or refine the assessment methodology.

Should there be any sensitive cultural information on the proposed project area, which may require restricted public access, appropriate protocols for sourcing and holding such cultural information will be developed and implemented through this consultation process.

Please find attached a form that you may choose to fill out after having read this methodology. The form is intended to make it easier for you to provide feedback and is not obligatory. If you would like to use this form,

please fill out the relevant sections, sign it and return the form to AMBS. If you would like to provide feedback concerning the proposed project in another form, you can respond by email to *matt@ambs.com.au* or by post to *Attn: Matthew Byron*, AMBS Ecology & Heritage, Unit 14, 1 Hordern Place Camperdown NSW 2050.

If you would like to discuss the project, or if I can be of assistance in any way please contact me on (02) 9518 4489 or by email.

Yours sincerely,
Matt Byron
Heritage Consultant

ambs ecology & heritage
Unit 14, 1 Hordern Place Camperdown NSW 2050 - http://ambs.com.au
matt@ambs.com.au - 02 9518 4489

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment

Matthew Byron <matt@ambs.com.au> 20 April 2021 at 13:19
Bcc: woriwooilywa@gmail.com, gunjeewong@yahoo.com.au, corroboreecorp@bigpond.com

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Yours sincerely,
Matt Byron
Heritage Consultant

ambs ecology & heritage
Unit 14, 1 Hordern Place Camperdown NSW 2050 - http://ambs.com.au
matt@ambs.com.au - 02 9518 4489

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment

Matthew Byron <matt@ambs.com.au> 21 April 2021 at 10:17
Bcc: butuheritage@gmail.com

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Stage 2: Project Information

The proponents proposed development includes rezoning the site from E3 Environmental Management to part R2 Low Density Residential; part E2 Environmental Conservation; part RE1 Public Recreation and part Special Purposes – Drainage. The proposed residential development will include creation of residential lots, and installation of internal roads, stormwater management, and other infrastructure. The development will require two external road access connections due to bushfire evacuation requirements.

Stage 3: Information Gathering

AMBS propose to undertake a brief archaeological survey of the study area to identify and record any Aboriginal heritage sites present and assess their significance. The survey will be done on foot and will cover the entire study area, focusing on areas of ground surface exposure.

During and following the survey, representatives of the RAPs will be consulted to inform an understanding of the context and values of any Aboriginal sites, objects and places that are located on the proposed project site, to assess their cultural significance, and to develop management options for recommendation in the ACHA.

Contact Details

This letter presents information regarding the proposed project and methodology for this assessment. If you have any cultural concerns, perspectives, or assessment requirements regarding the proposed project, or if you would like to provide any information about the cultural significance of Aboriginal objects or places that may be present in the study area, please contact us within 28 days, by **18 May 2021**.

At this time, we would appreciate it if you could identify any protocols that your organisation wishes to be adopted into the information gathering process and assessment methodology, or any matters such as issues or areas of cultural significance that might affect, inform or refine the assessment methodology.

Should there be any sensitive cultural information on the proposed project area, which may require restricted public access, appropriate protocols for sourcing and holding such cultural information will be developed and implemented through this consultation process.

Please find attached a form that you may choose to fill out after having read this methodology. The form is intended to make it easier for you to provide feedback and is not obligatory. If you would like to use this form, please fill out the relevant sections, sign it and return the form to AMBS. If you would like to provide feedback concerning the proposed project in another form, you can respond by email to *matt@ambs.com.au* or by post to *Attn: Matthew Byron*, AMBS Ecology & Heritage, Unit 14, 1 Hordern Place Camperdown NSW 2050.

If you would like to discuss the project, or if I can be of assistance in any way please contact me on (02) 9518 4489 or by email.

Yours sincerely,

Matt Byron
Heritage Consultant

ambs ecology & heritage
Unit 14, 1 Hordern Place Camperdown NSW 2050 - http://ambs.com.au
matt@ambs.com.au - 02 9518 4489

Matthew Byron <matt@ambs.consulting>

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessmen

Matthew Byron <matt@ambs.com.au> 26 April 2021 at 10:42
Bcc: cazadirect@live.com

Thank you for registering your organisation's registration of interest in being involved in the process of community consultation for this proposed project. As you are aware AMBS Ecology & Heritage has been commissioned by Petrin Holdings (nominated contact Dario Petrin, gat@gatassoc.com.au) to prepare an Aboriginal Cultural Heritage Assessment for works associated with the proposed rezoning of 71 St Andrews Road, Varroville.

The assessment is to be prepared in accordance with Heritage NSW guidelines and is required as supporting documentation for a development application for the property. Aboriginal community consultation in NSW as per Heritage NSW requirements may be used to assist in the preparation of an application for an AHIP for developments and assist the Director General of Heritage NSW in consideration and determination of an AHIP application.

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Yours sincerely,

Matt Byron
Heritage Consultant

ambs ecology & heritage
Unit 14, 1 Hordern Place Camperdown NSW 2050 - http://ambs.com.au
matt@ambs.com.au - 02 9518 4489

2 attachments

Study Area.jpg
5223K

Aboriginal Community Feedback Form (Stage 2 & 3).docx
39K

ambs ecology + heritage

Matthew Byron <matt@ambs.consulting>

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment

Matthew Byron <matt@ambs.com.au> 28 April 2021 at 13:25
Bcc: barrabyculturalservices@gmail.com

Thank you for registering your organisation's registration of interest in being involved in the process of community consultation for this proposed project. As you are aware AMBS Ecology & Heritage has been commissioned by Petrin Holdings (nominated contact Dario Petrin, gat@gatassoc.com.au) to prepare an Aboriginal Cultural Heritage Assessment for works associated with the proposed rezoning of 71 St Andrews Road, Varroville.

The assessment is to be prepared in accordance with Heritage NSW guidelines and is required as supporting documentation for a development application for the property. Aboriginal community consultation in NSW as per Heritage NSW requirements may be used to assist in the preparation of an application for an AHIP for developments and assist the Director General of Heritage NSW in consideration and determination of an AHIP application.

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Heritage Consultant

ambs ecology & heritage
Unit 14, 1 Hordern Place Camperdown NSW 2050 - http://ambs.com.au
matt@ambs.com.au - 02 9518 4489

2 attachments

Study Area.jpg
5223K

Aboriginal Community Feedback Form (Stage 2 & 3).docx
39K

Aboriginal Community Feedback Form

This form is intended to make it easier for Registered Aboriginal Parties to provide comments and feedback on the proposed methodology for 71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment. It is not obligatory to provide feedback in this way, however if you would like to use this form, please fill out, sign and return it to AMBS Ecology & Heritage as a scanned document emailed to *matt@ambs.com.au* or by post to *Attn: Matthew Byron,* AMBS Ecology & Heritage, Unit 14, 1 Hordern Place Camperdown NSW 2050.

REGISTERED ABORIGINAL PARTY FEEDBACK

I, _____ (your name)

of _____ (Aboriginal group name)

agree with the methodology detailed in the proposed methodology for 71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment and/or would like to make the following comments about the assessment or proposed works, and/or provide the following information regarding the cultural heritage values of the study area (cross out if not applicable):

_____

_____

_____

Written feedback provided by Aboriginal Parties

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment

philip khan <philipkhan.acn@live.com.au> 21 April 2021 at 13:39
To: Matthew Byron <matt@ambs.com.au>

Dear Matt,

Thank you for your methodology for 71 St Andrews Road, Varroville. Us Aboriginal people have walked this land for tens of thousands of years and continue to do so. We hunt and gather all over this land, we hold deep connection to our mother earth as she provides for us. We pass our knowledge down from generation to generation, we are guided by the skies and we follow the water ways with great spiritual awareness of the land. We have lost our land markings for our burials due to colonisation, it is very important that we are always mindful of Aboriginal burial sites as we just don't know where they are anymore. We would like to agree to your methodology and support your report, we look forward to working along side you on this project further.

Kind Regards

Kadibulla Khan

DARUG CUSTODIAN
ABORIGINAL CORPORATION

DARUG CUSTODIAN
ABORIGINAL
CORPORATION

PO BOX 81 WINDSOR 2756
PHONE: 0245775181 FAX: 0245775098
MOBILE: 0415770163 Leanne Watson
0414962766 Justine Coplin
EMAIL: mulgokiwi@bigpond.com / justinecoplin@optusnet.com.au

Attention: AMBS Date:210421

Subject: 71 St Andrews Road, Varroville

Dear Matthew

We have received and reviewed the 71 St Andrews Road, Varroville ACHA

Our group is a non- profit organisation that has been active for over forty years in Western Sydney, we are a Darug community group with over three hundred members. The main aim in our constitution is the care of Darug sites, places, wildlife and to promote our culture and provide education on the Darug history.

Our group promotes Darug Culture and works on numerous projects that are culturally based as a proud and diverse group. It has been discussed by our group and with many consultants and researches that our history is generic and is usually from an early colonists perspective or solely based on archaeology and sites. These histories are adequate but they lack the people's stories and parts of important events and connections of the Darug people and also other Aboriginal people that now call this area home and have done so for numerous generations.

Many Aboriginal organisations listed in the OEH response letter do not contribute to the Aboriginal community of Western Sydney. Individuals listed in the OEH response letter do not represent the community and while they may be consulted with, should not be employed for their own personal financial benefit.

Our organisation is committed to providing benefits back to our local Aboriginal community through such measures as funding the local Aboriginal juniors' touch football team, painting classes for the local children and donating money to various charities. Employment in cultural heritage activities is source of income that organisations such as ours can use to contribute to beneficial activities and support within the community.

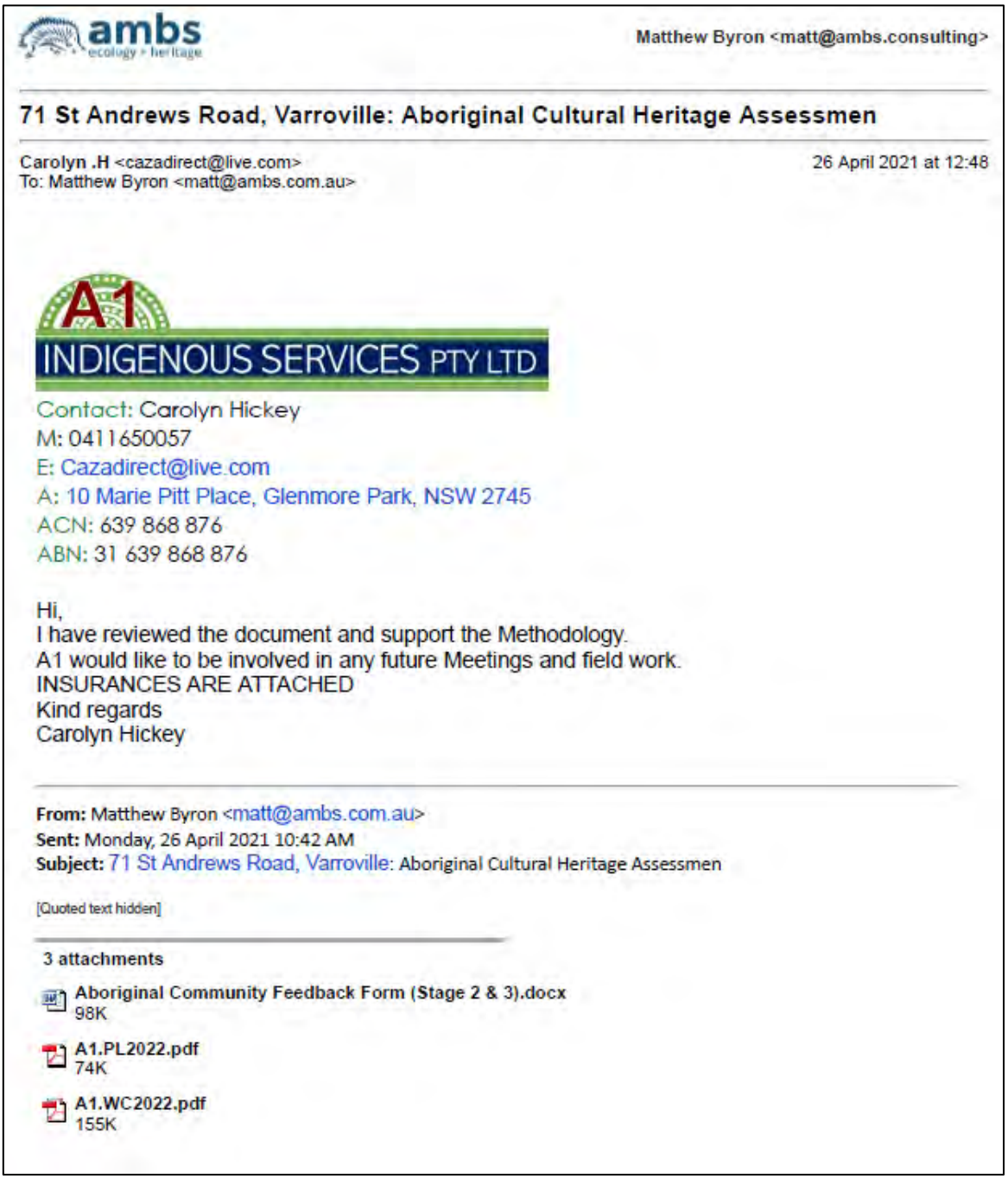
Darug custodian Aboriginal Corporation's site officers have knowledge of Darug land, Darug Culture,Oral histories, landforms, sites, Darug history, wildlife, flora and legislative requirements. We have worked with consultants and developers for many years in Western Sydney (Darug Land) for conservation, site works, developments and interpretation/education strategie.

We support the project information.

Please contact us with all further enquiries on the above contacts.

Regards

Justine Coplin



ambs ecology + heritage

Matthew Byron <matt@ambs.consulting>

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessmen

Carolyn .H <cazadirect@live.com>
To: Matthew Byron <matt@ambs.com.au>

26 April 2021 at 12:48

A1 INDIGENOUS SERVICES PTY LTD

Contact: Carolyn Hickey
M: 0411650057
E: Cazadirect@live.com
A: 10 Marie Pitt Place, Glenmore Park, NSW 2745
ACN: 639 868 876
ABN: 31 639 868 876

Hi,
I have reviewed the document and support the Methodology.
A1 would like to be involved in any future Meetings and field work.
INSURANCES ARE ATTACHED
Kind regards
Carolyn Hickey

From: Matthew Byron <matt@ambs.com.au>
Sent: Monday, 26 April 2021 10:42 AM
Subject: 71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessmen

[Quoted text hidden]

3 attachments

Aboriginal Community Feedback Form (Stage 2 & 3).docx
98K

A1.PL2022.pdf
74K

A1.WC2022.pdf
155K

Aboriginal Community Feedback Form

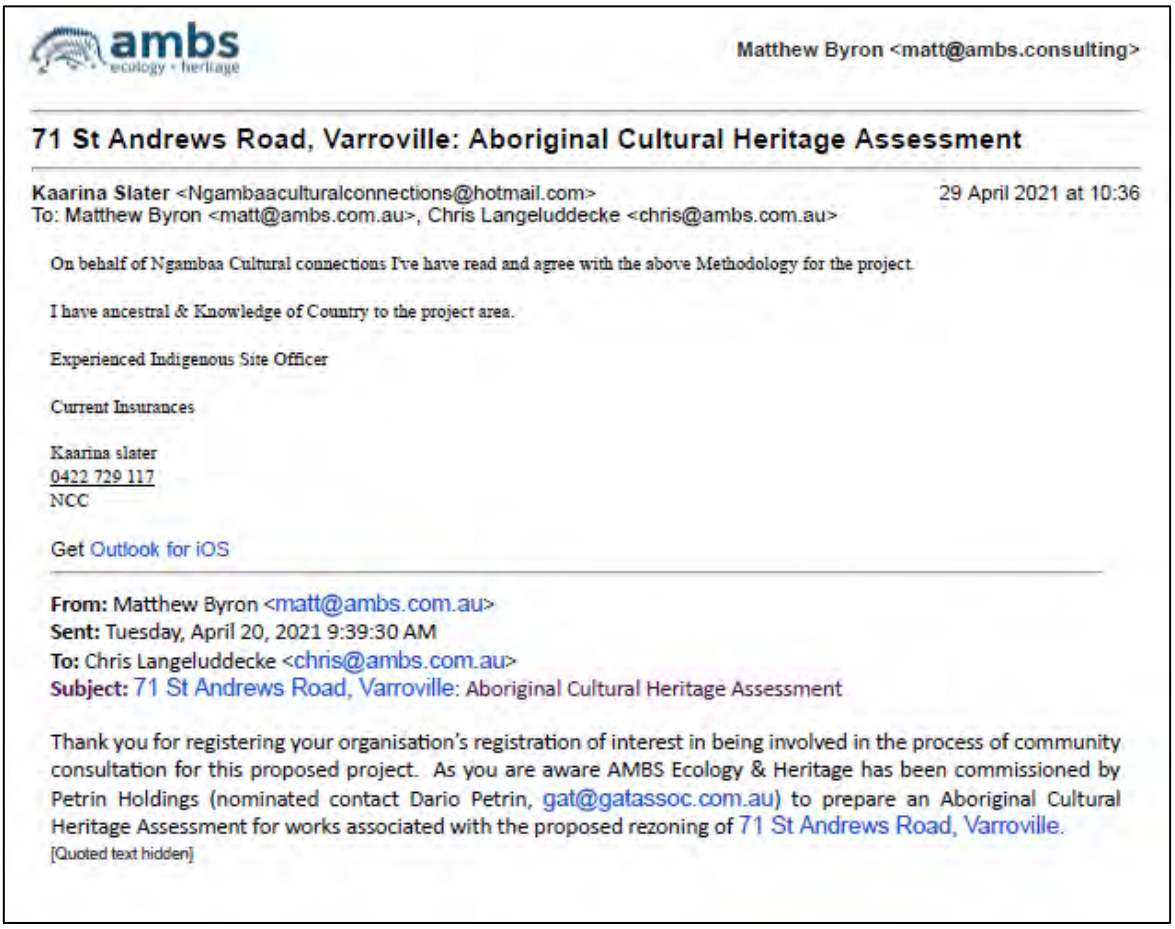
This form is intended to make it easier for Registered Aboriginal Parties to provide comments and feedback on the proposed methodology for 71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment. It is not obligatory to provide feedback in this way, however if you would like to use this form, please fill out, sign and return it to AMBS Ecology & Heritage as a scanned document emailed to *matt@ambs.com.au* or by post to *Attn: Matthew Byron,* AMBS Ecology & Heritage, Unit 14, 1 Hordern Place Camperdown NSW 2050.

REGISTERED ABORIGINAL PARTY FEEDBACK

I, CAROLYN HICKEY_____ (your name)
OF A1 INDIGENOUS SERVICES_____ (Aboriginal group name)
agrees with the methodology detailed in the proposed methodology for 71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment, :

Signature Date 26/04/2021

Position within Aboriginal group: MANAGING DIRECTOR



ambs ecology + heritage

Matthew Byron <matt@ambs.consulting>

71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment

Kaarina Slater <Ngambaaculturalconnections@hotmail.com> 29 April 2021 at 10:36
To: Matthew Byron <matt@ambs.com.au>, Chris Langeluddecke <chris@ambs.com.au>

On behalf of Ngambaa Cultural connections I've have read and agree with the above Methodology for the project.

I have ancestral & Knowledge of Country to the project area.

Experienced Indigenous Site Officer

Current Insurances

Kaarina slater
0422 729 117
NCC

Get Outlook for iOS

From: Matthew Byron <matt@ambs.com.au>
Sent: Tuesday, April 20, 2021 9:39:30 AM
To: Chris Langeluddecke <chris@ambs.com.au>
Subject: 71 St Andrews Road, Varroville: Aboriginal Cultural Heritage Assessment

Thank you for registering your organisation's registration of interest in being involved in the process of community consultation for this proposed project. As you are aware AMBS Ecology & Heritage has been commissioned by Petrin Holdings (nominated contact Dario Petrin, gat@gatassoc.com.au) to prepare an Aboriginal Cultural Heritage Assessment for works associated with the proposed rezoning of 71 St Andrews Road, Varroville.
[Quoted text hidden]

Stage 4 Review of draft cultural heritage assessment report

Correspondence with Aboriginal parties

Draft report feedback provided by Aboriginal parties

Aboriginal Community Consultation Log

Date	Sender	Organisation	Recipient	Organisation	Method	Comment
18/03/2021	M Byron	AMBS	NSW statutory bodies	Native Title Services Corporation (NTS Corp); Office of the Registrar, Aboriginal Land Rights Act (ORALRA); National Native Title Tribunal (NNTT); Campbelltown City Council; Tharawal Local Aboriginal Land Council (LALC); Heritage NSW; Greater Sydney Local Land Services (LLS)	Email	Request for a list of known Aboriginal stakeholders
18/03/2021	C Langeluddecke	AMBS		Daily Telegraph public notice	Newspaper	Stage 1 call for potential RAPs to register interest
18/03/2021	Megan Mebberson	ORALRA	M Byron	AMBS	Email	Receipt of Request for a list of known Aboriginal stakeholders
18/03/2021	M Byron	AMBS	NNTT	National Native Title Tribunal	Email	Request for Search of Tribunal Registers
19/03/2021	NNTT	National Native Title Tribunal	M Byron	AMBS	Email	Reply to Request for Search of Tribunal Registers
22/03/2021	Barry Gunther	Heritage NSW	M Byron	AMBS	Email	List of known Aboriginal Stakeholders
1/04/2021	M Byron	AMBS	James Carroll	Bidjawong Aboriginal Corporation	Letter	Invitation to Register
1/04/2021	M Byron	AMBS	Gordon Morton	Darug Aboriginal Cultural Heritage Assessments	Letter	Invitation to Register
1/04/2021	M Byron	AMBS	Elwyn Brown	D'harawal Mens Aboriginal Corporation	Letter	Invitation to Register
6/04/2021	M Byron	AMBS	All Aboriginal Stakeholders	Tharawal Local Aboriginal Land Council, Darug Custodian Aboriginal Corporation, Darug Tribal Aboriginal Corporation, Darug Aboriginal Cultural Heritage Assessments, Darug Land Observations, Darug Aboriginal Land Care, A1 Indigenous Services, Cubbitch Barta Gunjeewong Cultural Heritage Aboriginal Corporation Corroboree Aboriginal Corporation Murra Bidgee Mullangari Aboriginal Corporation Muragadi Heritage Indigenous Corporation Bidjawong Aboriginal Corporation Kamilaroi Yankuntjatjara Working Group, Wurrumay Pty Ltd, Warragil Cultural Services, Tocomwall, D'harawal Mens Aboriginal Corporation, Amanda Hickey Cultural Services, Dhinawan Culture & Heritage Pty Ltd, Gunyuu, Walbunja, Badu, Goobah Developments, Wullung Yerramurra Nundagurri Murrumbul Jerringong Pemulwuy CHTS Bilinga Munyunga Wingikara Minnamunnung Walgalu Thauaira Dharug Gulaga Biamanga Callendulla Murramarang DJMD Consultancy Butucarbin Aboriginal Corporation Didge Ngunawal Clan Ginninderra Aboriginal Corporation Garrara Aboriginal Corporation, Duncan Falk Consultancy, Wailwan Aboriginal Group, Guntawang Aboriginal Resources Incorporated, Barking Owl Aboriginal Corporation, Yulay Cultural Services, Thoorga Nura, Barraby Cultural Services, Yurrandaali Cultural Services, Darug Booroberongal Elders Aboriginal Corporation B.H. Heritage Consultants, Ngambaa Cultural Connections Goodradigbee Cultural & Heritage Aboriginal Corporation Mura Indigenous Corporation Aragung Aboriginal Cultural Heritage Site Assessments Waawaar Awaa Aboriginal Corporation Clive Freeman Galamaay Cultural Consultants (GCC) Wori Wooilywa James Davis Gilay Consultants	Email	Invitation to Register
6/04/2021	Arika Jalomaki	Yulay Cultural Services	M Byron	AMBS	Email	Registration of Interest

6/04/2021	Philip Khan	Kamilaroi Yankuntjatjara Working Group	M Byron	AMBS	Email	Registration of Interest
6/04/2021	Glenda Chalker	Cubbitch Barta	M Byron	AMBS	Email	Registration of Interest
6/04/2021	Justine Coplin	Darug Custodian Aboriginal Corporation	M Byron	AMBS	Email	Registration of Interest
6/04/2021	Clive Freeman	Freeman and Marx Pty Ltd	M Byron	AMBS	Email	Registration of Interest
6/04/2021	Kaarina Slater	Ngambaa Cultural Connection	M Byron	AMBS	Email	Registration of Interest
11/04/2021	Wendy Smith	Gulaga	M Byron	AMBS	Email	Registration of Interest
12/04/2021	Jamie Eastwood	Aragung Aboriginal Cultural Heritage Site Assessments	M Byron	AMBS	Email	Registration of Interest
13/04/2021	Robyn Straub	Tharawal Local Aboriginal Land Council	M Byron	AMBS	Email	Registration of Interest
18/04/2021	Carolyn Slater	Gilay Consultants	M Byron	AMBS	Email	Registration of Interest
19/04/2021	M Byron	AMBS	James Carroll	Bidjawong Aboriginal Corporation	Phone	Message left RE return to sender invitation of registration and an alternative means of contact, new contact details.
19/04/2021	Ryan Johnson	Murra Bidgee Mullangari Aboriginal Corporation	M Byron	AMBS	Email	Registration of Interest
20/04/2021	M Byron	AMBS	All Registered Parties	Yulay Cultural Services, Kamilaroi Yankuntjatjara Working Group,Cubbitch Barta Darug Custodian Aboriginal Corporation, Freeman and Marx Pty Ltd, Ngambaa Cultural Connection, Gulaga, Aragung Aboriginal Cultural Heritage Site Assessments Tharawal Local Aboriginal Land Council, Gilay Consultants	Email	Stage 2 & 3 Methodology
20/04/2021	Daniel Chalker	Wori Wooilywa	M Byron	AMBS	Email	Registration of Interest
20/04/2021	Cherie Carroll Turrise	Gunjeewong Cultural Heritage Aboriginal Corporation	M Byron	AMBS	Email	Registration of Interest
20/04/2021	Marilyn Carroll-Johnson	Corroboree Aboriginal Corporation	M Byron	AMBS	Email	Registration of Interest
20/04/2021	M Byron	AMBS	Daniel Chalker, Cherie Carroll Turrise, Marilyn Carroll-Johnson	Wori Wooilywa, Corroboree Aboriginal Corporation	Email	Stage 2 & 3 Methodology
21/04/2021	Lowanna Gibson	Butucarbin Cultural Heritage Assessments	M Byron	AMBS	Email	Registration of Interest

21/04/2021	M Byron	AMBS	Lowanna Gibson	Butucarbin Cultural Heritage Assessments	Email	Stage 2 & 3 Methodology
21/04/2021	Philip Khan	Kamilaroi Yankuntjatjara Working Group	M Byron	AMBS	Email	Acceptance of Methodology
21/04/2021	Justine Coplin	Darug Custodian Aboriginal Corporation	M Byron	AMBS	Email	Acceptance of Methodology
26/04/2021	Carolyn Hickey	A1 Indigenous Services	M Byron	AMBS	Email	Registration of Interest
26/04/2021	M Byron	AMBS	Carolyn Hickey	A1 Indigenous Services	Email	Stage 2 & 3 Methodology
26/04/2021	Carolyn Hickey	A1 Indigenous Services	M Byron	AMBS	Email	Acceptance of Methodology
28/04/2021	Lee Field	Barraby Cultural Services	M Byron	AMBS	Email	Registration of Interest
28/04/2021	M Byron	AMBS	Lee Field	Barraby Cultural Services	Email	Stage 2 & 3 Methodology
29/04/2021	Kaarina Slater	Ngambaa Cultural Connection	M Byron	AMBS	Email	Acceptance of Methodology
19/05/2021	M Byron	AMBS	RAPs	Tharawal Local Aboriginal Land Council, Cubbitch Barta, Kamilaroi Yankuntjatjara Working Group, Darug Custodian Aboriginal Corporation, Murra Bidgee Mullangari Aboriginal Corporation	Email	Invitation to Survey
19/05/2021	Ryan Johnson	Murra Bidgee Mullangari Aboriginal Corporation	M Byron	AMBS	Email	Reply to Invitation to Survey
19/05/2021	Justine Coplin	Darug Custodian Aboriginal Corporation	M Byron	AMBS	Email	Reply to Invitation to Survey
20/05/2021	Philip Khan	Kamilaroi Yankuntjatjara Working Group	M Byron	AMBS	Email	Reply to Invitation to Survey
24/05/2021	Tharawal Local Aboriginal Land Council	Tharawal Local Aboriginal Land Council	M Byron	AMBS	Phone	Follow up of Invitation to Survey
24/05/2021	Glenda Chalker	Cubbitch Barta	M Byron	AMBS	Phone	Follow up of Invitation to Survey

Appendix B: AHIMS Search Results

Office of Environment & Heritage
NSW GOVERNMENT

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 20896 St Andrews Rd 1

Client Service ID : 566437

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-3949	LP-6	GDA	56	296839	6237492	Open site	Valid	Artefact : 2		
	Contact	Recorders	Mr.Mark Rawson,Kelleher Nightingale Consulting Pty Ltd					Permits	3808	
45-5-4664	Varroville Artefact Scatter 12 (VAS 12)	GDA	56	298252	6236168	Open site	Valid	Artefact : -		
	Contact	Recorders	Mr.Josh Symons					Permits		
45-5-4668	Varroville Isolated Find 8 (VIF 8)	GDA	56	298352	6236181	Open site	Valid	Artefact : -		
	Contact	Recorders	Mr.Josh Symons					Permits		
45-5-4669	Varroville Isolated Find 9 (VIF 9)	GDA	56	298332	6236173	Open site	Valid	Artefact : -		
	Contact	Recorders	Mr.Josh Symons					Permits		
45-5-2557	TLC7	AGD	56	297200	6237090	Open site	Valid	Artefact : -	Isolated Find	98739
	Contact	Recorders	Mr.Mitchell.J Carter					Permits		
45-5-2558	TLC2	AGD	56	297748	6237738	Open site	Valid	Artefact : 10	Isolated Find	98739
	Contact	Recorders	Annie Nicholson					Permits	3593	
45-5-5244	UC AS 26	GDA	56	298129	6237828	Open site	Valid	Artefact : 1		104331
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Miss.Coral Hardwick					Permits		
45-5-3462	East Leppington IF17	GDA	56	296754	6237126	Open site	Valid	Artefact : -		103775
	Contact	Recorders	Heritage Concepts					Permits		
45-5-3463	East Leppington IF18	GDA	56	297689	6237191	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3464	East Leppington IF19	GDA	56	297699	6237193	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3465	East Leppington IF20	GDA	56	298128	6236660	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits		
45-5-3466	East Leppington IF21	GDA	56	297813	6236665	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits		
45-5-3467	East Leppington IF22	GDA	56	297813	6236665	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits		
45-5-3468	East Leppington IF23	GDA	56	297696	6237436	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3469	East Leppington IF24	GDA	56	298366	6237074	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3470	East Leppington IF25	GDA	56	298314	6237310	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3441	East Leppington AS2	GDA	56	298386	6237722	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	

Report generated by AHIMS Web Service on 08/02/2021 for Chris Langeluddecke for the following area at Datum :GDA, Zone : 56, Eastings : 296500 - 298500, Northings : 6236000 - 6238000 with a Buffer of 0 meters. Additional Info : commercial due diligence. Number of Aboriginal sites and Aboriginal objects found is 75

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

Page 1 of 5

Office of Environment & Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 20896 St Andrews Rd 1

Client Service ID : 566437

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-3443	East Leppington AS4	GDA	56	297662	6237348	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3444	East Leppington AS5	GDA	56	298255	6237391	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3446	East Leppington IF1	GDA	56	297738	6237813	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3458	East Leppington IF13	GDA	56	297835	6237798	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3459	East Leppington IF14	GDA	56	297686	6237705	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3460	East Leppington IF15	GDA	56	297714	6237622	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3461	East Leppington IF16	GDA	56	297817	6237756	Open site	Valid	Artefact : -		
	Contact	Recorders	Stirling Smith					Permits	3593	
45-5-3447	East Leppington IF2	GDA	56	297794	6237774	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3448	East Leppington IF3	GDA	56	297784	6237750	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3471	East Leppington IF26	GDA	56	298241	6237813	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3472	East Leppington IF27	GDA	56	298015	6237660	Open site	Valid	Artefact : -		104160
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3476	East Leppington IF31	GDA	56	298399	6237801	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3477	East Leppington IF32	GDA	56	298393	6237748	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3478	East Leppington IF33	GDA	56	298373	6237751	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3479	East Leppington IF34	GDA	56	298406	6237785	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3480	East Leppington IF35	GDA	56	298461	6237817	Open site	Valid	Artefact : -		
	Contact	Recorders	Stirling Smith					Permits	3593	
45-5-3481	East Leppington IF36	GDA	56	298405	6237726	Open site	Valid	Artefact : -		
	Contact	Recorders	Stirling Smith					Permits	3593	

Report generated by AHIMS Web Service on 08/02/2021 for Chris Langeluddecke for the following area at Datum :GDA, Zone : 56, Eastings : 296500 - 298500, Northings : 6236000 - 6238000 with a Buffer of 0 meters. Additional Info : commercial due diligence. Number of Aboriginal sites and Aboriginal objects found is 75

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Office of Environment & Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 20896 St Andrews Rd 1

Client Service ID : 566437

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-3482	East Leppington IF37	GDA	56	298356	6237699	Open site	Valid	Artefact : -		
	Contact	Recorders	Stirling Smith					Permits	3593	
45-5-3492	East Leppington IF47	GDA	56	297611	6237488	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3493	East Leppington IF48	GDA	56	297993	6236956	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-3496	East Leppington ST1	GDA	56	298028	6237291	Open site	Valid	Artefact : -		
	Contact	Recorders	Stirling Smith					Permits	3593	
45-5-3498	East Leppington ST3	GDA	56	298369	6237787	Open site	Valid	Artefact : -		
	Contact	Recorders	Heritage Concepts					Permits	3593	
45-5-4211	EL MA B1	GDA	56	298424	6237568	Open site	Valid	Artefact : 1		
	Contact	Recorders	GML Heritage Pty Ltd + Context - Surry Hills					Permits	3593	
45-5-4213	EL MA C1	GDA	56	298394	6237764	Open site	Valid	Artefact : 1		
	Contact	Recorders	GML Heritage Pty Ltd + Context - Surry Hills					Permits	3593	
45-5-4217	EL MA E1	GDA	56	297684	6237324	Open site	Valid	Artefact : 1		
	Contact	Recorders	GML Heritage Pty Ltd + Context - Surry Hills					Permits	3593	
45-5-4222	EL MA H	GDA	56	297967	6237968	Open site	Valid	Artefact : 1		
	Contact	Recorders	GML Heritage Pty Ltd + Context - Surry Hills					Permits	3593	
45-5-4270	EH3	GDA	56	296782	6237369	Open site	Valid	Artefact : 1		103775
	Contact	Recorders	Oliver Brown Consulting Archaeology					Permits		
45-5-4271	EH4	GDA	56	296782	6237369	Open site	Valid	Artefact : 1		103775
	Contact	Recorders	Oliver Brown Consulting Archaeology					Permits		
45-5-4322	Varroville Isolated Find 1 (VIF 1)	GDA	56	298494	6236216	Open site	Valid	Artefact : 1		
	Contact	Recorders	Artefact - Cultural Heritage Management - Pyrmont,Mr.Josh Madden,Mr.Josh Symo					Permits		
45-5-4230	EL MA L	GDA	56	298440	6237091	Open site	Valid	Artefact : 1		
	Contact	Recorders	GML Heritage Pty Ltd + Context - Surry Hills					Permits	3593	
45-5-4231	EL MA M	GDA	56	298238	6236912	Open site	Valid	Artefact : 1		
	Contact	Recorders	GML Heritage Pty Ltd + Context - Surry Hills					Permits	3593	
45-5-4232	EL MA N	GDA	56	298107	6237480	Open site	Valid	Artefact : 1		
	Contact	Recorders	GML Heritage Pty Ltd + Context - Surry Hills					Permits	3593	
45-5-4233	EL MA O	GDA	56	297947	6237471	Open site	Valid	Artefact : 1		
	Contact	Recorders	GML Heritage Pty Ltd + Context - Surry Hills					Permits	3593	
45-5-4234	EL MA P	GDA	56	298162	6237727	Open site	Valid	Artefact : 1		104160
	Contact	Recorders	GML Heritage Pty Ltd + Context - Surry Hills					Permits	3593	

Report generated by AHIMS Web Service on 08/02/2021 for Chris Langeluddecke for the following area at Datum :GDA, Zone : 56, Eastings : 296500 - 298500, Northings : 6236000 - 6238000 with a Buffer of 0 meters. Additional Info : commercial due diligence. Number of Aboriginal sites and Aboriginal objects found is 75

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Office of Environment & Heritage
NSW GOVERNMENT

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 20896 St Andrews Rd 1

Client Service ID : 566437

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-4235	EL MA Q	GDA	56	297201	6237626	Open site	Valid	Artefact : 1		
	Contact	Recorders	GML Heritage Pty Ltd + Context - Surry Hills					Permits	3593	
45-5-4236	EL MA R	GDA	56	297595	6237488	Open site	Valid	Artefact : 1		
	Contact	Recorders	GML Heritage Pty Ltd + Context - Surry Hills					Permits	3593	
45-5-4237	EL MA S	GDA	56	297576	6237576	Open site	Valid	Artefact : 1		
	Contact	Recorders	GML Heritage Pty Ltd + Context - Surry Hills					Permits	3593	
45-5-4228	EL MA K	GDA	56	298399	6237339	Open site	Valid	Artefact : 1		
	Contact	Recorders	GML Heritage Pty Ltd + Context - Surry Hills					Permits	3593	
45-5-4238	EL MA T	GDA	56	297607	6237928	Open site	Valid	Artefact : 1		
	Contact	Recorders	GML Heritage Pty Ltd + Context - Surry Hills					Permits	3593	
45-5-4240	EL MA V	GDA	56	297758	6237603	Open site	Valid	Artefact : 1		
	Contact	Recorders	GML Heritage Pty Ltd + Context - Surry Hills					Permits	3593	
45-5-4241	EL MA W	GDA	56	297806	6237792	Open site	Valid	Artefact : 1		
	Contact	Recorders	GML Heritage Pty Ltd + Context - Surry Hills					Permits	3593	
45-5-5031	UC AS 4	GDA	56	297063	6236350	Open site	Valid	Artefact : 1		104331
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Ms.Fenella Atkinson					Permits	4303	
45-5-5032	UC AS 6	GDA	56	297409	6236463	Open site	Valid	Artefact : 1		
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Ms.Fenella Atkinson					Permits	4303	
45-5-5033	UC AS 8	GDA	56	297852	6237546	Open site	Valid	Artefact : 1		104331
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Ms.Fenella Atkinson					Permits	4303	
45-5-5038	UC IA 5	GDA	56	297208	6236354	Open site	Valid	Artefact : 1		
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Ms.Fenella Atkinson					Permits	4303	
45-5-5039	UC IA 7	GDA	56	297566	6236721	Open site	Valid	Artefact : 1		
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Ms.Fenella Atkinson					Permits	4303	
45-5-4953	Emerald hills Estate Artefact Reburial	GDA	56	296618	6236076	Open site	Valid	Artefact : -		103775
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Mr.Alistair Hobbs					Permits		
45-5-3780	CG-IA-02	GDA	56	297903	6237628	Open site	Valid	Artefact : 1		104331
	Contact	Recorders	Miss.Melanie (Duplicate of #6086) Thomson					Permits	3593,4303	
45-5-3785	CG-OCS-04	GDA	56	297845	6237515	Open site	Valid	Artefact : 1		104331
	Contact	Recorders	Miss.Melanie (Duplicate of #6086) Thomson					Permits	3593,4303	
45-5-3786	CG-OCS-05	GDA	56	297838	6237242	Open site	Valid	Artefact : 1		104331
	Contact	Recorders	Miss.Melanie (Duplicate of #6086) Thomson					Permits	3593,4303	
45-5-3787	CS-OCS-06	GDA	56	297650	6236957	Open site	Valid	Artefact : 1		104331
	Contact	Recorders	Miss.Melanie (Duplicate of #6086) Thomson					Permits	4303	

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Office of Environment & Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 20896 St Andrews Rd 1

Client Service ID : 566437

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-3788	CG-OCS-09	GDA	56	297650	6236367	Open site	Valid	Artefact : 1		
	Contact	Recorders	Miss.Melanie (Duplicate of #6086) Thomson					Permits		
45-5-3792	CG-OCS-06 Duplicate of 45-5-3787	GDA	56	297650	6237242	Open site	Valid	Artefact : 1		
	Contact	Recorders	Miss.Melanie (Duplicate of #6086) Thomson					Permits	3593	
45-5-4453	EH 3	GDA	56	296780	6237380	Open site	Valid	Artefact : -		103775
	Contact	Recorders	Ms.Michelle Lau					Permits	3808	
45-5-4454	EH 4	GDA	56	296732	6237100	Open site	Valid	Artefact : -		103775
	Contact	Recorders	Ms.Michelle Lau					Permits	3808	
45-5-4455	EH 5	GDA	56	296690	6236975	Open site	Partially Destroyed	Artefact : -		
	Contact	Recorders	Ms.Michelle Lau					Permits	3808	
45-5-4456	EH 6	GDA	56	296620	6236500	Open site	Valid	Aboriginal Resource and Gathering : -		103775
	Contact	Recorders	Ms.Michelle Lau					Permits	3808	
45-5-4913	Aft 1	GDA	56	297592	6236852	Open site	Valid	Artefact : -		104331
	Contact	Recorders	Niche Environment and Heritage,Miss.Clare Leevers					Permits	4303	

Report generated by AHIMS Web Service on 08/02/2021 for Chris Langeluddecke for the following area at Datum :GDA, Zone : 56, Eastings : 296500 - 298500, Northings : 6236000 - 6238000 with a Buffer of 0 meters. Additional Info : commercial due diligence. Number of Aboriginal sites and Aboriginal objects found is 75

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Appendix I Gas Pipleline Assessment Letter and Associated Plans prepared by Craig and Rhodes

CRAIG& RHODES

TAKE THE LEAD

10 June 2021

Our Reference: 59904-2a

Department of Planning, Industry & Environment
Locked Bag 5022
PARRAMATTA NSW 2124

Attention: Deputy Secretary

Re: Planning Proposal (Department Ref: PP_2020_CAMPB_004_00)
Lot 71 DP 706546 St Andrews Road, Denham Court
Gas Pipeline Risk Study

Dear Deputy Secretary,

Reference is made to the above planning proposal and in particular item (2) (c) in Gateway Determination letter with regard to the potential impact of the proposed residential development footprint on an existing gas pipeline located on adjacent land.

Background

The proposed residential development is restricted to the western portion of the subject lot. A copy of the proposed residential development is attached. An Easement for Pipeline (Dealing 8352310) exists to the immediate eastern extent of the residential development footprint. The easement is identified (C) on the attached plan.

The HPG pipeline traversing the site has been located in accordance with AS5488-2013 QL-B and is shown on the attached plan sheets 1 and 2.

Assessment of Impact

Clause 66C of the Infrastructure SEPP relates to development adjacent to high pressure pipelines.
To address these risks circular – PS 18-010 requires notification of works within 20 metres radially of the centreline or within easement of the listed pipeline.

The proposed rear of the residential allotments and proposed road 16 wide & variable on the Eastern extremity of the site are located more than 20 metres away from the located high-pressure gas main. Accordingly, there will not be any affectation to the gas pipeline from future housing / residential allotments.

The proposed road 18 wide which incorporates stormwater drainage is the only part of the development to cross over the gas easement and pipeline. These proposed works have been considered by Jemena and the proponent will be required to undertake consultation with Jemena to establish the required design and protection strategies. A Safety Management Plan and engineering design in accordance with Jemena document Guideline to Designing, Constructing and Operating Around Existing AS2882 Natural Gas Pipelines GAS-960-GL-PI-001 will be developed for any necessary physical protection works of the gas

pipeline as part of Construction Certificate works. All construction will be undertaken under the supervision of Jemena representatives.

The consultation and protection strategy process is a standard procedure for Jemena gas pipelines and is regularly undertaken in similar circumstances.

In summary, it is considered that the gas pipeline will not be adversely affected and it will not pose a significant impediment to the proposed residential subdivision.

Yours faithfully,
CRAIG & RHODES PTY LTD

Aaron Hawke
Registered Land Surveyor

N

EXISTING HOUSE NOT CONSIDERED IN LAYOUT

CAMPBELLTOWN COUNCIL ROAD

CAMDEN COUNCIL

AQUEDUCT

St. ANDREWS ROAD

PROPOSED [16 WIDE] ROAD

PROPOSED [16 WIDE] ROAD

PROPOSED [16 WIDE] ROAD

PROPOSED [16 WIDE & VARIABLE] ROAD

PROPOSED [16 WIDE & VARIABLE] ROAD

CAMDEN COUNCIL CAMPBELLTOWN COUNCIL STREET

RIGHT OF CARRIAGEWAY

WALLS

RETAINING

NO

CAP END FOR FUTURE CONNECTION

GAS

St. ANDREWS ROAD

RIPARIAN CORRIDOR

6.575ha

(SUBJECT TO EASEMENTS)
(1.493ha)

PROPOSED ROAD [18 WIDE]

SYDNEY WATER CANAL

ADJOINING LAYOUT ROAD

CAP END FOR FUTURE CONNECTION

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

DIRECTION OF NATURAL SURFACE

PROPOSED DRAINAGE

20metre HPG BUFFER

GAS HPG MAIN

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)

LEAN LACKENBY & HAYWARD ABN 77 050 209 991
CONSULTANTS IN SURVEYING, ENGINEERING & LAND DEVELOPMENT
SHOP 1.01A, 5 EMERALD HILLS BOULEVARD LEPPINGTON. P.O. BOX 960 NARELLAN NSW 2567
PHONE: (02) 9602 1200 EMAIL: LLH-Reception@crhodes.com.au

	AMENDMENT	DATE	APPR'D
H	HPG LINE AND 20metre BUFFER ADDED	8/6/21	AMH
G	LOTS AMENDED FOR GAS MAIN BUFFER	28/5/21	AMH
F	ST ANDREWS ROAD CONNECTION REMOVED	20/4/21	AMH
E	NEW ROAD CONNECTION ADDED	18/2/21	AMH
D	LOT LAYOUT AMENDED	18/9/18	AMH
C	LOT LAYOUT AMENDED	12/12/17	AMH
B	LOT LAYOUT AMENDED	24/10/17	AMH

TABLE OF mm

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

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

DIRECTION OF NATURAL SURFACE

PROPOSED DRAINAGE

20metre HPG BUFFER

GAS HPG MAIN

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)

ST. ANDREWS ROAD
CAMPBELLTOWN COUNCIL
CAMDEN COUNCIL
AQUEDUCT
EXISTING HOUSE NOT CONSIDERED IN LAYOUT
PROPOSED ROAD [16 WIDE]
PROPOSED ROAD [18 WIDE]
NODE 1
NODE 2
NODE 3
NODE 4
NODE 5
NODE 6
225 uPVC
300 uPVC
375 uPVC
2 X600
RIGHT OF CARRIAGEWAY
WALLS
RETAINING WALL
(SUBJECT TO EASEMENTS)
1.493ha
RIPARIAN CORRIDOR
ECOSOL GPT 4900
TREAT 50% OF Q1 ARI
ORIFICE OUTLET
97.45 INV UP
2 x600 RCP CL2
10M LONG
1% GRADE
97.35 INV DOWN
1%AEP OVERFLW
3 X 0.605 @ 1%
1%AEP BYPASS
RESHAPE AND GRASS
TWL 98.45
1 IN 6
96.45
97.45
98.45
STORMWATER OUTLET & SPILLWAY
ROCK DISSIPATER - ENERGY
AS PER STD DWG SD 5-8 - AS REQUIRED
LANDCOM - SOILS AND CONSTRUCTION
VOLUME 1 - MANAGING URBAN STORMWATER
SYDNEY WATER CANAL
ADJOINING ROAD
LAYOUT

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 S
DRAINAGE PIPE KERB INLET PIT, SEALED PIT, GRATED PIT, DOWN PIPE, GUTTER OVERFLOW	DP PIT
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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CONSULTANTS IN SURVEYING, ENGINEERING & LAND DEVELOPMENT
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PHONE: (02) 9602 1200 EMAIL: LLH-Reception@crhodes.com.au

	AMENDMENT	DATE	APP'D
I	HPG LINE AND 20metre BUFFER ADDED	8/6/21	AMH
H	LOTS AMENDED FOR GAS MAIN BUFFER	28/5/21	AMH
G	ST ANDREWS ROAD CONNECTION REMOVED	20/4/21	AMH
F	NEW ROAD CONNECTION ADDED	18/2/21	AMH
E	LOT LAYOUT AMENDED	18/9/18	AMH
D	RESHAPING AND RELOCATION OF OSD AND POND	22/1/18	AMH
C	LOT LAYOUT AMENDED	12/12/17	AMH

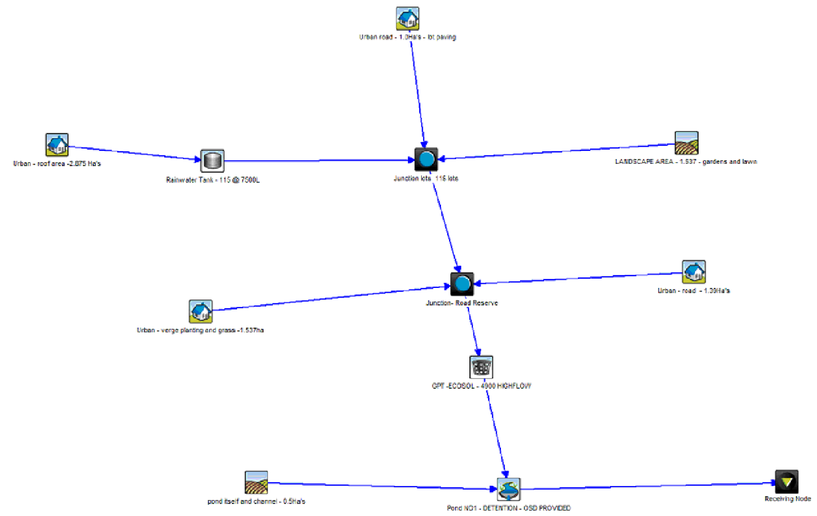
TABLE OF mm

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

CONCEPT DRAINAGE & ON SITE DETENTION/WSUD

DATE OCT 2017 | SHEET 2 of 4 | DRAWING NUMBER 59904PPS4-DR | AMEND I | FILE: 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	48.8	51.6E-3	7.20E3	15.6	116	1.22E3
Residual Load	32.6	0.163	473	4.54	45.0	0.00
% Reduction	33.2	-216.1	93.4	70.9	59.0	100.0

TREATMENT TRAIN MUSIC OUTCOME

LEAN LACKENBY & HAYWARD ABN 77 050 209 991
CONSULTANTS IN SURVEYING, ENGINEERING & LAND DEVELOPMENT
SHOP 1.01A, 5 EMERALD HILLS BOULEVARD LEPPINGTON. P.O. BOX 960 NARELLAN NSW 2567
PHONE: (02) 9602 1200 EMAIL: LLH-Reception@crhodes.com.au

NO	AMENDMENT	DATE	APPR'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 OCT 2017 | SHEET 3 of 4 | DRAWING NUMBER 59904WSUD | AMEND A | FILE: 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

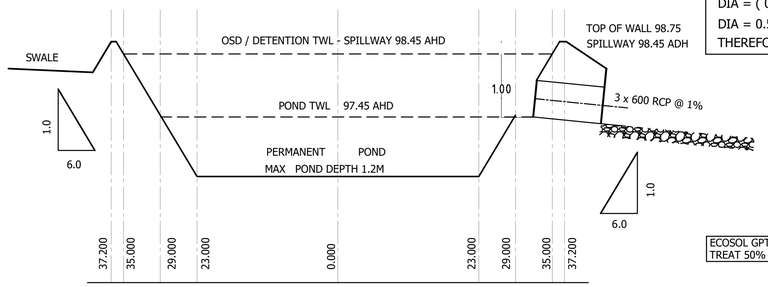
OSD MODELLING

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

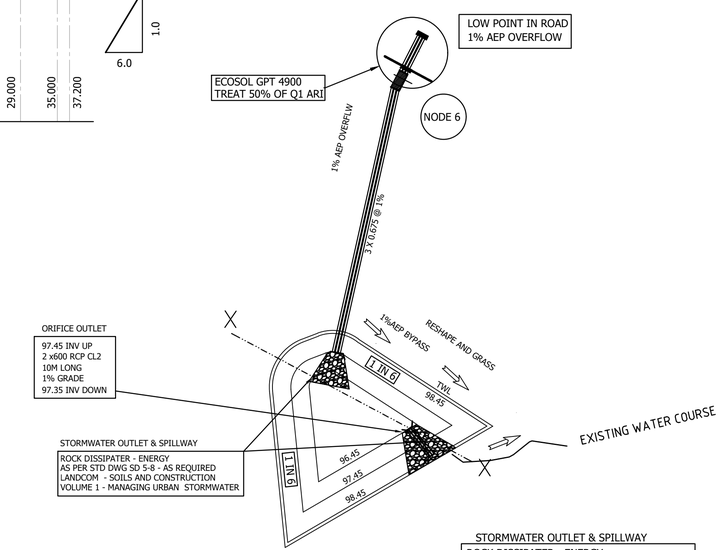
OUTFLOW 2.075 CUMSECS 1% AEP
PRE TO POST
DEPTH IN BASIN 0.95M
VOLUME : 2405.5 CUBIC METRES

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



STORMWATER OUTLET & SPILLWAY
ROCK DISSIPATER - ENERGY
AS PER STD DWG SD 5-8 - AS REQUIRED
LANDCOM - SOILS AND CONSTRUCTION
VOLUME 1 - MANAGING URBAN STORMWATER

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	0.500		
TOTAL		8.825 Ha	2.204	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 .

LEAN LACKENBY & HAYWARD ABN 77 050 209 991
CONSULTANTS IN SURVEYING, ENGINEERING & LAND DEVELOPMENT
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PHONE: (02) 9602 1200 EMAIL: LLH-Reception@crhodes.com.au

	AMENDMENT	DATE	APP'D
B	RESHAPING AND RELOCATION OF OSD AND POND	22/1/18	AMH
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

DRAINAGE NETWORK 1 & 2 CALCULATIONS & SUMMARY

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

Appendix J Letter to Campbelltown Council dated 22.06.18

GAT & Associates Pty Ltd

22 June 2018

The General Manager
Campbelltown City Council
PO BOX 57
Campbelltown NSW 2560

Attention: Jeff Burton, Planning & Development

Dear Jeff,

RE: 71 ST ANDREWS ROAD, VARROVILLE

I refer to the Planning Proposal submitted over the above property seeking a proposed amendment to the Campbelltown Local Environmental 2015 to rezone land from E3 Environmental Management to Part R2 Residential Low Density and to retain Part E3 Environmental Management.

This letter seeks to provide additional information following a telephone discussion with Council Staff.

- With respect to the zoning of the riparian corridor:

  I understand Council has questioned whether an SP2 Infrastructure zoning would be better suited to the area of the riparian corridor in lieu of the E3 Environmental Management zoning suggested by the current submission.

  As Council would be aware, an earlier planning proposal was submitted over the subject site where it is worthy to note that an SP2 zoning was initially sought to the riparian corridor. However as part of subsequent assessment carried out by the Department of Planning, our office was advised that such a zoning could only be applied where the land was to be acquired for that purpose.

  Therefore as the land is to be dedicated, rather than acquired, the E3 Environmental Management zone was extended to encompass the area of the riparian corridor and the SP2 zoning removed.

- With respect to potential lot yield:

  Documentation submitted as part of the current planning proposal references a conceptual subdivision layout which demonstrates a minimum lot size of 450m^2. The submitted concept plans nominate a total of 98 lots across the proposed residential zoned land.

  As noted in the submitted planning report, a minimum lot size of 300m^2 is permissible on adjoining sites in the Growth Centre and as such it would

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w. www.gatassoc.com.au

make good planning sense to maintain this standard across the subject site as well.

Our surveyors have evaluated the site and confirmed that in the event that all lots, excluding battle-axe lots, were designed as 300m^2 that a maximum of 163 lots could be achieved on the site.

Accompanying this letter is a conceptual subdivision plan which details a mix of lots ranging from 300 – 750m^2 across the area of proposed residential land. It is my opinion that this document represents a realistic outcome on the site where a variety of lot sizes and types are provided, facilitating/promoting future housing choice, density and diversity. In this scheme, a maximum of 133 lots is achieved.

As per our telephone discussion, our traffic engineers have reviewed both concepts and have confirmed that the additional traffic flows generated by a subdivision comprising of between 133 – 163 lots will be comfortably accommodated on the proposed new local road network.

It is however important to acknowledge that the current application is simply for a Planning Proposal and the submitted subdivision layouts are conceptual in nature. Any future lot yield and lot layout would be subject to a separate development application.

Reference should be made to the submitted letter prepared by Varga Traffic Planning and Concept Plan prepared by Lean Lackenby and Hayward which is attached as an Appendix.

Should you have any questions, please do not hesitate to contact the undersigned.

Kind regards,

Melissa Rodrigues
Town Planner
GAT & Associates
Plan 2251

VARGA TRAFFIC PLANNING Pty Ltd
Transport, Traffic and Parking Consultants
ACN 071 762 537 ABN 88 071 762 537

21 June 2018
Ref 17476

GAT & Associates Pty Ltd
PO Box 96
HABERFIELD NSW 2045

Attn: Ms Melissa Rodrigues

Dear Melissa,

PROPOSED RESIDENTIAL DEVELOPMENT
71 ST ANDREWS ROAD, VARROVILLE
ADDENDUM TRAFFIC ASSESSMENT

As requested, we have reviewed the traffic implications of increasing the lot yield on the subject site from 98 lots to a higher number of lots based on a smaller lot size.

It is understood that some 133 lots to 163 lots could potentially be achieved with a smaller lot size.

Increasing the number of lots from 98 lots to 163 lots would result in an increased traffic generation potential of an additional 62 vehicles per hour (vph) during the AM peak hour and 64 vph during the PM peak hour in accordance with the traffic generation rates published in the Roads and Maritime Services *Guide to Traffic Generating Developments (October 2002).*

However as noted in the Traffic Report dated 6 February 2018 which accompanied the planning proposal, some 25% of trips are expected to be local trips as detailed in the *Guide to Traffic Generating Developments (October 2002),* in the following terms:

> *"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".*

Thus the external traffic activity which could be generated by an increase in the number of lots from 98 lots to 163 lots would be approximately 10 vph IN/37 vph OUT in the AM peak hour, and approximately 38 vph IN/10 vph OUT during the PM peak hour. That additional traffic activity which could be generated by the increased lot yield would be dispersed over a number of collector roads such as St Andrews Road, Willowdale Drive and Denham Court Road.

The now completed upgrades to dual carriageway on Camden Valley Way includes new intersection layouts at the St Andrews Road, Willowdale Drive and Denham Court Road intersections. These improvements comprise 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.

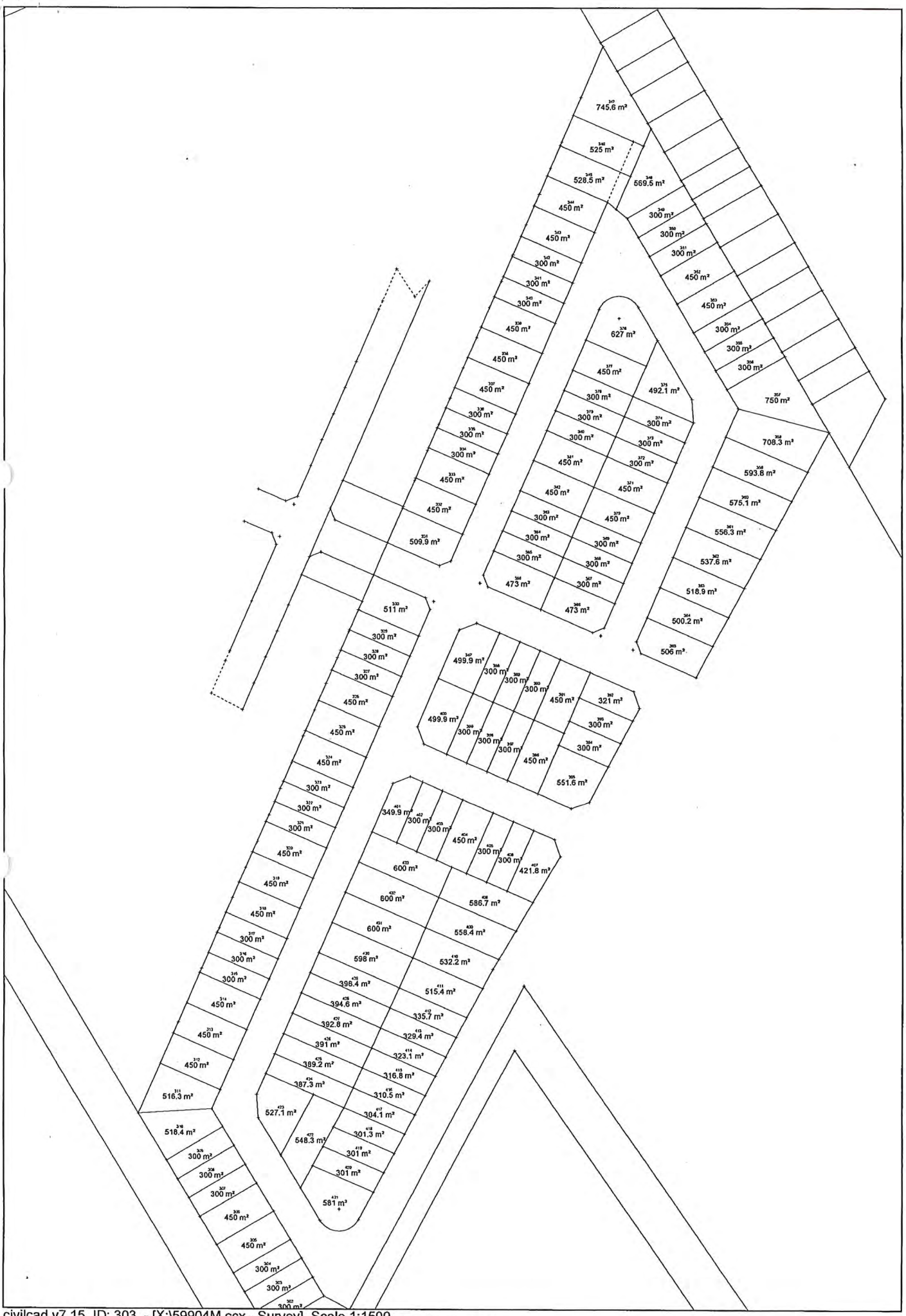
In the circumstances, it is reasonable to conclude that the external traffic flows expected to be generated by the planning proposal will not have any unacceptable traffic implications in terms of road network capacity.

In addition, it is noted that the additional traffic flows which could potentially be generated by an increased lot yield will be comfortably accommodated on the proposed new local road network which will be linked with the now completed Aqueduct Street in the residential subdivision located on the adjacent Cornish site.

Please do not hesitate to contact me on telephone 9904 3224 should you have any enquiries.

Yours sincerely

Robert Varga
Director
Varga Traffic Planning Pty Ltd



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Printed on June 08 2018 08:59 by Corey Lenton, Lean Lackenby and Hayward P/L

Appendix K Local Planning Panel Minutes dated 25.07.18

Minutes of the Local Planning Panel Meeting held on 25 July 2018

Present Member Ian Reynolds
Member Jenny Rudolph
Member Cecilia Cox

1. ACKNOWLEDGEMENT OF LAND

An Acknowledgement of Land was presented by the Chairperson .

2. APOLOGIES

Member Mary-Lynne Taylor

3. DECLARATIONS OF INTEREST

There were no Declarations of Interest made at this meeting.

4. REPORTS

4.1 Planning Proposal - 71 St Andrews Road, Varroville

Executive Summary

- A Planning Proposal request to amend the Campbelltown Local Environmental Plan 2015 (CLEP 2015) to rezone land at 71 St Andrews Road Varroville, from E3 Environmental Management to part R2 Low Density Residential and part E3 Environmental Management.
- A previous Planning Proposal request for the site was rejected by Council in 2016 due to concerns regarding potential impacts on existing bushland and the Scenic Hills. The reduction of the proposed urban footprint and preservation of additional bushland on the land as a potential biobanking site directly responds to the previous concerns raised by Council.
- The current Planning Proposal is considered to have broad level strategic planning merit due to its consistency with the urban-rural interface of the locality and the adjoining East Leppington Growth Centre.
- In accordance with the Local Planning Panels direction for draft planning proposals, advice is sought from the Panel concerning the merits of the proposal.

Public Address

The Local Planning Panel meeting was addressed by the applicant, Mr Gerard Turrisi.

Panel members asked questions that were responded to directly at the meeting.

Panel Considerations and Reasons for Decision

The Panel noted the proposed objectives and intended outcomes of the Planning Proposal request having regard to the following:

1. Development of the subject site for residential purposes has been pre-supposed by the development pattern approved on land adjoining to the west.

2. The site is adjoined on two sides by land developed for residential purposes pursuant to the Growth Centres SEPP and that an electricity easement formes a third boundary of the land proposed to be developed. As a result, the land proposed to be rezoned for residential purposes is currently isolated and appears no longer suitable for its current use.

3. Appropriate future development of the land, with development consent, would provide an improved transition between the adjoining residential lands and other neighbouring land uses than is currently provided were the site remain in its current zoning and use.

4. The land forms part of the Scenic Hills area designated by Campbelltown City Council. However, due to local topography, sight lines to the Scenic Hills would not be compromised by the proposal.

5. The proposal to utilise part of the site for bio banking purposes is supported subject to appropriate arrangements being entered into between the Council and the proponent to secure its long term viability. In this regard, the Panel consider an E3 Environmental Management zoning may not adequately secure the long term ecological integrity of the lands to be retained for environmental purposes. The Panel encourages Council to consider other options that would not provide a dwelling entitlement.

6. The Planning Proposal request is generally consistent with the changed urban-rural interface of the locality defined by recent development in the adjoining East Leppington Growth Precinct.

7. Although the Planning Proposal request would result in a small increase in housing supply in the area, the proposal has not satisfactorily addressed the current strategic framework established by the District Plan. Therefore, Council should satisfy itself of an appropriate strategic justification prior to seeking Gateway Determination.

8. Council's assessment of issues that require further consideration post Gateway Determination is supported. However, the following additional matters should also be addressed:

    a) impact of the gas pipeline on the development footprint; and
    b) strategy to ensure the existing urban edge is not replicated by future development and a sensitive interface is achieved.

9. As advised by the applicant at the Panel meeting, a development application has been lodged on 25 July 2018 to clear vegetation from the site. The Panel suggests that the Council carefully consider whether it should assess/determine the proposed removal of vegetation prior to finalisation of the Planning Proposal, as it may prejudice the rezoning assessment and associated environmental strategy.

Voting

The Local Planning Panel voted: 2/1

The open session of the Panel Meeting concluded at 3:45pm and the Panel then adjourned to consider the of business and information presented to the Panel during its hearing.

The next meeting of the Local Planning Panel will be held on Wednesday 22 August 2018 at 3.00pm in the Council Chambers, Level 3, Civic Centre, Campbelltown.

Ian Reynolds
Chairperson

Appendix L Letter from Campbelltown Council dated 07.08.18

campbelltown
city council

7 August 2018

E-MAILED

Mr Gerard Turrisi
GAT & Associates P/L
PO Box 96
HABERFIELD NSW 2045

By email: gerard@gatassoc.com.au

Dear Sir,

Draft Planning Proposal 500/2018/E-LEPA - 71 St Andrews Road Varroville

I refer to the abovementioned application considered by the Campbelltown Local Planning Panel at its meeting of 25 July 2018. Thank you for your direct representation to the Panel at this meeting.

A review of the application has been undertaken having regard to the advice provided by the Local Planning Panel (attached), and the relevant guidelines for the preparation of planning proposals published by the Department of Planning and Environment (DPE). Prior to Council considering a report on whether to progress the draft proposal to the DPE for Gateway Determination, the following issues are raised for your consideration and reply as appropriate.

1. Consistency with Higher Order Strategic Plans

The Local Planning Panel has requested that additional details are provided to address the current strategic framework established by the Western City District Plan. This request is in accordance with Section 3.8 of the Act which requires that in preparing a planning proposal, the planning proposal authority is to give effect to any district strategic plan applying to the local government area to which the planning proposal relates.

The current proposal does not demonstrate consistency with the Metropolitan Rural Area (MRA), identified under both the Greater Sydney Region Plan 2018 and the Sydney West District Plan. Objective 29 of the Greater Sydney Region Plan states that urban development is not consistent with the values of the MRA. This objective is reflected in Action 79 of the Western City District Plan which limits urban development within the MRA. These outcomes are currently secured through the existing E3 Environmental Management zoning of the site under Campbelltown Local Environmental Plan 2015.

2. Compatibility of E3 Zone with Future Biobanking Area (Conservation Stewardship Site)

The Panel considers that an E3 Environmental Management zoning may not adequately secure the long term ecological integrity of the lands to be retained for environmental purposes.

It is suggested that an E2 Environmental Conservation zone would likely be more compatible with any future biodiversity offset proposed. In addition, it is considered that an alternate zoning of the riparian corridor may be appropriate to better assimilate with the adjoining Willowdale subdivision, given the multi-functional purpose of this area to act as a public open space connection, drainage system and asset protection zone.

3. Ecological Assessment

The fauna and assessment report (Travers: February 2018) appears to underestimate the extent and quality of Cumberland Plain Woodland (CPW) on the site having regard to the field survey method guidelines of the NSW Office of Environment and Heritage. Therefore, the ecological assessment should be revised to comply with relevant legislation, and to properly inform any required biodiversity offsets. It is requested that your ecological consultant directly liaise with Council staff to further explore and resolve this matter.

4. Vehicular Access

Concern is raised regarding the feasibility of road access via the Cornish subdivision given the consent condition of DA 842/2014 issued by Camden Council. Accordingly, the proposal should address the opportunities to provide flood free access via the unformed section of St Andrews Road. The traffic study should also be updated to inform future consultation with Camden Council.

5. Bushfire

The requirement to manage the electrical easement as an asset protection zone will be dependent upon the electrical authority supporting this outcome.
Access to the proposed R2 Residential Zone by a single road link would result in a potential bottleneck which is not recommended by the Planning for Bushfire Protection Guidelines 2006. This matter will require consultation and verification from the NSW Rural Fire Service.

The presumption of a dwelling entitlement for the residual E3 zone and biodiversity corridor is not supported due to likely ecological conflicts with vegetation clearance associated with the required asset protection zone, access driveway, and service connections. This issue should be addressed by nominating an alternate environmental zoning as raised by the Local Planning Panel.

6. Flooding / Stormwater Issues

The behaviour of stormwater in the vicinity of the site has changed due to development in the adjoining Cornish Subdivision and Emerald Hill Estates. Therefore, the stormwater and flooding analysis should be updated to consider these changes on the surrounding landscape, match stormwater capacity of the existing riparian corridor in the downstream Willowdale Estate, and demonstrate safe passage of the probable maximum flood (PMF) through the subject land post-development. Flood free lots need only be above the flood planning level. PMF level requires safe evacuation routes.

This may require a significant amount of filling and associated retaining walls to provide flood free lots. It is also considered preferable that stormwater is discharged into the riparian corridor through the proposed R2 lands rather than the biodiversity area.

Upon receipt of a satisfactory response to the above matters, a report will be scheduled for the next available meeting of Council. Should you have any questions, please contact Council's Senior Strategic Planner, Jeff Burton on 4645 4842.

Yours sincerely

Fletcher Rayner
Executive Manager
Urban Release and Engagement

Appendix M Response to Campbelltown Council dated 21.12.18

GAT & Associates Pty Ltd

21 December 2018

The General Manager
Campbelltown City Council
PO BOX 57
Campbelltown NSW 2560

Attention: Jeff Burton, Planning & Development

Dear Jeff,

RE: PLANNING PROPOSAL 500/2018/E-LEPA
71 ST ANDREWS ROAD, VARROVILLE

This letter has been prepared in response to advice received from both the Local Planning Panel and Campbelltown Council with respect to the above Planning Proposal.

The submission of this letter follows a meeting with Council staff on 9 November 2018 where the matters below were discussed in detail. This letter seeks to formalise our response to Council and provide additional information with respect to the matters raised.

Response to letter from Campbelltown Council dated 7 August 2018:

1. Consistency with Higher Order Strategic Plans

Comment:

The Western City District Plan encompasses the Blue Mountains, Camden, Campbelltown, Fairfield, Hawkesbury, Liverpool, Penrith and Wollondilly local government areas.

As part of our original submission, reference was made to this Plan acknowledging the demand for residential housing in areas well serviced by local infrastructure (made available by virtue of the adjoining Growth Centre land) and in proximity to employment hubs (such as Leppington which has been identified as a Priority Precinct).

Council's letter however makes reference to the Metropolitan Rural Area (MRA), identified under both the Greater Sydney Region Plan 2018 and the Sydney West District Plan. The letter states,

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469-475 Parramatta Rd
Leichhardt NSW 2040

▪ **Brisbane Office**
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e. gat@gatassoc.com.au
w. www.gatassoc.com.au

> *"Objective 29 of the Greater Sydney Region Plan 2018 states that urban development is not consistent with the values of the MRA. This objective is reflected in Action 79 of the Western City District Plan which limits urban development within the MRA. These outcomes are currently secured through the existing E3 Environmental Management zoning of the site under Campbelltown Local Environmental Planning Plan 2015".*

It should first be acknowledged that the subject site is not a rural area. The zoning of the land itself refers to Environmental Management, not a rural classification. In fact, an overview of mapping in the immediate area indicates that the site adjoins R2 Residential Low Density land, RE1 Public Recreation and SP2 Infrastructure to the north and east, (as sought in part by this Proposal), E3 Environmental Management land to the south and E2 Environmental Conservation land to the west.

As such, the nearest rural zoned land, is a small pocket beyond the E2 land referred to above which is zoned RU2 Rural Landscape and along the northern side of Camden Valley Way which is zoned RU1 Primary Production or RU4 Primary Production Small Lots. It is acknowledged that the land referred to above varies between Campbelltown and Camden local government areas, however when considering the strategic direction of the overall landscape, these land use zones are instrumental in shaping the area. Refer to the figure below.

Figure 1 – Land Use Zones

Source: Planning Portal NSW

Objective 29 of the Greater Sydney Region Plan 2018 states,

> *"Environmental, social and economic values in rural areas are protected and enhanced".*

The objective is found under Planning Priority W17 – Better Managing Rural Areas. The provisions of this part continue to state,

> *"The Western City District's rural areas contribute to habitat and biodiversity, support productive agriculture, provide mineral and energy resources, and sustain local rural towns and villages. They are part of the larger Metropolitan Rural Area.*
>
> *…*
>
> *Greater Sydney's agricultural production in 2015-16 was $645 million – equal to five per cent of NSW's total agricultural value. Farmland in this District has supplied Greater Sydney's fresh food for over two centuries.*
>
> *The District's rural areas include poultry, egg production and dairy activities, irrigated horticulture such as leaf vegetables and mushrooms, and nurseries for cut flowers and turf".*

Action 79 of the Western City District Plan states,

> *"Limit urban development to within the Urban Area, except for investigation areas at Horsley Park, Orchard Hills and east of The Northern Road, Luddenham".*

It is clear from the comments above that the intention of the Plan is to protect Sydney's green/agricultural belt.

The subject site does not constitute agricultural land. The land has however been recognised for its ecological significance, which has been identified and protected by the current Planning Proposal through the retention of an environmental zone through the south eastern portion of the site.

The proposed rezoning of the northern and western portion of the site to residential is supported by the residential zoning of adjoining land. The subject site adjoins the South West Growth Centre to two of its boundaries providing access to established infrastructure which will assist in reduce the cost of housing within the NSW housing market. It is generally the cost of infrastructure which places 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.

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.

Following the advice of both Council and the Local Planning Panel, a small pocket of R2 Low Density Residential land is proposed within the E3 Environmental Management land. This arrangement maintains a predominantly environmental landscape over the subject site.

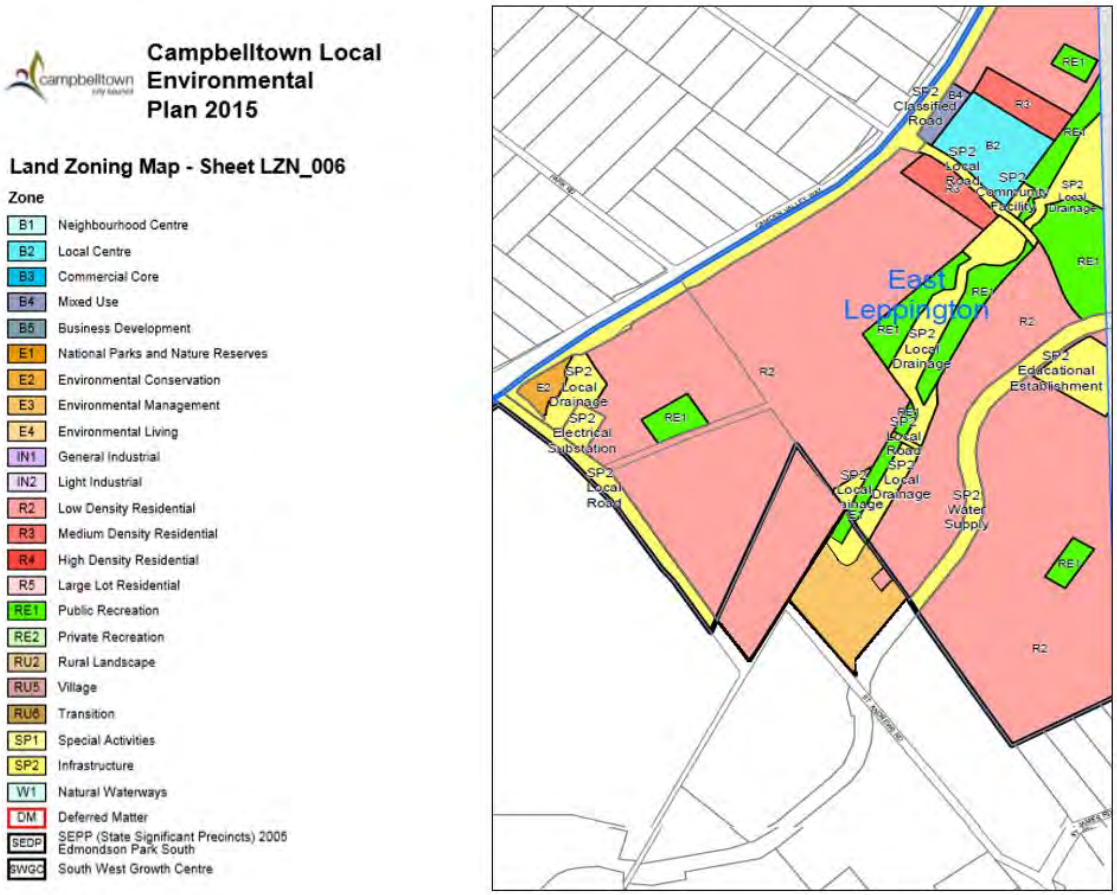
This arrangement is also not dissimilar to land use zones on the opposite side of St Andrews Road and allows for any required asset protection zone and hence land management to be contained within residential land, ensuring that any environmental land can be protected and enhanced.

Reference should be made to the comments made under point 2 of this letter full a complete overview of the proposed land use zones.

2. Compatibility of E3 Zone with Future Biobanking Area (Conservation Stewardship Site)

Comment:

In keeping with feedback from both Council and the Panel, an amended zoning map has been prepared as part of this submission. As demonstrated in the image below, the following land use zones are proposed:



- R2 Low Density Residential.

- RE1 Public Recreation and SP2 Infrastructure – aligning with the adjoining Willowdale subdivision to allow for a public open space connection, drainage system and asset protection zone.

  As Council would be aware, an earlier planning proposal was submitted over the subject site where it is worthy to note that an SP2 zoning was initially sought to the riparian corridor. However as part of a subsequent assessment carried out by the Department of Planning, our office was advised that such a zoning could only be applied where the land was to be acquired for that purpose.

  However as Council have advised that this is their preferred position, the proposed zoning map has been updated accordingly. We acknowledge that this land would subsequently be acquired by Council for future maintenance/maintenance purposes.

- E3 Environmental Management – having regard to the proposed biodiversity offset. As stated in the comments above, a small pocked of R2 Low Density Residential land is proposed within the E3 Environmental Management land fronting Grantham Crescent. This arrangement facilitates a residential property whereby all asset protection zones can be incorporated within the residential land securing the long term viability of the proposed E3 environmental land.

3. Ecological Assessment

Comment:

With regard to the ecological assessment, the following comments are provided in the report prepared by Travers Bushfire & Ecology:

"*Consultation with Campbelltown Council on the 9th of November 2018, Council's ecologists requested updated floristic survey of the site, re-examine the vegetation mapping and to demonstrate an avoidance of impact. This is a direct result of the site having been raked immediately prior to the November 2017 survey session for the purposes of removing light wood and pasture improvement. Travers bushfire and ecology note the concern raised by Council that the current land management is inconsistent with the current zoning. In addition, it is noted that the current land management which includes grazing of a small number of animals has an influence on the quality of the existing vegetation and its existing ecological value.*

To overcome the land management in November 2017 it was agreed by Council's ecologists that resurvey was appropriate under the circumstances and that the land be spelled for approximately 7-8 months to provide an opportunity for understory vegetation to regenerate. During that time, there was also one major rainfall event following an extended dry period.

The joint inspection with Councils ecologist in November 2018 revealed that the understorey had commenced to regenerate in selected locations but the ground was still mostly bare except in lower lying areas that benefited more from the recent rains. The site inspection also revealed various stock piles of native vegetation brush near quadrat 5 that may have been under scrubbed at an undetermined time.

Travers bushfire & ecology would have expected significantly more understory regeneration on site and consider that current management practices are preventing regeneration of native vegetation to any significant extent. Despite the vegetation management works the species diversity is low and not reflective of recently cleared vegetation but of long term pasture management and removal of timber consistent with ongoing grazing management."

The report then concludes by saying:

"*Travers bushfire & ecology has been engaged to undertake a flora and fauna assessment for a proposed rezoning within Lot 71 DP 706546, 71 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.

It is concluded that the proposed vegetation removal within Lot 71 DP 706546, 71 St Andrews Road, Varroville, is unlikely to result in a significant impact on any threatened species, populations or EECs or their habitats.

The proposed zonings are also suitable for the site in terms of its current condition and the ability of the zoning to result in a positive ecological outcome for the site. Offsetting under the Biodiversity Offsets Scheme also results in a better conservation outcome on lands that can be conserved with a higher level of resilience."

The report is submitted under a separate cover for review.

4. Vehicular Access

Comment:

The concept plans also show that should access not be available through the Cornish subdivision, then access is available through St Andrews Road.

Cardno have prepared a drainage/flood assessment and has confirmed that St Andrews Road is generally flood free, noticing that we are at the lowest point along St Andrews Road.

5. Bushfire

Comment:

Having regard to the electrical easement, the following is noted in the submitted Bushfire Report:

> *"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.*

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)".

With respect to access, the following comments are provided in the submitted Bushfire Report:

"The preferred access to the proposed R2 portion of land will be provided via the recently constructed Aqueduct Street in the west. This design does not provide for perimeter roads and follows a similar subdivision design as the adjoining recently approved subdivision to the west. Firefighting access to the adjoining vegetation (under this design) can be provided via the existing St Andrew Road in the south-west and via the existing access tracks under TransGRID maintenance.

Alternatively the main access to the site could potentially be provided via St Andrews Road to the south. This unformed road provides access to Camden Valley Way further north. If this access design is adopted St Andrews Road (for the full length between Camden Valley Way and the subdivision) will need to be upgraded to perimeter road standards (i.e. 8m carriageway which excludes parking)".

Finally, reference should be made to Point 1 of this letter with respect to the dwelling entitlement and proposed land use zones.

6. Flooding/Stormwater Issues

Comment:

Cardno have undertaken a hydraulic assessment. This firm was also involved with the Master Planning of the surrounding residential lands being Willowdale and Emerald Hills.

Cardno concluded:

The hydraulic assessment shows the proposed development site is not affected by the 1% AEP event, however, an onsite detention basin will be required to attenuate the peak flow from the proposed development site. A detailed hydrology and hydraulic assessment should be prepared in the DA stage to provide the required basin storage volume and outlet structure to ensure there will be no adverse flooding impact to the adjacent properties.

Detailed survey data should be obtained in the detailed design stage to show the existing overland flow path invert levels, banks and the location of the existing dam near Bonds Creek. The survey data will provide a more accurate design for the proposed basin and ensure it can be drained to Bonds Creek.

The PMF flood evacuation route can be proved by a new connection to Aqueduct Street as shown in the sketch.

This advice is attached to this letter.

Response to advice received the Local Planning Panel held on 25 July 2018:

While Council's letter has summarised the advice received from the Panel, it is acknowledged that the following matter was also raised:

> *"Council's assessment of issues that require further consideration post Gateway Determination is supported. However, the following additional matters should also be addressed:*
>
> *(a) Impact of the gas pipeline on the development footprint".*

Comment:

Reference is made to the submitted letter prepared by Craig Rhodes which confirms that the proposal maintains a 10m setback from the location of the gas pipeline easement. Accordingly, there will be no impact to the gas pipeline from future residential development. Their letter is attached and dated 20 September 2018.

Should you seek any further clarification on the development, please do not hesitate to contact me.

Kind regards,

Melissa Rodrigues
Town Planner
GAT & Associates
Plan 2251

Gerard Turrisi
Director

Travers

bushfire & ecology

Flora & fauna assessment

71 St Andrews Road
Varroville

December 2018
(REF: 18GAT03)

Flora & Fauna Assessment

71 St Andrews Road
Varroville

DECEMBER 2018

Report Authors:	Michael Sheather-Reid B. Nat. Res. (Hons.) (Managing Director) Lindsay Holmes B. Sc. – Manager of Ecology (Senior Botanist) George Plunkett B. Sc. PhD – Botanist Robert Sansom B. Sc. (Hons.) – Botanist Corey Mead B. App. Sc. – Fauna Ecologist
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Date:	20/12/18
File:	18GAT03

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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 prepare an updated flora and fauna assessment for a proposed rezoning within Lot 71 DP 706546, 71 St Andrews Road, Varroville. The entire area of this lot has been subject to ecological survey effort and will hereafter be referred to as the 'study area'. In some circumstances survey has however extended slightly beyond this boundary.

Travers bushfire & ecology undertook flora and fauna survey in November 2017 and additional vegetation assessment in November 2018. The vegetation mapping (November 2018) has been prepared in accordance with the BAM Methodology and accurately represents the cover and condition of vegetation onsite. *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.

Consultation with Campbelltown Council on the 9th of November 2018, Council's ecologists requested updated floristic survey of the site, re-examine the vegetation mapping and to demonstrate an avoidance of impact. This is a direct result of the site having been raked immediately prior to the November 2017 survey session for the purposes of removing light wood and pasture improvement. *Travers bushfire and ecology* note the concern raised by Council that the current land management is inconsistent with the current zoning. In addition, it is noted that the current land management which includes grazing of a small number of animals has an influence on the quality of the existing vegetation and its existing ecological value.

To overcome the land management in November 2017 it was agreed by Council's ecologists that resurvey was appropriate under the circumstances and that the land be spelled for approximately 7-8 months to provide an opportunity for understory vegetation to regenerate. During that time, there was also one major rainfall event following an extended dry period.

The joint inspection with Councils ecologist in November 2018 revealed that the understorey had commenced to regenerate in selected locations but the ground was still mostly bare except in lower lying areas that benefited more from the recent rains. The site inspection also revealed various stock piles of native vegetation brush near quadrat 5 that may have been under scrubbed at an undetermined time.

Travers bushfire & ecology would have expected significantly more understory regeneration on site and consider that current management practices are preventing regeneration of native vegetation to any significant extent. Despite the vegetation management works the species diversity is low and not reflective of recently cleared vegetation but of long term pasture management and removal of timber consistent with ongoing grazing management.

Whilst this current management is inconsistent with the current zoning, the condition of the vegetation would suggest that the vegetation within the understorey is quite disturbed and is likely to have a low resilience given the long-term management within the site. The existing vegetation on the western side of the electrical easement is highly managed and is unlikely to regenerate to any vegetative form without a significant spell of many years and supplementary revegetation works will be required to reintroduce native understorey and shrub layers.

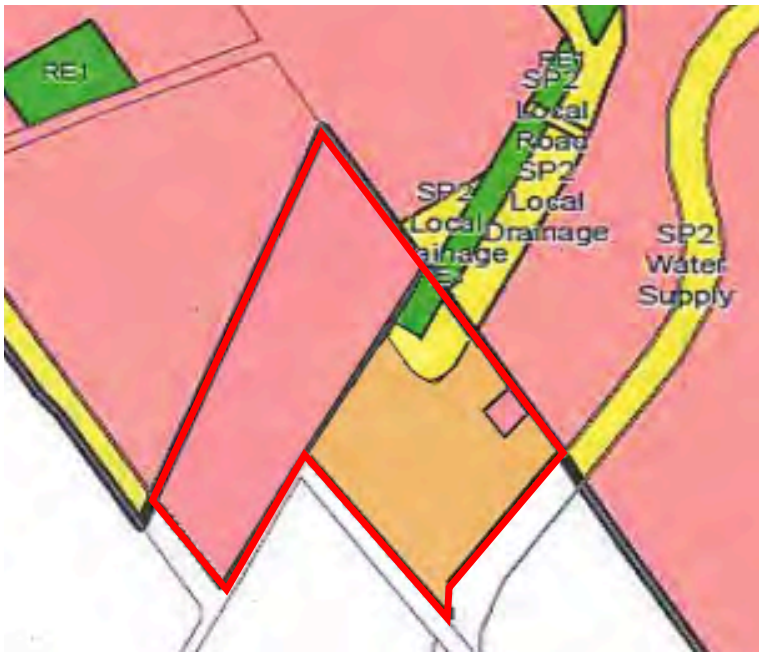
Additional plots were undertaken on adjoining lots as requested by Councils ecologist on the expectation that transitional arrangements of the BC Act would cease on the 25th of November 2018. However, as the savings and transitional provisions have been extended until 25 November 2019, this project must be assessed in accordance with the requirements of the TSC Act. *Travers bushfire & ecology* consider it inappropriate to rely on information from plots on adjoining lands that are reflective of a significantly different management history but also varying degrees of vegetation management from fire, understorey management and partial clearing.

This flora and fauna assessment has however relied on updated BAM plots within the site to provide accurate representation of the existing vegetation at the time of survey.

Proposed development

The study area is currently zoned E3 Environmental Management. As the site is located within the Campbelltown local government area (LGA), this project is being assessed under the *Threatened Species Conservation Act* (*TSC Act*, 1995) in accordance with the *Biodiversity Conservation (Savings and Transitional) Regulations, 2017.* Local developments in the Campbelltown LGA may submit proposals under the *TSC Act* until November 25th, 2019.

The proposal as shown below is for the rezoning of the lands to the north-western side of the powerline easement and subsequent subdivision to R2 residential. The south-eastern portion of the site is proposed to be retained as E3 Environmental Management with a small pocket of R2 to accommodate a single dwelling and asset protection zone. RE1 and SP2 are proposed to be extended into the site for stormwater and drainage works.



Proposed zonings

The proponents are currently intending to establish a biodiversity stewardship site on the E3 zoned lands and to use this as a potential offset for the proposed subdivision. This strategy is subject to a future Biodiversity stewardship assessment at prior to a subdivision DA. The E3 lands are likely to have either a restriction of the use of that title under an 88B Instrument or a conservation agreement of some form which may include a Biodiversity Stewardship Agreement under the *Biodiversity Conservation Act* (*BC Act*) 2016.

Future works within the E3 lands allow a single dwelling with associated works and APZ, and a stormwater detention basin. The stormwater detention basin has now been sized and its location shown Figure 1 – Concept Services Plan.

Avoidance of impact

It is noted that a demonstrated avoidance of impact was requested on the 9th of November 2018 by Council's ecologists. It's important to note that this proposal was previously submitted and refused by the planning panel on the basis of a R2 rezoning concept that would have resulted in complete removal of vegetation from the entire site.

The Planning Panel however gave support in principle for a revised rezoning concept that conserved the south-eastern portion of the site and the R2 zone would be retained on the western side of the current electrical easement. This was a direct avoidance action that recognised that the more diverse vegetation within the currently retained E3 zoned land would be conserved and restored. The current rezoning proposal has carried forward that avoidance action.

The recent inspection of the site revealed that the retained E3 land had low species diversity most likely due to dry conditions, grazing and past management. However, the retained E3 lands has a greater ability to regenerate due to higher species diversity, its sited closer to remnant vegetation to assist with regeneration and is located in lower and wetter ground conditions. The adjoining lots to the south also supports this view due to the presence of a dense understorey or more diverse species composition which we expect would regenerate well within low lying portions of the site.

The total area of Cumberland Plain Woodland vegetation within the site covers 8.35ha but in a highly-degraded condition. The past land management practice within the entire site which has extended over a decade has resulted in a low resilience land placed within portions of the site with low resilience, the E3 zone has conserved degraded vegetation that can be significantly improved, provides a linking parcel of vegetation to surrounding lots and will restore over a shorter time period.

The current proposal avoids impacting 3.74 ha of degraded CPW vegetation. The impacted CPW vegetation is of low quality, has low species diversity and would also be expected to regenerate poorly. Past management of this site which has extended over a decade based on aerial photography which has resulted in the low condition of the vegetation on the land.

Further avoidance of impact has been achieved through the removal of the proposed basin into the electrical easement and the creation of a small R2 parcel for a future dwelling on the northern boundary of the eastern portion of the site not within the centre of the of the retained E3 lands. This creates a less fragmented landscape and potential for a better conservation outcome.

Consequently, this flora and fauna assessment has assessed the avoidance of impact on the western lot and has assessed the impact on the eastern most portion which is proposed as a R2 Residential zone consistent with the adjoining residential lands to the north and west of the site.

Suitability of the proposed zones

The proposed zoning concept is supported by this ecological assessment on the basis of the following points:

- The existing vegetation within the proposed R2 zone has low resilience, low species diversity and the restoration effort would not result in a fully structured CPW vegetation without significant works over an extended 10 years or more. It also immediately abuts an existing residential zone and results in a reasonable extension of the R2 zone into a highly-degraded portion of the site.
- The loss of highly degraded CPW which currently contains sparse to moderate canopy with low species diversity is not significantly impacted by the proposed zoning and retains a significant portion of the existing more suitable land within the retained E3 zone.
- The proposed land to be retained under E3 environmental management has an ability to regenerate and can be restored over a shorter timeframe and forms part of larger more extensive parcel of vegetated lands.
- The proposed R2 lands would be required to be offset under the Biodiversity Offset Scheme at the time of a subdivision application and the retained E3 lands would contribute to that offset.
- Biodiversity offsetting of the impacted vegetation would result in a significantly better ecological outcome then trying to retain a highly-degraded portion of land.
- The proposed E3 lands can be required to be conserved, restored and protected in perpetuity by conditions of approval or a voluntary planning agreement.

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) critically endangered ecological community (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 proposed vegetation removal was not considered to have a significant impact on matters of national environmental significance as the remnant vegetation present which is 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 and amelioration measures to the above mentioned impacts are, where applicable, addressed within Section 5.3 of this report. Biodiversity offsetting is recommended for all residual impacts estimated at 4.61 ha of Cumberland Plain Woodland consisting of 1.2 ha of low quality sparse canopy and 3.41ha of low quality moderate canopy areas. Both areas meet the definition of Cumberland Plain Woodland, its low quality results in a not significant impact. The proposed rezoning provides an opportunity to not only conserve a significant portion of the site under a VPA but also to create an offset within the locality and or on other lands within the locality.

Conclusion

It is concluded that the proposed vegetation removal within Lot 71 DP 706546, 71 St Andrews Road, Varroville, is unlikely to result in a significant impact on any threatened species, populations or EECs or their habitats.

The proposed zonings are also suitable for the site in terms of its current condition and the ability of the zoning to result in a positive ecological outcome for the site. Offsetting under the Biodiversity Offsets Scheme also results in a better conservation outcome on lands that can be conserved with a higher level of resilience.

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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Introduction 1

Travers bushfire & ecology has been engaged to undertake an updated flora and fauna assessment for a proposed rezoning within Lot 71 DP 706546, 71 St Andrews Road, Varroville. The entire area of this lot has been subject to flora and fauna 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 Proposal

The study area is currently zoned E3 Environmental Management. The proposal is for the rezoning of the lands to the north-western side of the powerline easement and subsequent subdivision. 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 remaining E3 lands on the south-eastern side of the powerline easement 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 *BC Act*.

Future works within the E3 lands will also include a single dwelling with associated works and APZ, and a stormwater detention basin.

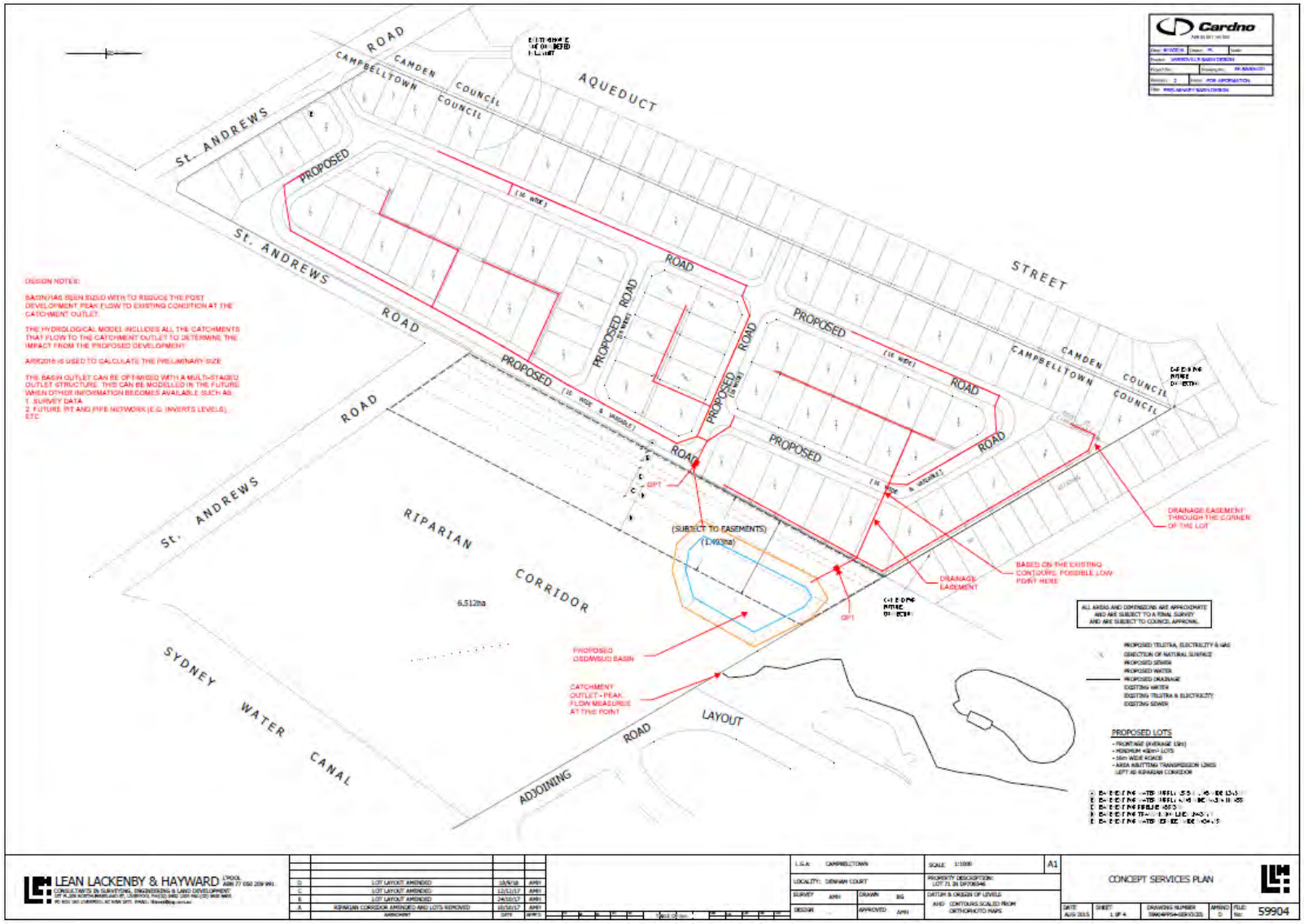


Figure 1 – Concept services plan

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 Lot 71 DP706546
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.
Zoning	E3 – Environmental management

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.

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*)
- *Biodiversity Conservation Act 2016* (BC 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 and 2018) 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 and 21st of November 2018. 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. However, given that raking of the understorey had been undertaken prior to the November 2017 survey an updated floristic assessment was undertaken in November 2018 after the site had been spelled for 7-9 months and at least one significant rainfall event. An additional five (5) 20x20m and 50x20m transect plots were undertaken for the purposes of remapping the vegetation within the lot.

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. An updated Bionet search was undertaken in 2018 to see if there were any new listings of threatened species that may require consideration.

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 2.5.

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 18ºC	Diurnal opportunistic	1hr 5min 1050 - 1155
	2/11/17	4/8 cloud, light N wind, no rain, temp 23-18ºC	Diurnal opportunistic	6hrs 1300 - 1900
Nocturnal birds	2/11/17	7/8 cloud, light ESE wind, no rain, temp 18-17ºC	Spotlighting	2hrs 1930 - 2130
			Call playback (Powerful Owl)	Commenced @ 2000
Arboreal mammals	2/11/17	7/8 cloud, light ESE wind, no rain, temp 18-17ºC	Spotlighting	2hrs 1930 - 2130
Terrestrial mammals	2/11/17	7/8 cloud, light ESE wind, no rain, temp 18-17ºC	Spotlighting	2hrs 1930 - 2130
Bats	2/11/17	7/8 cloud, light ESE wind, no rain, temp 18-17ºC	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 18ºC	Habitat search, opportunistic	1hr 5min 1050 - 1155
	2/11/17	4/8 cloud, light N wind, no rain, temp 23-18ºC	Habitat search, opportunistic	6hrs 1300 - 1900
Amphibians	2/11/17	7/8 cloud, light ESE wind, no rain, temp 18-17ºC	Spotlighting & call identification	2hrs 1930 - 2130
Molluscs	31/10/17	3/8 cloud, light-mod SW wind, no rain, temp 18ºC	Habitat searches	1hr 5min 1050 - 1155
	2/11/17	4/8 cloud, light N wind, no rain, temp 23-18ºC	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 2). 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 2. 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 cartharticus**	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.* Canopy density varies from moderate to sparse (see Figure 2).

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.

This community occupies 8.35 ha throughout the site. The western half has more gaps at present due to a lack of native ground layer having been recently ploughed, while 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 due to raking. (November 2017)

Photo 6 – Slashed groundlayer in the centre of the eastern portion of the site (November 2017)

Photo 7 – Raked groundlayer in the centre of the western portion of the site looking towards the existing house and shed (November 2017)

Photo 8 - Raked ground layer in the cleared areas after extensive dry period - centre of the western portion of the site looking towards the existing house and shed (November 2018)

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 microtuberosum.*

Photo 9 – Dam adjacent to the northern boundary in eastern portion of the site (November 2017)

Photo 9 – Dam near northern boundary in western portion of the site (November 2017)

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 (November 2017)

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
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*	✓	

Common name	Scientific name	Method observed	
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 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

HT1
Q1
HT2
Q6
GBB
Proposed detention basin
tation to the north-west
trical easement = 4.2 ha
HT4
Q2
Q7
Q8
L FM
YBSB
Q3
HT6
Q10
EBB
HT7
HT3
Q4
Q5
HT5
Q9

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 threatened flora species that may occur. Due to this disturbance of the soil, it was expected that threatened flora were unlikely to be found. The habitat potential in the eastern portion was quite limited within the central parts, but possibly better quality 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 flora species observed within the study area 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 2018) 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 was heavily degraded by prior slashing and the study area is not suitable any longer.

This population is not represented within the study area.

(c) Threatened ecological communities (NSW)

One (1) critically endangered ecological community (CEEC) – Cumberland Plain Woodland – was observed within the subject site;

- Cumberland Plain Woodland

8.35 ha of Cumberland Plain Woodland occurs within the study area.

The proposed vegetation clearing within the western portion would likely impact 4.61ha of poor quality Cumberland Plain Woodland. The eastern portion zoned E3 would see retention of CPW vegetation in a protected lot and result in a restoration outcome of an estimated 4.71ha. Additional offsetting to achieve a maintain or improve outcome may be required in accordance with the BAM methodology.

This community has 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 / BC 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 / BC 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
- 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
- Wingecarribee Swamp

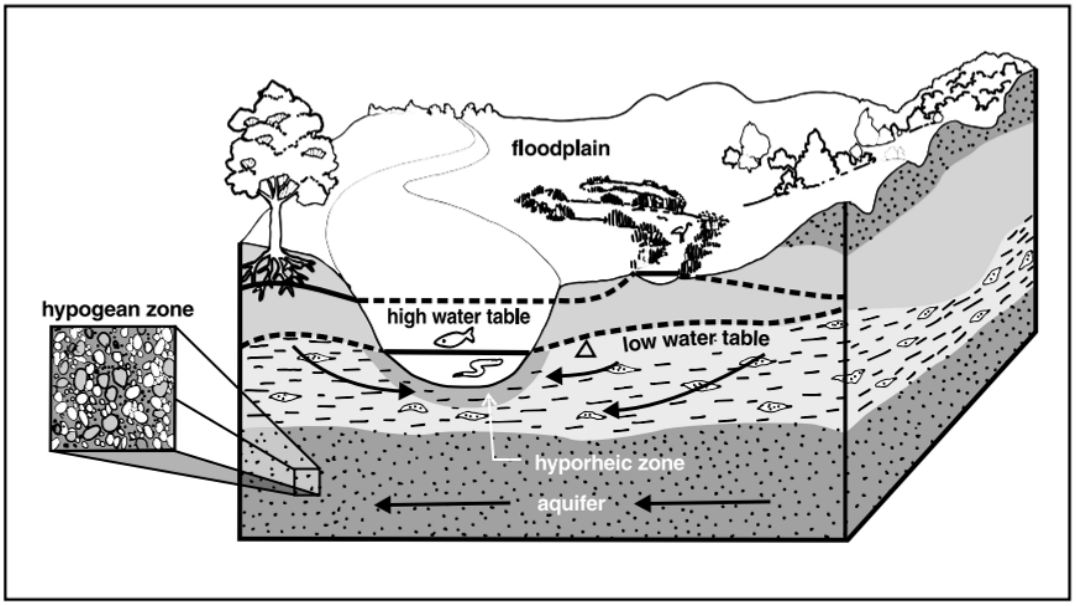
None of the aforementioned wetland communities are present within the study area, therefore they do not require any further consideration.

In accordance with the NSW DPI - Office of Water - Guidelines for Controlled Activities a standardised buffer of 40m applies to endangered wetland 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) shall be 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, therefore further consideration of GDEs is not required.

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 the presence of suitable habitat 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 to occur as there is suitable habitat within the study area. Despite detailed targeted searches, this species 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 3 displays as a flowchart.

In each of the 10 quadrats, native groundcover does not exceed 30%. In comparison to the exotic or introduced species, native species made up much less than 30% of the groundcover We note that the Quadrat 6 – 4% native vegetation, Quadrat 7 - 2%, Quadrat 8 & 9 - 1%, Quadrat 10 – 18%. 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.

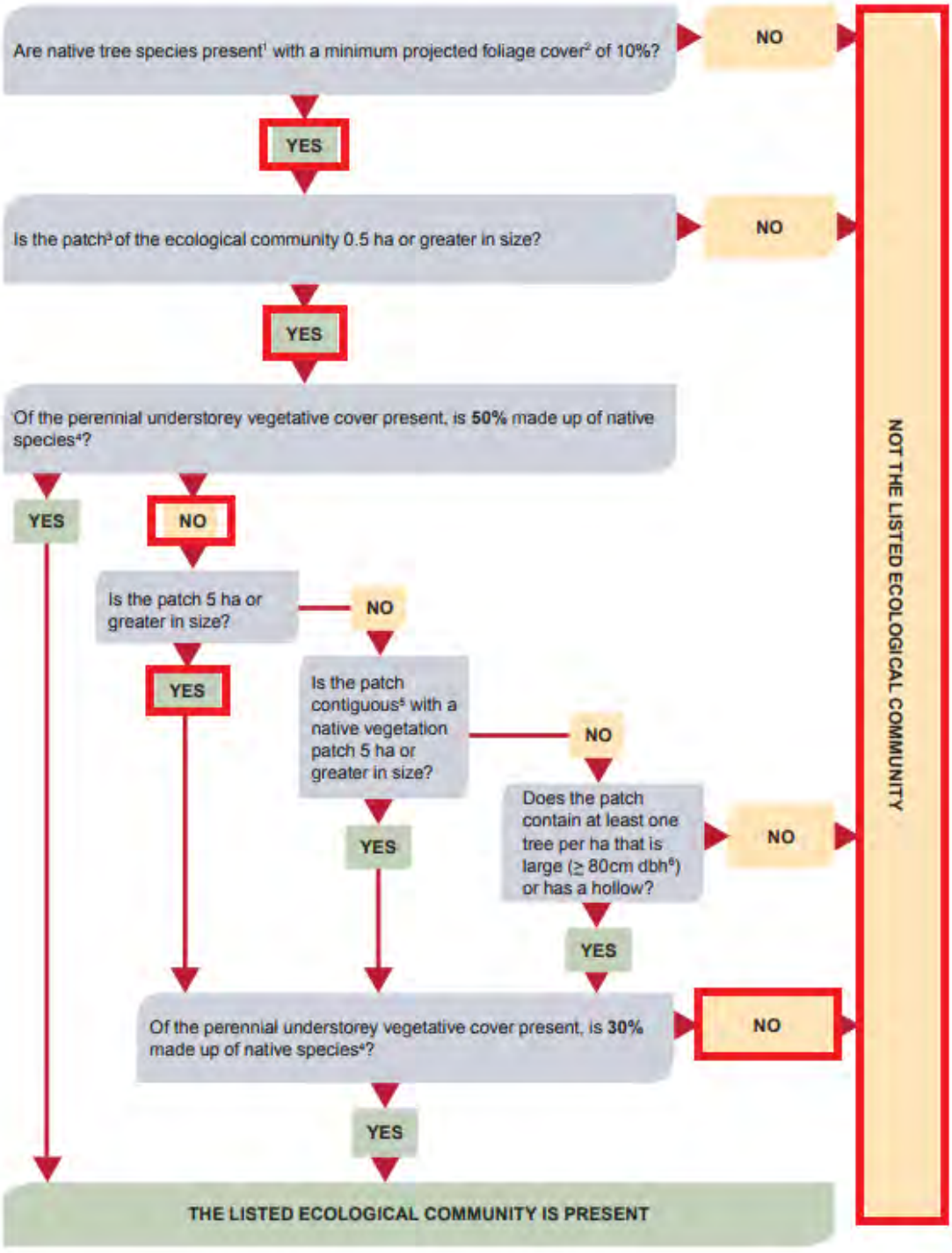


Figure 3 – Flowchart for determination of Cumberland Plain Shale Woodland and Shale-Gravel Transition Forest

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 2 shows locations of habitat trees.

One large hollow 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, 2018) 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 and an assessment of likely occurrence 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 trees containing hollows are inspected for use by any threatened microbat species and the presence of such hollows are retained in-situ with appropriate buffers wherever possible, or compensatory habitat such as appropriately sized nest boxes are installed within nearby retained vegetation.

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 2018) found five-hundred and fifty (550) 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 proposed vegetation removal.

(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 fauna species is considered in Table A2.3 (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 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, will not cause any segmentation, fragmentation or isolation of this local connectivity. This is demonstrated in Figure 4 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 proposed vegetation removal will not likely inhibit or reduce local movements for any of these remaining flying species.

Figure 4 – Local connectivity

Conclusion 5

Travers bushfire & ecology has been engaged to undertake a flora and fauna assessment for a proposed rezoning within Lot 71 DP 706546, 71 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*.

It is concluded that the proposed vegetation removal within Lot 71 DP 706546, 71 St Andrews Road, Varroville, is unlikely to result in a significant impact on any threatened species, populations or EECs or their habitats.

The proposed zonings are also suitable for the site in terms of its current condition and the ability of the zoning to result in a positive ecological outcome for the site. Offsetting under the Biodiversity Offsets Scheme also results in a better conservation outcome on lands that can be conserved with a higher level of resilience.

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 proposed vegetation removal 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 proposed vegetation removal 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 4.61 ha of highly degraded Cumberland Plain Woodland within the land to the north-west of the powerline easement consisting of low condition canopy vegetation (3.41 ha of moderate canopy & 1.2 ha of sparse canopy)
- 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 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 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.

- Residual impacts of the proposed vegetation removal are to be offset through the Biodiversity offsetting scheme.

- The retained E3 land is protected under an 88B instrument or a conservation agreement.

- A voluntary planning agreement be established to conserve the E3 lands and require restoration of CPW vegetation in accordance with an approved vegetation management plan.

- A vegetation management plan is to be submitted and approved by Council and works completed prior to release of the subdivision certificate.

- All trees removed within the proposed R2 zone are used to restore on-ground log and snail habitat within the retained E3 lands.

- 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 vegetation removal.

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

- Target weed control is to be undertaken across all retained E3 lands to improve the condition of the ground layer and assist in natural regeneration as well as reduce competition 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 or tracks of vehicles or machinery. 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 vegetation clearing area are to 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 or alternatively hollows are to be re-located or replaced with nest boxes of a similar size within adjoining retained vegetation. The same inspections and protections are required for any hollow-bearing trees located within E3 area to the south-east of the powerline easement.

- 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 the E3 conservation area to the south-east of the powerline easement. Nest boxes may be constructed to replace a removed hollow however a relocated/refurbished natural hollow is preferred for use by threatened microbat species. Constructed boxes should be constructed entirely 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 a 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 eye-shine 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 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**	
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 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**	
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 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**	
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 juniperina subsp. *juniperina* OEH	V	-	Erect to spreading shrub 0.5-1.5m tall. Grows on laterite and Tertiary alluvium. Distribution limits St Marys-Londonderry-Prospect.	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
Hibbertia puberula OEH EPBC	E1	-	Found in the central coast botanical subdivision in sandy soil often associated with sandstone. Has not been collected for over 40 years	x	x	-	-	x	x

Scientific name DATABASE SOURCE	***TSC Act***	***EPBC Act***	**Growth form and habitat requirements**	**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**	
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
Leucopogon fletcheri subsp. *fletcheri* OEH	E1	-	Shrub to 1.8m high growing in woodland on lateritic soils. Distribution limits N-St Albans S-Springwood.	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
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

Scientific name DATABASE SOURCE	***TSC Act***	***EPBC Act***	**Growth form and habitat requirements**	**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**	
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 curviflora var. *curviflora* OEH EPBC	V	V	Woody herb or sub-shrub to 0.2-1.2m high. Grows on Hawkesbury sandstone near shale outcrops. Distribution Sydney.	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
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

Scientific name DATABASE SOURCE	***TSC Act***	***EPBC Act***	**Growth form and habitat requirements**	**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**	
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
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

Scientific name DATABASE SOURCE	***TSC Act***	***EPBC Act***	**Growth form and habitat requirements**	**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**	
Thelymitra sp. 'Kangaloon' *(Thelymitra kangaloonica)* EPBC	E4a	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
E4a or 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.*	×	×	-	-	×	×
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.*	×	×	-	-	×	×
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.*	×	×	-	-	×	×

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.*	×	×	-	-	×	×
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.*	×	×	-	-	×	×
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.*	×	×	-	-	×	×
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.*	×	×	-	-	×	×

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.*	×	×	-	-	×	×
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.*	×	✓	×	✓	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.*	×	×	-	-	×	×
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.*	×	✓	✓	✓	✓	✓

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.*	×	✓	×	✓	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.*	×	✓	×	×	Not likely	×
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.*	×	marginal	×	×	Not likely	×
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.	×	×	-	-	×	×

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.*	×	×	-	-	×	×
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.*	×	×	-	-	×	×
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.*	×	×	-	-	×	×

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.*	×	×	-	-	×	×
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.*	×	×	-	-	×	×
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*.	×	✓	×	✓	✓	✓
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*.	×	✓	✓	✓	✓	✓
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.*	×	✓	×	×	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.*	×	✓	×	×	Not likely	×
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.*	×	✓	×	×	Not likely	×
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*.	×	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.*	×	✓	✓	✓	✓	✓
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.*	×	×	-	-	×	×
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.*	×	✓	×	×	Not likely	×

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.*	×	✓	×	×	Not likely	×
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.*	×	×	-	-	×	×
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.*	×	✓	×	×	Not likely	×
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.*	×	×	-	-	×	×

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.*	×	×	-	-	×	×
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.*	×	×	-	-	×	×
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.*	×	✓	✓	✓	✓	✓

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.*	×	×	-	-	×	×
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.*	×	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.	×	×	-	-	×	×

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 Grayling *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).	×	×	-	-	×	×

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
E4a or CE	-	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.	×	-	-
White-bellied Sea Eagle (*Haliaeetus leucogaster*)	Coasts, islands, estuaries, inlets, large rivers, inland lakes, reservoirs. *Sedentary; dispersive.*	×	-	-
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.*	✓	×	-
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.*	×	-	-
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.*	×	-	-
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*.	×	-	-
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.	×	-	-
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.*	×	-	-

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.*	×	-	-
Great Egret (*Ardea alba*)	Shallows of rivers, estuaries; tidal mudflats, freshwater wetlands; sewerage ponds, irrigation areas, larger dams, etc. *Dispersive; cosmopolitan.*	✓	×	-
Cattle Egret (*Ardea ibis*)	Stock paddocks, pastures, croplands, garbage tips, wetlands, tidal mudflats, drains. *Breeds in summer in warmer parts of range including NSW*.	✓	×	-
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.*	✓	×	-
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.*	✓	×	-

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 survey results and ecological assessment provided in Sections 3 and 4 of this report and should be read as such. The potential impact is for the removal of 4.61ha of disturbed low condition CPW vegetation.

The current proposal avoids impacting 3.74 ha of degraded CPW vegetation. The impacted CPW vegetation is of low condition, has low species diversity and would also be expected to regenerate poorly. Past management of this site which has extended over a decade based on aerial photography has resulted in the low condition of the vegetation on the land.

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

Common Name	BC Act	Potential to occur	Potential impact
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
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-bats 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 detailed 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) CEEC – 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 Varroville 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 impacted by the proposed R2 zone is 4.61ha of low condition vegetation consisting of 3.41ha of moderate canopy and 1.2ha of sparse canopy. A total of

The proposed rezoning to R2 for the western portion would likely impact (in the future) 4.61ha of disturbed low condition Cumberland Plain Woodland. Rezoning the eastern portion to E3 would see retention of the 3.74ha inclusive of stormwater basins and a dwelling with APZ. A total of approximately 4.71ha in total to be protected and restored.

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 retained E3 zoned land assists in protecting remnant Cumberland Plain Woodland in the locality and biodiversity offsetting provides a mechanism for creating a better ecological outcome within and off the site.

The impacted vegetation will not isolate or fragment the CEEC, 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,

4.61 ha within the lands west of the powerline easement and limited impact on the remaining 3.574 ha to the south-east of the powerline easement.

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 8.35 ha of disturbed native vegetation. The proposed vegetation removal is likely to remove 4.61ha of disturbed low condition native vegetation in the western portion of the site. 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 will not cause any segmentation, fragmentation or isolation of this local connectivity. This is demonstrated in Figure 4 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 proposed vegetation removal 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 area of impact associated with the proposed vegetation removal 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 is a critically endangered ecological community, 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 protected within adjoining 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 and fence lines.

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 proposed vegetation removal 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*)		✓	
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			✓

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**
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*)	✓		
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 proposed vegetation removal, 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) 4.61ha of Cumberland Plain Woodland. Restoration of CPW within the proposed E3 lands estimated at 4.71ha and offsetting is recommended to mitigate the clearing of vegetation.

Competition and grazing by the feral European rabbit

It is expected that the proposed vegetation removal 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.

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.

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.

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.

Invasion of native plant communities by Scotch Broom (*Cytisus scoparius*)

This species is present on the subject site. The proposed vegetation removal may provide an opportunity to ameliorate the effect of this key threatening process by the application of suitable weed control measures.

Invasion of native plant communities by Lantana (*Lantana camara*)

This species is present on the subject site. The proposed vegetation removal may provide an opportunity to ameliorate the effect of this key threatening process by the application of suitable weed control measures.

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.

Invasion of native plant communities by African Olive (*Olea europaea* subsp. *cuspidata*)

This species is present on the subject site. The proposed vegetation removal may provide an opportunity to ameliorate the effect of this key threatening process by the application of suitable weed control measures.

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 north-western portions of the study area. 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 of 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 proposed vegetation removal 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 proposed vegetation removal 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.

Cardno
ABN 95 001 145 035

Date: 8/10/2018	Drawn: PL	Scale:	
Project: VARROVILLE BASIN DESIGN			
Project No:	Drawing No: SK-BASIN-001		
Revision: 2	Status: FOR INFORMATION		
Title: PRELIMINARY BASIN DESIGN			

DESIGN NOTES:

BASIN HAS BEEN SIZED WITH TO REDUCE THE POST DEVELOPMENT PEAK FLOW TO EXISTING CONDITION AT THE CATCHMENT OUTLET.

THE HYDROLOGICAL MODEL INCLUDES ALL THE CATCHMENTS THAT FLOW TO THE CATCHMENT OUTLET TO DETERMINE THE IMPACT FROM THE PROPOSED DEVELOPMENT.

ARR2016 IS USED TO CALCULATE THE PRELIMINARY SIZE

THE BASIN OUTLET CAN BE OPTIMISED WITH A MULTI-STAGED OUTLET STRUCTURE. THIS CAN BE MODELLED IN THE FUTURE WHEN OTHER INFORMATION BECOMES AVAILABLE SUCH AS:
1. SURVEY DATA
2. FUTURE PIT AND PIPE NETWORK (E.G. INVERTS LEVELS), ETC.

EXISTING HOUSE NOT CONSIDERED IN LAYOUT

CAMDEN COUNCIL

CAMPBELLTOWN COUNCIL

AQUEDUCT

St. ANDREWS ROAD

PROPOSED ROAD [16 WIDE]

PROPOSED ROAD [16 WIDE & VARIABLE]

PROPOSED ROAD [16 WIDE]

PROPOSED STREET

CAP END FOR FUTURE CONNECTION

RIGHT OF CARRIAGEWAY

WALLS

RETAINING WALL

GPT

(SUBJECT TO EASEMENTS)
(1.493ha)

RIPARIAN CORRIDOR

6.512ha

SYDNEY WATER CANAL

ADJOINING LAYOUT ROAD

DRAINAGE EASEMENT THROUGH THE CORNER OF THE LOT

BASED ON THE EXISTING CONTOURS, POSSIBLE LOW POINT HERE

DRAINAGE EASEMENT

CAP END FOR FUTURE CONNECTION

PROPOSED OSD/WSUD BASIN

CATCHMENT OUTLET - PEAK FLOW MEASURES AT THIS POINT

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: llhlpool@tpg.com.au

	AMENDMENT	DATE	APPR'D
D	LOT LAYOUT AMENDED	18/9/18	AMH
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

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

CONCEPT SERVICES PLAN

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

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*

December 2018
(REF: 18GAT03B)

Bushfire Protection Assessment

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

Report Authors:	Nicole van Dorst BPAD-L2 23610 Emma Buxton *B.s*
Plans prepared:	Emma Buxton *B.s* & Sandi Cardow
Checked by:	John Travers BPAD-L3 15195
Date:	20 December 2018
File:	18GAT03B

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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 prepared a bushfire protection assessment report for the proposed rezoning and future residential subdivision of Lot 71 DP 706546, 71 St Andrews Rd, Varroville of the site in February 2018.

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 revised assessment has been undertaken based on a proposed new dwelling location with the E3 zone and to address the potential amendment to the current access arrangements.

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 current preferred access to the site will be provided via the recently constructed residential subdivision extending from Aqueduct Street in the west. An alternative access via a potential upgrade of St Andrews Road has also been explored.

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)

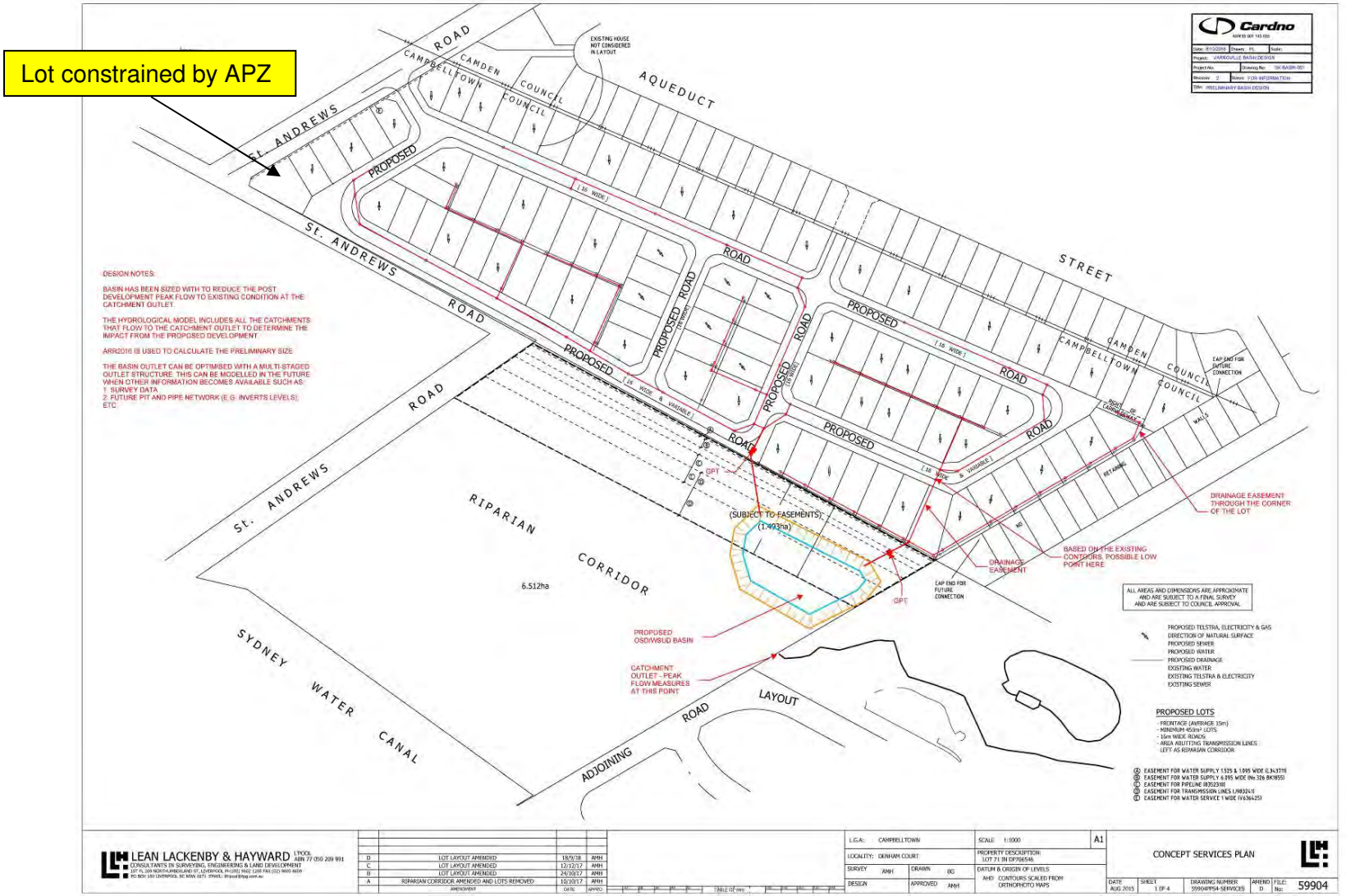


Figure 1.2 – Concept services plan

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 18/9/2018
- Campbelltown Local Environmental Plan 2015
- Flora and Fauna Assessment, 2018 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 10.3 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).

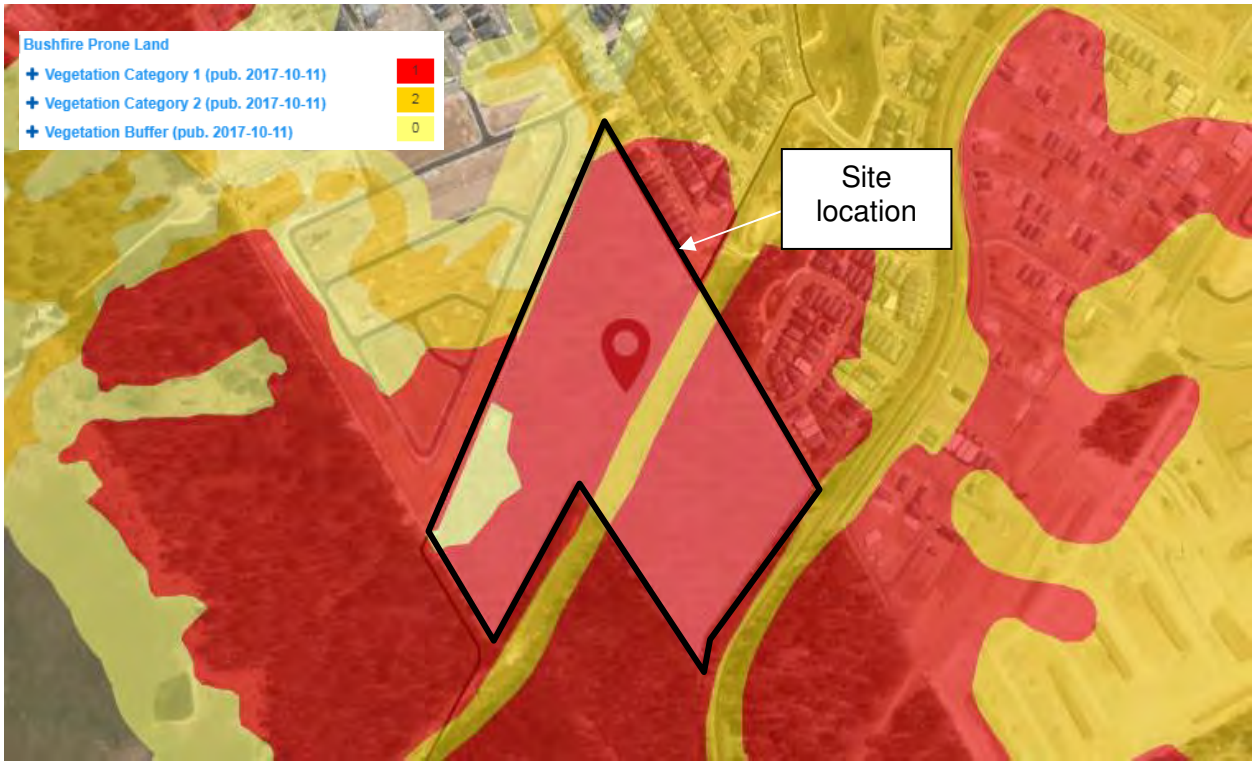


Figure 1.4 – Bushfire prone land map
(Source: Campbelltown Council)

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.

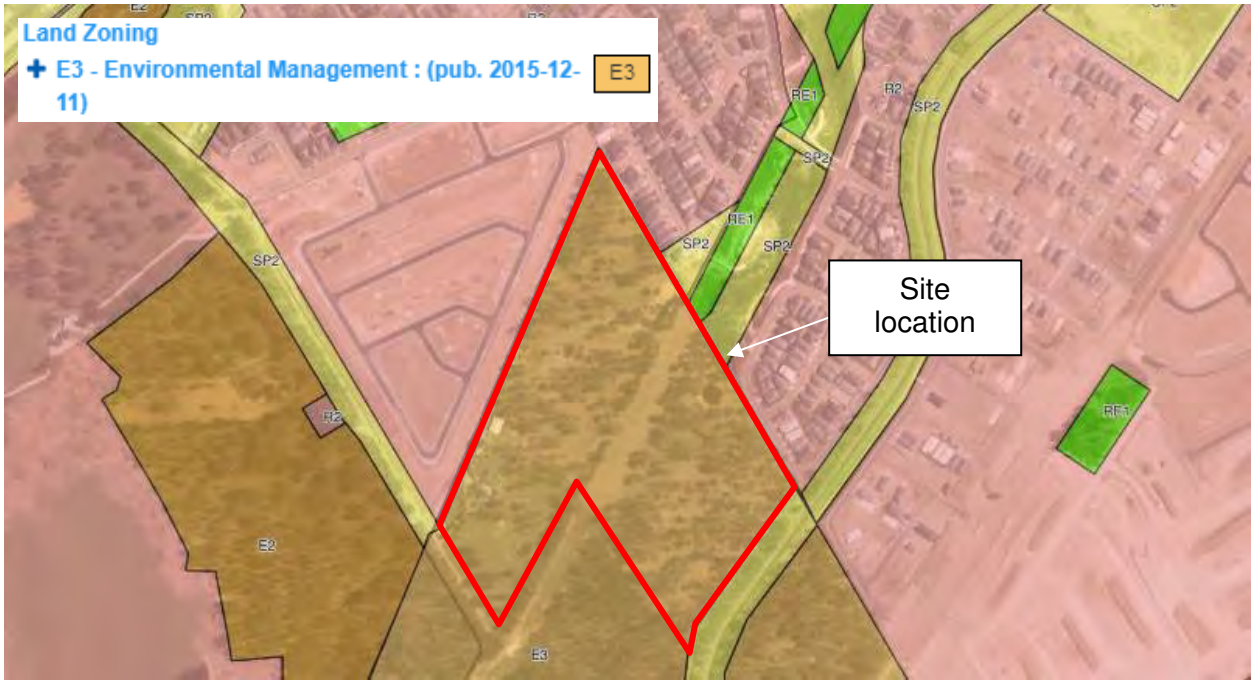


Figure 1.5 – Campbelltown LEP 2015
(Source: Planning Portal website)

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, 2018). 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.

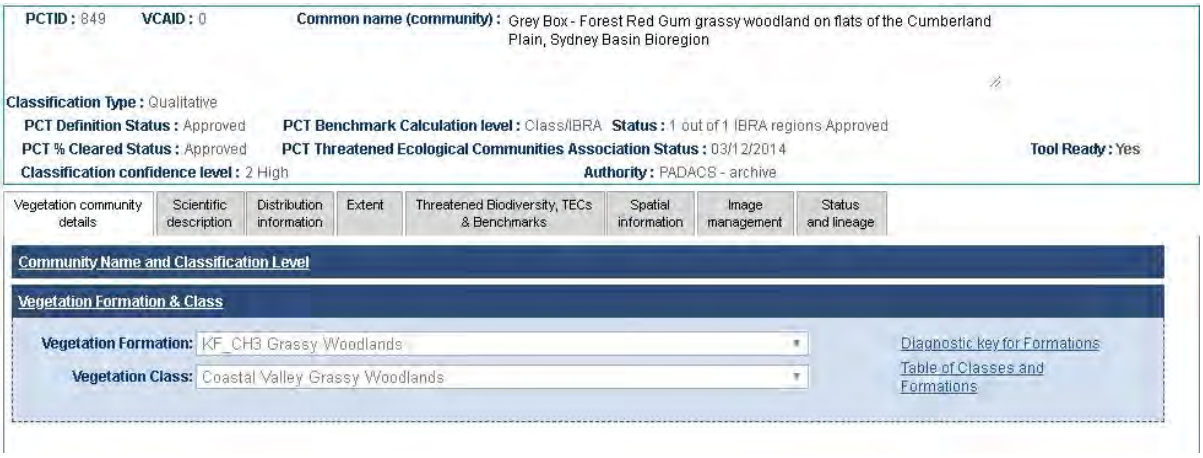
PBP provides a methodology to determine the size of any APZ that may be required to offset possible bushfire attack. These elements include the potential hazardous landscape that may affect the site and the effective slope within that hazardous vegetation.

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. This community is identified as Plant Community Type (PCT) 849 as detailed below.



- 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.

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).

Cumberland Plain Woodland (plant community type 849) has been identified within the Flora and Fauna Assessment compiled by *Travers bushfire & ecology* (December, 2018) 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 Pre-release PBP 2018.

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 Pre-release PBP 2018
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)**	12
Single dwelling entitlement (E3 zoned land)					
East and south	Woodland	Level to upslope	10	**16**	12
North-west	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.

A review has been conducted of Planning for Bush Fire Protection 2006. It is anticipated that PBP 2018 will become legislated by mid – 2019, to coincide with the enactment of the National Construction Code 2019. Until then, PBP 2018 is in a 'pre-release' stage, also known as the transitionary period. Until PBP 2018 becomes legislated, PBP 2006 will remain the legally referenced document. As a result any application for subdivision development which occurs after the Pre-release PBP becomes legislated 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^o. 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

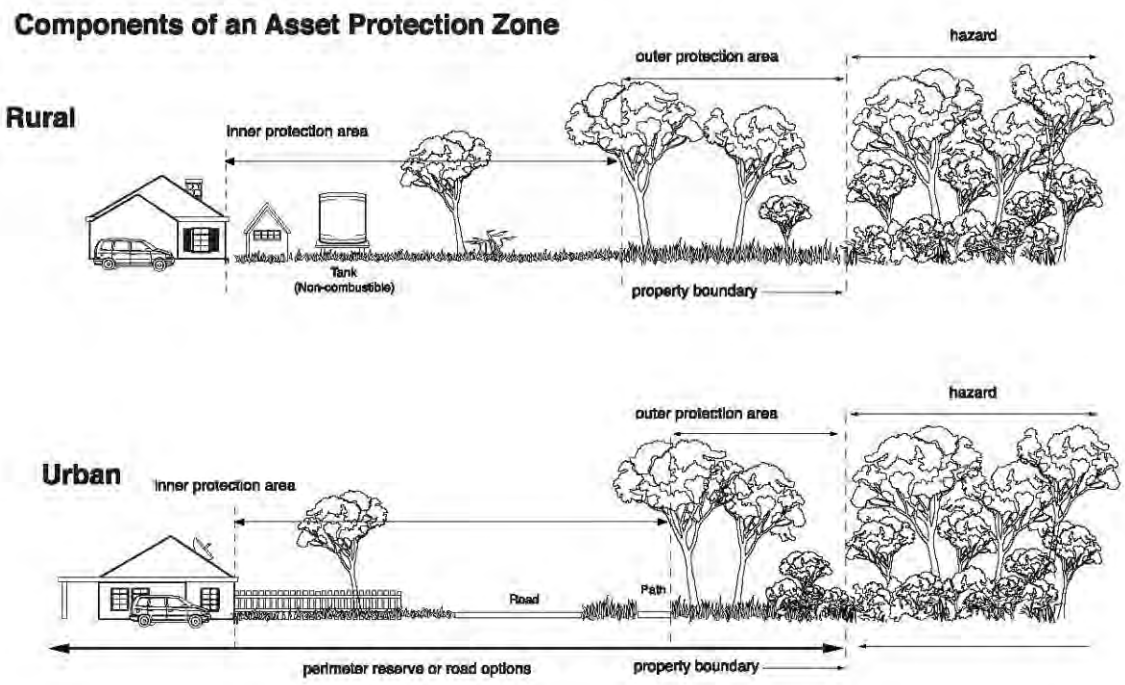
Category of Attack:	HIGH	**Peak Elevation of Receiver(m):**	6.76
Level of Construction:	BAL 29	**Fire Intensity(kW/m):**	26690
Radiant Heat(kW/m2):	28.75	**Flame Angle (degrees):**	64
Flame Length(m):	16.43	**Maximum View Factor:**	0.446
Rate Of Spread (km/h):	2.07	**Inner Protection Area(m):**	18
Transmissivity:	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 29*kW/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^o.	Yes - Slopes are less than 18^o.

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 4.14 of the EP&A Act and will need a full bushfire protection assessment report.

As outlined in Section 2.3 Pre-release PBP (2018) has been released. As a result any application for subdivision development which occurs after the adoption of the PBP 2018 (expected mid next year) may require minimum APZ's as outlined in Table 2.1 (Column 6). The APZ and BAL level applicable under the Pre-release 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

The preferred access to the proposed R2 portion of land will be provided via the recently constructed Aqueduct Street in the west. This design does not provide for perimeter roads and follows a similar subdivision design as the adjoining recently approved subdivision to the west. Firefighting access to the adjoining vegetation (under this design) can be provided via the existing St Andrew Road in the south-west and via the existing access tracks under TransGRID maintenance.

Alternatively the main access to the site could potentially be provided via St Andrews Road to the south. This unformed road provides access to Camden Valley Way further north. If this access design is adopted St Andrews Road (for the full length between Camden Valley Way and the subdivision) will need to be upgraded to perimeter road standards (i.e. 8m carriageway which excludes parking).

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.

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^{o}. 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^{o} and an average grade of not more than 10^{o}. 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

3.5 Water supplies

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

Table 3.5 outlines the performance criteria and acceptable solutions for reticulated water supply.

Table 3.5 – 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 3.6 outlines the required performance criteria for the gas supply.

Table 3.6 – Performance criteria for gas 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 3.7 outlines the required performance criteria for electricity supply.

Table 3.7 – 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. This updated report takes into consideration the proposed change of location for the dwelling within the E3 zone and proposed alternative egress point via St Andrews Road.

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 the preferred access design (via Aqueduct Street) does not allow for a perimeter road. This concept follows a similar subdivision design as the recently approved land to the west where St Andrews Road provides firefighting access to adjoining woodland vegetation. Alternatively if St Andrews Road is adopted as the main access point this road will need to be upgraded to an 8m carriageway and will form a perimeter road for the proposed subdivision and adjoining land to the west.
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.

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

MANAGED

CLEARED LAND SUBJECT TO APPROVED SUBDIVISION

AQUEDUCT STREET

ST ANDREWS RD

SHORT HEATH EASEMENT

BIODIVERSITY RIPARIAN CORRIDOR

SYDNEY WATER CANAL

WOODLAND

13m

16m

18m

10m

2up

1up

DISCLAIMER: CAD not georeferenced and has been aligned to LPI boundaries. Verification by a registered surveyor is required prior to finalisation

Legend

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

Aerial source: Nearmap

Travers bushfire & ecology
www.traversecology.com.au

PROJECT & MXD REFERENCE	DATE & ISSUE NUMBER	SCALE & COORDINATE SYSTEM
71 St Andrews Road, Varroville 18GAT03_BF001	20/12/2018 Issue 1	1:2,500 @ A3 GDA 1994 MGA Zone 56

0 50 100 m

TITLE

Schedule 1 - Bushfire Protection Measures

Document Path: N:\GIS STORAGE\N Drive\A17179_StAndrewsRd_Varroville\MXDs\18GAT03_BF001.mxd

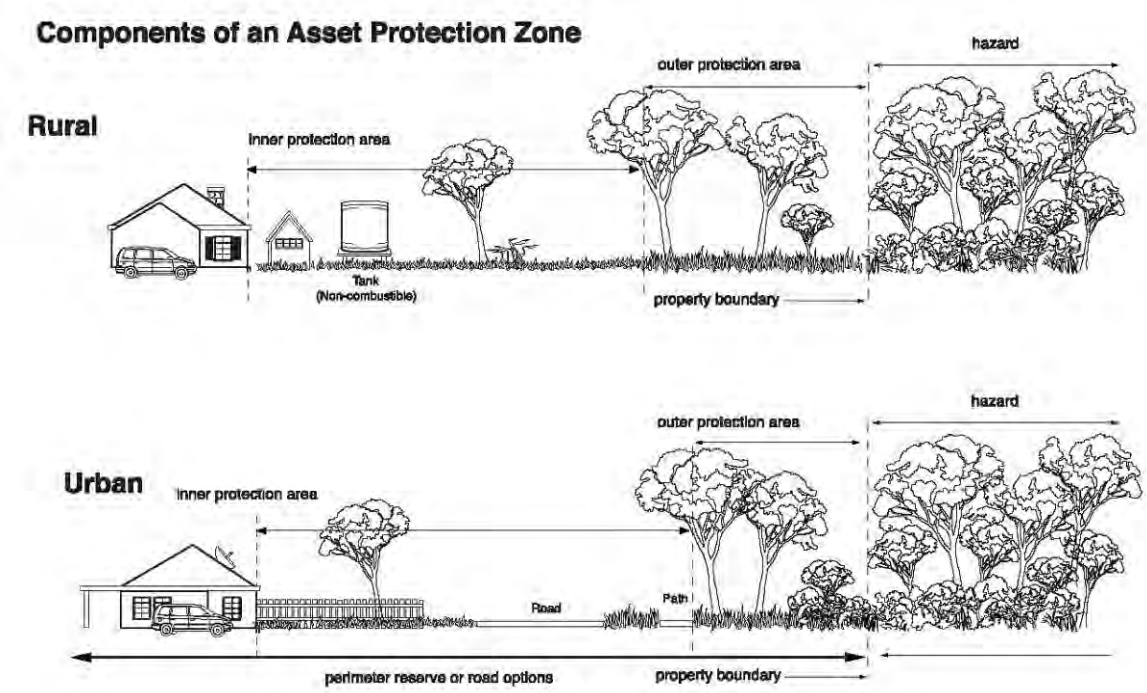
Disclaimer: The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features are to be confirmed by a registered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

Our Ref: 80219022-18-111:PL
Contact: Garry Neville

7 December 2018

Petrin Holdings
c/-GAT & Associates Pty Ltd
PO BOX 96
Haberfield NSW 2045

Attention: Dario Petrin

Cardno (NSW/ACT) Pty Ltd
ABN 95 001 145 035

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203 Pacific Highway
St Leonards NSW 2065
Australia

Phone +61 2 9496 7700
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www.cardno.com

Dear Dario,

FLOOD ASSESSMENT - 71 ST ANDREWS ROAD VARROVILLE

Cardno (NSW/ACT) has been engaged by Petrin Holdings to undertake a flood assessment of the existing overland flowpath adjacent to the proposed residential subdivision at 71 St Andrews Road Varroville. This report has been prepared to:

- Summaries the result of the hydraulic assessment of the overland flow path;
- Provides guidance to the flood planning level for the proposed lots; and
- Addresses the Section 6 of the letter "Draft Planning Proposal 500/2018/E-LPEA – 71 St Andrews Road, Varroville" on 7th August 2018.

Catchment Analysis

The existing overland flow path is located approximately 50m to the east of the proposed development site. It is running parallel with the lot boundary flowing from south west to north east, conveying stormwater flow to Bonds Creek, traverses through the existing Willowdale development. The overland flow path has a contributing catchment of approximately 61ha, which consists of the Stage 4 and 5 of Emerald Hills Development and the existing bushlands adjacent to the flow path. Figure 1 shows the extent of the catchments that are draining to the existing overland flowpath.

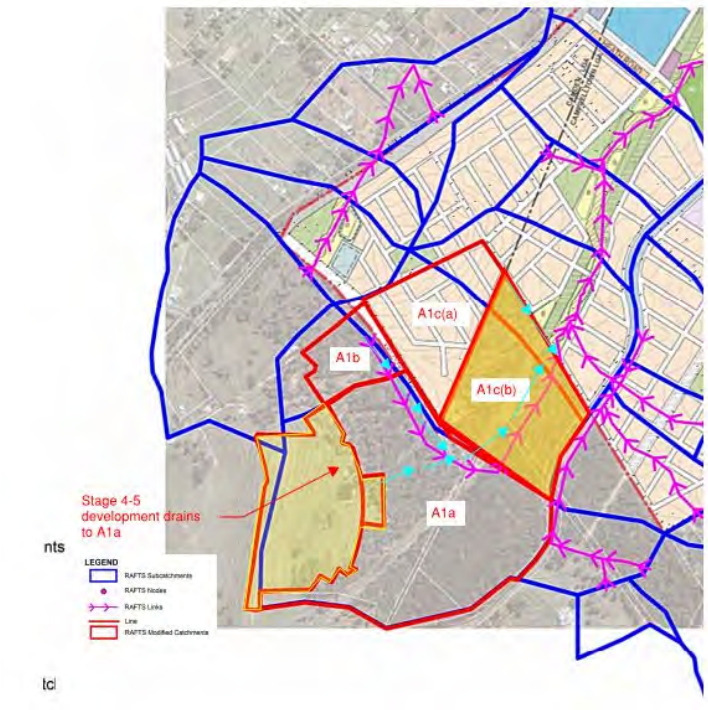


Figure 1 Catchment Plan

The hydrology of the catchment has been modelled by XP-RAFTS using the Australian Runoff and Rainfall 2016 procedures. The rural initial loss and continue loss were downloaded from the AR&R data hub, 37mm and 2.3mm respectively. The Indirectly Connected Areas assumed to have losses equivalent to 60% of the rural losses. The rainfall data was obtained from Bureau of Meteorology website. The 1% AEP peak flows along the flow path is shown in Table 1.

Table 1 Peak Flows

Location	1% AEP peak flow (m3/s)
At the start of the flow path	3.36
Near St Andrews Road	4.60
30m from the upstream end of Bonds Creek	5.22

Hydraulic Assessment

Hydraulic modelling software, HEC-RAS, was used to analyse the flood levels along the existing overland flow path. The existing model is based on the 0.5m contours from the LiDAR survey and imported to HEC-RAS from 12D design software. Cross sections has been created at 10m intervals along the centreline of the overland flow path. The overland flow path can be found in the sketch enclosed in this report.

The roughness coefficient Manning's 'n' used in the analysis was 0.035 along the centre and the left bank (area where the easements are located) of the flow path, as the area is mainly grass pastures. The right bank is grassed area with trees scattered across the site, which has a Manning's 'n' of 0.055.

The boundary condition for the analysis was assumed to be normal depth.

Results

The 1% AEP flood levels along the existing overland flow path that is adjacent to the proposed subdivision is between RL 102.12m and RL 98.30m. Table 2 shows the flood levels at different location of the overland flow path.

Table 2 1% AEP Flood Level (Existing Condition)

Location	1% AEP Flood Level (RLm)	Flood Planning Level (RLm)
CH 500 (St Andrews Road)	101.62m	102.12m
CH 380	100.58m	101.05m
CH 340	100.35m	100.85m
CH 280	99.85m	100.35m
CH 240	99.52m	100.02m
CH 80	98.65m	99.15m
CH 30	98.30m	98.80m

Table 2 shows the existing flood levels and the flood planning levels for the proposed development site. The flood extent as shown in the attached sketch indicates the site is not affected by the 1% AEP flood event and the existing surface is higher than the flood planning level.

The proposed lot fronting Gratham Crescent, located on the eastern side of the overland flowpath is also above the 1% AEP flood extent at RL 98.30m, the flood planning level for the lot would be at RL 98.80m. Based on the Lidar data, the existing surface level is at approximately RL 98.50m, which requires approximately 300mm fill over the site.

The proposed lots along St Andrews Road are not affected from the regional flood water along the existing overland flowpath. The localised ponding depth and flow widths along St Andrews Road would be assessed in the detailed design stage.

PMF Evacuation Route

The result of the hydraulic analysis has shown the PMF extent is generally outside of the proposed development area, refer to the enclosed flood extent sketch. The proposed roads are generally remain flood free. The PMF flood evacuation route can be provided by a new road connection to Aqueduct Street as shown in the proposed lot layout plan, which then provide access to Camden Valley Way via St Andrews Road or Willowdale Drive.

Recommendations

The hydraulic assessment shows the proposed development site is not affected by the 1% AEP event, however, an onsite detention basin will be required to attenuate the peak flow from the proposed development site. A detailed hydrology and hydraulic assessment should be prepared in the DA stage to provide the required basin storage volume and outlet structure to ensure there will be no adverse flooding impact to the adjacent properties.

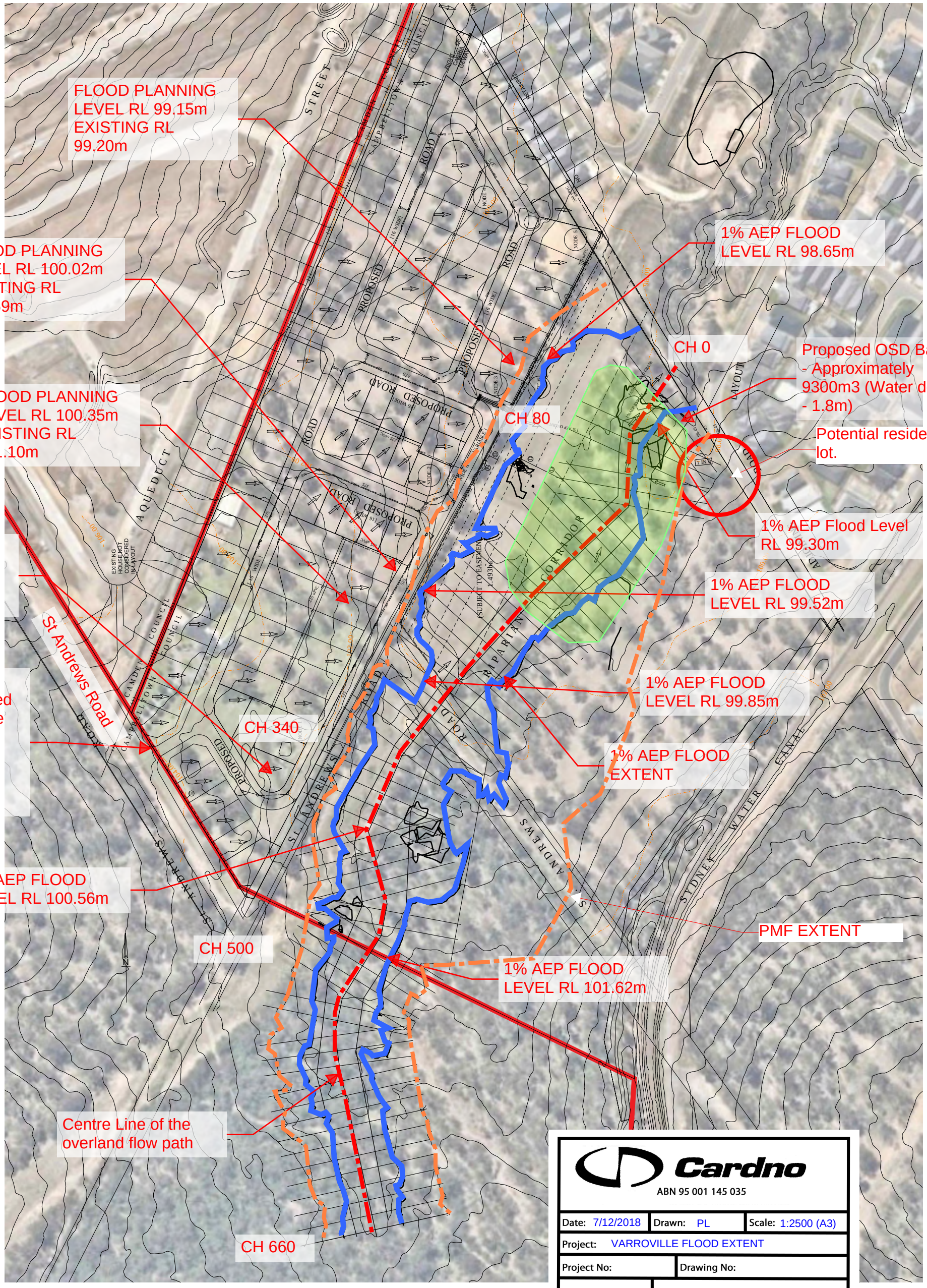
Detailed survey data should be obtained in the detailed design stage to show the existing overland flow path invert levels, banks and the location of the existing dam near Bonds Creek. The survey data will provide a more accurate design for the proposed basin and ensure it can be drained to Bonds Creek.

The PMF flood evacuation route can be provided by a new connection to Aqueduct Street as shown in the sketch.

Yours sincerely,

Pak Lau
Civil Engineer
for Cardno
Direct Line: +61 2 9496 7846
Email: pak.lau@cardno.com.au

Enc: Varroville Flood Extent



Cardno
ABN 95 001 145 035

Date: 7/12/2018	Drawn: PL	Scale: 1:2500 (A3)
Project: VARROVILLE FLOOD EXTENT		
Project No:	Drawing No:	
Revision: 4	Status: FOR INFORMATION	
Title: PRELIMINARY FLOOD ASSESSMENT		

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

DIRECTION OF NATURAL SURFACE

PROPOSED DRAINAGE

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)

DESIGN NOTES:

BASIN HAS BEEN SIZED WITH TO REDUCE THE POST DEVELOPMENT PEAK FLOW TO EXISTING CONDITION AT THE CATCHMENT OUTLET.

THE HYDROLOGICAL MODEL INCLUDES ALL THE CATCHMENTS THAT FLOW TO THE CATCHMENT OUTLET TO DETERMINE THE IMPACT FROM THE PROPOSED DEVELOPMENT.

ARR2016 IS USED TO CALCULATE THE PRELIMINARY SIZE

THE BASIN OUTLET CAN BE OPTIMISED WITH A MULTI-STAGED OUTLET STRUCTURE. THIS CAN BE MODELLED IN THE FUTURE WHEN OTHER INFORMATION BECOMES AVAILABLE SUCH AS:
1. SURVEY DATA
2. FUTURE PIT AND PIPE NETWORK (E.G. INVERTS LEVELS), ETC.

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 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
SIGN (GENERAL), TRAFFIC LIGHT, TRAFFIC LIGHT CONTROL BOX	SIGN
FENCE	
WATERCOURSE/TABLE DRAIN	
EMBANKMENT/BATTER	
CONTOURS	
LEVELS, TOP OF KERB LEVEL	+RL95 +TKRL95

ST. ANDREWS ROAD
CAMPBELLTOWN CAMDEN COUNCIL
EXISTING HOUSE NOT CONSIDERED IN LAYOUT
AQUEDUCT
PROPOSED ROAD [16 WIDE]
NODE 1
NODE 2
NODE 3
NODE 5
NODE 6
225 uPVC
375
525
600
2.3600 [16 WIDE & VARIABLE]
(SUBJECT TO EASEMENTS) 1.493ha
RIPARIAN CORRIDOR
ECOSOL GPT 4800 TREAT 50% OF Q1 ARI
1% AEP FLOW 3 x 0.575 @ 1.5m
RESHAPE AND GRASS
1%AEP BYPASS
ORIFICE OUTLET
97.45 INV UP
2 x600 RCP CL2
10M LONG
1% GRADE
97.35 INV DOWN
STORMWATER OUTLET & SPILLWAY
ROCK DISSIPATER - ENERGY
AS PER STD DWG SD 9-9 - AS REQUIRED
LANDCOM - SOILS AND CONSTRUCTION
VOLUME 1 - MANAGING URBAN STORMWATER
TYP 96.45
96.45
97.45
98.45
1 IN 5
SYDNEY WATER CANAL
CATCHMENT OUTLET - PEAK FLOW MEASURES AT THIS POINT
ADJOINING ROAD LAYOUT
RIGHT OF WAY
RETAINING WALLS
Possible basin location within transmission easement (approx footprint). Prelim size 5300m3
Existing Willowdale WSUD basin installed within transmission easement

Cardno
ABN 95 001 145 035

Date: 3/10/2018	Drawn: PL	Scale:
Project: VARROVILLE BASIN DESIGN		
Project No:	Drawing No: SK-BASIN-001	
Revision:	Status: FOR INFORMATION	
Title: PRELIMINARY BASIN DESIGN		

LEAN LACKENBY & HAYWARD L'POOL PTY LTD. ABN 61 003 107 971
CONSULTANTS IN SURVEYING, ENGINEERING & LAND DEVELOPMENT
1ST FL.209 NORTHUMBERLAND ST, LIVERPOOL PH:(02) 9602 1200 FAX:(02) 9600 6609
PO BOX 160 LIVERPOOL BC NSW 1871 EMAIL: llnpool@tpg.com.au

	AMENDMENT	DATE	APP'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: No:
OCT 2017	2 of 4	59904PP54-DR	D	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

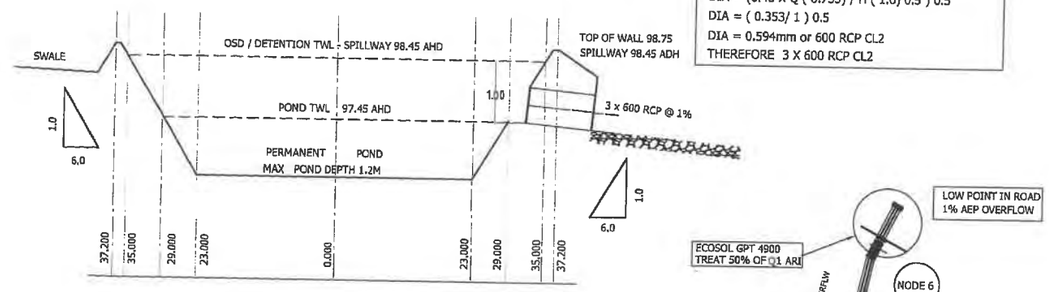
OSD MODELLING

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

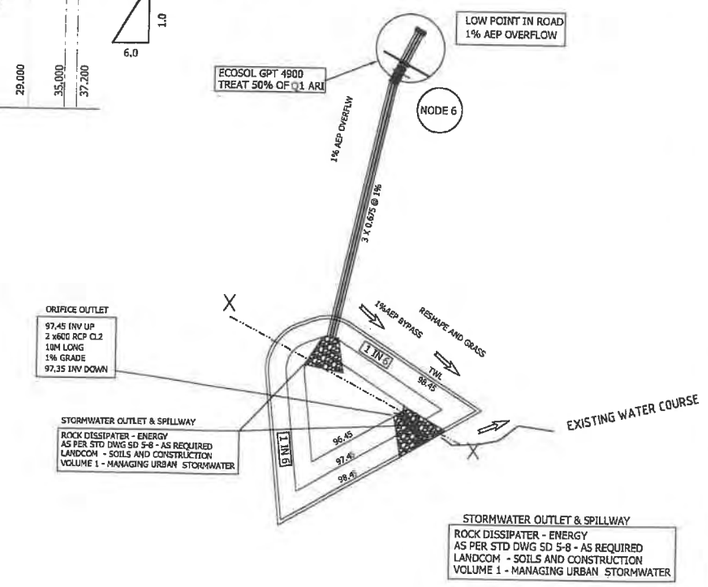
OUTFLOW 2.075 CUMSECS 1% AEP
PRE TO POST
DEPTH IN BASIN 0.95M
VOLUME : 2405.5 CUBIC METRES

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

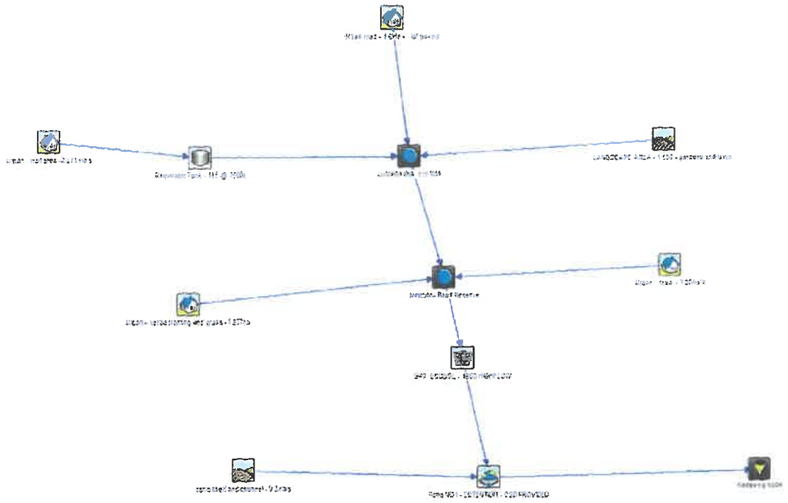
	AMENDMENT	DATE	APPR'D
B	RESHAPING AND RELOCATION OF OSD AND POND	22/1/18	AMH
A	ISSUE TO COUNCIL AND CLIENT FOR REZONING	12/10/17	AMH

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

59904_DA_REZONING



ECOSOL™ GPT - MUSIC Modelling Guidelines

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/o

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 1,150	36	120
Ecosol **GPT 4450**	3,600 x 1,450	78	260
Ecosol GPT 4600	4,500 x 1,850	141	470
Ecosol GPT 4750	5,600 x 2,200	219	730
Ecosol GPT 4800	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	10,880 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

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%

Receiving Node

TREATMENT TRAIN MUSIC OUTCOME

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

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

CRAIG& RHODES

TAKE THE LEAD

20th September 2018

Our Reference: LLH 59904

Campbelltown City Council
PO Box 57
CAMPBELLTOWN NSW 2560

Attention: General Manager

Re: Draft Planning Proposal 500/2018/E-LEPA
Lot 71 DP 706546 St Andrews Rd
Gas Pipeline

Dear Sir,

Reference is made to Minutes of the Local Planning Panel meeting held on 25th July 2018 in respect of the Planning Proposal being progress over the above mention site. In particular Item 8a) of the Panel Decision requires information with regard to the potential impact of the proposed residential development footprint on an existing gas pipeline located on adjacent land.

Background

The proposed residential development is restricted to the western portion of the subject lot. A copy of the proposed residential development is attached as “Plan A”. An Easement for Pipeline (20.0m wide) exists to the immediate eastern extent of the residential development footprint. The easement is edged in red on the attached “Plan A”

The gas pipeline traversing the site is detailed on Jemena plans obtained by a Dial Before You Dig enquiry. Copies of the Jemena plans are attached as “Plan B”.

Assessment of Impact

The proposed rear of the residential allotments on the eastern extremity of the site are located approximately 10.0m away from the location of the Easement for Pipeline. Accordingly, there will not be any affectation to the gas pipeline from future housing / residential allotments.

A triple cell 675 ØRCP stormwater line is intended to discharge from the proposed residential subdivision to a stormwater quality basin, the stormwater line will cross the gas pipeline. The stormwater line is depicted on “Plan A”.

Craig & Rhodes Pty Ltd
ABN 77 050 209 991

T 02 9869 1855 F 02 9869 2341
Suite 7.01 Level 7, 3 Rider Blvd, Rhodes NSW 2138
PO Box 3220 Rhodes NSW 2138

craigandrhodes.com.au

In respect of the stormwater line, the proponent will be required to undertake consultation with Jemena to establish the required design and protection strategies. A Safety Management Plan and engineering design in accordance with Jemena document *Guideline to Designing, Constructing and Operating Around Existing AS2885 Natural Gas Pipelines GAS-960-GL-PL-001* will be developed for any necessary physical protection works of the gas pipeline All construction will be undertaken under the supervisor of Jemena representatives.

This consultation and protection strategy process is a standard procedure for Jemena gas pipelines and is regularly undertaken in similar circumstances.

In summary, it is considered that the gas pipeline will not be adversely affected and it will not pose a significant impediment to the proposed residential subdivision.

Yours faithfully,
CRAIG & RHODES PTY LTD

Greg Morgan
General Manager - Development

Attachments:

Plan A – Layout Plan

Plan B – Jemena Gas

PLAN 'A'

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

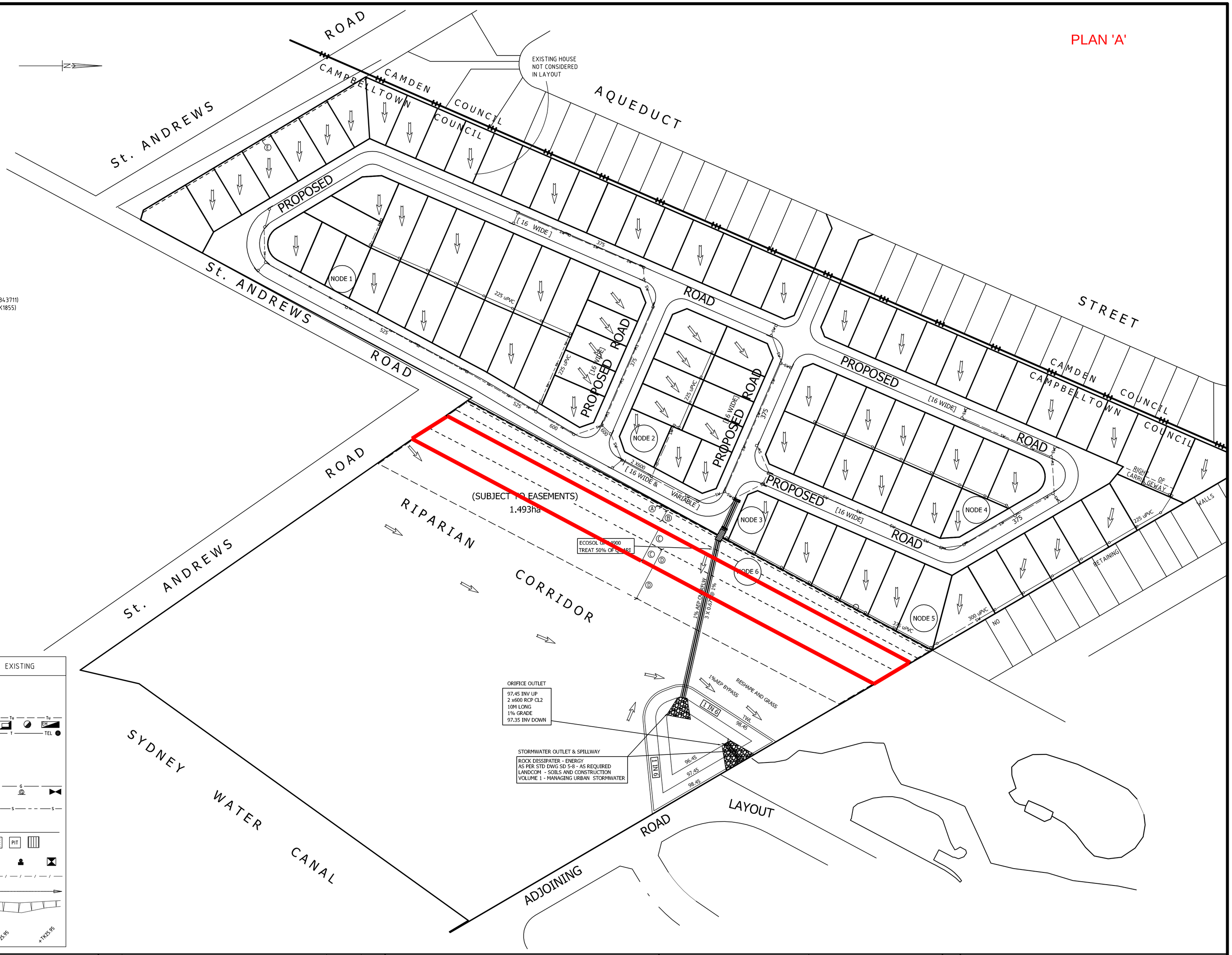
DIRECTION OF NATURAL SURFACE

PROPOSED DRAINAGE

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)



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 PIT 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 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 +1425.95

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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
	AMENDMENT	DATE	APPR'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

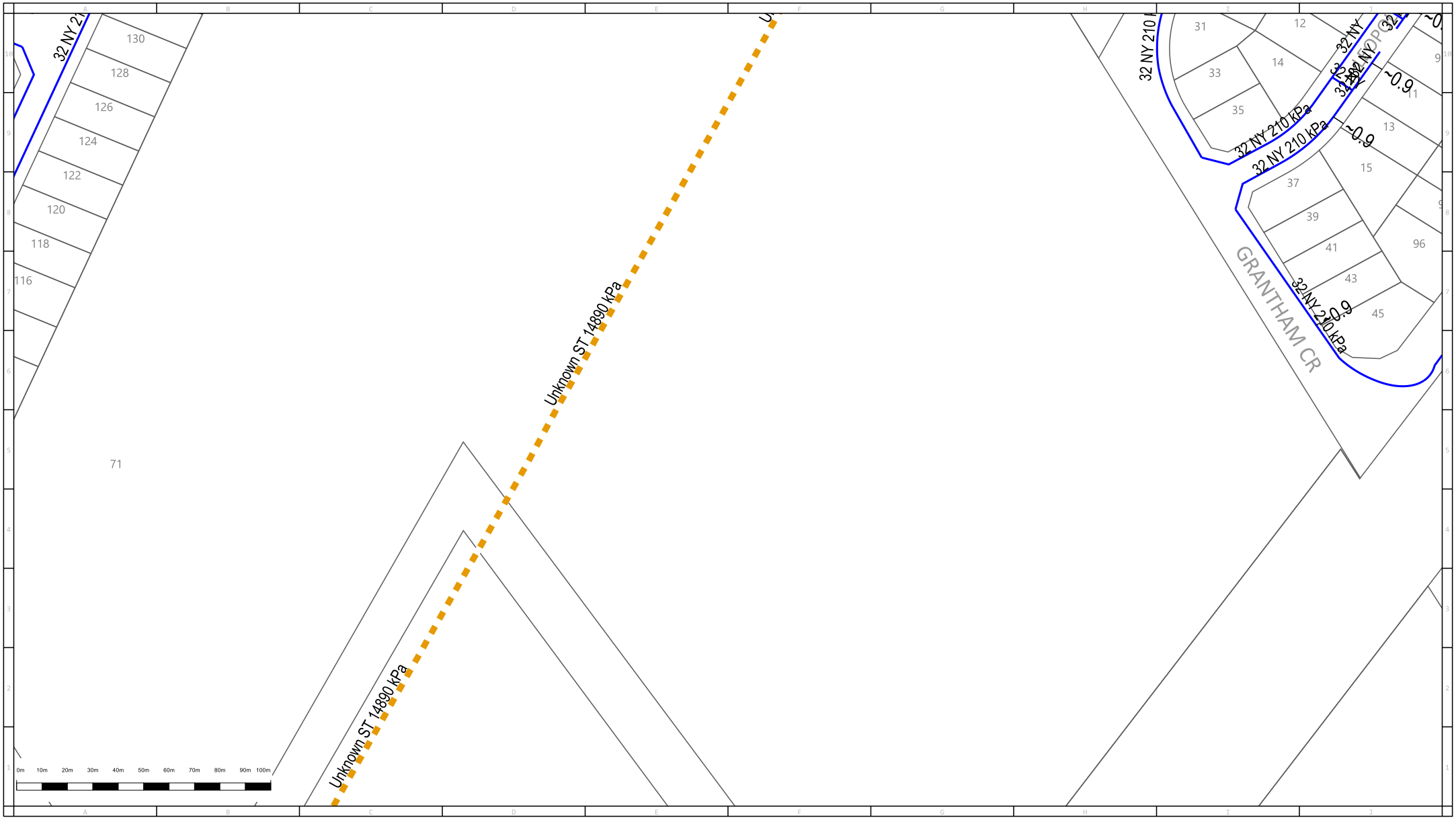
CONCEPT DRAINAGE & ON SITE DETENTION/WSUD

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

DBYD Authority: Jemena Gas Networks (NSW)

DBYD Location: 71 St Andrews Road Varroville NSW, 2566

Plan 'B'
Sheet 1



Jemena
ABN 87 003 004 322

Main	In Service	Proposed
Unknown Pressure	———	- - - - -
Distribution - 2 kPa	———	- - - - -
Distribution - 7 kPa	———	- - - - -
Distribution - 30 kPa	———	- - - - -
Distribution - 100 kPa	———	- - - - -

Main	In Service	Proposed
Distribution - 210 kPa	———	- - - - -
Distribution - 300 kPa	———	- - - - -
Distribution - 400 kPa	———	- - - - -

High Pressure Main & Pipeline	In Service	Proposed
Secondary - 1050 kPa	———	- - - - -
Secondary Service	———	- - - - -
Primary - 3500 kPa	———	
JGN Trunk - 7000 kPa	———	
Transmission	———	

Fittings, Valves & Regulators

Siphon
Valve
Distance in metres of Main from Boundary Line ~1.5
MBK = Metres Back of Kerb
MFL = Metres from Fence Line
Regulator Set
Regulator Station
Automatic Line Break Valve

N W E S

Scale: 1:2000

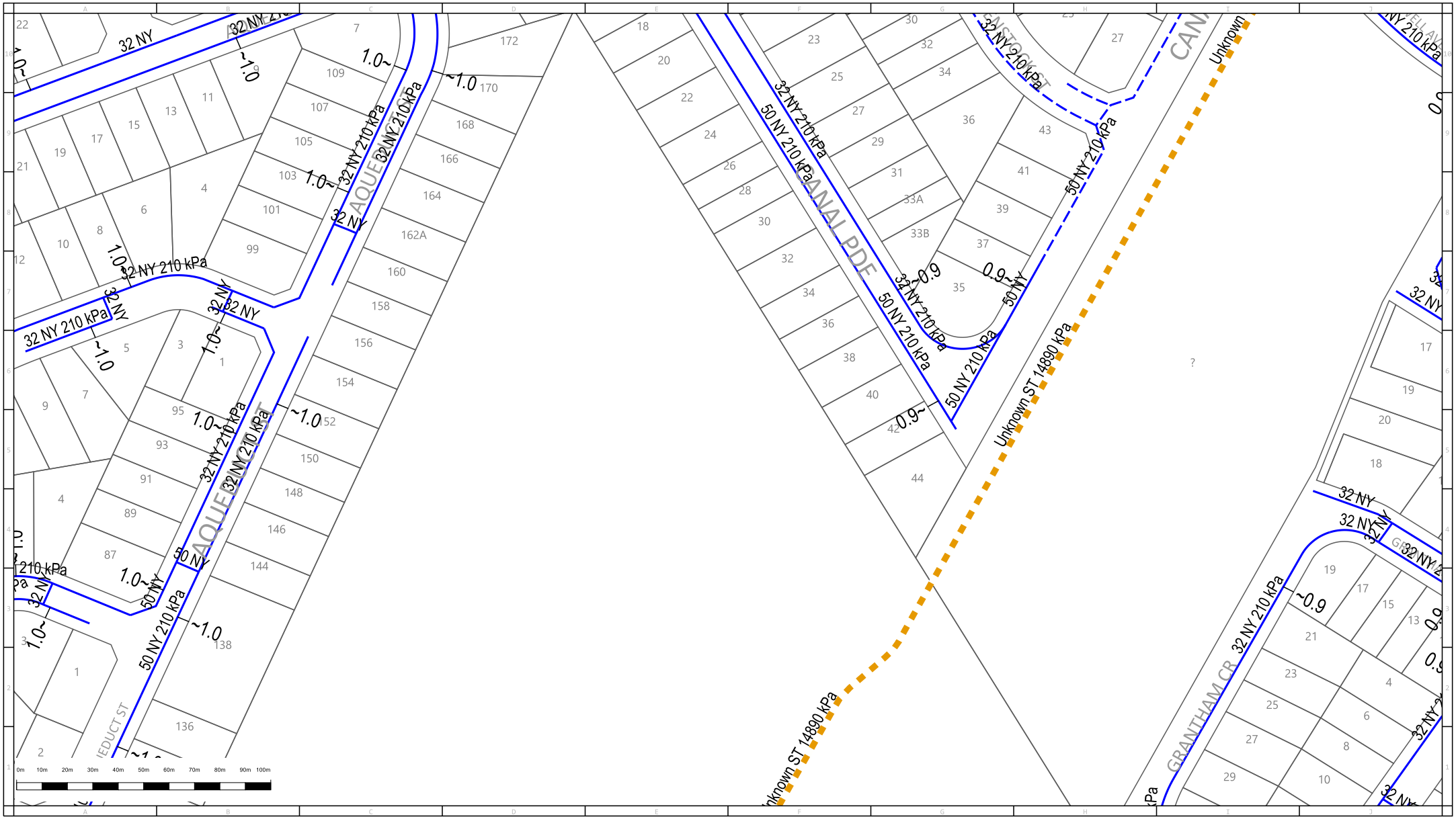
Issue Date: 27/09/2018
DBYD Seq No: 75941408
DBYD Job No: 15010589

WARNING: This is a representation of Jemena Gas Networks underground assets only and may not indicate all assets in the area. It must not be used for the purpose of exact asset location in order to undertake any type of excavation. This plan is diagramatic only, and distances scaled from this plan may not be accurate. Please read all conditions and information on the attached information sheet. This extract is subject to those conditions. The information contained on this plan is only valid for 28 days from the date of issue.

DBYD Authority: Jemena Gas Networks (NSW)

DBYD Location: 71 St Andrews Road Varroville NSW, 2566

Plan 'B'
Sheet 2



Jemena
ABN 87 003 004 322

Main	In Service	Proposed
Unknown Pressure		
Distribution - 2 kPa		
Distribution - 7 kPa		
Distribution - 30 kPa		
Distribution - 100 kPa		

Main	In Service	Proposed
Distribution - 210 kPa		
Distribution - 300 kPa		
Distribution - 400 kPa		

High Pressure Main & Pipeline	In Service	Proposed
Secondary - 1050 kPa		
Secondary Service		
Primary - 3500 kPa		
JGN Trunk - 7000 kPa		
Transmission		

Fittings, Valves & Regulators

Siphon
Valve
Distance in metres of Main from Boundary Line ~1.5
MBK = Metres Back of Kerb
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Regulator Station
Automatic Line Break Valve

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Appendix N Campbelltown Council Meeting Agenda - 11.06.19

8.5 Planning Proposal - 71 St Andrews Road, Varroville

Reporting Officer

Executive Manager Urban Centres
City Development

Community Strategic Plan

Objective	Strategy
4 Outcome Four: A Successful City	4.3 - Responsibly manage growth and development, with respect for the environment, heritage and character of our city

Officer's Recommendation

1. That Council forward the Planning Proposal for property No. 71 St Andrews Road, Varroville as attached to this report (attachment 1) to the Department of Planning and Environment seeking endorsement for Gateway Determination, noting the following changes from the proponent's request:

   a) The proposed minimum lot size be increased from 300sqm to 420sqm.

   b) The proposed area of retained land zoned E3 Environmental Management be zoned Part E2 Environmental Protection and part R2 Low Density Residential.

2. That should the Minister determine under Section 3.3.4 (2) of the *Environmental Planning and Assessment Act 1979* that the matter may proceed without significant amendment to the Proposal, Council publicly exhibit the Planning Proposal in accordance with the Gateway Determination.

   That Council not exercise, via the General Manager the functions of the Minister for Planning under section 3.31(3)(b) of the *Environmental Planning and Assessment Act 1979*, pursuant to the instrument of delegation dated 20 November 2012, due to the proposals inconsistency with the objectives of the Metropolitan Rural Area as contained in the Greater Sydney Region Plan 2018.

3. That following the exhibition, a report on submissions be presented to Council.

Purpose

The purpose of this report is to present a proponent initiated planning proposal request (PPR) to Council, which seeks to rezone a portion of property No. 71 St Andrews Road, Varroville from rural to residential purposes and to recommend that Council seek a Gateway Determination to progress the planning proposal with amendments as outlined in this report.

History

Council at its meeting of 15 October 2013 considered a preliminary Planning Proposal Request (PPR) to rezone Property No. 71 St Andrews Road, Varroville for residential purposes and resolved to consider potential development of the land for rural residential/ environmental living allotments, subject to additional information.

On 11 November 2015, GAT and Associates, on behalf of the landowners, lodged a PPR that did not align with the Council's previous resolution (outlined above) requesting the rezoning of the majority of the site to R2 Low Density Residential to permit approximately 173 lots, and adopting planning controls broadly consistent with those in the adjoining East Leppington Growth Centre Precinct.

The matter was subsequently considered by Council at its meeting of 16 February 2016 where it resolved not support the proposal for the following reasons:

- Inconsistencies with higher order planning policies
- Inconsistencies with local planning policy and Council's policy position on residential development in the Scenic Hills
- Potential adverse environmental impacts (Cumberland Plain Woodland).

On 3 April 2017, the Sydney South West Planning Panel considered and rejected a request by the applicant for a pre-gateway review, recommending that the proposal should not be submitted for a Gateway Determination for the following reasons:

- Lack of sufficient strategic merit
- Inconsistency with key strategic plans
- Didn't demonstrate the protection and conservation of environmentally sensitive land
- Didn't adequately consider potential impacts on the Sydney Water Canal.

Councillors were advised of the Sydney South West Planning Panel's decision in the Councillor Weekly Memo dated 2 June 2017.

On 19 September 2017, the proponent presented an amended Planning Proposal (PP) that seeks to retain a greater portion of Cumberland Plain Woodland by reducing the urban footprint. A site inspection was also held on 17 October 2017 and attended by Councillors and senior staff.

A revised PPR was subsequently lodged with Council on 19 February 2018 and considered by the Campbelltown City Council Local Planning Panel on 25 July 2018 who provided the following advice:

1. Development of the subject site for residential purposes has been pre-supposed by the development pattern approved on land adjoining to the west.
2. The site is adjoined on two sides by land developed for residential purposes pursuant to the Growth Centres SEPP and that an electricity easement formes a third boundary of the land proposed to be developed. As a result, the land proposed to be rezoned for residential purposes is currently isolated and appears no longer suitable for its current use.
3. Appropriate future development of the land, with development consent, would provide an improved transition between the adjoining residential lands and other neighbouring land uses than is currently provided were the site remain in its current zoning and use.

4. The land forms part of the Scenic Hills area designated by Campbelltown City Council. However, due to local topography, sight lines to the Scenic Hills would not be compromised by the proposal.
5. The proposal to utilise part of the site for bio banking purposes is supported subject to appropriate arrangements being entered into between the Council and the proponent to secure its long term viability. In this regard, the Panel consider an E3 Environmental Management zoning may not adequately secure the long term ecological integrity of the lands to be retained for environmental purposes. The Panel encourages Council to consider other options that would not provide a dwelling entitlement.
6. The Planning Proposal request is generally consistent with the changed urban-rural interface of the locality defined by recent development in the adjoining East Leppington Growth Precinct.
7. Although the Planning Proposal request would result in a small increase in housing supply in the area, the proposal has not satisfactorily addressed the current strategic framework stablished by the District Plan. Therefore, Council should satisfy itself of an appropriate strategic justification prior to seeking Gateway Determination.
8. Council's assessment of issues that require further consideration post Gateway Determination is supported. However, the following additional matters should also be addressed:
   a) impact of the gas pipeline on the development footprint; and
   b) strategy to ensure the existing urban edge is not replicated by future development and a sensitive interface is achieved.
9. As advised by the applicant at the Panel meeting, a development application has been lodged on 25 July 2018 to clear vegetation from the site. The Panel suggests that the Council carefully consider whether it should assess/determine the proposed removal of vegetation prior to finalisation of the Planning Proposal, as it may prejudice the rezoning assessment and associated environmental strategy.

Subject to addressing the above matters, the Panel recommends to Council that it considers it appropriate for the Planning Proposal request to proceed for a Gateway Determination to enable public comment to be obtained on the proposal.

Those items above that require a response from Council are addressed in Section 2 Evaluation.

Site

The site is known as Property No. 71 St Andrews Road, Varroville and described as Lot 71, DP 706546. It is irregular in shape, has an area of 14 hectares and is zoned E3 Environmental Management under Campbelltown LEP 2015. There is one existing dwelling within the south western part of the site, accessed from St Andrews Road.

The site is bounded to the south by bushland, to the east by the Upper Canal and to north and west by the new residential subdivisions of the Willowdale development (East Leppington Growth Centre Precinct) including a public open space and riparian corridor abutting the northern boundary of the subject land. To the west and east, bushland separates the site from the Willowdale and Emerald Hills (Camden LGA) development precincts.

There is a service infrastructure corridor that runs north-south across the central part of the site that contains two underground gas pipelines and an overhead high voltage electricity transmission line. Apart from the service infrastructure corridor, the land is vegetated with mature trees (Cumberland Plain Woodland) with a generally cleared understorey.

Proposal

The PPR seeks to amend Campbelltown LEP 2015 as follows:

- Zone the western part of the site (between service easements and western boundary) to R2 Low Density Residential
- Amend the Lot Size Map and Height of Buildings Map to permit a minimum lot size of 300 sqm and building height of 9m
- Zone a portion of land for a drainage corridor to SP2 Local Drainage, adjoining drainage land in the Willowdale development
- Zone a portion of land for open space to RE1 Public Recreation, adjoining open space in the Willowdale development
- Introduce a minimum dwelling density of 15 dwellings per hectare for the proposed R2 Low Density Residential Zone
- Zone a portion of land as R2 Low Density Residential to permit a caretakers dwelling on the remaining bushland area
- Retain the E3 Environmental Management Zone on the remaining land.

The proposed amendments are illustrated on page 4 of the PPR as provided in attachment 2. The proposal is supported by specialist studies addressing bushfire, water management, contamination, ecology and traffic impacts.

Report

This report considers the strategic context of the PPR in relation to state and local planning policies and the potential impacts of the Proposal.

1. Strategic Context

The following state and local planning policies are relevant to the proposal as discussed below.

1.1. Greater Sydney Region Plan 2018

The Greater Sydney Region Plan: A Metropolis of Three Cities (GSRP) has been prepared by the NSW State Government to guide land use planning decisions for the next 20 years. The Plan sets a strategy for accommodating Sydney's future population growth and identifies the need to deliver 725,000 new homes by 2036. The GSRP identifies that capacity for new homes should be located in areas supported by infrastructure such as the new communities in the land release areas of the South West Growth Areas.

Although consistent with the above growth objectives, the site is located on land identified by the GSRP to form part of the Metropolitan Rural Area (MRA). Accordingly, the proposal would be inconsistent with Objective 28 (Scenic and cultural landscapes are protected) and Objective 29 (Environmental, social and economic values in rural areas are protected and enhanced) which indicate that urban development is not consistent with the values of the MRA which includes the Campbelltown Scenic Hills. Further, the GSRP provides that Greater Sydney has sufficient land to deliver its housing needs within the current boundary of the urban area.

Although the proposal is not consistent with this objective, it is considered that mapping of the MRA as it relates to the subject property is the result of a planning anomaly arising from the:

- location of the site on the Campbelltown City Council and Camden Council LGA boundary
- extent of the South West Priority Growth Area which includes the East Leppington Precinct
- Emerald Hills Precinct located in the Camden LGA and rezoned in September 2014
- Mapping of the MRA which aligns with property boundaries rather than landscape features.

Given the above, the subject site does not exhibit the rural or landscape qualities that comprise the MRA. The site is flanked by urban development on its western and northern boundaries, is bisected by a riparian corridor, gas and high voltage electricity transmission lines that separate it from the Scenic Hills. Accordingly, the impact on scenic and cultural landscape of the Scenic Hills, when viewed from the public realm is considered minimal and any inconsistency with the objectives is considered reasonable in this instance.

1.2. Western City District Plan

The Western City District Plan (WCDP) was released in March 2018 and provides a template for realising the Western Parkland City of the Metropolis of Three Cities (Region Plan for Greater Sydney). It provides a range of planning priorities for councils to consider when undertaking local planning. The planning priorities relevant to the proposal are discussed below:

Planning Priority	Comment
Planning Priority W5: Providing housing supply, choice and affordability, with access to jobs, services and public transport).	Consistent. The proposal would deliver new housing that directly adjoins the existing greenfield developments of Willowdale and Emerald Hills which are serviced by shops and public transport. Further, the area will be serviced by a new school planned for delivery within the Willowdale development.
Planning Priority W14: Protecting and enhancing bushland and biodiversity	Consistent. The proposed development of the site would be consistent with the urban form of adjoining developments and would assist to connect waterfront land, providing a linear open space connection between the Willowdale and Emerald Hills precincts. Any proposal to clear land would be subject to the requirements of the *Biodiversity Conservation Act 2016* with opportunity for the land owner to enter into a biodiversity stewardship agreement to protect in perpetuity land on the eastern side of the riparian corridor to be zoned E3 Environmental Management.

Planning Priority	Comment
Planning Priority W15: Increasing urban tree canopy cover and delivering Green Grid connections)	As above
Planning Priority W17: Better managing rural areas	Inconsistent: As discussed in section 1.1 above, mapping of the site within the Metropolitan Rural Area is considered a planning anomaly. As the land does not exhibit important farming, scenic or cultural values, an exemption from this priority is considered appropriate in this instance.

As outlined above, the inconsistency of the proposal with the MRA is considered of minor significance given the site location. Further, the PPR would achieve the overall intent of the District Plan and would not undermine the overall achievement of the Plan, particularly with respect to implementation of Council's Local Strategic Planning Statement and pending review of the Campbelltown LEP 2015.

1.3. Ministerial Directions (9.1 Directions)

Section 9.1 of the *Environmental Planning and Assessment Act 1979* (EPA Act) allows the Minister for Planning and Public Spaces to give directions to Council regarding principals, aims, objectives or policies to be achieved or given effect to in the preparation of draft local environmental plans. The PPR includes a table listing the Section 9.1 Directions and whether the proposal complies with them.

A planning proposal may be inconsistent with a Section 9.1 Direction only where the relevant planning authority can satisfy the Secretary of the Department of Planning and Environment that the provisions of the planning proposal that are inconsistent are of minor significance. In this regard, the following minor inconsistencies are relevant to the proposal:

- **Direction 2.1: Environmental Protection Zones**

This direction requires that a planning proposal must include provisions that facilitate the protection and conservation of environmentally sensitive areas. It also requires that a proposal on land within an environment protection zone must not reduce the environmental protection standards that apply.

The current environmental planning standards applying the land are enforced only by virtue of the current E3 Environmental Management zone and lot size standard which provide a single dwelling entitlement on the site. Notwithstanding this limitation, the north-west part of the site currently exhibits low species diversity and no ground or mid storey due to its grazing history.

The proposal provides an opportunity to increase the environmental protections standards that apply to the land by encouraging more sustainable land practices and promote the establishment of a Biodiversity Stewardship Agreement under the *Biodiversity Conservation Act 2016* for the south eastern part of the site. In support of this outcome, it is recommended that the PRR be amended to also identify the areas of Cumberland Plain Woodland on

Council's existing Terrestrial Biodiversity Map and that the zoning of the south eastern part of the site be strengthened to E2 Environmental Conservation.

- **Direction 4.4: Planning for Bushfire Protection**

This direction requires consultation with the Rural Fire Service following receipt of a Gateway determination, that a planning proposal must have regard to Planning for Bushfire Protection 2006, introduce controls that avoid placing inappropriate developments in hazardous areas, and ensure that bushfire hazard reduction is not prohibited within the Asset Protection Zone (APZ).

There is bushland to be retained east of the land proposed to be rezoned as R2. It will however be separated by from the residential development by an existing power line easement that assists in providing an APZ. Appropriate measures such as further APZs to minimise the risk can be put in place as part of the development assessment process and thereby satisfy this direction.

- **Direction 7.1: Implementation of A Plan for Growing Sydney**

The Greater Sydney Region Plan and Western District Plan identify the site as part of the Metropolitan Rural Area. Each plan states that urban development is not compatible with the MRA and that there is sufficient land to deliver housing eliminating the need for expanding into the MRA.

The site is on the western side of the Scenic Hills and is not visible from the eastern side of the Scenic Hills. The site would not link directly to the Campbelltown Urban Areas nor require any major upgrade of infrastructure in Campbelltown LGA and would form an extension of the existing Willowdale development to the North and Emerald Hills Development to the West and South West.

Accordingly, it is considered that the site limitations arising from its classification as being part of the Metropolitan Rural Area is an anomaly and any inconsistency with the direction is justified.

1.4. Campbelltown Residential Development Housing Strategy

The strategy identifies certain release and infill areas for residential development. While it refers to the East Leppington Precinct (commonly known as Willowdale) it does not specifically identify additional lands adjoining the precinct for future residential development.

As outlined in Section 1.1 above, the planning proposal provides an opportunity to regularise the planning controls applying to the land to correct previous planning anomalies arising from the application of historic controls and strategies. Therefore, the insistency with the current Housing Strategy is of minor significance and subject to support, may be included in the current revision of the Housing Strategy required to give effect to the Western City District Plan.

1.5. Campbelltown LEP 2015

The following elements of the proposal are relevant to the CLEP 2015 with respect to the proposed land use zoning and principle development standards.

1.5.1. Land Zoning Map

Consistent with the advice of the Local Planning Panel, the proposal to retain the existing E3 Environmental Management zone on the southern eastern part of the site is not supported on the grounds that a dwelling entitlement is retained. This may present a future conflict with respect to establishing a Biodiversity Stewardship Site over the land as the potential siting of a dwelling would not be known until a development application is submitted.

An alternate outcome similar to that already implemented on St Andrews Road in the Camden LGA would be to apply an E2 zone and require its dedication as public land. Compensation for dedication of the land may be via identification of a suitable development lot zoned R2 Low Density Residential to be accessed from Sawsedge Avenue in the Willowdale development.

1.5.2. Terrestrial Biodiversity Map

As outlined in the response to Ministerial Direction 2.1: Environmental Protection Zones, it is recommended that the PRR be amended to also identify the areas of Cumberland Plain Woodland on Council's existing Terrestrial Biodiversity Map. This approach has been implemented in recent rezonings for areas such as the Caledonia Precinct, Menangle Park and Mt Gilead and would require any future development application to demonstrate how the development minimises disturbance and adverse impacts to remnant vegetation communities, threatened specifies populations and their habitats.

1.5.3. Minimum Lot Size Map

The request to permit a minimum lot size of 300sqm on the grounds that this development is permitted in adjoining developments is generally not supported. Planning controls for the Willowdale precinct fall within State Environmental Planning Policy (Sydney Region Growth Centres) 2006 for that part located in the Campbelltown LGA. This policy does not apply a minimum lot size map but rather a minimum and maximum density approach of between 15 to 20 dwellings per hectare with lots of 300 or 250sqm permitted depending on whether the proposal includes built form or not. This approach is generally not consistent with the current release area controls of CLEP 2105.

The adjoining subdivisions in the Willowdale precinct achieve an average lot size of 415sqm, with most lots having an area between 300 and 450sqm. The minimum permitted lot size in the R2 zone in Menangle Park is 420sqm. There is also scope for subdivision of smaller lots (300sqm) for dual occupancy, semi-detached dwellings, attached dwellings and multi dwelling housing.

The concept layout plan submitted with the PPR indicates that approximately 98 lots could be designed to fit the proposed R2 zoned land based on a 450sqm lot size. However, the proposal to permit a minimum lot size of 300sqm would result in up to 190 lots or approximately 30 dwellings per hectare.

Therefore, to be consistent with the prevailing density of the locality, and to also reflect the distance from shops, public transport and recreation opportunities, it is recommended that a minimum lot size of 420 sqm be applied. This would enable approximately 124 lots over the site which would be in keeping with the character of the locality.

1.5.4. Urban Release Area Map

As the site adjoins existing urban release areas, it is appropriate to amend the Urban Release Area Map. This would ensure that any future proponent enters into satisfactory arrangements for the provision of designated state infrastructure and that appropriate DCP provisions are inforce prior to the issuing of development consent.

A site specific DCP would form a chapter of Council's Sustainable City Development Control Plan and address matters such as street layout, connections to adjoining development, tree canopy, addressing the special uses corridor, bushfire risk, drainage and open space design.

1.6. Campbelltown (Sustainable City) DCP 2015

At this stage, the proponent has not provided a draft development control plan for the site. Should a Gateway Determination be issued by the Department, a draft DCP would be required prior to finalization of the amendment.

1.7. Campbelltown Local Infrastructure Contributions Plan 2018

Future subdivision of the site would be subject to the Campbelltown Local Infrastructure Contributions Plan 2018 and attract a maximum levy of $20,000 per lot.

2. Evaluation

The following environmental impacts are relevant to the Proposal as discussed below.

2.1. Urban Design

As noted by the Local Planning Panel, future development of the land, with development consent, would provide an improved transition between the adjoining residential lands and other neighbouring land uses. In this regard, the proposal provides a possible subdivision layout that in part would provide road frontage to the riparian corridor, consistent with the prevailing character of the Willowdale development. This concept should be incorporated in a future DCP for the site to ensure that any new residential subdivision addresses the riparian corridor and retained bushland to support an attractive open space corridor linking the Willowdale development with areas to the south and west.

The Local Planning Panel also suggested the need for a strategy to ensure the existing urban edge is not replicated by future development and a sensitive interface is achieved. This concern was raised by the panel due to the existing 2m retaining wall the forms the western property boundary and concern that a similar outcome may occur along the sites eastern boundary with the riparian area. This issue would be addressed in a future DCP and upon evaluation of a development application.

2.2. Infrastructure

Future development of the site would require implementation of a local road network, connection to external collector streets and a stormwater management strategy.

Access to the site may be provided from either St Andrews Road, which is currently subject to an upgrade strategy, including a roundabout that will connect the Jamboree Avenue and a new collector street to service the Emerald Hills development with St Andrews Road.

Planning for this connection has been a long standing feature of the Indicative Layout Plan for East Leppington and supporting documents.
Alternatively, access to Aqueduct Street may be negotiated with the owner of adjoining allotments consistent with previous conditions of development consent for this land imposed by Camden Council. Access via Aqueduct Street would ensure better integration with the Willowdale development for future residents.

While the site is not flood-prone, it drains to Bonds Creek and would require an on-site detention basin to attenuate peak flows from the development. A concept plan has been submitted with the proposal detailing how this would be achieved. The feasibility of locating the proposed basin within the riparian area would be addressed during consultation with relevant state authorities and upon further assessment by Council's Development Engineers.

The scale of the residential development generates the need for additional open space. It is considered that the proposed open space along the service infrastructure corridor would be sufficient and provide opportunity to the continuation of existing pedestrian and cycle links.

Consultation with major infrastructure authorities, including those responsible for existing high pressure gas main and electricity easements would be expected to be undertaken as a condition of Gateway Determination supporting the PPR. It should be noted that the existing gas main and electricity easements pass through the Willowdale Precinct.

Should the rezoning proceed, further referrals would occur at the development application stage to obtain general terms of approval that would inform detailed amendment, if any, to the concept subdivision plan.

2.3. Vegetation

The proposal is supported by an Ecological Assessment that confirms the presence of 8.35 hectares of Cumberland Plain Woodland vegetation which is a critically endangered ecological community.

The proposed development would avoid impacting 3.745 hectares of degraded CPW. The impacted vegetation is considered by the assessment to be of low quality, has low species diversity and may regenerate poorly.

The Local Planning Panel (LPP) considered the issue of vegetation and supported the proposal to utilise part of the site for bio banking purposes subject to appropriate arrangements being entered into between the Council and the proponent to secure its long term viability. Any application to clear vegetation would require development consent and would trigger the requirements and assessment methodology of the *Biodiversity Conservation Act 2016.*

2.4. Bushfire risk

The proposal is supported by a Bushfire Assessment that indicates future development would be impacted by bushfire risk associated with existing woodland vegetation that adjoins the site and short heath vegetation located under the electrical services easement. The report confirms that bushfire risk could be appropriately mitigated if appropriate bushfire protection measures are put in place as summarised in the report. This would include suitable evacuation routes via Aqueduct Street and possibly St Andrews Road as well.

This outcome would be confirmed via future consultation with the RFS should a Gateway Determination be issued and would also be a requirement prior to the issuing of future development consent.

2.5. Contamination

A preliminary site investigation report was prepared to assess the potential for land contamination. The report found that there is low to moderate potential for contamination on site and 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.

This is consistent with the procedure envisaged by SEPP 55 - Remediation of Land whereby a preliminary investigation is undertaken to determine whether the extent of contamination should preclude proceeding with a rezoning or whether there is sufficient information to show that there is minimal contamination or that any existing contamination can be adequately remediated as part of development taking place.

3. Public Benefit

The community benefit test is an important element of determining whether a planning proposal has merit. Relevant matters for consideration of a spot rezoning include whether a local environmental plan accurately reflects the strategic direction and changing circumstances of an area, the length of time that has elapsed since the community was consulted about the planning controls applying to the land, and whether the planning controls are too prescriptive to facilitate a sensible development. The test also considers whether there is a demonstrable public interest in considering an alternative proposal to the existing planning scheme, which was not considered by Council or the community when the scheme was adopted.

In the case of this PPR, there is a strong argument to amend the Campbelltown LEP on the following grounds:

- The site is located between two existing urban release areas, and by virtue of its location within the Campbelltown LGA has been inadvertently omitted from previous planning investigation
- Development of adjoining areas is now almost complete, which has altered the previous rural character into that of an urban area
- Future development of the site would be consistent with the objectives and outcomes envisaged by metropolitan, district and local planning strategies
- Would have a negligible impact on the local road network, open space and community facilities.

For the above reasons, the PPR would provide a public benefit commensurate with adjoining development. In addition, any future development would be required to pay a monetary contribution towards the provision of local traffic, open space and community facilities.

4. Formal Consultation

A guide to preparing local environmental plans has been prepared by the Department of Planning and Environment (DP&E) to assist councils in preparing planning proposals and LEPs. Should Council resolve to proceed with the Planning Proposal, and Gateway

Authorisation is issued by the DP&E, consultation would be undertaken in accordance with the Gateway Determination requirements.

5. Statutory Consideration

The preparation of a Planning Proposal is the first step in the process of requesting changes to a planning instrument. Should Council resolve to proceed with the Planning Proposal to Gateway Determination, the DP&E would confirm the technical studies required and relevant parts of the Planning Proposal to be updated or amended prior to public exhibition.

As part of the Gateway Authorisation process, Section 3.34 of the *Environmental Planning and Assessment Act 1979* allows the Minister and the Secretary to delegate functions to a Council and/or an officer or employee of a Council. When submitting a planning proposal, Council is required to identify whether it wishes to Exercise Delegation (the Authorisation). Authorisation delegates the following plan making powers to Council:

- to make and determine not to make an LEP
- to defer inclusion of certain matters
- to identify which matters must be considered and which stages of the plan making process must be carried out again

At its meeting on 20 November 2012, Council resolved to formally accept the plan making delegations and delegate the plan making functions to the General Manager and Director Planning and Environment (now titled Director City Development).

On the grounds that the planning proposal is not consistent with the objectives of the Metropolitan Rural Area, it is recommended that Council not seek to exercise the Authorisation in this instance.

Conclusion

The PPR for the rezoning of 71 St Andrews Road, Varroville for urban development is considered to have sufficient strategic and site specific merit. Therefore, it is recommended that an amended Planning Proposal as provided in attachment 1 be submitted to the Department of Planning and Environment for a Gateway Determination.

Should the Department issue a Gateway Determination, the preparation of an amendment to Council's Sustainable City Development Control Plan would be required to insert a new part for the subject site.

Attachments

1. Planning Proposal (contained within this report)
2. Submitted Planning Proposal Request (due to size 326 pages) (distributed under separate cover)

Planning Proposal – 71 St Andrews Road, Varroville

Proposed amendment of Campbelltown Local Environmental Plan 2015

Background

Council at its meeting of 15 October 2013 considered a preliminary Planning Proposal Request (PPR) to rezone Property No. 71 St Andrews Road, Varroville for residential purposes and resolved to consider potential development of the land for rural residential / environmental living allotments, subject to additional information.

On 11 November 2015, GAT and Associates, on behalf of the landowners, lodged a PPR that did not align with the Council's previous resolution (outlined above) requesting the rezoning of the majority of the site to R2 Low Density Residential to permit approximately 173 lots, and adopting planning controls broadly consistent with those in the adjoining East Leppington Growth Centre Precinct.

The matter was subsequently considered by Council at its meeting of 16 February 2016 where it resolved not support the proposal for the following reasons:

- Inconsistencies with higher order planning policies;
- Inconsistencies with local planning policy and Council's policy position on residential development in the Scenic Hills; and
- Potential adverse environmental impacts (Cumberland Plain Woodland).

On 3 April 2017, the Sydney South West Planning Panel considered and rejected a request by the applicant for a pre-gateway review, recommending that the proposal should not be submitted for a Gateway Determination for the following reasons:

- Lack of sufficient strategic merit;
- Inconsistency with key strategic plans;
- Didn't demonstrate the protection and conservation of environmentally sensitive land; and
- Didn't adequately consider potential impacts on the Sydney Water Canal.

Councillors were advised of the Sydney South West Planning Panel's decision in the Councillor Weekly Memo dated 2 June 2017.

On 19 September 2017, the proponent presented an amended Planning Proposal (PP) that seeks to retain a greater portion of Cumberland Plain Woodland by reducing the urban footprint. A site inspection was also held on 17 October 2017 and attended by Councillors and senior staff.

A revised PPR was subsequently lodged with Council on 19 February 2018 and considered by the Campbelltown City Council Local Planning Panel on 25 July 2018 who provided the following advice:

1. Development of the subject site for residential purposes has been pre-supposed by the development pattern approved on land adjoining to the west.
2. The site is adjoined on two sides by land developed for residential purposes pursuant to the Growth Centres SEPP and that an electricity easement formes a third boundary of the land proposed to be developed. As a result, the land proposed to be rezoned for

residential purposes is currently isolated and appears no longer suitable for its current use.

3. Appropriate future development of the land, with development consent, would provide an improved transition between the adjoining residential lands and other neighbouring land uses than is currently provided were the site remain in its current zoning and use.
4. The land forms part of the Scenic Hills area designated by Campbelltown City Council. However, due to local topography, sight lines to the Scenic Hills would not be compromised by the proposal.
5. The proposal to utilise part of the site for bio banking purposes is supported subject to appropriate arrangements being entered into between the Council and the proponent to secure its long term viability. In this regard, the Panel consider an E3 Environmental Management zoning may not adequately secure the long term ecological integrity of the lands to be retained for environmental purposes. The Panel encourages Council to consider other options that would not provide a dwelling entitlement.
6. The Planning Proposal request is generally consistent with the changed urban-rural interface of the locality defined by recent development in the adjoining East Leppington Growth Precinct.
7. Although the Planning Proposal request would result in a small increase in housing supply in the area, the proposal has not satisfactorily addressed the current strategic framework stablished by the District Plan. Therefore, Council should satisfy itself of an appropriate strategic justification prior to seeking Gateway Determination.
8. Council's assessment of issues that require further consideration post Gateway Determination is supported. However, the following additional matters should also be addressed:
   a) impact of the gas pipeline on the development footprint; and
   b) strategy to ensure the existing urban edge is not replicated by future development and a sensitive interface is achieved.
9. As advised by the applicant at the Panel meeting, a development application has been lodged on 25 July 2018 to clear vegetation from the site. The Panel suggests that the Council carefully consider whether it should assess/determine the proposed removal of vegetation prior to finalisation of the Planning Proposal, as it may prejudice the rezoning assessment and associated environmental strategy.

Subject to addressing the above matters, the Panel recommends to Council that it considers it appropriate for the Planning Proposal request to proceed for a Gateway Determination to enable public comment to be obtained on the proposal.

Definitions and abbreviations

CLEP 2015 means Campbelltown Local Environmental Plan 2015

DCP means Development Control Plan

DPE means Department of Planning and Environment

EP&A Act 1979 means Environmental Planning and Assessment Act 1979

LEP means Local Environmental Plan

LGA means local government area

M means metres

MRA means Metropolitan Rural Area

PP means Planning Proposal

SEPP means State Environmental Planning Policy

Introduction

Existing use

The site is largely covered in bushland and occupied by a dwelling house.

Location

The land adjoins the southern boundary of the East Leppington Precinct of the former South West Growth Centre.

The Site

The land is known as 71 St Andrews Road, Varroville and described as Lot 71, DP 706546. It is irregular in shape, has an area of 14 ha and is zoned E3 Environmental Management under *Campbelltown Local Environmental Plan 2015*. There is one existing dwelling within the south western part of the land, accessed from St Andrews Road.

The land is located on the boundary of the Camden and Campbelltown Local Government Area Boundary.

The land is bounded to the south by bushland, to the east by the Upper Canal and to north and west by the new residential subdivisions of the Willowdale development including a public open space and riparian corridor abutting the northern boundary of the subject land. To the west of the land there is also bushland that separates the Willowdale development from the Emerald Hills development in Camden LGA.

There is a service infrastructure corridor that runs north-south across the central part of the land that contains two underground gas pipelines and an overhead high voltage electricity transmission line. Apart from the service infrastructure corridor, the land is vegetated with mature trees (Cumberland Plain Woodland) with a generally cleared understorey. The precinct is shown on Figure 1.

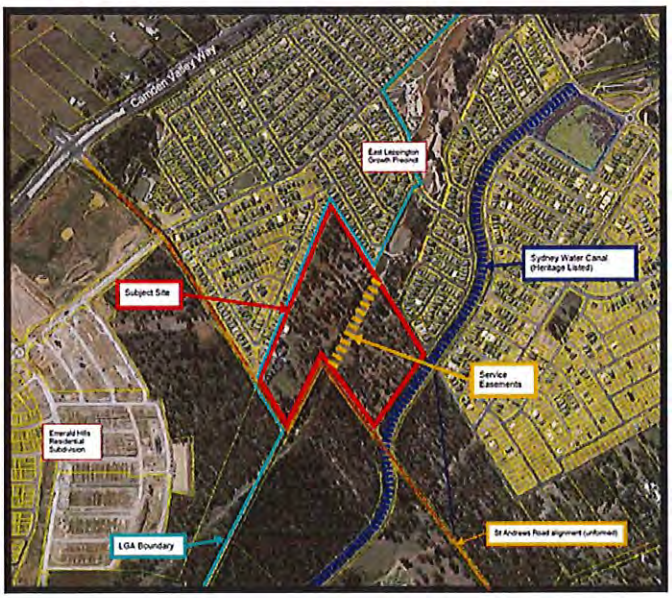


Figure 1 Location Map

Existing Zoning

The site is currently in the E3 Environmental Management zone under the provisions CLEP 2015.

The zoning of adjoining land to the north and west is R2 Low Density Residential under the provisions of SEPP (Sydney Region Growth Centres) 2006. To the south the site is adjoins the upper canal (zoned SP2 Infrastructure) and land zoned E3 Environmental Management under CLEP 2015, including land on the south-east side of the canal.

To the south-west the site is adjoined by bushland in Camden Council that is zoned E2 Environmental Conservation.

Figure 2 shows the subject site in relation to the surrounding land use zones.

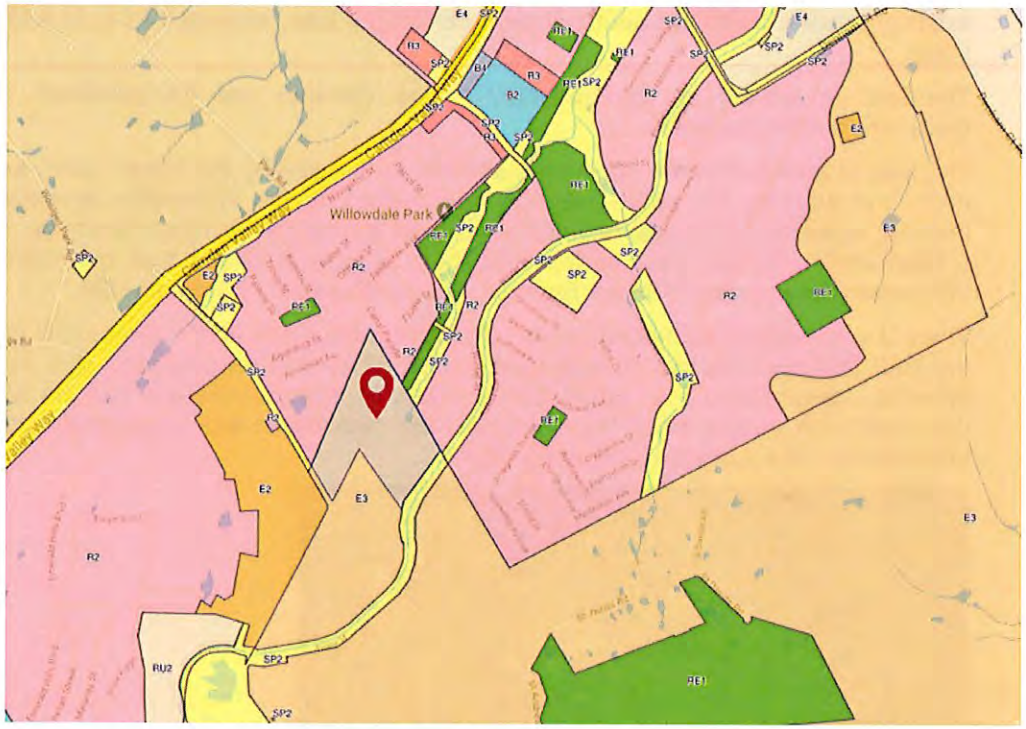


Figure 2 Current zoning on site and surrounding Zoning

Part 1 – Objectives or Intended Outcomes

The objectives of this PP are:

a) to enable the development of a portion of the site for residential development and for public recreation; and

b) provide further protection of the remaining bushland on the site.

Part 2 - Explanation of provisions

The proposed amendments are outlined below in Table 1.

Table 1

Changes	Description of changes
Zoning	Change from Zone E3 Environmental Management to: • R2 Low Density Residential; • RE1 Public Recreation; • SP2 Drainage; and • E2 Environmental Conservation.
Minimum Lot Size	Change the Minimum Lot Size from 100 ha to 420 sqm in the proposed R2 zone on the western side of the site.
Dual Occupancy Lot Size	Change the Minimum Lot Size for Dual Occupancy development from 100 ha to 700 sqm in the proposed R2 zone on the western side of the site.
Terrestrial biodiversity	Add the site to the Terrestrial Biodiversity map.
Land Reservation	Include a RE1 zone and SP2 Local Drainage zone.
Urban Release Area	Add the site to the Urban Release Area map.

Part 3 - Justification

Section A – Need for the Planning Proposal

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

   No. The proposal is a proponent initiated proposal.

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

   Yes. An amendment to CLEP 2015 to provide for the rezoning of the subject land is the best means of achieving the objectives of this PP.

Section B – Relation to Strategic Planning Framework

3. Is the planning proposal consistent with the objectives and actions of the applicable regional, sub-regional or district plan or strategy (including any exhibited draft plans or strategies)

Greater Sydney Region Plan 2018

The Greater Sydney Region Plan 2018 was released in March 2018. While the PP is not consistent with the Plan, the inconsistency can be justified as explained in relation to the relevant objectives and strategies in Table 2.

Table 2

Objective	Comments on consistency
Objective 4 Infrastructure use is optimised Strategy 4.1 Maximise the utility of existing infrastructure assets and consider strategies to influence behaviour changes, to reduce the demand for new infrastructure, including supporting the development of adaptive and flexible regulations to allow decentralised utilities.	The proposed development would assist in making better use of existing infrastructure.
Objective 27 Biodiversity is protected, urban bushland and remnant	While some of the existing bushland would be lost when developed as residential in the proposed R2 zone the remaining land is proposed to be included in an E2 zone, which is more restrictive than the existing E3 zone.
Objective 28 Scenic and cultural landscapes are protected Strategy 28.1 Identify and protect scenic and cultural landscapes. Strategy 28.2 Enhance and protect views of scenic and cultural landscapes from the public realm.	The site is one of 3 that are on the western side of the Scenic Hills at this location that would not be visible from Campbelltown. The site would not link directly to the Campbelltown Urban Areas nor require any major upgrade of infrastructure in Campbelltown LGA. Subject to subdivision design this area could integrate with the Willowdale development. Development of the subject site or the adjoining parcels could reasonably be considered as not being a precedent for large scale or incremental rezonings east of the ridge or the Upper Canal in this location.

Objective	Comments on consistency
Strategy 27.1 Protect and enhance biodiversity by: • supporting landscape-scale biodiversity conservation and the restoration of bushland corridors • managing urban bushland and remnant vegetation as green infrastructure • managing urban development and urban bushland to reduce edge-effect impacts	The existing E3 zone across the scenic hills area allows a range of rural land uses. It is noted that the adjoining bushland in Camden LGA is zoned as E2 Environmental Conservation, which separates Willowdale and Emerald Hills (in Camden). Therefore it is appropriate that the portion of the site identified for bio-banking be zoned as E2 zone. This would restrict the range of land uses on the site.
Objective 29 Environmental, social and economic values in rural areas are protected and enhanced Strategy 29.1 • Maintain or enhance the values of the Metropolitan Rural Area using place-based planning to deliver targeted environmental, social and economic outcomes.	The Greater Sydney Region Plan and Western District Plan identify the site as part of the Metropolitan Rural Area. Each plan states that urban development is not compatible with the MRA and that there is sufficient land to deliver housing eliminating the need for expanding into the MRA. Although the proposal is not consistent with this objective, it is considered that mapping of the MRA as it relates to the subject property is the result of a planning anomaly arising from the: • location of the site on the Campbelltown City Council and Camden Council LGA boundary; • extent of the South West Priority Growth Area which includes the East Leppington Precinct; • Emerald Hills Precinct located in the Camden LGA and rezoned in September 2014; and • Mapping of the MRA which aligns with property boundaries rather than landscape features. Given the above, the subject site does not exhibit the rural or landscape qualities that comprise the MRA. The site is flanked by urban development on its western and northern boundaries, is bisected by a riparian corridor, gas and high voltage electricity transmission lines that

Objective	Comments on consistency
Strategy 29.2 • Limit urban development to within the Urban Area, except for the investigation areas at Horsley Park, Orchard Hills, and east of The Northern Road, Luddenham.	separate it from the Scenic Hills. Accordingly, the impact on scenic and cultural landscape of the Scenic Hills, when viewed from the public realm is considered minimal and any inconsistency with the objectives is considered reasonable in this instance.
Objective 30 Urban tree canopy cover is increased Strategy 30.1 Expand urban tree canopy in the public realm.	The proposed development would provide a substantial amount of street trees as well as some planting on the proposed open space.
Objective 31 Public open space is accessible, protected and enhanced Strategy 31.1 Maximise the use of existing open space and protect, enhance and expand public open space by: • providing opportunities to expand a network of diverse, accessible, high quality open spaces that respond to the needs and values of communities as populations grow	It is proposed to extend the open space corridor in the Willowdale development into the site and provide a continuous open space corridor through the site to connect to potentially connect to Emerald Hills and to land to the east in the Scenic Hills.
• investigating opportunities to provide new open space so that all residential areas are within 400 m of open space and all high density residential areas (over 60 dwellings per ha) are within 200 m of open space	Additional open space would be provided in close proximity of the new dwellings that would be created adjoins the riparian corridor.
• requiring large urban renewal initiatives to demonstrate how the quantity of, or access to high quality and diverse local open space is maintained or improved	Not applicable
• planning new neighbourhoods with a sufficient quantity and quality of new open space	Additional open space would be provided with the proposed development.
• delivering shared and co-located sports and recreational facilities including shared school grounds and repurposed golf courses	Not applicable
• delivering or complementing the Greater Sydney Green Grid	The proposal would support the Greater Sydney Green Grid.

Objective	Comments on consistency
• providing walking and cycling links for transport as well as leisure and recreational trips	The proposed development would create a pedestrian and bicycle link from the southern end of the Willowdale development to land around Emerald Hills and to the eastern side of the Scenic Hills.
Objective 32 The Green Grid links parks, open spaces, bushland and walking and cycling paths Strategy 32.1 Progressively refine the detailed design and delivery of: • Greater Sydney Green Grid priority corridors • opportunities for connections that form the long term vision of the network • walking and cycling links for transport as well as leisure and recreational trips.	The proposed development would provide for increased protection of existing bushland and provide a pedestrian and bicycle link from the southern end of the Willowdale development to land around Emerald Hills and to the eastern side of the Scenic Hills.
Objective 37 Exposure to natural and urban hazards is reduced	
Strategy 37.1 • Avoid locating new urban development in areas exposed to natural and urban hazards and consider options to limit the intensification of development in existing urban areas most exposed to hazards.	The site is located adjacent to a corridor containing 2 gas lines and 1 electricity power line that also traverse the adjoining Willowdale development. The 2 gas line corridors within the Willowdale development are located within open space with streets fronting open space. It is proposed that this combined corridor be zoned as RE1. The site is subject to bushfire risk. The proposed R2 zone would be separated from the proposed E2 zone by the proposed RE1 corridor.
Strategy 37.2 • Respond to the direction for managing flood risk in the Hawkesbury-Nepean Valley as set out in resilient Valley, Resilient Communities – Hawkesbury- Nepean Valley Flood Risk Management Strategy.	Not applicable.

Greater Macarthur Land Release Investigation and Greater Macarthur Priority Growth Area

The site is not within the area of these lands.

Western City District Plan

The Western City District Plan was released in March 2018. While the PP is not consistent with the Plan, the inconsistency can be justified as explained in relation to the relevant objectives and strategies in Table 3.

Table 3

Planning Priority	Comments on consistency
Planning Priority W1 Planning for a city supported by infrastructure	
6. Maximise the utility of existing infrastructure assets and consider strategies to influence behaviour changes, to reduce the demand for new infrastructure, including supporting the development of adaptive and flexible regulations to allow decentralised utilities.	The proposed development would assist in making better use of existing infrastructure.
Planning Priority W5 Providing housing supply, choice and affordability, with access to jobs, services and public transport	The Planning Proposal supports this.
19. Using a place-based and collaborative approach throughout planning, design, development and management, deliver great places by: a. prioritising a people-friendly public realm and open spaces as a central organising design principle b. recognising and balancing the dual function of streets as places for people and movement c. providing fine grain urban form, diverse land use mix, high amenity and walkability, in and within a 10-minute walk of centres d. integrating social infrastructure to support social connections and provide a community hub e. recognising and celebrating the character of a place and its people	The proposed development would create a pedestrian and bicycle link from the southern end of the Willowdale development to land around Emerald Hills and to the eastern side of the Scenic Hills.
Planning Priority W14 Protecting and enhancing bushland and biodiversity 72. Protect and enhance biodiversity by: a. supporting landscape-scale biodiversity conservation and the restoration of bushland corridors b. managing urban bushland and remnant vegetation as green infrastructure c. managing urban development and urban bushland to reduce edge-effect impacts.	The existing E3 zone across the scenic hills area allows a range of rural land uses. It is noted that the adjoining bushland in the Camden LGA is zoned E2 Environmental Conservation, which separates Willowdale and Emerald Hills (in Camden). Therefore it would be appropriate that the portion of the site identified for bio-banking be zoned as E2 zone. This would restrict the range of land uses on the site.
Planning Priority W15 Increasing urban tree canopy cover and delivering Green Grid connections	

Planning Priority	Comments on consistency
73. Expand urban tree canopy in the public realm.	A further bio-banking agreement has the potential to increase tree canopy over the site proposed to be zoned E2. Street tree planting in the proposed R2 zone has the potential to replace the loss of trees in conjunction with the subdivision of land.
74. Progressively refine the detailed design and delivery of: a. Greater Sydney Green Grid priority corridors and projects important to the District b. opportunities for connections that form the long-term vision of the network c. walking and cycling links for transport as well as leisure and recreational trips.	The Planning Proposal is consistent in that it will retain an open space corridor that can be planted with low landscaping as well as retaining bushland via a stricter E2 zone that exists on adjoining lands in Camden LGA.
75. Create Greater Sydney Green Grid connections to the Western Sydney Parklands.	
Planning Priority W16 Protecting and enhancing scenic and cultural landscapes	
76. Identify and protect ridgelines, scenic and cultural landscapes, specifically the Scenic Hills, Mulgoa Valley and the escarpments of the Blue Mountains.	The Planning Proposal is considered consistent as the site is not visible from the Campbelltown side of the Scenic Hills.
77. Enhance and protect views of scenic and cultural landscapes from the public realm.	Building height in the Planning Proposal control would support this action.
78. Maintain or enhance the values of the Metropolitan Rural Area using place-based planning to deliver targeted environmental, social and economic outcomes.	
79. Limit urban development to within the Urban Area, except for the investigation areas at Horsley Park, Orchard Hills, and east of The Northern Road, Luddenham.	It is considered that subject land, due to its location in relation to the adjoining residential development is an anomaly.
Planning Priority W18 Delivering high quality open space	
80. Maximise the use of existing open space and protect, enhance and expand public open space by:	The site is located adjacent to a corridor containing 2 gas lines and 1 electricity power line that also traverse the adjoining Willowdale development. The 2 gas line corridors within the Willowdale development are located within open space with streets fronting open space. It is proposed that this combined corridor be zoned as RE1. The site is subject to bushfire risk. The

Planning Priority	Comments on consistency
a. providing opportunities to expand a network of diverse, accessible, high quality open spaces that respond to the needs and values of communities as populations grow	proposed R2 zone would be separated from the proposed E2 zone by the proposed RE1 corridor.
b. investigating opportunities to provide new open space so that all residential areas are within 400 m of open space and all high density residential areas (over 60 dwellings per hectare) are within 200 m of open space	Complies
c. requiring large urban renewal initiatives to demonstrate how the quantity of, or access to, high quality and diverse local open space is maintained or improved	Not applicable
d. planning new neighbourhoods with a sufficient quantity and quality of new open space	Complies
e. delivering shared and co-located sports and recreational facilities including shared school grounds and repurposed golf courses	Not applicable
f. delivering or complementing the Greater Sydney Green Grid	The Planning Proposal would support this.
g. providing walking and cycling links for transport as well as leisure and recreational trips.	Consistent as the proposed RE1 zone would link the existing open space system in the Willowdale development with land to the south and east of the site. The PP would create a pedestrian and bicycle link from the southern end of the Willowdale development to land around Emerald Hills and to the eastern side of the Scenic Hills.
Planning Priority W20 Adapting to the impacts of urban and natural hazards and climate change	
87. Avoid locating new urban development in areas exposed to natural and urban hazards and consider options to limit the intensification of development in existing urban areas most exposed to hazards.	The site is located adjacent to a corridor containing 2 gas lines and 1 electricity power line that also traverse the adjoining Willowdale development. The 2 gas line corridors within the Willowdale development are located within open space with streets fronting open space. It is proposed that this combined corridor be zoned as RE1. The site is subject to bushfire risk. The proposed R2 zone would be separated from the proposed E2 zone by the proposed RE1 corridor.

Planning Priority	Comments on consistency
88. Mitigate the urban heat island effect and reduce vulnerability to extreme heat.	It is expected that the development of the R2 zone would be supported by substantial street tree planting and the bushland to be retained in the proposed E2 zone would support this.

4. Is the Planning Proposal consistent with Council's local strategy or other local strategic plan?

Campbelltown Community Strategic Plan – Campbelltown 2027

This Community Strategic Plan represents the principal community outcome focused strategic plan guiding Council's policy initiatives and actions.

The PP is consistent with the relevant objectives headed accordingly.

Table 4

Outcomes	Comments on consistency
Outcome 1: A vibrant, liveable city Council's goal Our community is able to celebrate its diversity, make a contribution to, and enjoy the lifestyle opportunities offered by our city. Our city is a place where people want to live – it is creative, innovative, vibrant and resilient. It is a city that is designed for people, with easy access to high quality housing, services, amenities and open space. It is a community where people feel safe, socially connected and included. We celebrate our rich heritage and diversity, and respect our strong ties to Aboriginal culture. Our people enjoy the lifestyle offered by the city – a city which is a destination of choice.	The Planning Proposal does not compromise these goals.
Outcome 2: A respected and protected natural environment Council's goal Our people embrace the city's natural surrounds and see it as a unique point of difference. We work together to ensure development in the LGA is approached in a sustainable manner, and that our natural assets, bushlands and waterways are treated with respect. Our community is engaged and educated on the benefits of managing and accessing open space. We protect biodiversity conservation, our visual landscape and our heritage values, and recognise the importance of creating a sustainable and resilient city for future generations. Strategies 2.1 Implement and advocate for initiatives that conserve the city's natural environment 2.2 Activate the city's natural bushland and open spaces, fostering enhanced community stewardship of these areas 2.3 Promote and educate our community on sustainable practices and encourage practicable take up of more sustainable life-choices 2.4 Conserve and care for our city's biodiversity 2.5 Plan for and ensure that development in our city is sustainable and resilient	The Planning Proposal does not compromise these goals. The Planning Proposal is consistent in that while some bushland would be lost stricter controls would be applied in the remaining land proposed to be zone E2.
Outcome 3: A thriving, attractive city Council's goal	

Outcomes	Comments on consistency
We are a city that encourages and supports the development of the local economy through business innovation and growth. Our city attracts professional organisations which provide a range of employment opportunities for our people. We are a destination which makes the most of our city's natural and man-made assets to build on the experience that is Campbelltown. Our people are engaged in ongoing conversations about matters which affect our city, to ensure Council activities align with its strategic direction and the city's assets are managed strategically and sensitively. We embrace change and look to support the creation of new economies to build the resilience of the city.	The Planning Proposal does not compromise these goals.
Strategies 3.1 Support the resilience, growth and diversity of the local economy 3.2 Ensure that service provision supports the community to achieve and meets their needs 3.3 Become an innovative city where advances in technology, creativity and community participation are nurtured and embraced 3.4 Retain and expand existing businesses and attract new enterprises to Campbelltown, offering opportunities for a diverse workforce including professional, technology and knowledge based skills and creative capacity 3.5 Support for new education opportunities that match workforce skill sets with emerging economic needs underwritten by creative entrepreneurship and innovation capacity within the local community 3.6 Develop tourism opportunities and promote Campbelltown as a destination 3.7 Public funds and assets are managed strategically, transparently and efficiently 3.8 Provide strong governance for all Council activities	The Planning Proposal does not compromise these strategies.
<u>Outcome 4: A successful city</u> Council's goal	

Outcomes	Comments on consistency
We are a modern, forward thinking, connected city. We have built on our history and character, and shaped a city which transforms in line with its community and its needs. Our people value a balance between the built form and open space, and are kept informed of infrastructure delivery, including better health and education infrastructure and services. Our city and our people are connected through strategic road networks, transport systems and pedestrian facilities. Council strategies are developed in line with the draft South West District Plan and complement State Government plans for the city. Our city is reinvigorated – it is a city where people choose to be.	The Planning Proposal does not compromise these goals.
Strategies 4.1 Advocate and plan for enhanced connectivity, accessibility and movement within, to and from our city through improved public transport, road and traffic management infrastructure, cycling and pedestrian movement 4.2 Support and advocate for infrastructure solutions that meet the needs of our city and which pay an economic and liveability dividend 4.3 Responsibly manage growth and development, with respect for the environment, heritage and character of our city 4.4 Maintain and create usable open and recreational spaces that set our city apart from others 4.5 Work in partnership with the State Government to achieve positive planning outcomes 4.5 Work in partnership with the State Government to achieve positive planning outcomes 4.6 Plan and invest in the revitalisation of Campbelltown-Macarthur CBD, Ingleburn and other town centres	The Planning Proposal does not compromise these strategies. The proposed open space link will enhance cycling and pedestrian movement.

Campbelltown Local Planning Strategy 2013

The Local Planning Strategy 2013 was adopted in conjunction with the Campbelltown LEP 2015 to assist in informing future planning decisions.

The Planning Proposal is onsistent with the relevant strategies headed accordingly.

Table 5

Strategy	Comments on consistency
Environmental Management	
Contamination	This issue has been addressed in the background reports.
Salinity	In the absence of extreme localised geotechnical events, the inherent geotechnical constraints are manageable. They can generally be mitigated through the appropriate location of development through ground truthing, geotechnical investigation and environmental and engineering design.
Groundwater and Surface Water • A more comprehensive understanding of groundwater systems should be pursued as a fundamental step in developing and implementing a sustainable groundwater management strategy.	Not applicable to the site.
• Sufficient groundwater recharge areas should be maintained in elevated areas and desirably as vegetated corridors along ridgelines.	Not applicable to the site.
• The opportunities for integrating re-vegetated ridgelines with bio-banking areas should be explored, particularly in the Scenic Hills, as part of a more holistic strategy for the sustainable management of this area.	This Planning Proposal will support the bio-banking of the remaining bushland.
• The general management of water in the landscape should embrace the principles of Total Water Cycle Management and Water Sensitive Urban Design21.	The Planning Proposal will allow development of the site to contribute to this.
• Naturalistic drainage systems should be created or recreated as mechanisms for the management of surface water flows. Such systems should strive to mimic the natural hydrological regime.	The Planning Proposal will allow development of the site to contribute to this.
Sub-surface minerals and gases • A more comprehensive understanding of the nature, extent and aspirations for realising subsurface mineral and gaseous resources is required.	Not applicable to the site.
• A detailed knowledge of any adverse environmental impacts attached to realising subsurface minerals and gases and a comprehensive strategy to oppose inappropriate development of this nature and to mitigate adverse impacts is also required.	Not applicable to the site.
Effluent Disposal • In the absence of reticulated sewer, on-site effluent disposal should be the subject of comprehensive Sewage Management Plans, informed by broad ranging soil and landscape data.	Any future development would be required to provide reticulated sewer.

Strategy	Comments on consistency
Biodiversity • A comprehensive Biodiversity Strategy should be prepared having regard to existing knowledge and include, as a minimum:	The proposed E2 zone will contribute a future biodiversity strategy.
Air Quality	Not applicable to the site.
Noise	Not applicable to the site.
Bushfire	Development on the site will be subject to bushfire planning requirements.
Flooding and Drainage	While the site is not below the flood planning level, detention works will be required to minimise any adverse impacts downstream.
Climate Change • Promote the planting of appropriate trees for shade and solar access.	Vegetation of the proposed E2 lands will assist with this.
Residential Development • "Greenfield" Development refers to the development of land located on the urban fringe that has previously been used for non-urban land uses such as agriculture, for urban uses and particularly for new housing. It is critical to providing some degree of balance in meeting future population growth and provides a different housing and lifestyle choice. If these areas are formally identified as Urban Release Areas they will develop as well planned, integrated communities with a range of housing types and styles, supplied by well-planned services, infrastructure and quality public transport systems and open space networks. Caution should be used when considering proposals to develop land on the urban fringe that is not within a recognised Urban Release Area, as developing such land can lead to uncoordinated development and servicing issues.	The Planning Proposal complies in that it will provide scope for additional housing while further protecting existing bushland.
Economy and Employment (Incorporating Centres and Corridors)	Not applicable
Centres, Corridors and Business Parks	Not applicable.
Transport and Access	

Strategy	Comments on consistency
Overarching Objectives • Integrate land use and transport planning and delivery • Advocate for improved public transport and promote the use of public transport • Promote walking and cycling for local trips • Facilitate access for all users (including persons with disabilities, the aged and persons with young children) and integrate this philosophy into all levels of planning and transportation network and public domain improvements.	The development is expected to integrate with the surrounding street network. The provision of an open space corridor through the site will facilitate walking and cycling links between Willowdale and areas to the east and south.
• Continue to plan and lobby for funding assistance associated with the construction of the Spring Farm Link Road	Not applicable.
Infrastructure, Services and Open Space Overarching Objectives • Adequate infrastructure provision should accompany all proposed development • Development should not be approved if it cannot be adequately serviced by existing or augmented infrastructure • Pursue optimum future conservation and demand management of water • Consult relevant service providers in the preparation of the Comprehensive LEP	The development of the site will be required to provide the required infrastructure. Infrastructure servicing authorities will be consulted during the exhibition process.
Rural Lands	
Scenic and Visual Landscapes	

Strategy	Comments on consistency
• Retain the existing footprint of the Scenic Hills.	As outlined above, it is considered that mapping of the MRA as it relates to the subject property is the result of a planning anomaly arising from the: • location of the site on the Campbelltown City Council and Camden Council LGA boundary; • extent of the South West Priority Growth Area which includes the East Leppington Precinct; • Emerald Hills Precinct located in the Camden LGA and rezoned in September 2014; and • Mapping of the MRA which aligns with property boundaries rather than landscape features. Given the above, the subject site does not exhibit the rural or landscape qualities that comprise the MRA or scenic hills. The site is flanked by urban development on its western and northern boundaries, is bisected by a riparian corridor, gas and high voltage electricity transmission lines that separate it from the Scenic Hills. Accordingly, the impact on scenic and cultural landscape of the Scenic Hills, when viewed from the public realm is considered minimal and any inconsistency with the objectives is considered reasonable in this instance
• Protect the prevailing "undeveloped"/rural state.	As above.
• Urbanisation should be avoided, including in particular intensification of existing uses and the further introduction of institutional development.	As above.
• Development within existing urban areas shall minimise its impact upon significant vistas towards the Scenic Hills.	Not applicable
• Foster an understanding and respect for the complexity and richness of the Scenic Hills landscape.	Complies

Strategy	Comments on consistency
• Protect and conserve the ecological, scenic and environmental qualities of the Mount Annan Botanic Garden, including inward and outward views and adverse edge effects.	Not applicable
• Conserve both the skyline quality and integrity of the Mount Annan ridgeline.	Not applicable
• Include the landscape of Sugarloaf within the area recognised as the Scenic Hills.	Not applicable
• Protect the quality and integrity of the sequential views while travelling south on Menangle Road, Glenlee Road and the Freeway.	Not applicable
• Minimise visual impact of "hard/physical' Infrastructure.	Complies

Campbelltown Residential Development Strategy 2013

The site is not identified as a future residential urban release site. However the strategy does not preclude minor additions to existing greenfield urban areas.

5. Is the Planning Proposal consistent with applicable State Environmental Planning Polices?

The PP is generally consistent with applicable SEPPs. See Table 6 below.

Table 6

State Environmental Planning Policies	Comments on consistency
SEPP No 1 Development Standards	Not applicable as CLEP 2015 is a Standard Instrument LEP and incorporates Clause 4.6 - Exceptions to Development Standards, which negates the need for consistency with SEPP 1.
SEPP No. 19 - Bushland in Urban Areas	The PP satisfies this SEPP in that it applies stricter controls on the remaining bushland by zoning it E2 Environmental Conservation.
SEPP No. 21 - Caravan Parks	Not applicable to this Planning Proposal.
SEPP No. 30 - Intensive Agriculture	Not applicable to this Planning Proposal.
SEPP No. 33 - Hazardous and Offensive Development	Not applicable to this Planning Proposal.
SEPP No. 36 - Manufactured Home Estates	Not applicable in the Campbelltown LGA.
SEPP No. 44 - Koala Habitat Protection	Not applicable to this Planning Proposal.
SEPP No. 47 - Moore Park Showground	Not applicable in the Campbelltown LGA.
SEPP No. 50 - Canal Estate Development	Not applicable to this Planning Proposal.
SEPP No. 52 - Farm Dams and Other Works in Land and Water Management Plan Areas	Not applicable in the Campbelltown LGA.

State Environmental Planning Policies	Comments on consistency
SEPP No. 55 - Remediation of Land	As the land has been occupied by bushland it is not anticipated that it would be contaminated. A preliminary site contamination investigation was undertaken and no significant contamination was identified. A future development application would be required to comply with the requirements of the SEPP.
SEPP No. 62 - Sustainable Aquaculture	Not applicable to this Planning Proposal.
SEPP No. 64 - Advertising and Signage	Not applicable to this Planning Proposal.
SEPP No. 65 - Design Quality of Residential Flat Development	Not applicable to this Planning Proposal as residential flat buildings is not proposed on the site.
SEPP No. 70 - Affordable Housing (Revised Schemes)	Not applicable in the Campbelltown LGA
SEPP (Affordable Rental Housing) 2009	Not applicable to this Planning Proposal.
SEPP (Building Sustainability Index: BASIX) 2004	Not applicable to this Planning Proposal.
SEPP (Coastal Management) 2018	Not applicable in the Campbelltown LGA.
SEPP (Educational Establishments and Child Care Facilities) 2017	Not applicable to this Planning Proposal.
SEPP (Exempt and Complying Development Codes) 2008	Consistent as the Planning Proposal. does not propose any provisions contrary to the SEPP.
SEPP (Gosford City Centre) 2018	Not applicable in the Campbelltown LGA.
SEPP (Housing for Seniors or People with a Disability)	Consistent as the Planning Proposal does not propose any provisions contrary to the SEPP.
SEPP (Infrastructure) 2007	Consistent with SEPP.
SEPP (Kosciuszko National Park—Alpine Resorts) 2007	Not applicable in the Campbelltown LGA.
SEPP (Kurnell Peninsula) 1989	Not applicable in the Campbelltown LGA.
SEPP (Mining, Petroleum Production and Extractive Industries) 2007	Not applicable to this Planning Proposal.
SEPP (Miscellaneous Consent Provisions) 2007	Consistent as the PP does not propose any provisions contrary to the SEPP.
SEPP (Penrith Lakes Scheme) 1989	Not applicable in the Campbelltown LGA.
SEPP (Rural Lands) 2008	Not applicable to this Planning Proposal.
SEPP (State and Regional Development) 2011	Not applicable to this Planning Proposal.
SEPP (State Significant Precincts) 2005	Not applicable to this Planning Proposal.
SEPP (Sydney Drinking Water Catchment) 2011	Not applicable in the Campbelltown LGA.
SEPP (Sydney Region Growth Centres) 2006	Not applicable to this Planning Proposal.
SEPP (Three Ports) 2013	Not applicable in the Campbelltown LGA.
SEPP (Urban Renewal) 2010	Not applicable to this Planning Proposal.

State Environmental Planning Policies	Comments on consistency
SEPP (Vegetation in Non - Rural Areas) 2017	Consistent as the Planning Proposal does not propose any provisions contrary to the SEPP. Any removal of vegetation will be dealt with at the development applications stage.
SEPP (Western Sydney Employment Area) 2009	Not applicable in the Campbelltown LGA.
SEPP (Western Sydney Parklands) 2009	Not applicable in the Campbelltown LGA.
REP No.2 – Georges River Catchment	Not applicable to this Planning Proposal.
REP No.9 - Extractive Industry (No 2)	Not inconsistent
REP No.20 - Hawkesbury-Nepean River (No 2 1997)	Not inconsistent

Is the Planning Proposal consistent with applicable Ministerial Directions (S9.1 directions)?

The PP is either considered consistent, justifiably inconsistent with the applicable Ministerial Directions (S9.1 directions). See Table 7 for an assessment of the PP against the S9.1 Ministerial Directions.

Table 7

Ministerial Direction	Comments on consistency
1. Employment and Resources	
1.1 Business and industrial Zones	Not applicable to this Planning Proposal.
1.2 Rural Zones	Satisfies this direction as the Planning Proposal is of minor significance.
1.3 Mining, Petroleum Production and Extractive Industries	Not applicable to this Planning Proposal.
1.4 Oyster Production	Not applicable to this Planning Proposal.
1.5 Rural Lands	Satisfies this direction as no land used for agriculture is affected by this Planning Proposal.
2. Environment and Heritage	
2.1 Environmental Protection Zones	The Planning Proposal can satisfy the in that it would provide greater security of protection of the remaining bushland and provides the opportunity for the conservation of land s as a bio-banking site to provide long term protection.
2.2 Coastal Protection	Not applicable to this Planning Proposal.
2.3 Heritage Conservation	Not applicable to this Planning Proposal.
2.4 Recreation Vehicle Area	Not applicable to this Planning Proposal.
2.5 Application of E2 and E3 Zones and Environmental Overlays in Far North Coast LEPs	Not applicable to this Planning Proposal.
3. Housing, Infrastructure and Urban Development	
3.1 Residential Zones	Consistent with Direction as it provides for additional housing choice.

Ministerial Direction	Comments on consistency
3.2 Caravan Parks and Manufactured Home Estates	Not applicable to this Planning Proposal.
3.3 Home Occupations	Not applicable to this Planning Proposal.
3.4 Integrating Land Use and transport	Consistent with Direction as it is of minor significance and unlikely to lead to any other significant rezoning proposals.
3.5 Development Near Licensed Aerodromes	Not applicable to this Planning Proposal.
4. Hazard and Risk	
4.1 Acid Sulphate Soils	Consistent as the land is not known to exhibit acid sulphate qualities.
4.2 Mine Subsidence and Unstable Land	Not applicable to this site.
4.3 Flood Prone Land	Not inconsistent as this Planning Proposal does not propose to rezone any flood affected land.
4.4 Planning for Bushfire Protection	There is bushland to be retained east of the land proposed to be rezoned as R2. It will however be separated by from the residential development by an existing power line easement that assists in providing an Asset Protection Zone. Appropriate measures such as evacuation routes to minimise the risk can be put in place as part of the development assessment process.
5. Regional Planning	
5.1 Implementation of Regional Strategies	Not applicable in the Campbelltown LGA
5.2 Sydney Drinking Water catchments	Not applicable in the Campbelltown LGA
5.3 Farmland of State and Regional Significance on the NSW Far North Coast	Not applicable in the Campbelltown LGA.
5.4 Commercial and Retail Development along the Pacific Highway, North Coast	Not applicable in the Campbelltown LGA.
5.5 -5.7	Revoked.
5.8 Second Sydney Airport	Not applicable in the Campbelltown LGA.
5.9 North West Rail Link Corridor Strategy	Not applicable in the Campbelltown LGA.
5.10 Implementation of Regional Plans	Refer to 7.1 below.
6. Local Plan Making	
6.1 Approval and Referral Requirements	Consistent as the Planning Proposal does not alter the provisions relating to approval and referral requirements.
6.2 Reserving Land for Public Purposes	Consistent, as Campbelltown City Council will be the acquisition authority for the land identified for a public purpose.
6.3 Site Specific Provisions	Consistent with Direction.

Ministerial Direction	Comments on consistency
7. Metropolitan Planning	
7.1 Implementation of A Plan for Growing Sydney	The Greater Sydney Region Plan and Western District Plan identify the site as part of the Metropolitan Rural Area. Each plan states that urban development is not compatible with the MRA and that there is sufficient land to deliver housing eliminating the need for expanding into the MRA. It is considered that mapping of the MRA as it relates to the subject property is the result of a planning anomaly arising from the: • location of the site on the Campbelltown City Council and Camden Council LGA boundary; • extent of the South West Priority Growth Area which includes the East Leppington Precinct; • Emerald Hills Precinct located in the Camden LGA and rezoned in September 2014; and • Mapping of the MRA which aligns with property boundaries rather than landscape features. Given the above, the subject site does not exhibit the rural or landscape qualities that comprise the MRA. The site is flanked by urban development on its western and northern boundaries, is bisected by a riparian corridor, gas and high voltage electricity transmission lines that separate it from the Scenic Hills. Accordingly, the impact on scenic and cultural landscape of the Scenic Hills, when viewed from the public realm is considered minimal and any inconsistency with the objectives is considered reasonable in this instance.
7.2 Implementation of Greater Macarthur Land Release Investigation	Not applicable to the site.
7.3 Parramatta Road Corridor Urban Transformation Strategy	Not applicable in the Campbelltown LGA.
7.4 Implementation of North West Priority Growth Area Land Use and Infrastructure Implementation Plan	Not applicable in the Campbelltown LGA.
7.5 Implementation of Greater Parramatta Priority Growth Area Interim Land Use and Infrastructure Implementation Plan	Not applicable in the Campbelltown LGA.
7.6 Implementation of Wilton Priority Growth Area Interim Land Use and Infrastructure Implementation Plan	Not applicable in the Campbelltown LGA.
7.7 Implementation of Glenfield to Macarthur Urban Renewal Corridor	Not applicable to this Planning Proposal.

Section C – Environmental Social or Economic impact

6. **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?**

   The site is occupied by Cumberland Plain Woodland. The existing E3 zone is applied across the entire the Scenic Hills area and allows a range of rural land uses, subject to a 100 ha minimum site area. It is noted that the adjoining bushland in Camden LGA is zoned as E2 Environmental Conservation, which separates Willowdale and Emerald Hills (in Camden).

   It is proposed to zone the eastern portion of the site as E2, which would restrict the range of land uses on the site and assist in protecting the existing bushland. This portion of the site has also been identified by the applicant for future bio-banking.

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

   While the Planning Proposal is in the vicinity of the Upper Canal, the land proposed to be zoned R2 is located some distance from the boundary of the canal and drains away from the canal.

   It is not expected that there would be any significant visual, acoustic and air quality impacts and any bushfire hazard.

8. **How has the planning proposal adequately addressed any social and economic effects?**

   The site does not contain any items of environmental heritage. No aboriginal heritage study has been carried out at this stage.

Section D – State and Commonwealth Interests.

9. **Is there adequate public infrastructure for the planning proposal?**

   Water, sewer, electricity and telecommunications

   The site is adjacent to the Willowdale development. Consultation with infrastructure providers will take place to confirm availability of services.

   Road access

   The provision of road access via St Andrews Road and / or via Aqueduct Street in the adjoining subdivision is being worked out with Camden Council.

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

    It is expected that consultation will take place with various government authorities in accordance with any Gateway determination.

Part 4: Mapping

In seeking to achieve the PP objective and outcomes the following map amendments are proposed:

Table 8

Item	Location
Changes to Land Zoning Map	Annexure 1
Changes to Minimum Lot Size Map	Annexure 2
Changes to Changes to Dual Occupancy Lot Size Map	Annexure 3
Changes to Land Reservation Map	Annexure 4
Changes to Urban Release Area Map	Annexure 5
Changes to Terrestrial Biodiversity Map	Annexure 6

Part 5 - Community Consultation

Public consultation will take place in accordance with a relevant Gateway Determination. All relevant agencies and local community will also be consulted during the mandated minimum public exhibition period.

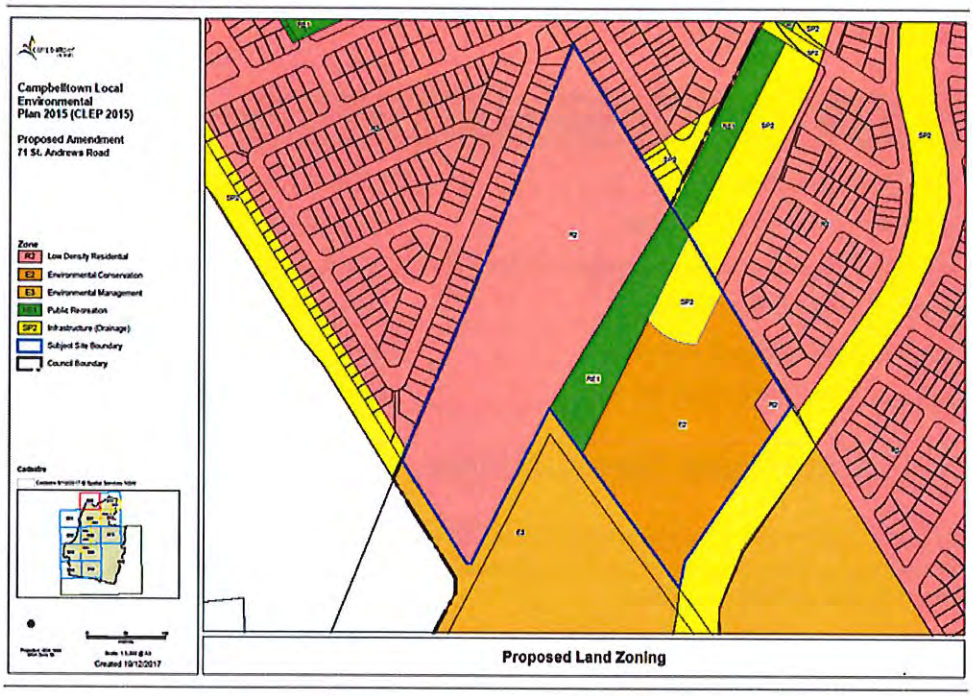
Part 6 Project Timeline

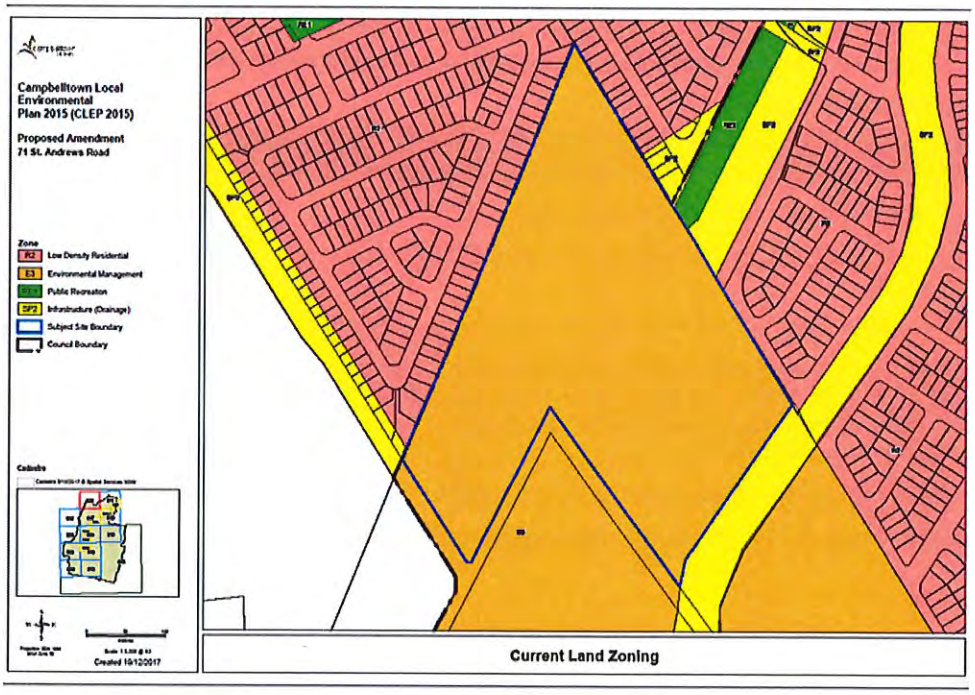
The project timeline has been included in Table 9 below. The anticipated timeframes and dates have been assigned to each milestone of the Gateway process.

Table 9: Project Timeline

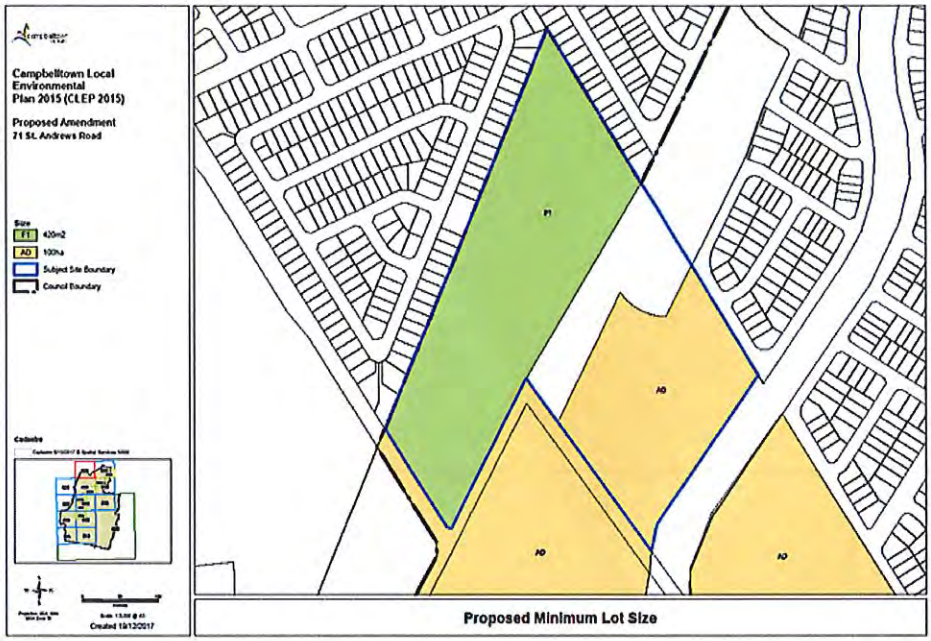
Milestone	Timeline
Commencement date (date of Gateway determination)	August 2019
Anticipated timeframe for the completion of required technical information	December 2019
Commencement and completion dates for public exhibition period	March 2020
Timeframe for government agency consultation (pre and post exhibition as required by Gateway determination) – Consultation with government agencies is proposed to be undertaken while the proposal is on public exhibition.	June 2020
Timeframe for consideration of submissions (report to Council)	July 2020
Anticipated date RPA will forward to the Department for notification	August 2020

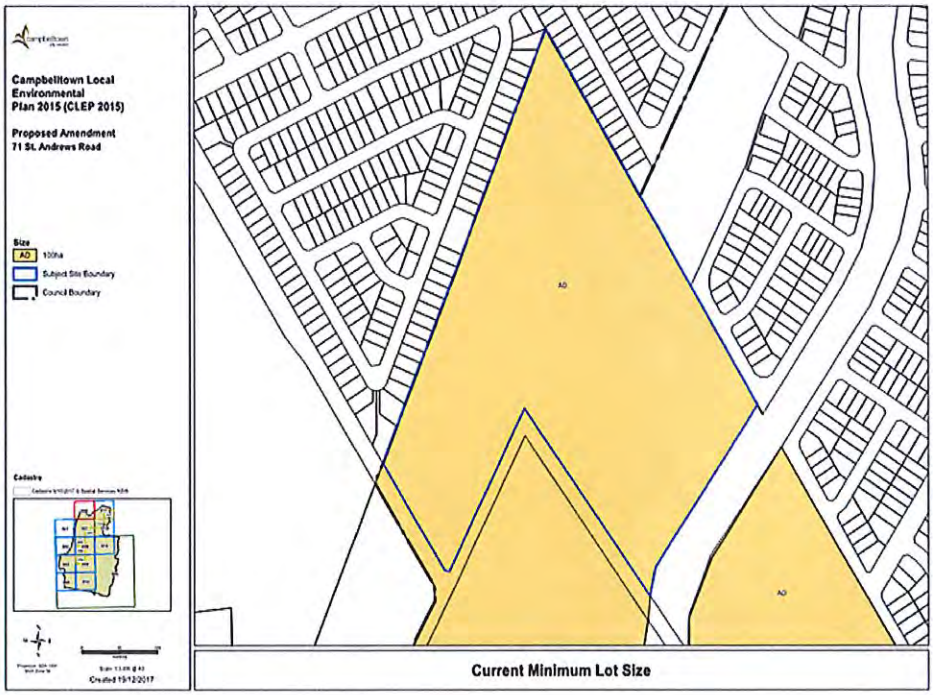
Annexure 1 Changes to Zoning Map



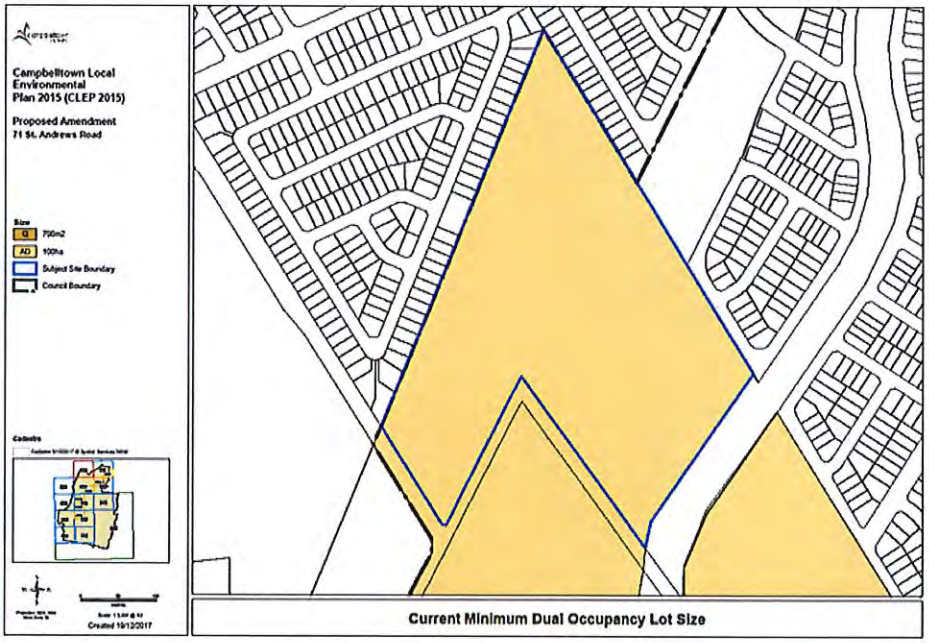


Annexure 2 - Changes to Minimum Lot Size Map

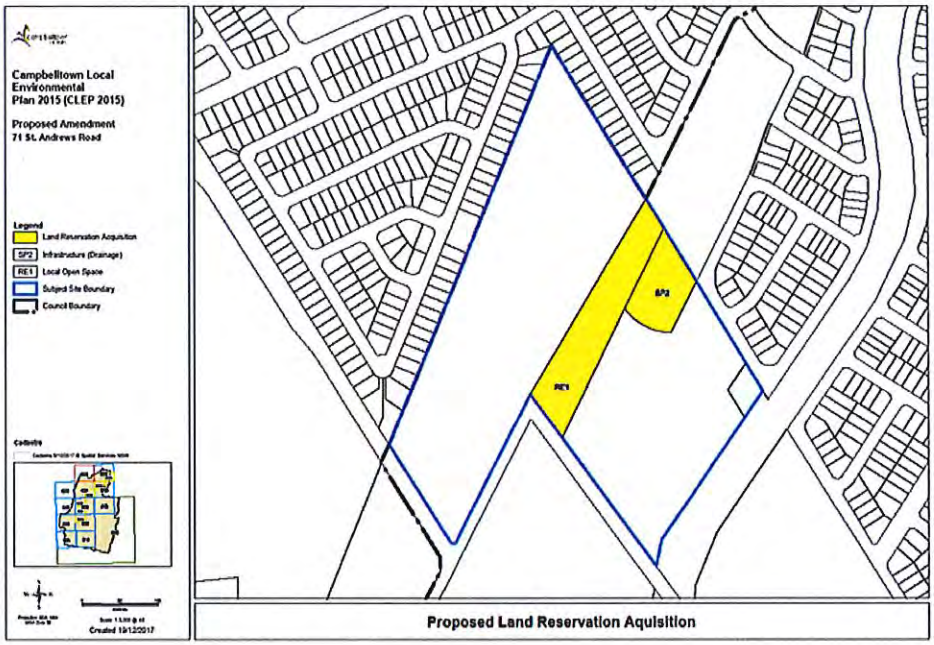


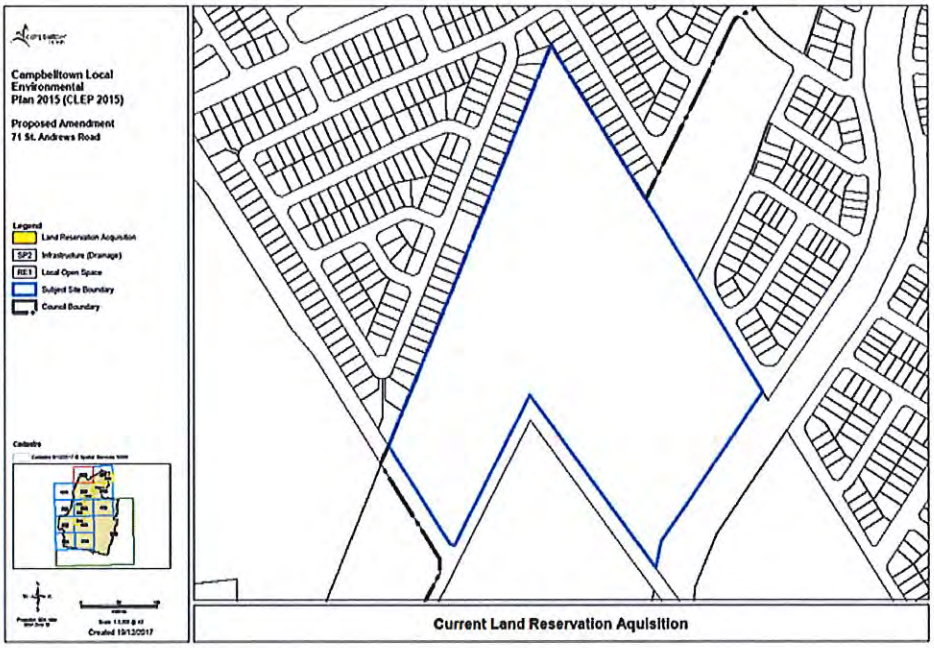


Annexure 3 – Changes to Dual Occupancy Lot Size Map

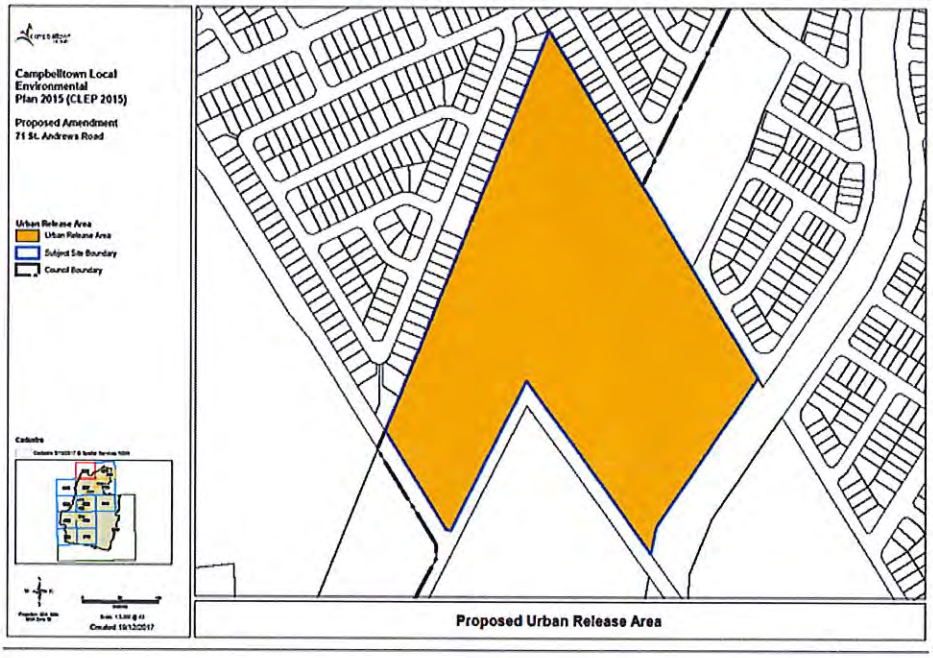


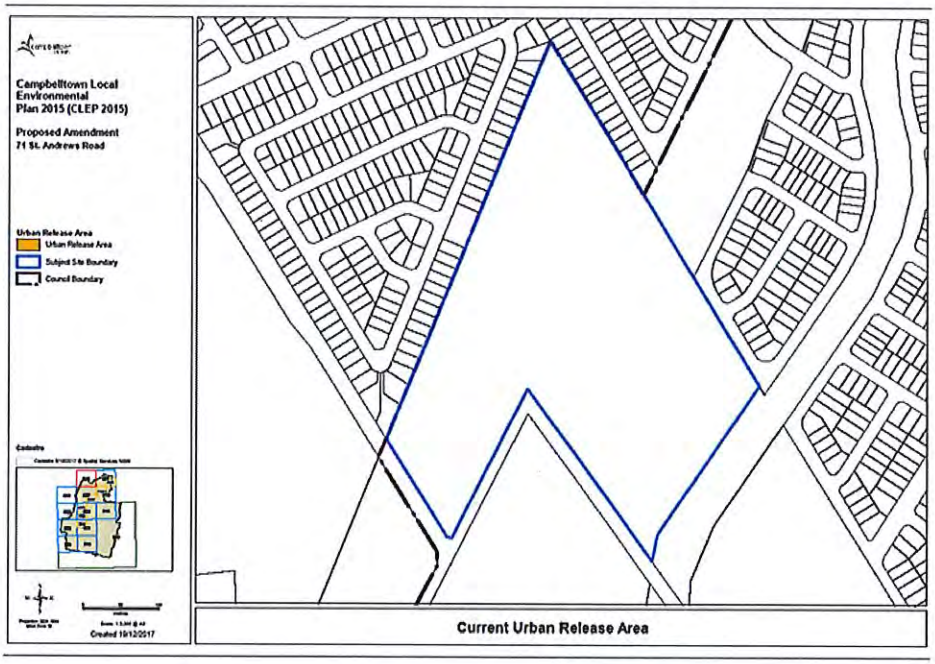
Annexure 4 - Changes to Land Reservation Map



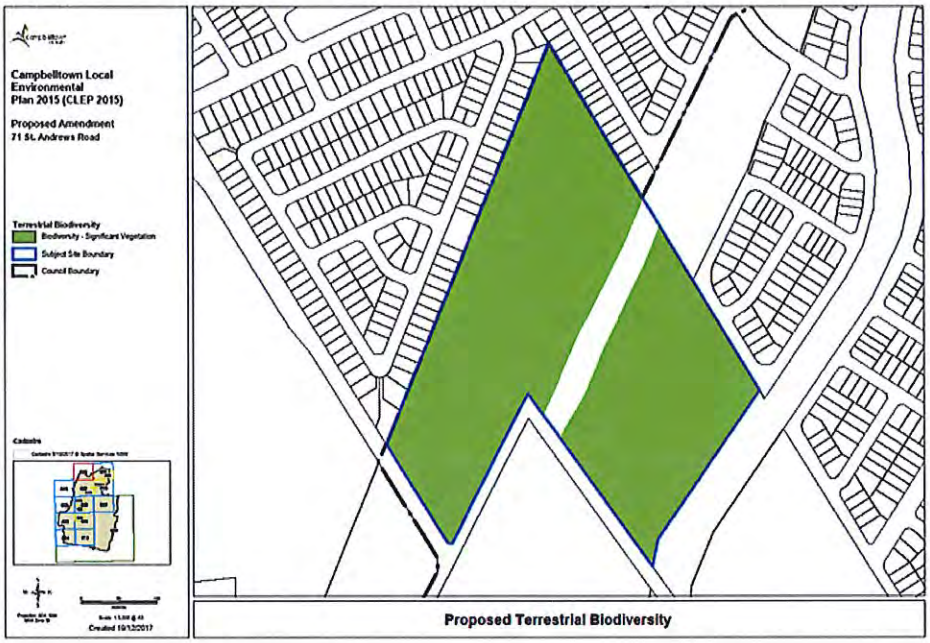


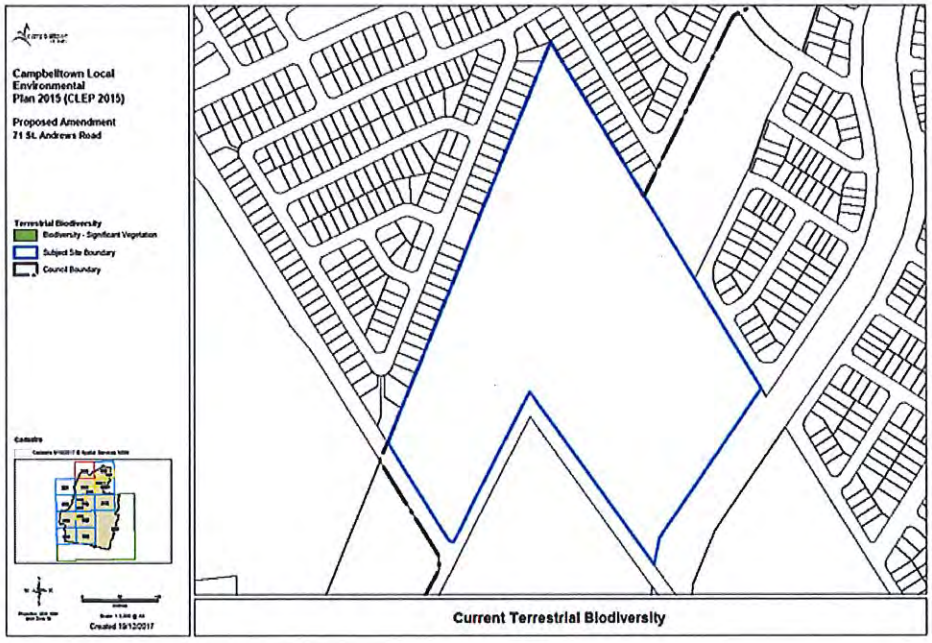
Annexure 5 - Changes to Urban Release Area Map





Annexure 6 - Changes to Terrestrial biodiversity Map





Appendix O Campbelltown Council Meeting Minutes - 11.06.19

8.5 Planning Proposal - 71 St Andrews Road, Varroville

Meeting note: Mr Gerard Turrisi addressed the meeting.

It was **Moved** Councillor Hunt, **Seconded** Councillor Thompson:

1. That Council forward the Planning Proposal for property No. 71 St Andrews Road, Varroville as attached to this report (attachment 1) to the Department of Planning and Environment seeking endorsement for Gateway Determination, noting the following changes from the proponent's request:

   a) The proposed minimum lot size be increased from 300sqm to 420sqm.

   b) The proposed area of retained land zoned E3 Environmental Management be zoned Part E2 Environmental Protection and part R2 Low Density Residential.

2. That should the Minister determine under Section 3.3.4 (2) of the *Environmental Planning and Assessment Act 1979* that the matter may proceed without significant amendment to the Proposal, Council publicly exhibit the Planning Proposal in accordance with the Gateway Determination.

   That Council not exercise, via the General Manager the functions of the Minister for Planning under section 3.31(3)(b) of the *Environmental Planning and Assessment Act 1979*, pursuant to the instrument of delegation dated 20 November 2012, due to the proposals inconsistency with the objectives of the Metropolitan Rural Area as contained in the Greater Sydney Region Plan 2018.

3. That following the exhibition, a report on submissions be presented to Council.

A Division was recorded in regard to the Resolution for Item 8.5 with those voting for the Motion being Councillors K Hunt and W Morrison.

Voting against the Resolution were Councillors G Brticevic, M Chowdhury, R Manoto, B Gilholme, M Chivers, B Moroney and B Thompson.

The motion on being Put was **LOST**.

Meeting note: At the conclusion of the discussion regarding Item 8.5 Councillor Greiss, Councillor Lound and Councillor Oates returned to the Chamber at 6:52pm.

Appendix P Letter to DPIE – Rezoning Review dated 10.07.19

10 July 2019

Department of Planning, Industry and Environment
GPO Box 39
Sydney NSW 2001

Attention: Rezoning Review

Dear Sir/Madam,

RE: 71 ST ANDREWS ROAD, VARROVILLE

This letter has been prepared to accompany a rezoning review regarding a Planning Proposal over land known as 71 St Andrews Road, Varroville.

This submission follows the refusal of the Planning Proposal by the Councillors of Campbelltown Council at its Ordinary Council Meeting on 11 June 2019, despite a recommendation of support by both Council Officers and the Local Planning Panel.

This submission has been prepared on behalf of our clients, Mr. Dario and Mrs. Angelina Petrin, the land owners of the subject site.

Site History

Prior to GAT & Associates being engaged by our clients, a preliminary Planning Proposal Request to rezone the subject land for residential purposes was considered by Campbelltown Council at its 15 October 2013 Council Meeting. It was resolved that a rural residential/environmental living style development could be considered, subject to additional information.

GAT & Associates were subsequently engaged and a Planning Proposal Request was submitted to Council which continued to pursue a low density residential scheme over the majority of the site having regard to local context and the findings of an ecological study. The residential controls proposed over the site followed those of the adjoining East Leppington Growth Precinct.

In a letter from Council dated 11 January 2016, Council expressed that they would not be supporting the above application. A subsequent meeting of Council's Planning and Environment Committee on the 9 February and a formal Council meeting on the 16 February adopted this recommendation.

The basis for the refusal is summarised below:

- Inconsistencies with higher order planning policies;
- Inconsistencies with local planning policy and Council's policy position on residential development in the Scenic Hills; and
- Potential adverse environmental impacts (Cumberland Plains Woodlands).

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The application was subsequently submitted to the Department of Planning for a Pre-Gateway Review on 19 February 2016.

This submission was refused by the Sydney South West Planning Panel on 3 April 2017, on the following basis:

- Lack of sufficient strategic merit;
- Inconsistency with key strategic plans;
- Didn't demonstrate the protection and conservation of environmentally sensitive land;
- Didn't adequately consider potential impacts on the Sydney Water Canal.

Notwithstanding the above, the merits of the proposal are evident in that although the subject site is located within the suburb of Varroville, the property does not share any boundary with any other property in the suburb. This is due to the nature of St Andrews Road which is broken into two parts, separated by the Sydney Water Catchment Canal. The subject site has no vehicle or pedestrian access to the south east and is therefore physically disconnected from the suburb of Varroville.

The site does however share physical boundaries with the East Leppington precinct and accordingly rezoning the subject site to match the East Leppington precinct would provide for a logical expansion of the approved residential land to the north west and north east of the site. The rezoning would result in St Andrews Road forming the boundary between the residential zone and the environmental zone.

This is evident in the aerial imagery below which demonstrates the extraordinary change to the landscape over the last 12 – 1 3 years.

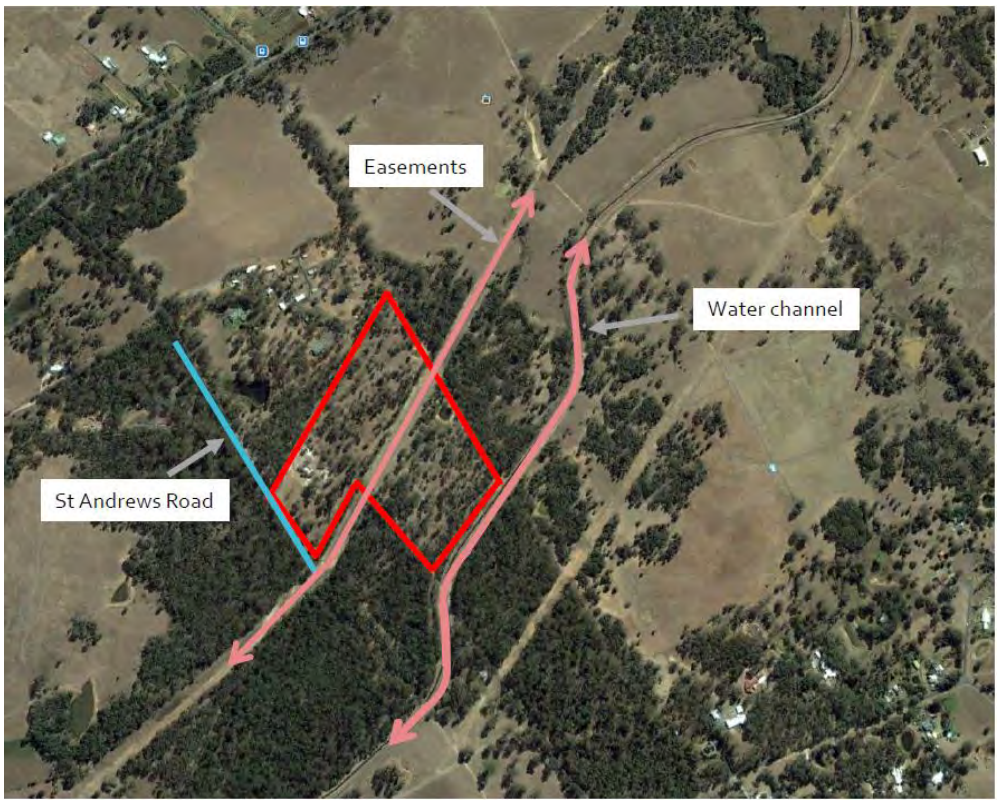

Figure 1 - The subject site – 17 April 2006.

Figure 2 - The subject site – 12 March 2018.

In this context, the environmental zoning of the property is an anomaly. The zoning is clearly not a reflection of current and surrounding land uses which previously had some relevance given the adjoining land was previously zoned rural. Furthermore, the property would remain the only land on the northern side of the Sydney Water Catchment Channel, not identified, or zoned for urban development in the future.

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 which currently go through the site.

Current Proposal

A revised scheme was subsequently prepared having regard to the comments provided by Council and the Sydney South West Planning Panel. This included a peer review of the ecological assessment which greatly refined the proposed land uses with a clear dominance of environmental land over residential land.

Prior to a formal submission, the project team met with Campbelltown Council to discuss the scheme. This included a site inspection on 17 October 2017 and attended by Councillors and Senior Staff.

With the informal support of Council, a revised Planning Proposal Request was lodged with Council on 19 February 2018.

The proposal was considered by the Campbelltown City Local Planning Panel on 25 July 2018 who expressed their support subject to additional information being provided with respect to how the proposal aligns with the strategic framework outlined by the District Plan; impact of the gas pipeline on the development footprint and a strategy to ensure the existing urban edge is not replicated by future development and a sensitive interface is achieved.

A subsequent letter from Council dated 7 August 2018further requested additional information with respect to:

- Consistency with higher order strategic plans;
- Compatibility of E3 Zone with Future Biobanking area (conservation stewardship site);
- Ecological assessment with respect to the extent and quantity of Cumberland Plains Woodland;
- Vehicular access;
- Bushfire; and
- Flooding/stormwater issues.

A copy of both the minutes provided by the Local Planning Panel and Council's letter are provided as part of the submitted package.

Following internal team meetings to refine the development in light of the comments above, another meeting was held with Council Staff on 9 November to discuss the proposed amendments to ensure a compatible outcome was realised.

All additional information was then formally submitted to Council on 21 December 2018 and is included as part of the submitted package.

A favourable Council report was later prepared by Council Officers recommending that the proposal be submitted to the Department for a Gateway Determination.

The proposal was then unexpectedly refused by the Councillors at their meeting on 11 June 2019 without explanation.

Key Strategic Merit

The Strategic Directions of the Western City District Plan recognise that an adequate supply of land for residential purposes is required to meet Sydney's growth. Sites for new homes should be within 30 minutes by public transport to jobs and services in a major centre and should be located where there is available or planned public transport capacity. The location of the subject site meets these directions given its proximity to the planned major centre of Leppington.

In addition to the north of the subject site (within the Leppington Major Centre) are mixed use employment corridors, including pockets of industrial and employment lands along Camden Valley Way which would cater to the increased residential population in the area.
The site also has the benefit of being able to utilise the 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.

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.

Upgrading works to Camden Valley Way from a two lane rural road to a four lane highway were completed at the end of 2015, improving road access and providing a new bus based public transport corridor in proximity to the site. It is noted that a bus stop is located within 800m of the subject site, linking the site to the new Train Station.

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.

To retain the environmental zoning, the subject site becomes an isolated property given that to the north east and north west the site adjoins approved residential subdivisions and is bounded by Sydney Water Canal to the south and St Andrews Road to the west. Where opportunity exists to tidy the so called "loose ends" such as boundaries adjustments, then such adjustments should be made to achieve the relevant targets. It therefore makes planning sense for this site to be used to meet the additional housing targets.

The Campbelltown Local Environmental Plan District 8 (Central Hills Lands) was created in 1988 and acknowledged the zoning of the subject site as 7(d1) Environmental Protection (Scenic). It can be said that with the implementation of A Metropolis of Three Cities – the Greater Sydney Region Plan, 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.

The subject site is surrounded by new/proposed urban centres, with planned releases to the south west of the site. The scenic protection zoning afforded to the subject site is therefore diminished given the rapidly changing landscape.

Scenic Hills

In terms of the visual impact of the proposal in relation to the Scenic Hills, we submit that this view is redundant given the changing landscape of the area in recent years. As emphasised in this letter, the subject site is located on the fringe of the Scenic Hills and is best described as a micro valley, with the land sited in a depression limiting any visual impact when viewed from Campbelltown.

It is worthy to note that in the latest Council Meeting Agenda (11 June 2019), Council Officers have stated, *"The land forms part of the Scenic Hills area designated by Campbelltown City Council. However, due to local topography, sight lines to the Scenic Hills would not be compromised by the proposal".*

Submitted below as Figure 3, is a representation of the Campbelltown LEP – District 8 (Central Hills Lands) which demonstrates that land to the east of the subject site, now part of the Stockland's development was previously subject to the same Environmental protection zoning which applies to the subject site prior to its rezoning to allow for R2 Low Density Residential development. We submit that the subject site is on the fringe of the

Scenic Hills area, and is no different to the interface of the Stockland's development within the precinct.

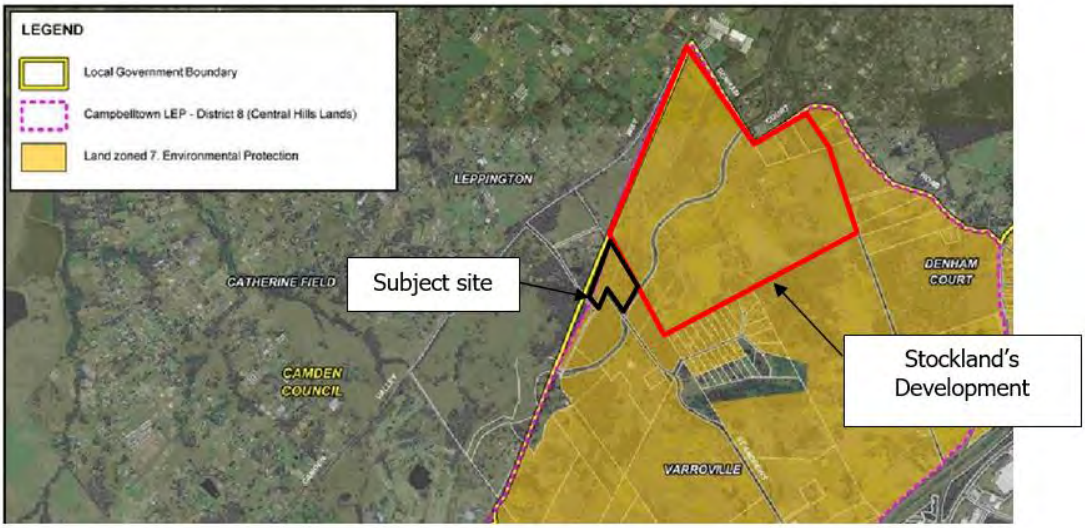

Figure 3: Land zoned Environmental Protection under the Campbelltown LEP D8 (Central Hills Lands)

In addition, as demonstrated in Figure 2 of this report the subject site is bounded by residential development to two boundaries with road connections available to service the site creating a residential/urban context that does not reflect the rural setting that once previously applied to these sites.

We submit too that the rezoning of this land would not create a precedent for other lands in the area, by virtue of the Sydney Water Canal which physically disconnects the subject site from land to the south. As reiterated throughout this letter, the subject site is an isolated property, which remains as one of the last allotments along this section of St Andrews Road to be redeveloped for the purposes of the Low Density Residential development.

<u>Conclusion</u>

Accordingly, we are seeking the Department of Planning to reconsider our proposal. We are keen to meet with the Department of Planning to discuss the merits of our application further. We feel that Councillors have a pre-determined position based on previous considerations, and have failed to acknowledge that the planning in the area has evolved and that the proposed land use is the correct planning outcome.

Should you have any questions, please do not hesitate to contact me.

Kind regards,

Melissa Rodrigues
GAT & Associates
Plan 2251

Appendix Q Gateway Determination Letter issued by DPIE dated 11.01.20

REZONING REVIEW
RECORD OF DECISION
SYDNEY WESTERN CITY PLANNING PANEL

DATE OF DECISION	Monday, 9 December 2019
PANEL MEMBERS	Justin Doyle (Chair), Bruce McDonald, Julie Savet Ward, George Greiss, Darcy Lound
APOLOGIES	None
DECLARATIONS OF INTEREST	None

REZONING REVIEW
2019WCI041 – Campbelltown – RR_2019_CAMPB_002_00 – at St. Andrews Road, Varroville (AS DESCRIBED IN SCHEDULE 1)

Reason for Review:
- ☒ The Council has notified the proponent that the request to prepare a planning proposal has not been supported
- ☐ The Council has failed to indicate its support 90 days after the proponent submitted a request to prepare a planning proposal or took too long to submit the proposal after indicating its support

PANEL CONSIDERATION AND DECISION
The Panel considered: the material listed at item 4 and the matters raised and/or observed at meetings and site inspections listed at item 5 in Schedule 1.

Based on this review, the Panel determined that the proposed instrument:
- ☒ should be submitted for a Gateway determination because the proposal has demonstrated strategic and site specific merit
- ☐ should not be submitted for a Gateway determination because the proposal has
  - ☐ not demonstrated strategic merit
  - ☐ has demonstrated strategic merit but not site specific merit

The decision was unanimous.

REASONS FOR THE DECISION

The Planning Proposal considered

In this matter the applicant had applied for a planning proposal which would permit more dense development of land located at St. Andrews Road, Varroville.

A threshold issue that arose for the Panel was the question of whether it was reviewing Council's decision to reject the planning proposal as submitted by the Applicant to the Council meeting at which the planning proposal was rejected, or whether the Panel should consider the amended planning proposal that was recommended for Gateway approval by the Council staff.

The planning proposal form described the proposal as "Rezone land from E3 Environmental Management to Part R2 Low Density Residential". The planning proposal made by the applicant when considered by Council as described in the Council staff assessment report was:

- Zone the western part of the site (between service easements and western boundary) to R2 Low Density Residential
- Amend the Lot Size Map and Height of Buildings Map to permit a minimum lot size of 300 sqm and building height of 9m

- Zone a portion of land for a drainage corridor to SP2 Local Drainage, adjoining drainage land in the Willowdale development
- Zone a portion of land for open space to RE1 Public Recreation, adjoining open space in the Willowdale development
- Introduce a minimum dwelling density of 15 dwellings per hectare for the proposed R2 Low Density Residential Zone
- Zone a portion of land as R2 Low Density Residential to permit a caretaker's dwelling on the remaining bushland area
- Retain the E3 Environmental Management Zone on the remaining land.

By letter of 12 July 2019, the Team Leader, Sydney Region West Planning and Assessment wrote to the Chair of the Panel requesting that the Panel consider a rezoning review "to amend the Campbelltown Local Environmental Plan 2015 to rezone part of land at 71 St Andrews Road, Varroville from E3 Environmental Management to R2 Residential Low Density and amend the associated development controls". The planning proposal described in the Departmental Report to the Panel, reflected not the planning proposal as made, but the Council staff recommendation. Specifically, the planning proposal was described as:

- rezoning the northern portion of the site from E3 Environmental Management to part: R2 Low Density Residential; RE1 Public Recreation; SP2 Infrastructure (Drainage); and E2 Environmental Conservation;
- applying a minimum lot size for the land rezoned to R2 zone on the western portion of the site of 420m^2;
- applying a minimum lot size for dual occupancy development for the proposed R2 zone on the western portion of the site of 700m2;
- not applying a minimum lot size to the land rezoned to RE1 and SP2 on the site;
- identifying the RE1 and SP2 zone on the land reservation acquisition map;
- identifying the site on the terrestrial biodiversity map excluding the service easement; and,
- identifying the site on the urban release area map of Campbelltown LEP 2015.

On the question of the proposal to be considered by the Panel, consideration should be given to the final 2015 report of the "review of the NSW Government's Rezoning Review process" (2015 Report) that includes the following advice:

> "The Recommendations Report recommended that the pre-Gateway review should be refocussed to be a review of the proposal as submitted to and considered by Council. If the Department forwarded a review request to the Regional Panel, it would concurrently notify the Council and request that any comments, additional information and confirmation that the proposal is consistent with the original submission be forwarded to the relevant Regional Panel within 21 days. The role of the Department will be administrative only."

In all meaningful ways, what was "considered by" Council was the recommendation of the Council assessment staff. Notably, while the Applicant said that it continued to argue for the planning proposal it had submitted, it was content for the Panel to consider that recommended by the Council staff and would like that proposal referred for Gateway assessment if the Panel was minded to so resolve.

On that basis, the proposal considered was that as recommended by the Council staff to the Council, rather than the planning proposal submitted. It is that proposal which the Panel has unanimously decided to refer for Gateway review.

Improvement on earlier Site Rezoning Proposal

The site has previously been subject to a rezoning proposal review by the Sydney South West Planning Panel. That proposal was substantially different from that now being considered. The earlier proposal sought to convert almost the whole of the site to residential development while a substantial area of the site is now proposed to be retained for conservation.

Specifically, the large majority of the area located between the existing power infrastructure easements and the heritage listed Sydney Water Canal is proposed to be zoned principally as E2 Environmental Conservation and RE1 Public Recreation. That is seen as a substantial improvement both in terms of strategic and site specific merit.

The Applicant's planning proposal included a single residential lot within the E2 zone recommended by Council staff. The Applicant anticipated that through the conditions of DA subdivision consent the owner of that lot would be obliged to manage the vegetation on the E2 Conservation parcel, as well as an area of 'special purposes infrastructure' zoning to allow for a stormwater detention basin also within the E2 zoned land proposed by Council staff.

With the resulting asset protection zones there would be a significant increase in bushland clearing through that proposal. If the detention basin was kept to the R2 zoned land as proposed by Council staff, there would also be less bushland clearing.

The ecological benefit of the bushland dedication is an important factor in justifying the proposal and the desirability of minimising clearing of the critically endangered Cumberland Plain Woodland on the site will be important factors during any Gateway assessment of the planning proposal.

Another discrepancy between the Applicant's proposal and that recommended by Council staff is the extent of the RE1 zoned land. The Council staff proposed that it be extended for the full length of the transmission line easement. Again, the desirability of extending through links for public access is an important factor in the strategic and site specific justification for the proposal.

However, the Panel is of the view that final consideration of the acceptability of locating any development to the south east of the transmission easement, and the extent of the RE1 zoning, is a matter best left to the Gateway process. The Panel anticipates that some consideration of these matters will occur in determining the proposal most appropriate for exhibition.

Councils Assessment Report

The Panel takes into account the assessment recommendation presented to Campbelltown Council on 11 November 2019 that the Planning Proposal be forwarded to the Department of Planning and Environment, seeking endorsement for Gateway Determination. While that recommendation was not adopted by Council, the Panel considers it provides a considered evaluation of the Proposal and concur its 'recommendation 1' that the proposal described in the assessment report be forwarded to the Department for Gateway Determination endorsement generally for the reasons set out in that report.

STRATEGIC MERIT CONSIDERATION

GREATER SYDNEY REGION PLAN / WESTERN CITY DISTRICT PLAN

- Metropolitan Rural Area

Under the Greater Sydney Region Plan the subject site is within the Metropolitan Rural Area. Consideration of the impact of divorcing that section of the site proposed for residential development from the Metropolitan Rural Area is the context against which the proposal must be evaluated. Relevant GSRP objectives relate to the protection of urban bushland, remnant vegetation enhancement and

importantly, protection of scenic and cultural landscapes which in this case includes the Campbelltown Scenic Hills.

Allied to that are Western Sydney District Plan Planning Priority W14- *Protecting and enhancing bushland and diversity* and Planning Priority W15- *increasing urban tress canopy cover and delivering Green Grid connections.*

Whilst the proposal to utilise a section of the site for residential use is inconsistent with these Metropolitan Rural Area related objectives and priorities, the Panel accepts the analysis that the site does not exhibit the rural or landscape qualities that comprise the MRA and that zoning of that section of the site west of the onsite service easement is anomalous. In that regard the section of the site proposed to be developed for housing through a traditional subdivision represents a logical extension of the recently established suburban settlement which flanks it on two sides.

The proposed zoning of the substantial section of the site east of the service easement as R1 Public Recreation and E2 Environmental Conservation is consistent with MRA objectives as it provides the opportunity to re-establish the ecological communities reinforcing the Green Grid. The Panel considers a specific mechanism to ensure this bushland is protected and enhanced should be incorporated in the terms of any decision to Gazette any change to the zoning under the planning proposal.

While recognising the importance of the established Campbelltown Scenic Hills concept as an element of Campbelltown's regional setting the Panel accepts that the proposal will not materially impact on the Scenic Hills given the current rural / urban setting of the site, its topography and as it is not visible from the broader public domain.

While it is not a matter requiring resolution at this initial Gateway stage, and may well be a matter for DA stage, the Panel saw merit in a subdivision layout designed to preserve as reasonably feasible trees on the land to be rezoned for urban development. Preservation of existing trees in that area will assist the value of the parcel as a transition between the preserved bushland and the more dense development to the north.

- Housing Supply

The proposal is considered to be consistent with Planning Priority W5 of the Western City District Plan of providing housing supply, choice and availability. While not making a significant contribution to housing supply the land proposed for housing integrates with the existing/ planned residential layout and being defined by the onsite service easement establishes a logical and distinct edge to the MRA. Further the additional residential area will have access to the services and amenities provided to this developing element of the South West Priority Growth Centre.

Final determination of the minimum site area which would be permitted by the rezoning changes is more appropriate for later stages in the rezoning process. However, the minimum lot size of 420m2 recommended by Council staff seems more suited to achieving the desired transition. The minimum lot size for dual occupancy to be adopted in the exhibited proposal also needs attention to ensure that the potential density Is what is intended.

SITE SPECIFIC MERIT

Having regard to Council's assessment, the Panel considered there are site specific merits in the rezoning:

- The land proposed to be zoned R2 Low Density Residential id substantially cleared with individual trees scattered across the site, providing a landscape setting.
- The Proposal provides opportunity to require the natural flora to be re-established on that section of the land proposed to be rezoned E2 Environmental Conservation. This will allow extension of the tree canopy of the Metropolitan Rural Area.

- Residential development of that section of the site northeast of the infrastructure service easements would provide a logical definition of the urban development and Metropolitan Rural Area.
- The site has been assessed as not containing contaminants that would disqualify residential development.
- The site is accessible from the established road network.
- The Proposal would not impact on the Sydney Water Canal heritage item.

CONCLUSION

The Panel considers the Planning Proposal has sufficient strategic and site specific merit to be referred to the Department of Industry and Environment for a Gateway Determination.

However, a number of issues including those outlined above will require careful consideration during the exhibition and detailed assessment stages of the planning proposal process.

PANEL MEMBERS	
Justin Doyle (Chair)	Bruce McDonald
Julie Savet Ward	George Greiss
Darcy Lound	

SCHEDULE 1		
1	PANEL REF – LGA – DEPARTMENT REF - ADDRESS	2019WCI041 – Campbelltown – RR_2019_CAMPB_002_00 – at St. Andrews Road, Varroville
2	LEP TO BE AMENDED	Campbelltown Local Environmental Plan 2015
3	PROPOSED INSTRUMENT	The proposal seeks to amend the Campbelltown Local Environmental Plan 2015 to rezone part of land at 71 St Andrews Road, Varroville from E3 Environmental Management to R2 Residential Low Density and amend the associated development controls.
4	MATERIAL CONSIDERED BY THE PANEL	• Rezoning review request documentation • Briefing report from Department of Planning, Industry and Environment

5	**BRIEFINGS AND SITE INSPECTIONS BY THE PANEL**	• **Site inspection:** 9 December 2019 o Panel members in attendance: Justin Doyle (Chair), Bruce McDonald, Julie Savet Ward, George Greiss, Darcy Lound o Department of Planning, Industry and Environment (DPIE) staff in attendance: Terry Doran, Thomas Holmes • **Briefing with Department of Planning, Industry and Environment (DPIE):** 9 December 2019, 12.15pm o Panel members in attendance: Justin Doyle (Chair), Bruce McDonald, Julie Savet Ward, George Greiss, Darcy Lound o DPIE staff in attendance: Thomas Holmes, Terry Doran • **Briefing with Council:** 9 December 2019, 12.15pm o Panel members in attendance: Justin Doyle (Chair), Bruce McDonald, Julie Savet Ward, George Greiss, Darcy Lound o DPIE staff in attendance: Terry Doran, Thomas Holmes o Council representatives in attendance: Fletcher Rayner, Graham Pascoe, Alexandra Saprun, Belinda Borg, Barry Millwood • **Briefing with Proponent:** 9 December 2019, 1.25pm o Panel members in attendance: Justin Doyle (Chair), Bruce McDonald, Julie Savet Ward, George Greiss, Darcy Lound o DPIE staff in attendance: Terry Doran, Thomas Holmes o Proponent representatives in attendance: Gerard Turrisi, Melissa Rodrigues, Pak Lau, Angelina Petrin, Dario Petrin, Michael Sheather- Reid