Hamilton Environmental Services
ABN: 89 108 410 911

TEST OF SIGNIFICANCE – CEMETERY ROAD, COROWA

NORTH EAST SURVEY DESIGN

Test of Significance – Cemetery Road, Corowa

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Cover Photo: The existing road access to the southern parcel.

TABLE OF CONTENTS

1. INTRODUCTION

In January 2020, Hamilton Environmental Services (HES) was engaged to undertake a Biodiversity Assessment to complete a Test of Significance under Part 7 Division 1 Section 7.3 of the *Biodiversity Conservation Act 2016* for Enth Degree Architects, the landholder of two land parcels on Cemetery Road, Corowa, through North East Survey Design.

Field assessment of both parcels was conducted on the 3rd February 2020, and again on the 15th April 2021, both times by Dr. Steve Hamilton, and this report presents these findings.

2. BACKGROUND

2.1 Consultant Background

Steve Hamilton (Dr.)

AssocDipAppBiol, BAppSc(AppBiol), MAppSc (RMIT), PhD (University of Melbourne), BAM accredited Assessor (DPIE NSW), Vegetation Quality Assessment Certified (DSE/DEPI/DELWP Victoria), Bush Broker Assessor (DELWP Victoria), Certificate IV in Training and Assessment.

Steve is an ecologist specialising in flora and fauna inventory, auditing, monitoring and surveying, as well as soil typing, analysis and mapping. He has 12 years consulting experience, associated with a range of ecological evaluations and monitoring processes across all of Victoria, and southern and western New South Wales, which includes assessing and mapping vegetation condition, vegetation type, targeted threatened species surveys, habitat quality assessment (in Victoria, Habitat Hectares assessment and 'Net Loss and Gain' evaluations), across the range of terrestrial, riparian and wetland ecosystems.

He has vast experience in the assessment of native vegetation and species, and habitat loss assessment, for irrigation, residential, infrastructure and mining (including sand, rock and ore extraction) developments, and the successful negotiation of the appropriate legislative, regulatory and statutory frameworks across the three levels of Government to provide suitable outcomes for clients across both States to allow developments to proceed. In Victoria, this involves the production of Net Loss Reports, Vegetation Offset Management Plans and Work Plans, and in NSW, reporting for potential native vegetation/habitat losses and threatened species threats in Development Applications (DAs), and in more detailed situations where Director General Requirements (or Secretary's Environmental Assessment Requirements; SEARs) are specified, Environmental Impact Statements (EISs) or Reviews of Environmental Factors (REFs).

Beyond statutory requirements and reporting, Steve is often called upon to provide technical reporting into particular issues, such as research/survey investigations into vegetation-soil-fauna management issues in natural areas or for development proposals, such as weed management surveys and strategies, kangaroo survey and management, potential mining pollution impacts, sustainability of timber resources, soil mapping and land capability assessment, ecosystem restoration, or revegetation design.

Prior to consulting, Steve spent 20 years as a senior teaching/research academic, and has more than 30 peer-reviewed papers and many technical reports, most focussing on the impacts of disturbance on the ecology and floristics of woodlands and grasslands.

2.2 Location and Description

Both land parcels are located approximately 1.7 km west of the centre of the township of Corowa (Fig. 2-1).

The northern parcel of 12.2 ha (Lot 1 DP199174) is rectangular in shape and has dimensions of 475 m north-south, and 395 m east-west, and is found on the south-eastern corner of the Cemetery Road and Redlands Road intersection, and is bordered by both of these roads on its northern and western boundaries, Tower Road on its southern boundary, and freehold land on its eastern boundary (see Figures 2-1 and 2-2). This parcel is fully fenced for stock, and has been almost wholly cleared of woody vegetation, except for one planted exotic Peppercorn and a large dead Yellow Box (*Eucalyptus melliodora*) tree in the south-western corner, and has clearly been used for cropping and grazing for an extended period based on the predominantly introduced species ground layer.

A proposed road access point to Cemetery Road is aligned near the north-western corner.

The southern parcel of 15.5 ha (Lot 66 DP1167493) is roughly square in shape and has maximum dimensions of 500 m north-south, and 495 m east-west, and is bordered on its western boundary, and freehold land on all other boundaries (see Figures 2-1 and 2-2). This parcel has been almost wholly cleared of remnant woody vegetation, is fully fenced for stock, and has also clearly been used for cropping and grazing for an extended period based on the predominantly introduced species ground layer. There are narrow plantations of exotic, indigenous and non-indigenous native trees and shrubs on the Cemetery Road boundary, and there is an access track from Cemetery Road leading to the dwelling and garden/house zone of 0.76 ha found on the north central boundary (see Fig. 2-2).

Figure 2-1 Aerial image of the general location of the assessed parcels, outlined in red (Google Earth 2020).

Figure 2-2 **Aerial image of the Cemetery Road Corowa parcels, outlined with solid red lines (Image copyright NSW Land and Property Information 2020).**

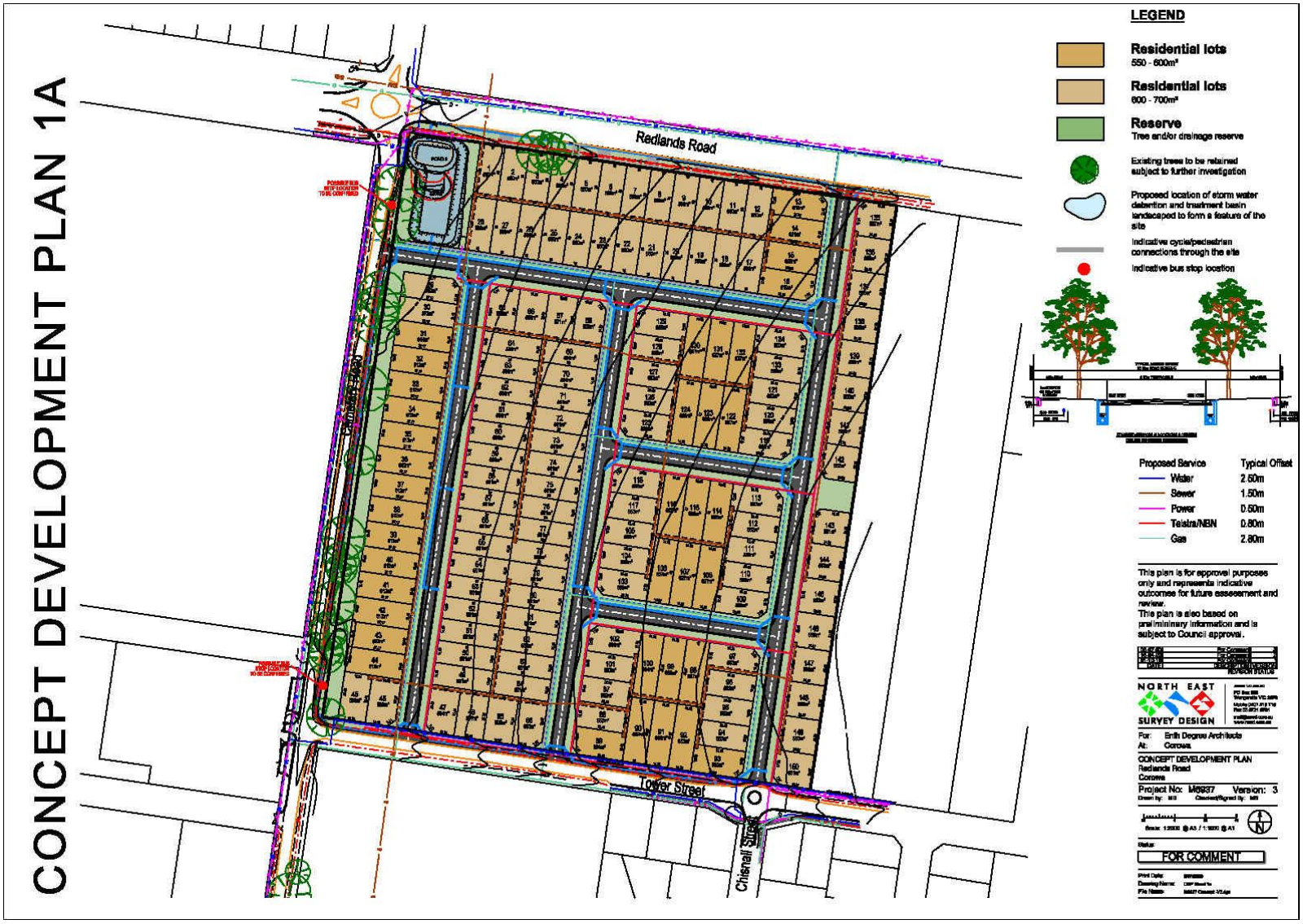

Figure 2-3 Version 1 Concept Development Plan for the northern parcel (North East Survey Design dated 8/7/20).

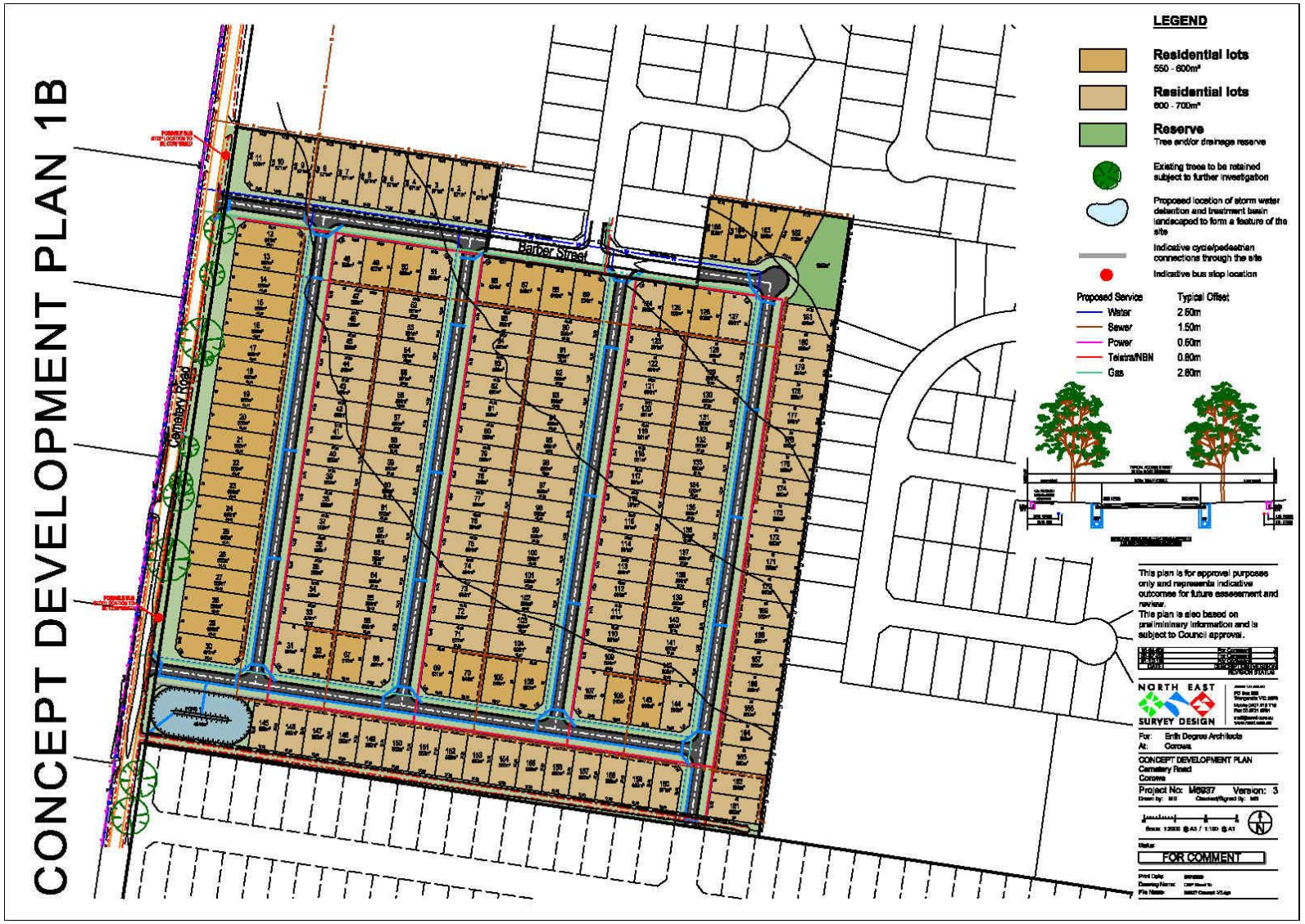

Figure 2-4 Version 1 Concept Development Plan for the southern parcel (North East Survey Design dated 8/7/20).

There is a fenced east-west open drainage channel found across the length of the southern boundary of the southern parcel, and this channel reserve has a width of 8 m; this channel zone is dominated by a mixture of annual and perennial introduced species.

The Concept Development Plans for both parcels are shown in Figures 2-3 and 2-4. The development plan shown in Fig. 2-4 for the southern parcel excludes the channel zone from the proposed development area (Andrew Mott pers. comm. 2020).

3. METHODOLOGY

3.1 Desktop Review

The following desktop information was gathered prior to field assessment:

- Aerial imagery and base map from Land and Property Information New South Wales;
- Determination of a general species list for the area (Department of Planning, Industry and Environment [DPIE] 2020a);
- Matters of National Significance reporting for the 10 km radius around the property (Department of Energy and Environment [DoEE] 2020);
- Flora, fauna and threatened species lists, sighting records and information for the district was obtained from *BioNet – Website of the Atlas of NSW Wildlife* (DPIE 2020b).

3.2 General Site Assessment

On the 3rd February 2020, Dr. Steve Hamilton (BAAS 18106) visited the property and the adjacent area to undertake the assessment. On this day, air temperatures were between 20 and 22°C, the sky was clear, and winds were gusty (Bureau of Meteorology 2020).

On the 15th April 2021, Dr. Steve Hamilton (BAAS 18106) re-visited the property and the adjacent area to undertake an additional assessment. On this day, air temperatures were between 15 and 18°C, the sky was overcast, and the winds were light (Bureau of Meteorology 2021).

Both parcels and the adjacent roadsides were traversed by vehicle and/or foot, and continuous active searching was conducted over a total period of 3 hours over both assessment periods.

In a general sense, the following assessments were undertaken in each zone:

- Vascular plant species were identified and noted according to zone, with an overall cover/abundance value recorded for each species in each zone completed post-field assessment (see Table 3-1);
- The species, location, diameter, health and basic hollow characteristics of all assessed tree individuals was recorded, and an image of the tree taken. The exotic woody vegetation individuals within the garden of the dwelling on the southern parcel were not recorded;
- Opportunistic recording of any fauna;
- Digital images across the site taken.

One hundred and forty two (142) images were taken across the area during both assessments.

3.3 Taxonomy

3.3.1 Flora

Vascular plants that could not be identified in the field, specimens and images were collected for identification using the *Flora of New South Wales* (Harden 1990, 1991, 1992, 1993), and *PlantNet Flora On-line* (Royal Botanic Gardens Sydney 2020 and 2021).

3.3.2 Fauna

Any fauna observed were recorded, with the nomenclature based variously on the compilations of Hero *et al.* (1991), Menkhorst (1995), Cogger (1996) and Simpson and Day (1998), utilising Triggs (1996) for identification using indirect methods, such as the presence of scats or tracks.

Table 3-1 Modified Braun-Blanquet scale applied to assessment to each vascular plant species identified.

Visual assessment of cover/abundance	
Symbol	*Description*
+	rare, cover < 5%
1	Uncommon, cover < 5 %
2	Very common, cover < 5 % or cover 5-25 % with any number of individuals
3	Cover 25-50 % with any number of individuals
4	Cover 50-75 % with any number of individuals
5	Cover 75-100 % with any number of individuals

4. EXISTING ENVIRONMENT

4.1 Vegetation

The inventory of species noted across the parcels and pertinent areas is recorded in Appendix A.

A total of 69 vascular plant species were recorded across the parcels and the adjacent road reserves; 49 of these species were introduced, of which 12 are planted or naturalised woody species (Appendix A).

There were no rare or threatened species observed (after DPIE 2019a).

As indicated, the northern parcel is fully fenced for stock, and has been almost wholly cleared of woody vegetation, except for one planted exotic Peppercorn, and a large dead Yellow Box tree in the south-western corner, and has clearly been used for cropping and grazing for an extended period based on the predominantly introduced species ground layer, which includes species such as Sweet Vernal Grass, Wild Oat, Common Heliotrope, Barley Grass, Cat's Ear, Prickly Lettuce, Paspalum and Rat's-tail Fescue (95 % projective foliage cover counting cured annual plant material). There are some indigenous ground layer species present across this area, such as Brown-backed Wallaby-grass, Curly Windmill Grass and Variable Sida, but these species are in very low abundance (< 1 % projective foliage cover)(Appendix A).

As indicated, the southern parcel has also been almost wholly cleared of remnant woody vegetation, is fully fenced for stock, and has also clearly been used for cropping and grazing for an extended period based on the predominantly introduced species ground layer, composed predominantly of the pasture legume Lucerne (established), with Sweet Vernal Grass, Wild Oat, Common Heliotrope, Barley Grass, Cat's Ear, Prickly Lettuce, Paspalum and Rat's-tail Fescue (95 % projective foliage cover counting cured annual plant material). There are some indigenous ground layer species present across this area, such as Brown-backed Wallaby-grass, Curly Windmill Grass and Variable Sida, but these species are in very low abundance (< 1 % projective foliage cover)(Appendix A).

There are narrow and sparse plantations of trees and shrubs on the Cemetery Road boundary of the southern parcel, such as the exotics Desert Ash, Radiata Pine and Silver Birch, the non-indigenous native species Red Ironbark, and the indigenous species River Red Gum (Appendix A).

There is an access track from Cemetery Road through the southern parcel leading to the dwelling and garden/house zone found on the north central boundary, that is dominated by introduced ground layer lawn species, and is planted with fairly typical exotic, non-indigenous native and indigenous trees and shrubs (Appendix A).

Plate 4-1 **Views across the northern parcel: from the north-eastern corner looking south-west with Tree 2 in the foreground (top left), from the north-western corner looking south-east (top right), from the south-western corner looking north-east (bottom left), and the proposed road access area to Cemetery Road, with Trees 3 to 5 on the fence line (number in white; bottom right). Selected trees are numbered in white; proposed road access point extents are shown as solid red lines.**

There is a fenced east-west open drainage channel found across the length of the southern boundary of the southern parcel, and this channel reserve has a width of 8 m; this channel zone is dominated by a mixture of annual and perennial introduced species such as Wild Oat, Great and Soft Brome, Spear Thistle, Cocksfoot, Summer Grass, Stinkwort, Flaxleaf Fleabane, St. John's Wort, Cat's Ear, Water Couch, Paspalum, Kikuyu, Phalaris, Plantain, Wireweed, Curled Dock, Milk Thistle, and Subterranean Clover (95 % projective foliage cover, including cured annual plant material). Indigenous ground layer species, such as Tall and Fen Sedge, Common Club-rush, Pale Rush, Blown Grass, Creeping Knotweed and Swamp Dock are common, but have a relatively low abundance (5 % projective foliage cover)(Appendix A).

There are five proposed road access points for the northern parcel – one to Redlands Road in the north-eastern corner, one to Cemetery Road in the north-western corner, and three to Tower Street on the

southern boundary. There are also seven individual or shared lot access points for the 12 proposed lots that have frontage on Redlands Road on the northern boundary (see Fig. 2-3).

Plate 4-2 **Views across the southern parcel: from the south-western corner looking north-east (top left), from the north-eastern corner looking south-west (top right), the southern plantation from the access road (middle left), the southern plantation from Cemetery Road (middle right), the northern plantation from the access track (bottom left), and the northern plantation from the access track (bottom right). Selected trees are numbered in white.**

Four of the road access points and five of the lot access points cross road reserves in areas where there are no remnant trees, and a ground layer dominated by introduced species such as Wild Oat, Great Brome, Common Heliotrope, Cat's Ear, Prickly Lettuce, Paspalum, Hensbit, Plantain, Wireweed, Water Couch and Rat's-tail Fescue (65 % projective foliage cover counting cured annual plant material). There

are some indigenous ground layer species present across these areas as individual plants or small patches, such as Brown-backed and Smallflower Wallaby-grass, Red-leg Grass, Rigid Panic, Mat-grass, Curly Windmill Grass and Variable Sida, but these species are in very low abundance (< 5 % projective foliage cover)(Appendix A).

There is one road access point and two lot access points that cross road reserves within proximity to remnant trees: the road access point to Cemetery Road in the north-western corner, and the proposed lot access points for Lots 3 and 4 to Redlands Road.

Plate 4-3 **Views of the house/garden block (top), the channel from Cemetery Road looking east (bottom left), and the channel from the south-eastern corner looking west (bottom right). Selected trees are numbered in white.**

The proposed road access point to Cemetery Road is a 30 m width section of the eastern road reserve – with the lot access points for Lots 3 and 4 to Redlands Road being only 4 m width each - that maintain several mature Yellow Box individuals in close proximity to the proposed alignment; as a consequence, the ground layer in all three instances is dominated by leaf litter (> 60 % projective foliage cover). Wild Oat, Soft Brome, Prickly Lettuce, Hensbit, Small-flowered Mallow, Paspalum and Wimmera Ryegrass are the dominant introduced ground layer species present in this area (30 % projective foliage cover), while a very low abundance of the indigenous ground layer species Mat-grass, Curly Windmill Grass, Smallflower Wallaby Grass and Rigid Panic are the only indigenous ground layer species present (< 1 % projective foliage cover; Appendix A).

There are five proposed road access points for the southern parcel – three to Barber Street on the northern boundary, and two to Cemetery Road in the north-western and south-western corners (see Fig. 2-4).

While there is one remnant Yellow Box within reasonable proximity to the proposed road access to Cemetery Road in the north-western corner, there are no remnant trees within proximity to the other four road access points, and all five areas maintain a ground layer dominated by introduced species such as Wild Oat, Great Brome, Common Heliotrope, Cat's Ear, Prickly Lettuce, Paspalum, Hensbit, Plantain, Wireweed, Water Couch and Rat's-tail Fescue (65 % projective foliage cover counting cured annual plant material). There are some indigenous ground layer species present across these areas as individual plants or small patches, such as Brown-backed and Smallflower Wallaby-grass, Red-leg Grass, Rigid Panic, Mat-grass, Curly Windmill Grass and Variable Sida, but these species are in very low abundance (< 5 % projective foliage cover)(Appendix A).

Based on the evidence provided by the remnant vegetation of the adjacent road reserves, the pre-European site was likely one NSW Plant Community Type (PCT)(from Environment and Heritage 2012 and DPIE 2020d): PCT ID 237 – *Floodplain Transition Woodlands – Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone*.

Plate 4-4 **Views of the lot access points for Lots 3 and 4 to Redlands Road on the northern parcel (left), and the road access point in the north-western corner of the southern parcel on Cemetery Road (right). Selected trees are numbered in white; proposed road access point extents are shown as solid red lines.**

4.2 Remnant Trees

A total of 40 tree individuals were assessed across the parcels, and the details on all of these individuals can be viewed in the table in Appendix C.

The location of all assessed trees can be seen across Figures 4-1 to 4-5.

Of these trees:

- Trees 2, 30, 33 and 36 are planted exotic Peppercorns. Tree 2 is found within the northern parcel, and all others are found on the eastern road reserve of Cemetery Road;
- Trees 6 to 11 are planted indigenous River Red Gums found around the existing dwelling/garden within the southern parcel;
- Tree 32 is a planted non-indigenous native Kurrajong found on the eastern road reserve of Cemetery Road;
- Tree 37 is a naturalised non-indigenous native Cootamundra Wattle found on the eastern road reserve of Cemetery Road;
- Trees 21 to 28 and Trees 38 and 39 are indigenous, remnant River Red Gums, of which all are on the eastern Cemetery Road reserve. All of these trees except Tree 24 are hollow-bearing;

- Tree 1, Trees 3 to 5, Trees 12 to 20, and Trees 29, 31, 35 and 40 are all indigenous, remnant Yellow Box, of which all are on either the southern road reserve of Redland Road (Trees 12 to 15), or on the eastern road reserve of Cemetery Road (all others). Tree 1 is a standing dead tree, and all except Tree 17 are hollow-bearing.
- Tree 1 (a standing dead, hollow-bearing Yellow Box) the only proposed loss of these 40 trees.

The plantations on the Cemetery Road boundary of the southern parcel, includes planted species such as the exotics Desert Ash, Radiata Pine and Silver Birch, the non-indigenous native species Red Ironbark, and the indigenous species River Red Gum.

Construction projects that involve earthworks or soil disturbance can cause indirect losses of native vegetation that are retained during construction due to root damage and soil modification within the zone where roots occur. Of particular concern is the longer-term impact of soil compaction and excavation (e.g. trenching for pipelines) close to trees and the effects of this on immediate and longer-term tree health. Standards Australia (2009) has provided guidance and clarity on this issue, and has defined an acceptable distance for tree retention in order to prevent indirect losses of native vegetation during and after construction activities as a guiding principle. These designated Tree Protection Zones (TPZs) should be implemented for the duration of construction activities (Standards Australia 2009) as part of the development conditions.

A TPZ is a specific area above and below the ground, with a radius 12 times the Diameter at Breast Height (dbh; 1.3 m) of any individual tree; the TPZ of trees should be no less than 2 m or greater than 15 m, and it is recommended that physical barriers be erected to delineate the TPZs of retained trees during construction activities. Should a development impinge on the TPZ area for > 10 % of its area, the tree shall be considered a loss, and will have to be offset (Standards Australia 2009).

The proposed road access to Cemetery Road in the north-western corner of the northern parcel has been located to not impact on remnant Yellow Box tree 3, 4, 5 and 16; the TPZ of Tree 5 is likely to be impinged, but at << 10 % of its area (see Fig. 4-2).

The proposed road access to Cemetery Road in the north-western corner of the southern parcel has been located to not impact on Yellow Box tree 29; the TPZ of this tree will not be impinged (see Fig. 4-5).

The lot access points for Lots 3 and 4 to Redlands Road are only to be 4 m width each; however, while these crossings will impinge on the TPZs of Trees 12 (< 3 %) and 15 (< 10 %), respectively, and it is proposed that access track construction to the two lots be undertaken with minimal (if any) excavation, and with the use of materials overlaying the existing surface, such as concrete lattice (precast concrete car pavers). This will result in vehicle access to the lots, but with negligible disturbance to the root zone of these trees, and furthermore, the hollow structure of the concrete lattice allows for relatively unobstructed water infiltration conditions compared to the existing soil surface, and obviates any significant change in the water movement within the drip-line of these trees.

Therefore, the road crossings that could impact on the remnant trees on the pertinent road reserves have been located to ensure that TPZ impacts are < 10 %, and that trees will be retained. Furthermore, to ensure that all of the remnant trees on the Cemetery Road have minimal (< 10 %) or no TPZ impact from the adjacent residential development, a 5 m buffer between lot boundaries and the parcel boundary will be established (see Figures 4-3 and 4-4)(Andrew Mott pers. comm. 2021).

Figure 4-1 **Aerial image of the northern parcel and adjacent road reserves on Cemetery Road, Corowa, showing the location of indigenous remnant and planted non-indigenous native and exotic trees; numbers are tree identifiers in the table in Appendix C (Image from ESRI Australia 2021).**

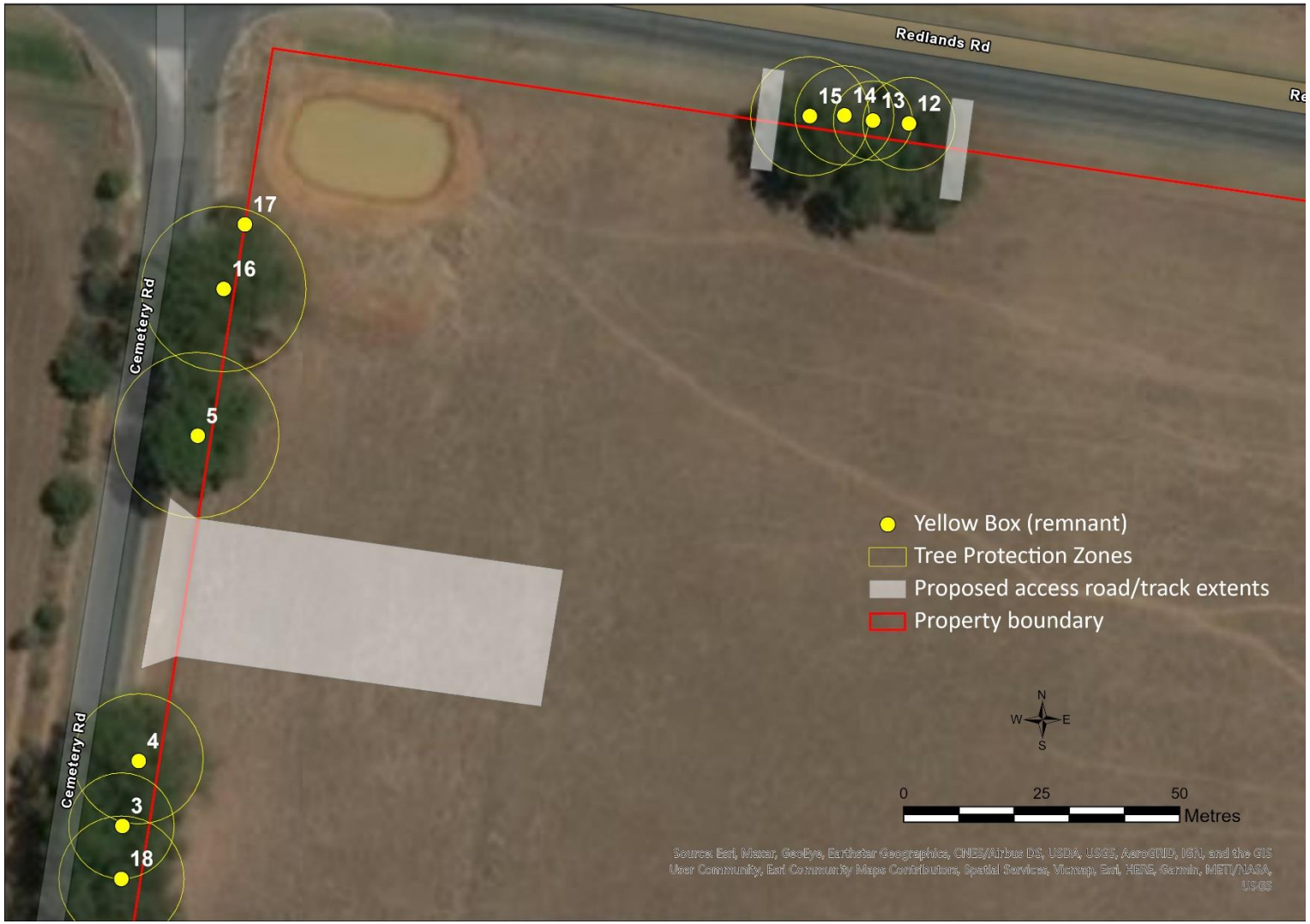

Figure 4-2 **Aerial image of the proposed road access points of the northern parcel on Cemetery Road, Corowa, that are in proximity to remnant trees, showing the location of indigenous remnant and planted non-indigenous native and exotic trees; numbers are tree identifiers in the table in Appendix C (Image from ESRI Australia 2021).**

Figure 4-3 **Aerial image of the southern parcel and adjacent road reserves on Cemetery Road, Corowa, showing the location of indigenous remnant and planted non-indigenous native and exotic trees; numbers are tree identifiers in the table in Appendix C (Image from ESRI Australia 2021).**

Figure 4-4 **Aerial image of the Garden/House zone of the southern parcel on Cemetery Road, Corowa, showing the location of indigenous trees and pertinent Tree Protection Zones; numbers are tree identifiers in the table in Appendix C (Image copyright NSW Land and Property Information 2020).**

Figure 4-5 **Aerial image of the proposed road access point of the southern parcel on Cemetery Road, Corowa, that is in proximity to a remnant tree, showing the location of indigenous remnant and planted non-indigenous native and exotic trees; numbers are tree identifiers in the table in Appendix C (Image from ESRI Australia 2021).**

4.3 Fauna

There were 6 species of fauna observed (all birds), all of which are indigenous.

Details of those species noted or inferred over the assessment period are detailed in Appendix B.

There were no rare or threatened species observed at the site (DPIE 2019a).

As indicated previously, the majority of the parcels have been cleared of all indigenous woody vegetation, and the ground layer substantially modified, with the indigenous flora largely replaced by exotics.

Not surprisingly, the indigenous fauna observed across the mostly cleared parcel and road reserve environment is typically of those observed in such modified/cleared-rural environments, such as the indigenous Australian Magpie, Galah, Magpie-lark, Sulphur-crested Cockatoo, Red-rumped Parrot and Noisy Miner.

The lack of observed species diversity across the majority of the parcel is not surprising, given:

- the lack of woody vegetation across the property, with particular reference to the wholly cleared areas as a result of the substantive clearing and disturbance, would considerably limit mammal, reptile, bat and bird species residency;
- the lack of fallen timber, which would considerably limit mammal, reptile, bat and bird species residency;
- domination of the ground layer vegetation by introduced species across much of the property;
- the likely presence of feral animal populations such as foxes and feral cats, which would actively predate any ground-dwelling or near ground-dwelling species heavily.

On this basis, across the majority of the property, there are relatively few opportunities for fauna occupation of the proposed development sites, in terms of a simplified vegetation structure (i.e. little shrub or emerging tree layer, meaning fewer opportunities for food collection and shelter/protection), and a relative lack of food sources (e.g. lack of indigenous nectar producing plants, etc.).

The Murray River corridor is the closest native vegetation block to the site, and is 1.2 km south-east of the southern parcel and 1.7 km south-east of the northern parcel, but there is no continuous vegetation (tree) cover to this corridor.

There is only scattered remnant hollow-bearing native vegetation (Yellow Box and River Red Gum trees) on the Cemetery Road Reserve to the west, but there is no other indigenous woody vegetation in the vicinity; the parcels are therefore quite disconnected from larger areas of native vegetation and have low connectivity within the landscape.

On this basis, it is reasonable to assume that fauna are less likely to utilise the scattered trees within proximity to the parcels.

4.4 Threatened Species and Communities

4.4.1 Threatened community likelihood

As stated previously, the pre-European site was likely one NSW Plant Community Type (PCT)(from Environment and Heritage 2012 and DPIE 2019d): PCT ID 237 – *Floodplain Transition Woodlands – Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone*.

Threatened Ecological Communities (TECs) are listed in the schedules of the *Biodiversity Conservation Act 2016*; *Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions,* the *Allocasuarina luehmannii Woodland in*

the Riverina and Murray-Darling Depression Bioregions, the *Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes Bioregions,* and *White Box-Yellow Box-Blakely's Red Gum Woodland* are listed as *Endangered* under the Act (DPIE 2019b).

Matters of National Environmental Significance searching reveals that the nationally critically endangered *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* community, and *Natural Grasslands of the Murray Valley Plains* community, and the nationally endangered *Grey Box Grassy Woodlands and Derived Native Grasslands of South-eastern Australia, Weeping Myall Woodlands* and the *Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions* communities occur within the Murray Catchment (DoEE 2019).

It is likely that the majority of the parcels are former *Inland Grey Box Woodland in the Riverina* or *Grey Box Grassy Woodlands and Derived Native Grasslands of South-eastern Australia*; the parcels have been wholly cleared of indigenous trees, with this community now only represented by a few scattered mature tree individuals on fence lines in the Cemetery Road reserve.

According to the decision-making flowchart to ascertain whether a site is a patch of potential *Grey Box Grassy Woodlands or derived native grasslands* of sufficient quality for national listing, the Department of Environment, Heritage, Water and the Arts (DEHWA)(2012), indicates that the site is no longer a viable part of this threatened ecological community based on the low tree cover, the lack of ground layer indigenous species diversity, and the abundance of ground layer exotic species. Although some indigenous species may remain, in most of these areas the indigenous understorey is effectively irretrievable, and in order for an area to be included in the listed ecological community, a patch must have a predominantly indigenous understorey (DEHWA 2012).

4.4.2 Threatened species likelihood

There were no rare or threatened species under the *Biodiversity Conservation Act 2016* observed at the property (DPIE 2020a).

The likelihood of presence for all recorded threatened species within a 20 km radius of the site has been considered (DPIE 2020a).

BioNet – Website of the Atlas of NSW Wildlife and *Matters of National Environmental Significance* searches revealed that there were records or predicted occurrences of twenty three (23) threatened fauna species within a 20 km radius of the site (DPIE 2020a, Department of Environment and Energy [DoEE] 2020; Appendix D).

BioNet – Website of the Atlas of NSW Wildlife and *Matters of National Environmental Significance* revealed that there were eight (8) records or predicted occurrences of threatened flora species within a 10 km radius of the site (DPIE 2020a, DoEE 2020; Appendix D).

The likelihood of the presence of these species and their likelihood of utilisation of the proposed development area was considered, and rated based on the prevailing habitat and habitat quality of the site, the low-moderate landscape connectivity, known records for species, and the composition, abundance and structure of indigenous vegetation (Appendix D).

Of these species, twenty two threatened fauna and all threatened flora species were not likely to occur on the property or to utilise it because of the following issues (or combination of them):

- the lack of a suitable community/habitat type (e.g. Floating Swamp Wallaby-grass, Claypan Daisy, Rigid Spider-orchid, Plains-wanderer, Squirrel Glider);
- the almost complete loss of connectivity of the sites through clearing of habitat to areas of known occurrence (e.g. Brown Treecreeper, Diamond Firetail, Corben's Long-eared Bat, Southern Bell Frog, Squirrel Glider, Koala, Swift Parrot, Superb Parrot);

- disturbance to, and simplification of the site (e.g. Lowly Greenhood, Turnip Copperburr, Slender Darling-pea, Small Purple-pea, Southern Bell Frog, Squirrel Glider, Pink-tailed Worm-lizard);
- the length of time since the last record (e.g. Spotted-tailed Quoll).

Based on the assumptions described above, only one species of fauna – Sloane's Froglet – was considered to have any potential to utilise the properties, notably the channel on the southern boundary, which may potential sub-optimal habitat for the species.

There are recent records of the species within the Corowa township, with one recent record within 500 m of the channel to the south adjacent to Nixon Street in a constructed dam/wetland; the species is known to utilise sub-optimal habitat composed of mostly introduced species in man-made structures such as channels. The channel in question is largely devoid of any vegetation, with adjacent land to the south and north being cleared land utilised for cropping and grazing, with minimal vegetation of any kind.

4.4.3 Assessment of Significance

Part 7 Division 1 Section 7.3 of the *Biodiversity Conservation Act 2016* sets out five parameters that a determining authority must consider in deciding whether an activity is likely to have a significant effect on threatened species, populations, or ecological communities, or their habitats.

As indicated, both parcels have been completely cleared of indigenous woody vegetation and has clearly been utilised in the past for both grazing and cropping. There are some scattered individual indigenous hollow-bearing Yellow Box and River Red Gum trees on the adjacent Cemetery Road reserve; the presumably long-term cropping/grazing land use has resulted in the ground layer vegetation being dominated by introduced opportunistic pasture species (60 % projective foliage cover).

There is one standing dead, hollow-bearing Yellow Box tree (Tree 1) proposed for loss on the south-western corner of the northern parcel. All other remnant trees have been avoided and will be retained with careful design of the location of proposed road and lot access points, and with the designation of a 5 m buffer zone between parcel boundaries and proposed lot boundaries along Cemetery Road.

Six threatened communities, eight threatened species of flora and twenty three species of fauna have been recorded within a 20 km radius of the site (DPIE 2020a) or are known or predicted to occur within 20 km of the site (DoEE 2020)(Appendix D).

After likelihood assessment, no representative threatened communities or threatened flora are considered likely to occur in the area, and one fauna species that has the potential to occur on the proposed works area, have been evaluated using the five parameters (Appendix D), and it is considered that the proposed development would have no impact on any of these species and populations, or their habitats.

The application of the five parameters of Part 7 Division 1 Section 7.3 of the *Biodiversity Conservation Act 2016* in the following section specifically addresses the effects of the development on the one threatened species.

Sloane's Froglet

1 (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,

Despite known local populations of the species, including a record for the species in a vegetated constructed dam/wetland near Nixon Street to the south (DPIE 2020a), the species was not observed or presence inferred during assessment; this is not surprising as, the only section of the

property which contains even sub-optimal habitat for the species is the channel along the southern boundary of the southern parcel, and this channel is: (a), marginal habitat for the species, and maintains minimal vegetation of any kind, retains no woody vegetation, and the adjacent cropping/grazing land to the north and south has been wholly cleared of woody vegetation with a minimalist introduced ground layer, (b), was dry at the time of assessment and is dry for the majority of the year (Andrew Mott pers. comm. 2021), (c), the assessment was conducted for only one hour and in the middle of the day (the species is generally nocturnally active in winter when there is water present; Woolshed Thurgoona Landcare Group 2018), and (d), the assessment was not made at a known time of the year where the species is more likely to be observed or heard (June to August; Woolshed Thurgoona Landcare Group 2018).

The decision has been made to avoid development within the channel zone, and the channel – and the marginal habitat for the species that it represents - will be excluded from the development. The habitat to the north of the channel (the southern parcel) is dominated by closely-grazed introduced pasture species, and similar pasture on the southern boundary of the zone; due to the historic levels of disturbance in these pasture/cropping areas, these areas are not suitable habitat for the species. Therefore, given the sub-optimal habitat that the channel represents compared to the suitable vegetation habitat provided at the known site on Nixon Street, and the unsuitability of the adjacent land use for the species, it seems highly unlikely that the species would be found in the channel.

The proposed development will therefore result in the direct loss of only one dead hollow-bearing Yellow Box tree in the northern parcel; the loss of this tree will have no impact on the species and will not have an adverse effect on the life cycle of Sloane's Froglet.

1 (b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

(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

Not applicable.

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Not applicable.

1 (c) in relation to the habitat of a threatened species or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

There are known local populations of the species, but it was not observed or presence inferred during assessment; this is not surprising as, the only section of the property which contains even sub-optimal habitat for the species is the channel along the southern boundary of the southern parcel, and this channel is: (a), marginal habitat for the species, and maintains minimal vegetation of any kind, retains no woody vegetation, and the adjacent cropping/grazing land to the north and south has been wholly cleared of woody vegetation with a minimalist introduced ground layer, (b), was dry at the time of assessment and is dry for the majority of the year (Andrew Mott pers. comm. 2021), (c), the assessment was conducted for only one hour and in the middle of the day (the species is generally nocturnally active in winter when there is water present; Woolshed Thurgoona Landcare Group 2018), and (d), the assessment was not made at a known time of the year where the species is more likely to be observed or heard (June to August; Woolshed Thurgoona Landcare Group 2018).

The decision has been made to avoid development within the channel zone, and the channel – and the marginal habitat for the species that it represents - will be excluded from the development. The habitat to the north of the channel (the southern parcel) is dominated by closely-grazed introduced pasture species, and similar pasture on the southern boundary of the zone; due to the historic levels of disturbance in these pasture/cropping areas, these areas are not suitable habitat for the species. Therefore, given the sub-optimal habitat that the channel represents compared to the suitable vegetation habitat provided at the known site on Nixon Street, and the unsuitability of the adjacent land use for the species, it seems highly unlikely that the species would be found in the channel.

The proposed development will therefore result in the direct loss of only one dead hollow-bearing Yellow Box tree in the northern parcel; the loss of this tree will have no impact on the species and will have no effect on the available habitat for the Sloane's Froglet.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

There are known local populations of the species, but it was not observed or presence inferred during assessment; this is not surprising as: the only section of the property which contains even sub-optimal habitat for the species is the channel along the southern boundary of the southern parcel, and this channel is: (a), marginal habitat for the species, and maintains a minimalist vegetation of any kind, retains no woody vegetation, and the adjacent cropping/grazing land to the north and south has been wholly cleared of woody vegetation with minimal introduced ground layer, (b), was dry at the time of assessment and is dry for the majority of the year (Andrew Mott pers. comm. 2021), (c), the assessment was conducted for only one hour and in the middle of the day (the species is generally nocturnally active in winter when there is water present; Woolshed Thurgoona Landcare Group 2018), and (d), the assessment was not made at a known time of the year where the species is more likely to be observed or heard (June to August; Woolshed Thurgoona Landcare Group 2018).

The decision has been made to avoid development within the channel zone, and the channel – and the marginal habitat for the species that it represents - will be excluded from the development. The habitat to the north of the channel (the southern parcel) is dominated by closely-grazed introduced pasture species, and similar pasture on the southern boundary of the zone; due to the historic levels of disturbance in these pasture/cropping areas, these areas are not suitable habitat for the species. Therefore, given the sub-optimal habitat that the channel represents compared to the suitable vegetation habitat provided at the known site on Nixon Street, and the unsuitability of the adjacent land use for the species, it seems highly unlikely that the species would be found in the channel.

The proposed development will therefore result in the direct loss of only one dead hollow-bearing Yellow Box tree in the northern parcel; the loss of this tree will have no impact on the species and will have no effect on the connectivity of the species with the surrounding habitat.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,

There are known local populations of the species, but it was not observed or presence inferred during assessment; this is not surprising as, the only section of the property which contains even sub-optimal habitat for the species is the channel along the southern boundary of the southern parcel, and this channel is: (a), marginal habitat for the species,

and maintains minimal vegetation of any kind, retains no woody vegetation, and the adjacent cropping/grazing land to the north and south has been wholly cleared of woody vegetation with a minimalist introduced ground layer, (b), was dry at the time of assessment and is dry for the majority of the year (Andrew Mott pers. comm. 2021), (c), the assessment was conducted for only one hour and in the middle of the day (the species is generally nocturnally active in winter when there is water present; Woolshed Thurgoona Landcare Group 2018), and (d), the assessment was not made at a known time of the year where the species is more likely to be observed or heard (June to August; Woolshed Thurgoona Landcare Group 2018).

The decision has been made to avoid development within the channel zone, and the channel – and the marginal habitat for the species that it represents - will be excluded from the development. The habitat to the north of the channel (the southern parcel) is dominated by closely-grazed introduced pasture species, and similar pasture on the southern boundary of the zone; due to the historic levels of disturbance in these pasture/cropping areas, these areas are not suitable habitat for the species. Therefore, given the sub-optimal habitat that the channel represents compared to the suitable vegetation habitat provided at the known site on Nixon Street, and the unsuitability of the adjacent land use for the species, it seems highly unlikely that the species would be found in the channel.

The proposed development will therefore result in the direct loss of only one dead hollow-bearing Yellow Box tree in the northern parcel; the loss of this tree will have no impact on the species and will have no impact on habitat that is important for the long-term **s**urvival of populations of the species.

1 (d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly):

No such declaration has been made for the area.

1 (e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

Key threatening processes are listed in the *Biodiversity Conservation Act 2016*.

The proposed development will result in two key threatening processes: *Clearing of native vegetation* and *Loss of hollow-bearing trees*.

5. LIKELIHOOD OF SIGNIFICANT IMPACT

In regard to the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* Significant Impact Criteria, an action is likely to have a significant impact on an endangered species if there is a real chance or possibility that it will (from DEHWA 2009):

- 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.

Sloane's Froglet

The proposed development will result in the direct loss of only one dead hollow-bearing Yellow Box tree in the northern parcel; the loss of this tree will have no impact on the species and will have no impact on habitat that is important for the long-term **s**urvival of populations of the species. There are known local populations of the species, but it was not observed or presence inferred during assessment; this is not surprising as, the only section of the property which contains even sub-optimal habitat for the species is the channel along the southern boundary of the southern parcel, and this channel is marginal habitat for the species, and maintains minimal vegetation of any kind, retains no woody vegetation, and the adjacent cropping/grazing land to the north and south has been wholly cleared of woody vegetation with a minimalist introduced ground layer.

The channel area is to be excluded from development.

Therefore the tree loss and proposed development is highly unlikely to impact on this aquatic species, as the proposed development areas are dominated by introduced ground layer species and devoid of periodically inundated areas which are the typically habitat of the species.

In regard to the impact of the proposed vegetation removal on Sloane's Froglet, given the vegetation and habitat characteristics of the site described, the proposed development will (from DEHWA 2009):

- The vegetation loss is highly unlikely to impact on this aquatic species, as the development areas are dominated by introduced ground layer species and devoid of the periodically inundated areas which are the typically habitat of the species, and on this basis, the development will not lead to a long-term decrease in the size of a population;
- Result in no reduction in the area of occupancy of the species. The areas to be developed do not contain habitat suitable for the species, and the development will not result in a reduction in the area of occupancy of the species;
- Not fragment an existing population into two or more populations. The areas to be developed do not contain habitat suitable for the species and do not contain the species, and the development will not result in any further fragmentation of the habitat of the species, and will certainly not fragment any existing population into two or more populations;
- Not result in any adverse effect to the habitat that will be critical to the survival of the species. The proposed vegetation loss is unsuitable habitat for the species, and the loss will not impact any adjacent habitat;
- Result in no disruption to the breeding cycle. The proposed vegetation loss is unsuitable habitat for the species, and would not be utilised for breeding by the species;
- Not modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. The proposed vegetation loss is unsuitable habitat for the species, and the development will not impact any adjacent habitat or its quality or reduce its availability;
- Not result in invasive species that are harmful to an endangered species becoming established in the endangered species' habitat. The development will not result in the establishment of an invasive species;
- Not introduce disease that may cause the species to decline;
- Not interfere with the recovery of the species, as no known habitat will be impacted.

6. AVOIDANCE AND MINIMISATION OF NATIVE VEGETATION

The proposed development areas have been wholly cleared of woody native vegetation, and are dominated by introduced ground layer species at ground level; the development will result in the

direct loss of only one dead hollow-bearing Yellow Box tree in the northern parcel; the loss of this tree will have no impact on any threatened species.

The road crossings that could impact on the remnant trees on the pertinent road reserves have been located to ensure that TPZ impacts are < 10 %, and that all trees will be retained. Furthermore, to ensure that all of the remnant trees on the Cemetery Road have minimal (< 10 %) or no TPZ impact from the adjacent residential development, a 5 m buffer between lot boundaries and the parcel boundary will be established

The only section of the property which contains even sub-optimal habitat for the threatened Sloane's Froglet is the channel along the southern boundary of the southern parcel and this channel is marginal habitat for the species, maintains a minimalist vegetation of any kind, and retains no woody vegetation. As indicated, the decision has been made to avoid development within the channel zone, and the channel – and the marginal habitat for Sloane's Froglet that it represents - will be excluded from the development. The habitat to the north of the channel (the southern parcel) and south of the channel has been wholly cleared of woody vegetation and is dominated by closely-grazed introduced pasture species; these areas are not suitable habitat for the species.

The generation of a Biodiversity Offset Scheme Entry Threshold Report (BOSET Report) (DPIE 2019f) reveals that the minimum Lot Size is 0.06 ha, and that the Area Clearing Threshold required to enter the Biodiversity Offset Scheme (BOS), and for a Biodiversity Development Assessment Report (BDAR) to be completed, is 0.25 ha for each parcel.

Therefore, for development to avoid entering the BOS and requiring a BDAR to be undertaken, native vegetation clearance must be < 0.25 ha on each parcel.

7. RECOMMENDATION

The parcels are not in a declared area of outstanding biodiversity value, the proposed development area is not mapped as *Vulnerable or Sensitive Regulated Land* according to the *State Environmental Planning Policy (Vegetation) 2017*, and is also not mapped as an area of Biodiversity Value (DPIE 2020e).

There is no effective native vegetation on either parcel.

As indicated, the generation of BOSET Reports for each parcel reveals that the minimum Lot Size is 0.06 ha, and that the Area Clearing Threshold required to enter the BOS, and for a BDAR to be completed, is 0.25 ha for each parcel.

Therefore, for development to avoid entering the BOS and requiring a BDAR to be undertaken, native vegetation clearance must be < 0.25 ha on each parcel; the loss of only one dead tree on the northern parcel of < 0.01 ha in total extent clearly is clearly well below this threshold.

Both parcels have been evaluated and subjected to a Test of Significance under Part 7 Division 1 Section 7.3 of the *Biodiversity Conservation Act 2016*, and it is concluded that in the event of development proposing to remove the loss of one dead hollow-bearing remnant tree, there will not be any significant impacts on any threatened species or community as a consequence.

The only section of the property which contains even sub-optimal habitat for the threatened Sloane's Froglet is the channel along the southern boundary of the southern parcel, and this area has been excluded from development; the adjacent pasture/cropping land are dominated by introduced ground layer species and devoid of the periodically inundated areas which are the typically habitat of the species, and unsuitable for it.

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APPENDIX A FLORA INVENTORY FOR CEMETERY ROAD COROWA

Recorded vascular plant species for the Cemetery Road Corowa parcels and the adjacent roadsides. Vascular flora have been recorded for presence using a cover-abundance scale that is outlined in Table 3-1.

An asterisk denotes an introduced species.

Common name	Scientific name	Plantations	Channel	N & S block	Garden	Road access areas	General road reserves
Sheep's Burr	*Acaena echinata*		+				
Sweet Verbal Grass	*Anthoxanthum odoratum**			2			
Brown-backed Wallaby-grass	*Austrodanthonia duttoniana*			1			1
Smallflower Wallaby Grass	*Austrodanthonia setaceum*					1	1
Rough Spear-grass	*Austrostipa scabra*						2
Wild Oat	*Avena fatua**	2	2	2		2	2
Silver Birch (planted)	*Betula alba**	2					
Red-leg Grass	*Bothriochloa macra*						1
Kurrajong (planted)	*Brachychiton populneus**						+
Great Brome	*Bromus diandrus**	2	2	2		2	2
Soft Brome	*Bromus mollis**	1	1				
A Callistemon (planted)	*Callistemon* sp.*				2		
Shepherd's Purse	*Capsella bursa-pastoris**					+	
Tall Sedge	*Carex appressa*		2				
Fen Sedge	*Carex gaudichaudiana*		1				
Atlantic Cedar	*Cedrus atlantica**				1		
Common Windmill Grass	*Chloris truncata*						2
Spear Thistle	*Cirsium vulgare**		1				
Cocksfoot	*Dactylis glomerata**		1				
Summer Grass	*Digitaria sanguinalis**		2				
Stinkwort	*Dittrichia graveolens**		1				
Paterson's Curse	*Echium plantigineum**	2				1	1
Annual Veldtgrass	*Ehrharta longifolia**				2		

Common name	Scientific name	Plantations	Channel	N & S block	Garden	Road access areas	General road reserves
Common Club-rush	*Eleocharis acuta*		2				
Curly Windmill Grass	*Enteropogon acicularis*			1		+	2
Smooth Willow-herb	*Epilobium billardierianum*		+				
Stinkgrass	*Eragrostis cilianensis**					1	1
Flaxleaf Fleabane	*Erigeron bonariensis**	2	2			1	1
River Red Gum (planted)	*Eucalyptus camaldulensis*	2			2		
Yellow Box	*Eucalyptus melliodora*					2	
Red Ironbark (planted)	*Eucalyptus sideroxylon**				2		
Desert Ash (planted)	*Fraxinus* sp.*	2			2		
Silky Oak (planted)	*Grevillea robusta**				1		
Common Heliotrope	*Heliotropium europeum**			2		1	1
Mat-grass	*Hemarthria uncinata*					2	2
Barley Grass	*Hordeum leporinum**			2			
St. John's Wort	*Hypericum perforatum**		2				
Cat's Ear	*Hypochaeris radicata**	1	1	1		1	2
Pale Rush	*Juncus pallidus*		1				
Blown Grass	*Lachnagrostis avenacea*		1				
Prickly Lettuce	*Lactuca serriola**	2		2		2	2
Hensbit	*Lamium amplexicaule**					2	2
Large-leaved Privet (naturalised)	*Ligustrum lucidum**						1
Wimmera Ryegrass	*Lolium rigidum**			2		2	
Small-flowered Mallow	*Malva parvifolium**						1
Lucerne	*Medicago sativa**			2			
Paperbarks	*Melaleuca* spp.*				2		
White Cedar (planted)	*Melia azerdarach**				1		
European Olive (naturalised)	*Olea europea**						+

Common name	Scientific name	Plantations	Channel	N & S block	Garden	Road access areas	General road reserves
Soursob	*Oxalis pes-caprae**					1	1
Paspalum	*Paspalum dilitatum**	2	2	1		2	2
Water Couch	*Paspalum distichum**		2		2	1	2
Kikuyu Grass	*Pennisetum clandestinum**		2		2		
Creeping Knotweed	*Persicaria prostrata*		2				
Toowoomba Canary Grass	*Phalaris aquatica**		2				
Lesser Canary Grass	*Phalaris minor**					1	1
Canary Island Date Palm (naturalised)	*Phoenix canariensis**						+
Radiata Pine (planted)	*Pinus radiata**	2					
Plantain	*Plantago lanceolata**		2		2	1	2
Wireweed	*Polygonum aviculare**		1			1	2
Prunus (planted)	*Prunus spp.**				2		1
Swamp Dock	*Rumex brownii*		1				
Curled Dock	*Rumex crispus**		2				
Variable Sida	*Sida corrugata*		+	2			+
Blackberry Nightshade	*Solanum nigrum**						1
Milk Thistle	*Sonchus oleraceus**		2				+
Subterranean Clover	*Trifolium subterraneum**		2				
Rat's Tail Fescue	*Vulpia myuros**	2		2			
Rigid Panic	*Walwhalleya proluta*					1	2
Indigenous species projective foliage cover (%)		5	5	< 1	< 1	< 1	5
Introduced species projective foliage cover (%)		50	85	5	50	30	30
Litter cover (%)		45	10	90	20	60	35
Bare earth (%)		0	0	5	30	10	30

APPENDIX B OBSERVED FAUNA OF CEMETERY ROAD COROWA

Observed or inferred fauna at the sites and surrounds between 1.00 and 2.30 pm on the 3rd February 2020 and 9.00 to 10.30 am on the 15th April 2021.

An asterisk denotes an introduced species.

Common name	Scientific name	Mode of observation[1]
Birds		
Australian Magpie	*Gymnorhina tibicen*	A,V
Galah	*Eolophus roseicapillus*	A,V
Magpie-lark	*Grallina cyanoleuca*	A,V
Noisy Miner	*Manorina melanocephala*	A,V
Red-rumped Parrot	*Psephotus haematonotus*	A,V
Sulphur-crested Cockatoo	*Cacatua galerita*	A,V

1. Identification method: A = audible call; V = visual; N = distinctive nest; S = scat.

APPENDIX C ASSESSED TREES

Tree number	Common name	Scientific name	Category	Diameter[1]	Tree location[2]	
					Easting	*Northing*
1	Yellow Box	*Eucalyptus melliodora*	Indigenous	260 (dead)	443106	6016584
2	Peppercorn	*Schinus molle**	Exotic (planted)		443458	6016882
3	Yellow Box	*Eucalyptus melliodora*	Indigenous	95	443139	6016848
4	Yellow Box	*Eucalyptus melliodora*	Indigenous	90/90	443142	6016858
5	Yellow Box	*Eucalyptus melliodora*	Indigenous	140	443150	6016905
6	River Red Gum	*Eucalyptus camaldulensis*	Indigenous (planted)		443288	6016057
7	River Red Gum	*Eucalyptus camaldulensis*	Indigenous (planted)		443291	6016053
8	River Red Gum	*Eucalyptus camaldulensis*	Indigenous (planted)		443290	6016049
9	River Red Gum	*Eucalyptus camaldulensis*	Indigenous (planted)		443286	6016045
10	River Red Gum	*Eucalyptus camaldulensis*	Indigenous (planted)		443286	6016040
11	River Red Gum	*Eucalyptus camaldulensis*	Indigenous (planted)		443287	6016047
12	Yellow Box	*Eucalyptus melliodora*	Indigenous	70/35	443254	6016952
13	Yellow Box	*Eucalyptus melliodora*	Indigenous	60/25	443249	6016952
14	Yellow Box	*Eucalyptus melliodora*	Indigenous	75	443244	6016953
15	Yellow Box	*Eucalyptus melliodora*	Indigenous	90	443239	6016953
16	Yellow Box	*Eucalyptus melliodora*	Indigenous	130	443154	6016927
17	Yellow Box	*Eucalyptus melliodora*	Indigenous	30	443157	6016936
18	Yellow Box	*Eucalyptus melliodora*	Indigenous	95/75	443139	6016841
19	Yellow Box	*Eucalyptus melliodora*	Indigenous	130/75/65	443132	6016795
20	Yellow Box	*Eucalyptus melliodora*	Indigenous	100/90	443128	6016750
21	River Red Gum	*Eucalyptus camaldulensis*	Indigenous	70/60	443119	6016702
22	River Red Gum	*Eucalyptus camaldulensis*	Indigenous	85	443116	6016685
23	River Red Gum	*Eucalyptus camaldulensis*	Indigenous	70	443116	6016681
24	River Red Gum	*Eucalyptus camaldulensis*	Indigenous	38	443114	6016677
25	River Red Gum	*Eucalyptus camaldulensis*	Indigenous	160/60	443111	6016656
26	River Red Gum	*Eucalyptus camaldulensis*	Indigenous	75	443109	6016640

Tree number	Common name	Scientific name	Category	Diameter[1]	Tree location[2]	
					Easting	*Northing*
27	River Red Gum	*Eucalyptus camaldulensis*	Indigenous	80/65	443107	6016629
28	River Red Gum	*Eucalyptus camaldulensis*	Indigenous	75	443108	6016626
29	Yellow Box	*Eucalyptus melliodora*	Indigenous	80	443029	6016099
30	Peppercorn	*Schinus molle**	Exotic (planted)		443025	6016067
31	Yellow Box	*Eucalyptus melliodora*	Indigenous	70/50/40	443018	6016025
32	Kurrajong	*Brachychiton populneus**	Non-indigenous native (planted)		443009	6015957
33	Peppercorn	*Schinus molle**	Exotic (planted)		443006	6015937
35	Yellow Box	*Eucalyptus melliodora*	Indigenous	130	442998	6015885
36	Peppercorn	*Schinus molle**	Exotic (planted)		443000	6015886
37	Cootamundra Wattle	*Acacia baileyana**	Non-indigenous native (naturalised)		442994	6015853
38	River Red Gum	*Eucalyptus camaldulensis*	Indigenous	60	442992	6015850
39	River Red Gum	*Eucalyptus camaldulensis*	Indigenous	75	442991	6015845
40	Yellow Box	*Eucalyptus melliodora*	Indigenous	65/30	443004	6015928

1. Diameter at breast height over bark in cm (at 1.30 m above ground);
2. Location data are northings and eastings of MGAz55 coordinates.

APPENDIX D THREATENED SPECIES LIKELIHOOD OF PRESENCE

List of threatened communities, and flora and fauna species recorded by the BioNet - Atlas of NSW Wildlife and by Matters of National Environmental Significance search of a 20 km radius from the proposed development site, their status, and their likelihood of occurrence on the site (DPIE 2020b; DoEE 2020).

Common Name	Scientific name	Conservation Status (NSW)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]	Five Part Test
Vegetation community					
Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions (Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions)		e	E	While this TEC is represented within the district, It is likely that the majority of the parcel is former *White Box-Yellow Box-Blakely's Red Gum Woodland* or *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland - Grassy Box Gum Woodland*. **Likelihood: Not present**	No
Forb-rich Speargrass-Windmill Grass-White Top grassland of the Riverina (Natural Grasslands of the Murray Valley Plains)		e	CE	While this TEC is represented within the district, It is likely that the majority of the parcel is former *White Box-Yellow Box-Blakely's Red Gum Woodland* or *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland - Grassy Box Gum Woodland*. **Likelihood: Not present**	No
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions (Grey Box Grassy Woodlands and Derived Native Grasslands of South-eastern Australia)		e	E	It is likely that the majority of the parcel is former *White Box-Yellow Box-Blakely's Red Gum Woodland* or *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland - Grassy Box Gum Woodland*; however, within the parcel this community is now only represented by mostly mature tree individuals, and the remnant vegetation does not meet the quality threshold to be considered a remnant of this community. **Likelihood: Not present**	No
White Box-Yellow Box-Blakely's Red Gum Woodland (White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland - Grassy Box Gum Woodland)		e	CE	While this TEC is represented within the district, It is likely that the majority of the parcel is former *White Box-Yellow Box-Blakely's Red Gum Woodland* or *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland - Grassy Box Gum Woodland*. **Likelihood: Not present**	No
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions		e		While this TEC is represented within the district, It is likely that the majority of the parcel is former *White Box-Yellow Box-Blakely's Red Gum Woodland* or *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland - Grassy Box Gum Woodland.* **Likelihood: Not present**	No
Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions (Weeping Myall Woodlands)		e	E	While this TEC is represented within the district, It is likely that the majority of the parcel is former *White Box-Yellow Box-Blakely's Red Gum Woodland* or *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland - Grassy Box Gum Woodland*. **Likelihood: Not present**	No
Flora					
Floating Swamp Wallaby-grass	*Amphibromus fluitans*	v	V	Wetland/riparian plant. The channel is the only area of potential habitat for the species, but as the site is ephemeral, species presence is highly unlikely. No records within 20 km. **Likelihood: Highly unlikely to be present**	No
Claypan Daisy	*Brachyscome muelleroides*	v	V	A small annual herb restricted to the mid-Murray/Murrumbidgee Rivers region in NSW and Victoria. It occurs in seasonally wet depressions, and relies on seasonal inundation. The species is now restricted to only 10 known populations. Such habitat is not found on site. No records within 20 km. **Likelihood: Highly unlikely to be present**	No
Sand-hill Spider-orchid	*Caladenia arenaria*	e	E	The species occurs in woodland with sandy soil, especially that dominated by White Cypress-pine. Such habitat is not found on site. Numerous records within 20 km are all on the Cooren-Balldale Road, 15 km north of the site. **Likelihood: Highly unlikely to be present**	No

Common Name	Scientific name	Conservation Status (NSW)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]	Five Part Test
Rigid Spider-orchid	*Caladenia tensa*		E	This species grows mostly in light soils on sand-hills and sand plains. Little information in now known of its NSW distribution, and the only known populations are in Victoria and South Australia. Such habitat is not found on site. No records of the species within 20 km of the site. **Likelihood: Highly unlikely to be present**	No
Austral Pillwort	*Pilularia novae-hollandiae*	e		In NSW, Austral Pillwort has been recorded from suburban Sydney, Khancoban, the Riverina between Albury and Urana (including Henty, Walbundrie, Balldale and Howlong), Oolambeyan National Park near Carathool and at Lake Cowal near West Wyalong. Austral Pillwort grows in shallow swamps and waterways, often among grasses and sedges. It is most often recorded in drying mud as this is when it is most conspicuous. The channel is the only area of potential habitat for the species, and such habitat is not found on site. The six records within 20 km are at Howlong and Balldale, and the most recent of these was in 1951. **Likelihood: Highly unlikely to be present**	No
Sturdy Leek-orchid	*Prasophyllum validum*		V	*Prasophyllum validum* occurs across inland Victoria and in South Australia in the Flinders Ranges in drier woodland habitats. While it may have been found in suitable habitats in NSW, there are no records for the species in NSW or within 20 km. **Likelihood: Highly unlikely to be present**	No
Turnip Copperburr	*Sclerolaena napiformis*	e	E	Confined to remnant grassland habitats on clay-loam soils. Grows on level plains in tussock grassland of *Austrostipa nodosa* and *Chloris truncata*, in grey cracking clay to red-brown loamy clay. Known from only a few small populations in remnant grassland in the southern Riverina of NSW and north-central Victoria. NSW populations are confined to the area between Jerilderie and Moama on travelling stock routes and road reserves. While sections of the development site may have once been suitable habitat, it is unlikely the species would be found because of the extent of disturbance to the site, and there are no records within 20 km. **Likelihood: Unlikely to be present**	No
Small Purple-pea	*Swainsona recta*	e	E	Grassland and Grassy Woodland plant in sites prone to seasonal inundation. While sections of the development site may have once been suitable habitat, it is unlikely the species would be found because of the extent of disturbance to the site, and there are no records within 20 km. **Likelihood: Unlikely to be present**	No
Fauna					
Black Falcon	*Falco subniger*	v		The Black Falcon inhabits woodland, shrubland and grassland in the arid and semi-arid zones, especially wooded watercourses and agricultural land with scattered remnant trees. The species is usually associated with streams or wetlands, visiting them in search of prey and often using standing dead trees as lookout posts. Such habitat is not found on site, and the one record within 20 km is at the Balldale Swamp in 2011. **Likelihood: Unlikely to be present**	No
Black-chinned Honeyeater	*Melithripterus gularis gularis*	v		Occurs in intact woodlands, and adjacent agricultural land. While sections of the development site may have once been suitable habitat, it is unlikely the species would be found because of the extent of disturbance to the site, and there is no connectivity to known locations. Three records within 20 km are at Howlong, and Chiltern in Victoria. **Likelihood: Unlikely to be present**	No
Brolga	*Grus rubicunda*	v		The Brolga inhabits large open wetlands, grassy plains, coastal mudflats and irrigated croplands and, less frequently, mangrove-studded creeks and estuaries. It is less common in arid and semi-arid regions, but will occur close to water. No suitable habitat occurs on site. Four records of the species within 20 km, the closest being north of Corowa in 2007. **Likelihood: Unlikely to be present**	No

Common Name	Scientific name	Conservation Status (NSW)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]	Five Part Test
Brown Treecreeper (eastern ssp.)	*Climacteris picumnus victoriae*	v		Occurs in intact woodlands, and adjacent agricultural land. While sections of the development site may have once been suitable habitat, it is unlikely the species would be found because of the extent of disturbance to the site, and there is no connectivity to known locations. Numerous records to the west, north and east, the closest 2 km to the west in 2004. **Likelihood: Unlikely to be present**	No
Bush Stone-curlew	*Burhinus grallarius*	e		Range in south-eastern Australia is now largely confined to grassy woodlands and farmland. Likes to roost and nest in grassy woodlands of Buloke, gum or box with low, sparse grassy or herb understorey. Branches on the ground are essential for the bird's camouflage, and it is unlikely to attempt nesting without it. Six records within 20 km; all around Balldale and Lowesdale on private property. Site is highly disturbed and is no longer suitable habitat. **Likelihood: Highly unlikely to be present**	No
Corben's Long-eared Bat	*Nyctophilus corbeni*	v	V	Occurs in intact Buloke, mallee, Cypress-pine, ironbark and box woodlands and forests, and adjacent agricultural land. While sections of the development site may have once been suitable habitat, it is unlikely the species would be found because of the extent of disturbance to the site, and there is no connectivity to known locations. Not recorded within 20 km of the site. **Likelihood: Unlikely to be present**	No
Diamond Firetail	*Stagonopleura guttata*	v		Occurs in woodlands, and adjacent agricultural land. While sections of the development site may have once been suitable habitat, it is unlikely the species would be found because of the extent of disturbance to the site, and there is no connectivity to known locations. Five records within 20 km are at Howlong and Balldale. **Likelihood: Unlikely to be present**	No
Dusky Woodswallow	*Artamus cyanopterus cyanopterus*	v		The species primarily inhabits dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. While sections of the development site may have once been suitable habitat, it is unlikely the species would be found because of the extent of disturbance to the site, and there is no connectivity to known locations. Three records within 20 km are north of the site at Coreen and Balldale. **Likelihood: Unlikely to be present**	No
Flame Robin	*Petroica phoenicea*	v		Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys. The ground layer of the breeding habitat is dominated by native grasses and the shrub layer may be either sparse or dense. The Flame Robin is endemic to south eastern Australia, and ranges from near the Queensland border to south east South Australia and also in Tasmania. In NSW, it breeds in upland areas and in winter, many birds move to the inland slopes and plains. While sections of the development site may have once been suitable habitat, it is unlikely the species would be found because of the extent of disturbance to the site, and there is no connectivity to known locations. Six records to the west, north and east, the closest 5 km to the west in 1995. **Likelihood: Unlikely to be present**	No
Grey-crowned Babbler (eastern subspecies)	*Pomatostomus temporalis temporalis*	v		Prefers extensive intact woodlands with significant shrub and litter layers. While sections of the development site may have once been suitable habitat, it is unlikely the species would be found because of the extent of disturbance to the site, and there is no connectivity to known locations. Numerous records to the west, north and east, the closest 3 km to the north-west in 2007. **Likelihood: Unlikely to be present**	No

Common Name	Scientific name	Conservation Status (NSW)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]	Five Part Test
Grey-headed Flying-fox	*Pteropus poliocephalus*	v	V	Australia's only endemic flying-fox and occurs in a coastal belt from south-eastern Queensland to Melbourne, Victoria. It is a canopy-feeding frugivore and nectivore, which utilises vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands. Site is not suitable habitat, and species not recorded within 20 km. **Likelihood: Highly unlikely to be present**	No
Hooded Robin	*Melanodryas cucullata cucullata*	v		Occurs in intact woodlands, and adjacent agricultural land. They occupy a wide range of Eucalypt woodlands, Acacia shrublands and open forests. In temperate woodlands, the species favours open areas adjoining large woodland blocks, with areas of dead timber and sparse shrub cover. While sections of the development site may have once been suitable habitat, it is unlikely the species would be found because of the extent of disturbance to the site, and there is no connectivity to known locations. Numerous records to the west, north and east, the closest 5 km to the west in 2008. **Likelihood: Unlikely to be present**	No
Koala	*Phascolarctus cinereus*	v	V	Inhabit eucalypt woodlands and forests. Spend most of their time in trees, but will descend and traverse open ground to move between trees. While sections of the development site may have once been suitable habitat, it is unlikely the species would be found because of the extent of disturbance to the site, and there is no connectivity to known locations. One record within 20 km – at Balldale in 2010. **Likelihood: Highly unlikely to be present**	No
Large Bent-winged Bat	*Miniopterus orianae oceanensis*	v		Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. They hunt in forested areas, catching moths and other flying insects above the tree tops. Such habitat is not found on site. One record for the species within 20 km of the site – at Howlong in 2010. **Likelihood: Highly unlikely to be present**	No
Little Eagle	*Hieraaetus morphnoides*	v		The species occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used. It nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter. Such habitat is not found on site. Two records for the species within 20 km – one at Howlong, and one near the Murray River at Corowa in 2016. **Likelihood: Unlikely to be present**	No
Painted Honeyeater	*Grantiella picta*	v	V	The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. Inhabits Boree/ Weeping Myall, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests, particularly those infested with mistletoe. While sections of the development site may have once been suitable habitat, it is unlikely the species would be found because of the extent of disturbance to the site, and there is no connectivity to known locations. No records within 20 km. **Likelihood: Highly unlikely to be present**	No
Pink-tailed Legless Lizard	*Aprasia parapulchella*	v	V	Occurs in intact high quality and undisturbed grassy woodlands and grasslands. No such habitat occurs on or near the subject site. Four records of the species within 20 km – all 8 km north of Howlong at Goombargana Hill. **Likelihood: Highly unlikely to be present**	No
Plains-wanderer	*Pedionomus torquatus*	e	CE	Occurs in extensive quality riparian grasslands and plains woodlands, and adjacent agricultural land. Site is not suitable habitat. No records within 20 km. **Likelihood: Highly unlikely to be present**	No

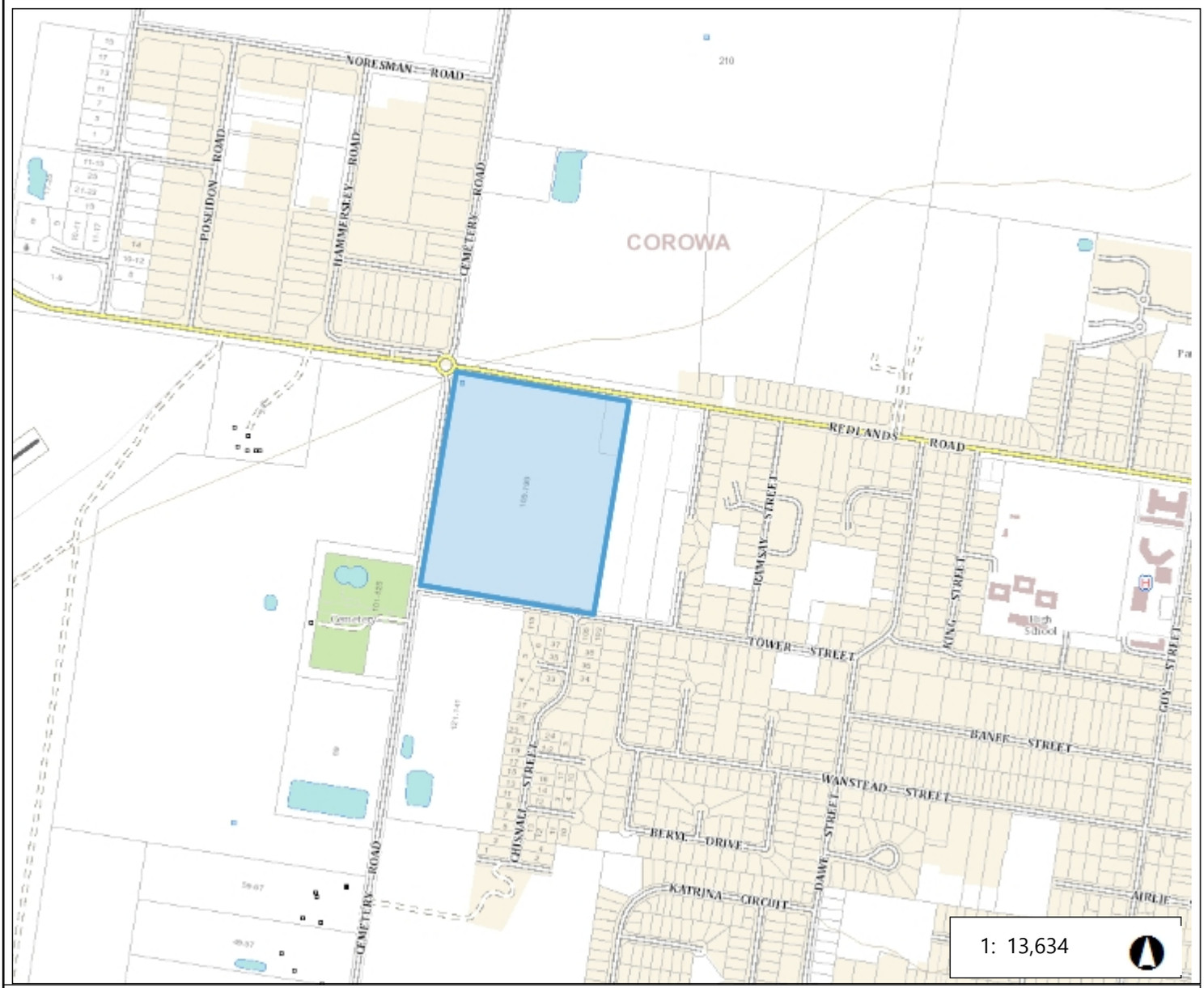
Common Name	Scientific name	Conservation Status (NSW)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]	Five Part Test
Purple-crowned Lorikeet	*Glossopsitta porphyrocephala*	v		It is uncommon in NSW, with records scattered across the box-ironbark woodlands of the Riverina and south west slopes, the River Red Gum forests and mallee of the Murray Valley as far west as the South Australian border. Found in open forests and woodlands, particularly where there are large flowering eucalypts. While sections of the development site may have once been suitable habitat, it is unlikely the species would be found because of the extent of disturbance to the site, and there is no connectivity to known locations. One record within 20 km - 2 km north of the site in 2015. **Likelihood: Unlikely to be present**	No
Scarlet Robin	*Petroica boodang*	v		In NSW, it occurs from the coast to the inland slopes. After breeding, some Scarlet Robins disperse to the lower valleys and plains of the tablelands and slopes. Some birds may appear as far west as the eastern edges of the inland plains in autumn and winter. The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs in both mature and regrowth vegetation. While sections of the development site may have once been suitable habitat, it is unlikely the species would be found because of the extent of disturbance to the site, and there is no connectivity to known locations. Four records within 20 km – all in the Kentucky State Forest near Balldale. **Likelihood: Unlikely to be present**	No
Sloane's Froglet	*Crinia sloanei*	v		Sloane's Froglet has been recorded from widely scattered sites in the floodplains of the Murray-Darling Basin, with the majority of records in the Darling Riverine Plains, NSW South Western Slopes and Riverina bioregions in New South Wales. It is typically associated with periodically inundated areas in grassland, woodland and disturbed habitats. There are many records for the species around Corowa, including one 500 m south of the channel on Nixon Street in 2010 in a vegetated dam/wetland that is suitable habitat. The channel provides marginal habitat for the species. **Likelihood: May be present**	Yes
Southern Bell Frog	*Litoria raniformis*	e	V	In NSW the species was once distributed along the Murray and Murrumbidgee Rivers and their tributaries, the southern slopes of the Monaro district and the central southern tablelands as far north as Tarana, near Bathurst. Currently, the species is known to exist only in isolated populations in the Coleambally Irrigation Area, the Lowbidgee floodplain and around Lake Victoria. While the channel provides potential sub-optimal habitat for the species, there are no records within 20 km. **Likelihood: Unlikely to be present**	No
Speckled Warbler	*Chthonicola sagittatus*	v		Patchy distribution on and inland of the Great Dividing Range, from level with Mackay in Queensland, to the Grampians National Park in Victoria. Lives in dry sclerophyll forests and woodlands dominated by eucalypts. It is mostly seen on the grassy ground layer, when it is foraging. While sections of the development site may have once been suitable habitat, it is unlikely the species would be found because of the extent of disturbance to the site, and there is no connectivity to known locations. Six records within 20 km – all in the Kentucky State Forest near Balldale. **Likelihood: Unlikely to be present**	No
Spotted Harrier	*Circus assimilis*	v		Found in mainland Australia and Indonesia. It is widespread but sparsely distributed. Found in open wooded country in tropical and temperate Australia, particularly in arid and semi-arid areas. While sections of the development site may have once been suitable habitat, it is unlikely the species would be found because of the extent of disturbance to the site, and there is no connectivity to known locations. One record within 20 km – at the Lonesome Pine State Forest near Coreen. **Likelihood: Unlikely to be present**	No

Common Name	Scientific name	Conservation Status (NSW)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]	Five Part Test
Spotted-tailed Quoll	*Dasyurus maculatus*	v	E	The Spot-tailed Quoll has a preference for mature wet forest habitat, especially in areas with rainfall 600 mm/year. Unlogged forest or forest that has been less disturbed by timber harvesting is also preferable. The range of the Spotted-tailed Quoll has contracted considerably since European settlement, and it is now found only in eastern NSW; two records of the species within 20 km – at Howlong and Corowa - are both more than 100 years old. Species is considered regionally extinct. **Likelihood: Highly unlikely to be present**	No
Squirrel Glider	*Petaurus norfolcensis*	v		Prefers extensive intact woodlands with significant shrub and litter layers in blocks or along roadsides. No such habitat occurs on or near the subject site, and there is no connectivity to known locations. Seven records within 20 km – several close to Corowa, but all in areas of remnant vegetation. **Likelihood: Unlikely to be present**	No
Superb Parrot	*Polytelis swainsonii*	v	V	Occurs in riparian woodlands and forest, and adjacent woodlands and agricultural land. No such habitat occurs on or near the subject site, and there is no connectivity to known locations. Numerous records within 20 km – one close to Corowa that is 2 km west of the site, but most are near Howlong. **Likelihood: Unlikely to be present**	No
Swift Parrot	*Lathamus discolor*	e	CE	Occurs in extensive riparian forests and woodlands, and adjacent agricultural land. While sections of the development site may have once been suitable habitat, it is unlikely the species would be found because of the extent of disturbance to the site, and there is no connectivity to known locations. Four records within 20 km – all to the north and north-east of Corowa. **Likelihood: Unlikely to be present**	No
Varied Sittella	*Daphoenositta chrysoptera*	v		The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. It inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. While sections of the development site may have once been suitable habitat, it is unlikely the species would be found because of the extent of disturbance to the site, and there is no connectivity to known locations. Numerous records within 20 km – all in State Forest to the north-west, north and north-east of Corowa. **Likelihood: Unlikely to be present**	No
Yellow-bellied Sheathtail Bat	*Saccolaimus flaviventris*	v		The Yellow-bellied Sheathtail-bat is a wide-ranging species found across northern and eastern Australia. In the most southerly part of its range - most of Victoria, south-western NSW and adjacent South Australia - it is a rare visitor in late summer and autumn. Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Such habitat is not found on site. One record for the species within 20 km of the site – at Corowa on the Murray River in 2008. **Likelihood: Highly unlikely to be present**	No

1. x = presumed extinct in NSW; e = endangered in NSW; v = vulnerable in NSW; ce = critically endangered in NSW (from DPIE 2020b).
2. V = vulnerable nationally; E = endangered nationally; CE = critically endangered nationally (DoEE 2020).

APPENDIX E BIODIVERSITY OFFSET SCHEME ENTRY THRESHOLD (BOSET) TOOL REPORTS

Biodiversity Offset Scheme (BOS) Entry Threshold Map



692.6 0 346.32 692.6 Metres

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days

Notes

Biodiversity Values Map and Threshold Report

Results Summary

Date of Calculation	27/11/2019 5:27 PM		**BDAR Required***
Total Digitised Area	12.43	ha	
Minimum Lot Size Method	LEP		
Minimum Lot Size	0.06	ha	
Area Clearing Threshold	0.25	ha	
Area clearing trigger Area of native vegetation cleared	Unknown #		Unknown #
Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)?	no		no
Date of the 90 day Expiry	N/A		

*If BDAR required has:

- at least one 'Yes': you have exceeded the BOS threshold. You are now required to submit a Biodiversity Development Assessment Report with your development application. Go to https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor to access a list of assessors who are accredited to apply the Biodiversity Assessment Method and write a Biodiversity Development Assessment Report
- 'No': you have not exceeded the BOS threshold. You may still require a permit from local council. Review the development control plan and consult with council. You may still be required to assess whether the development is '"likely to significantly affect threatened species' as determined under the test in s. 7.3 of the Biodiversity Conservation Act 2016. You may still be required to review the area where no vegetation mapping is available.

Where the area of impact occurs on land with no vegetation mapping available, the tool cannot determine the area of native vegetation cleared and if this exceeds the Area Threshold. You will need to work out the area of native vegetation cleared - refer to the BOSET user guide for how to do this.

On and after the 90 day expiry date a BDAR will be required.

Disclaimer

This results summary and map can be used as guidance material only. This results summary and map is not guaranteed to be free from error or omission. The State of NSW and Office of Environment and Heritage and its employees disclaim liability for any act done on the information in the results summary or map and any consequences of such acts or omissions. It remains the responsibility of the proponent to ensure that their development application complies will all aspects of the *Biodiversity Conservation Act 2016.*

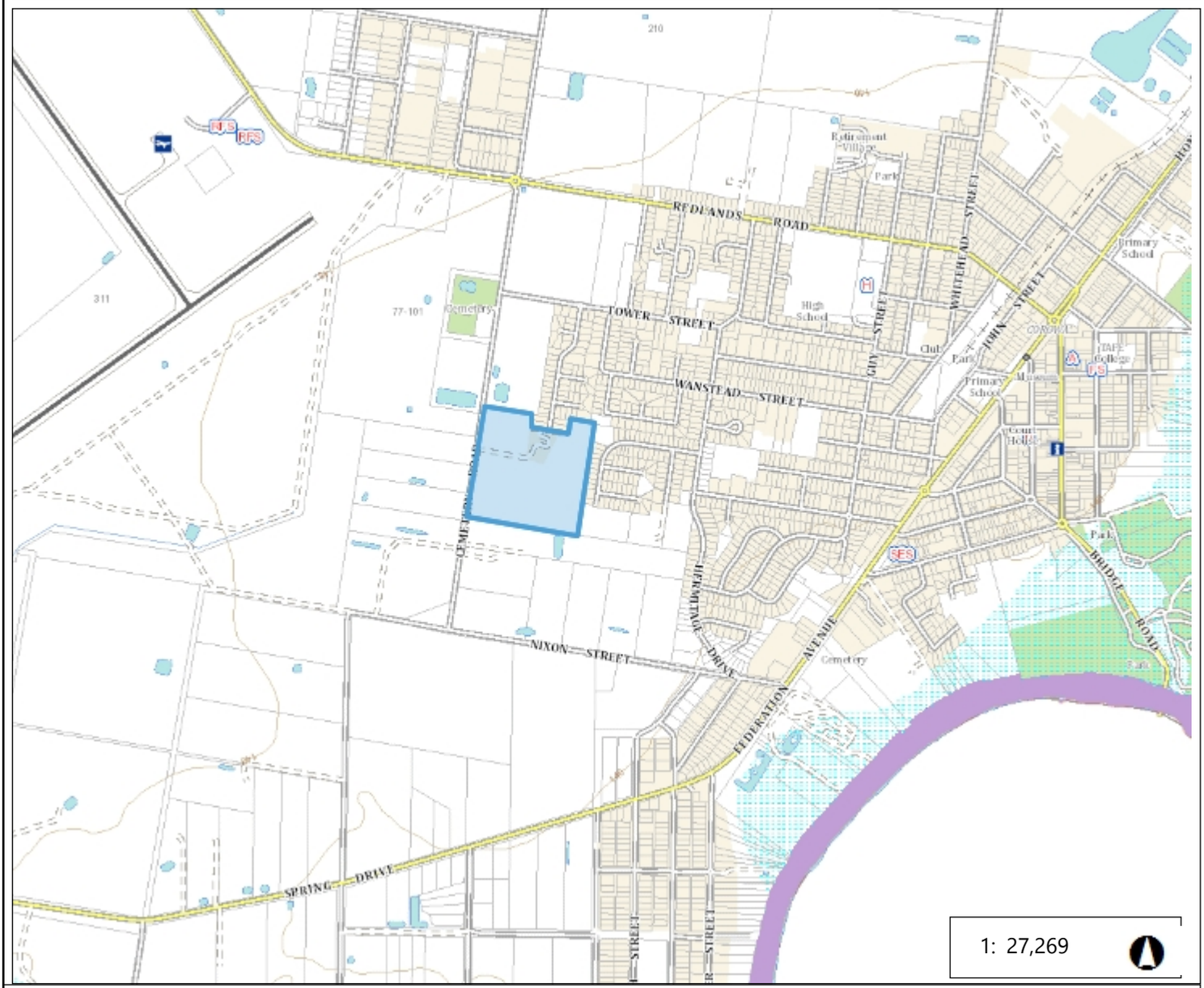
The mapping provided in this tool has been done with the best available mapping and knowledge of species habitat requirements. This map is valid for a period of 30 days from the date of calculation (above).

Acknowledgement

I as the applicant for this development, submit that I have correctly depicted the area that will be impacted or likely to be impacted as a result of the proposed development.

Signature_____ Date:27/11/2019 05:27 PM

Biodiversity Offset Scheme (BOS) Entry Threshold Map



1,385.3 0 692.63 1,385.3 Metres

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days

Notes

Biodiversity Values Map and Threshold Report

Results Summary

Date of Calculation	19/02/2020 12:16 PM		**BDAR Required***
Total Digitised Area	15.87	ha	
Minimum Lot Size Method	LEP		
Minimum Lot Size	0.06	ha	
Area Clearing Threshold	0.25	ha	
Area clearing trigger Area of native vegetation cleared	Unknown #		Unknown #
Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)?	no		no
Date of the 90 day Expiry	N/A		

*If BDAR required has:

- at least one 'Yes': you have exceeded the BOS threshold. You are now required to submit a Biodiversity Development Assessment Report with your development application. Go to https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor to access a list of assessors who are accredited to apply the Biodiversity Assessment Method and write a Biodiversity Development Assessment Report
- 'No': you have not exceeded the BOS threshold. You may still require a permit from local council. Review the development control plan and consult with council. You may still be required to assess whether the development is '"likely to significantly affect threatened species' as determined under the test in s. 7.3 of the Biodiversity Conservation Act 2016. You may still be required to review the area where no vegetation mapping is available.

Where the area of impact occurs on land with no vegetation mapping available, the tool cannot determine the area of native vegetation cleared and if this exceeds the Area Threshold. You will need to work out the area of native vegetation cleared - refer to the BOSET user guide for how to do this.

On and after the 90 day expiry date a BDAR will be required.

Disclaimer

This results summary and map can be used as guidance material only. This results summary and map is not guaranteed to be free from error or omission. The State of NSW and Office of Environment and Heritage and its employees disclaim liability for any act done on the information in the results summary or map and any consequences of such acts or omissions. It remains the responsibility of the proponent to ensure that their development application complies will all aspects of the Biodiversity Conservation Act 2016.

The mapping provided in this tool has been done with the best available mapping and knowledge of species habitat requirements. This map is valid for a period of 30 days from the date of calculation (above).

Acknowledgement

I as the applicant for this development, submit that I have correctly depicted the area that will be impacted or likely to be impacted as a result of the proposed development.

Signature_____ Date:19/02/2020 12:16 PM