

Our Ref: 80219020:JO'G

27 February 2020

Department of Planning, Industry and Environment,
GPO Box 39
Sydney NSW 2000

Via: DPIE Submissions Portal

Cardno (NSW/ACT) Pty Ltd
ABN 95 001 145 035

Level 9 - The Forum
203 Pacific Highway
St Leonards NSW 2065
Australia

Phone +61 2 9496 7700
Fax +61 2 9439 5170

www.cardno.com

SUBMISSION TO THE EXHIBITION OF THE STAGE 2 WESTERN SYDNEY AEROTROPOLIS PLANNING PACKAGE

We act on behalf of owners of approximately 27ha of land located at Luddenham, adjacent to the western boundary of the proposed Western Sydney Airport.

Our submission maintains that the proposed zoning of the Subject Lands in the draft Western Sydney Aerotropolis State Environmental Policy as Environment and Recreation is not consistent with the highest and best use of the land or with proper strategic planning practices.

We contend that the proposed zoning of the Subject Land in the draft *Sydney Aerotropolis State Environmental Policy* should be amended from *Environment and Recreation* to *Agribusiness*.

Our opinion in this regard has been formed based on the following findings:

- The proposed zoning is not consistent with the actual ecological value of the Subject Land. There are significant parts of the Land that do not support native vegetation and the condition of the mapped native vegetation on the Land is variable.
- The mapped native vegetation on the Land is disconnected from nearby vegetation corridors and would be further truncated by the Northern Road realignment and the proposed Western Sydney Orbital motorway. Its viability for conservation and wildlife corridor purposes is questionable.
- A precinct planning exercise should inform development of a coordinated recreation network embedded in the Agribusiness Precinct. Zoning of the Subject Land for recreational purposes in the absence of this planning process appears to be premature.
- The Endangered Ecological Community mapped on the Subject Land does not require zoning protection. Development Applications pertaining to the land would require assessment of its ecological values under the current planning regime prior to determination.
- The proposed zoning of the Land as Environment and Recreation will potentially impact negatively on the potential of adjoining lands to achieve the planning objectives of the Agribusiness zone.
- Zoning of the Subject Land for conservation purposes has the potential to increase risk to airport operations via wildlife strike.
- The highly restrictive nature of the Environment and Recreation zone will impact grossly on the value of the Subject Land to the market. This is considered an unjust impost on the landowners and is inconsistent with the Department of Planning Practice Note PN 09-002 – Environment Protection Zones.

In order to provide a more detailed explanation of the content of this Submission and to make our case for the recommendations therein, Cardno and the owners of the Subject Lands request a meeting with the Department during the post exhibition deliberations for the Stage 2 WSA Planning Package.

1.1 The Subject Land

Our clients have interests in the following land parcels (referred to in this submission as **the Subject Land**).

Address	Legal Title	Approximate Area (Hectares)
[REDACTED], Luddenham	[REDACTED] Luddenham	10.6
[REDACTED], Luddenham	[REDACTED] Luddenham	10.4
[REDACTED], Luddenham	[REDACTED] The Northern Road Luddenham.	6.75ha (area mapped as Environment & Recreation)
Total Area		26.75ha

Table 1-1 Subject Land

The location and extent of the Subject Lands is indicated at Figure 1-2. The land is located between The Northern Road realignment and the future Outer Sydney Orbital motorway, approximately 250m west of the Western Sydney Airport boundary and 800m south west of the site of the western runway.

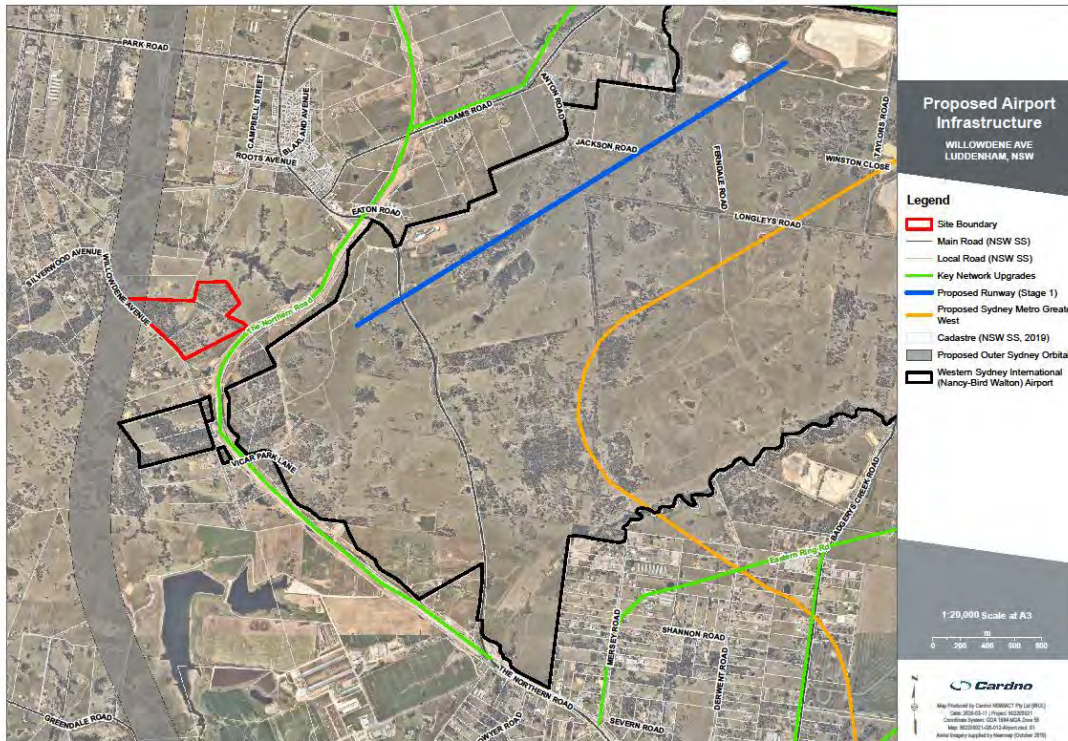


Figure 1-1 Site location (edged red) in relation to the Western Sydney Airport site



Figure 1-2 Local aerial – Subject Land edged red

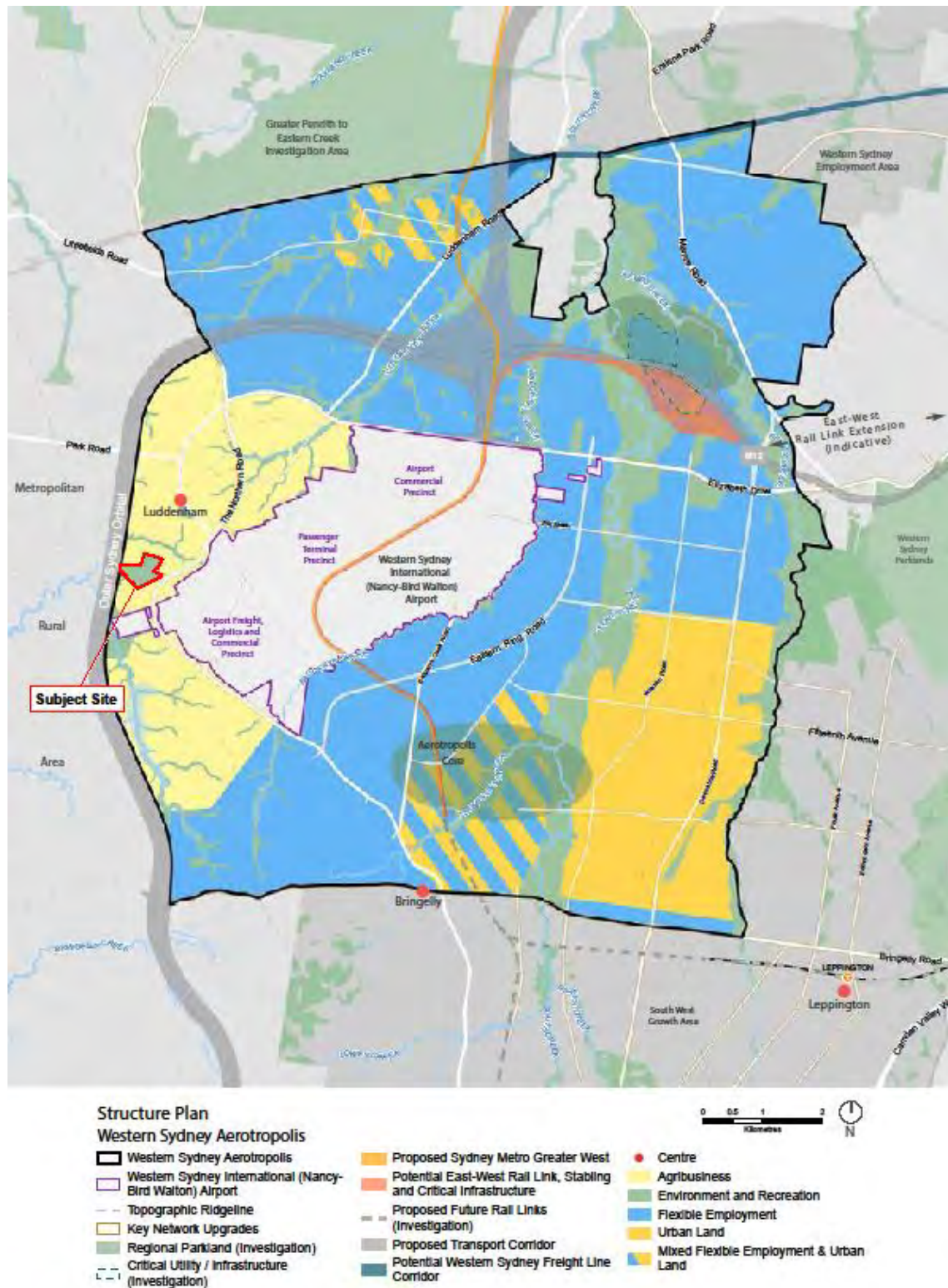


Figure 1-3 Subject lands (edged red) – context within the Western Sydney Aerotropolis. (Draft Western Sydney Aerotropolis Plan, Department of Planning, Industry and Environment, Dec 2019)

1.2 The submission

Our submission provides commentary on behalf of our client on the Planning Package placed on exhibition in December 2019, constituting Stage 2 of the Aerotropolis Plan. Specifically our submission is in relation to the following documents included in the Planning Package and currently on Exhibition:

- Western Sydney Aerotropolis Plan. Draft – for public comment, December 2019

- Western Sydney Aerotropolis Discussion Paper on the Proposed State Environmental Planning Policy – Draft for public comment, December 2019
- Western Sydney Aerotropolis Development Control Plan 2019. Phase 1 Draft – for public comment. December 2019

1.3 Western Sydney Aerotropolis Plan (WSAP). Draft – for public comment, December 2019

The 2019 iteration of the draft Aerotropolis Plan includes precinct structure plans for six “Initial Precincts” within the Aerotropolis. The land that is the subject of this submission is included in the Agribusiness Precinct and is designated as “Regional Parkland (Investigation)” in the draft Precinct Plan (see Figure 1-4).

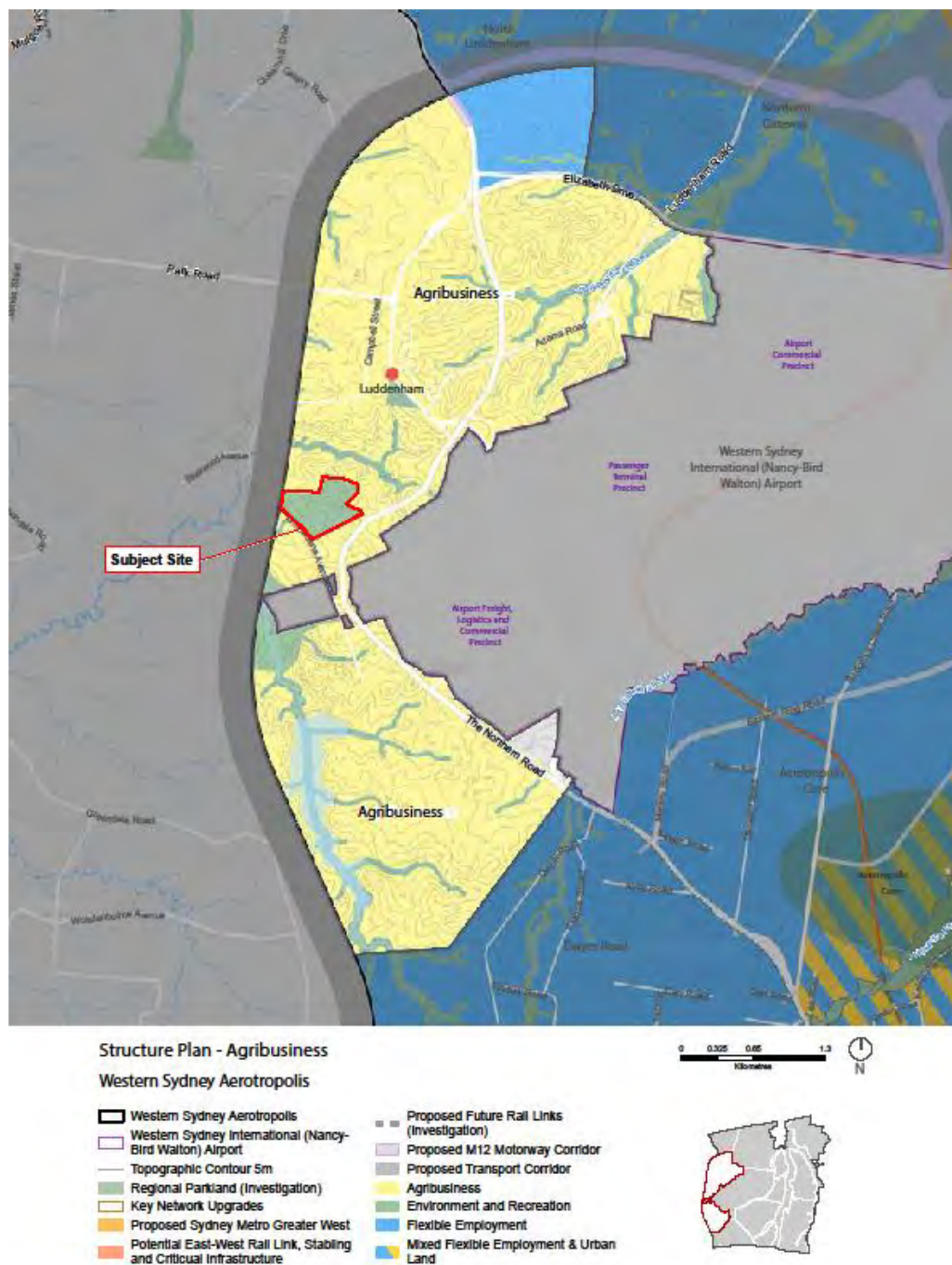


Figure 1-4 Western Sydney Aerotropolis – Agribusiness Precinct - draft Structure Plan (Department of Planning, Industry and Environment, Dec 2019)

1.4 Western Sydney Aerotropolis Discussion Paper on the Proposed State Environmental Planning Policy. Draft – for public comment, December 2019

The SEPP Discussion Paper flags that a State Environmental Planning Policy will be prepared in mid 2020. The SEPP will be the principle Planning Instrument that applies to the Aerotropolis lands. It will implement the WSAP by defining the Aerotropolis Precincts, applying land use zones, setting strategic planning objectives, planning controls and mapping.

The Subject Lands appear to be mapped as “Environment and Recreation” in the draft Structure Plan that is included in the SEPP Discussion Paper (Figure 1-4). In a Green Infrastructure Plan that is also included in the Paper, the lands are designated as “Potential for Conservation” (Figure 1-5).

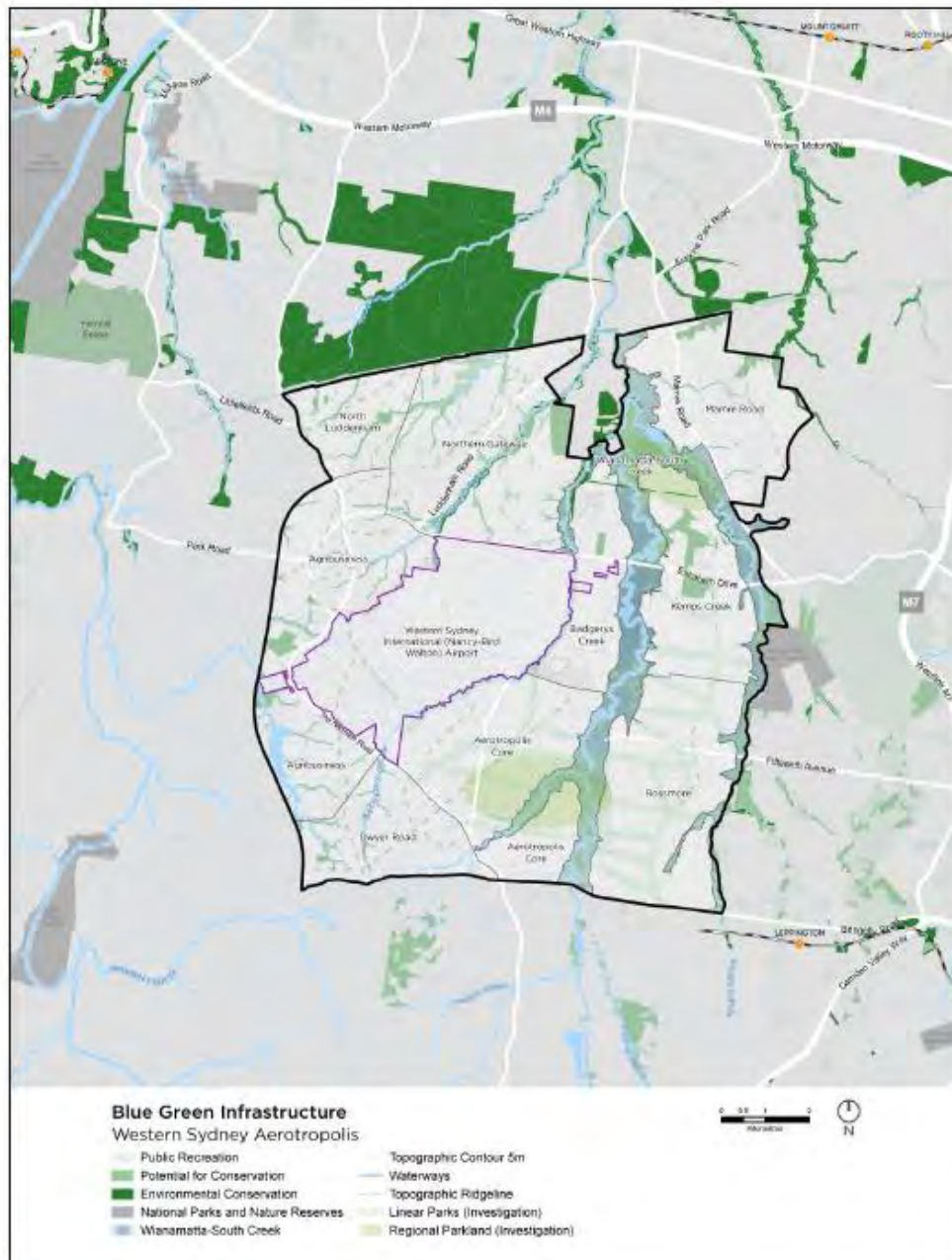


Figure 2 Green Infrastructure

Figure 1-5 Green Infrastructure Plan (Ref: SEPP Discussion Paper, 2019)

1.5 Western Sydney Aerotropolis Development Control Plan 2019. Phase 1. Draft – for public comment, December 2019

A Development Control Plan (DCP) is to be prepared to guide development within the Aerotropolis in order to achieve connectivity, liveability, productivity and sustainability. A number of aims are listed in the 2019 Draft. The following of these are of direct relevance to this submission:

“b) encouraging development that responds to its context and is compatible with the Principles set out in the Western Sydney Aerotropolis Plan (WSAP);

f) protecting and enhancing the green and blue assets of the area;

g) safeguarding the airport operations of Western Sydney International (Nancy-Bird) Airport(Airport);”

The draft DCP also provides the basis for setting the Aerotropolis Precinct Vision and Place Statements into planning controls. With respect to the Agribusiness Precinct, the following Objectives are of relevance to this submission:

“e) Allow for the successful implementation of the blue-green grid for the Western Parkland City.

j) Ensure development of the precinct in a logical and staged manner.

l) Protect the operations of the Airport, including 24-hour operations and provide appropriate protections for the community.”

1.6 Implications of the Planning Package for the Subject Lands.

In summary, the documents included in the 2019 Planning Package indicate that the Subject Lands should be zoned as Environment and Recreation and, subject to further investigations, they may function as conservation lands. The nature and timing of these investigations is unclear and it is also unclear what the zoning of the land marked as “Potential” would be when the draft Aerotropolis SEPP is prepared.

The status of the Subject Land in the Planning Package leads to significant uncertainty with regard to planning for the land and for nearby properties. To address this, Cardno has carried out a detailed assessment of the ecological value of the land and its potential to fulfil conservation objectives. We have also carried out investigations into the planning implications of zoning the land as Environment and Recreation. And finally we have done a high level assessment of the suitability of the subject land for Agribusiness purposes. We recommend that the outcomes of the ecological assessment and planning investigations should inform the next round of decisions regarding the zoning of the land in the draft SEPP.

1.6.1 Ecological values

Cardno has carried out a detailed assessment of the biodiversity values of the Subject Lands. A report on the results of the assessment is attached to this submission (see attachment). This assessment was completed via the following process:

- > A desktop ecological investigation was carried out, including a review of:
 - Existing mapping of the site as per the Draft Western Sydney Aerotropolis Plan;
 - Existing vegetation mapping as available in NSW BioNet Vegetation Information System (NPWS 2002);
 - Local threatened species records within the NSW BioNet Atlas; and
 - Relevant Threatened Ecological Community description and assessment guidelines (DEWHA 2010; DoPIE 2019)
- > On the 16 January 2020, a site inspection and Random Meander Transect (RMT) was completed by Cardno ecologists Dr Andrew Smith and Dr Adriana Mothe with the intention of:
 - Identifying biodiversity values at the site, including the presence of native vegetation (including threatened ecological communities (TEC)), threatened flora and fauna species and habitat for fauna;
 - Assessing the general condition of the site in terms of disturbance and/or condition;
 - Establishing the presence of, or finding signs of occurrence of, the threatened species and ecological communities identified in searches of the BioNet atlas and vegetation mapping.

- Based on the outcomes of the desktop and site investigations, conclusions were drawn regarding the ecological values of the Subject Lands and merits or otherwise of setting the lands aside for conservation purposes.

The vegetation mapping at Figure 1-6 illustrates the extent of native vegetation that occurs on the Subject Lands. It also indicates the results of the Cardno ecologists' assessment of the ecological quality of the vegetation.



Figure 1-6 Vegetation on the Subject Lands

The mapping also indicates that, notwithstanding its condition, the native vegetation is isolated from significant tracts of native vegetation in moderate to good condition.

In summary, the outcomes of the Cardno ecological assessment of the Subject Lands were:

- > Large proportions of the three properties have been disturbed or have been otherwise cleared of indigenous vegetation. Approximately 38% of the land area within the Subject Lands (10.32ha of the total 26.75ha land area) is cleared of native vegetation and is considered for this reason to be of minimal ecological value.
- > The native vegetation present on the Subject Lands is commensurate with the *Cumberland Plain Woodland in the Sydney Basin Bioregion*, which is listed as critically endangered under the Biodiversity Conservation Act (BCA) and the Environmental Protection and Biodiversity Conservation Act (EPBC). Mapped native vegetation constitutes a total area of 16.53ha on the Subject Lands.
- > Of the total area of native vegetation, 6.65ha (40%) was assessed as being in Moderate condition and 9.9ha (60%) was assessed as being in Low condition. Impacts on the quality of the indigenous vegetation identified on the Subject Lands included:
 - Loss of native understorey;
 - Condition of the native trees which, where the communities were assessed as being in low condition, included dead “stags”, and trees with significant dieback or evidence of borer attack; and
 - Lack of connectivity to other remnants of native vegetation in moderate to good condition. The Subject Lands are isolated from other vegetation by Willowdene Avenue to the south west, the Sydney Orbital corridor to the west and the Northern Road realignment to the south east (currently under

construction). The mapping at Figure 1-9 also indicates that the vegetation is disconnected from other native vegetation on the remaining boundaries of the Subject Lands.

- > The ecologists' overall opinion is that the cleared land and the land that supports native vegetation that has been assessed as being of low ecological value would have a correspondingly low potential for conservation.
- > Native vegetation on the Subject Lands that has been assessed as being in Moderate condition is also considered by the ecologists as having a low potential for conservation due to its isolation and lack of connectivity to other tracts of native vegetation in moderate to good condition in the local area.

1.6.2 Urban planning

1.6.2.1 Land capability assessment

Cardno has carried out a high level assessment of the suitability capability of the land for recreation and conservation functions against its suitability for agribusiness. The assessment has considered existing conservation values, connectivity to intact bushland, implications for proximity to the airport (specifically the western runway), connectivity to existing and future transport and impacts on viability of adjoining properties. Each of these elements is discussed below.

1.6.2.2 Existing conservation values

The Cardno ecological assessment has found that, although the native vegetation on the Subject Lands falls within the technical definition of Cumberland Plain Woodland, its condition and viability as an ecological resource is limited. Agricultural grazing, weed infestation, and variable condition of tree stock has led to an assessment of the quality of the ecological community as low to medium, with 60% of the vegetation being allocated a low rating for ecological quality. Further, a significant portion (38% of the total land area) is cleared of bushland and/or supports existing housing and ancillary buildings. This land is considered to have no value for ecological conservation purposes and would require complete bushland regeneration to be considered worthy of an environmental based zoning.

1.6.2.3 Connectivity to viable bushland corridors

Figure 1-9 indicates that the medium quality native vegetation on the Subject Lands is generally confined to the south west portion of the lands, addressing Willowdene Avenue. The remainder of the mapped native vegetation, apart from a small portion at the northern boundary of Lot 18, DP258581, has been assessed as Low quality.

Figure 1-7 shows Stream Order in the Catchment that includes the Subject Lands and illustrates that Duncan Creek is the principle riparian corridor in the catchment, and supports the most significant tract of native vegetation in the locality. Figure 1-7 & 1-8 also include an indication of the proposed location of the Western Sydney Orbital Motorway corridor. Figures 1-9 and 1-10 show listed native vegetation in the locality and within and adjacent to the Subject Land, again with the proposed Orbital Corridor overlaid. The mapping indicates that when implemented, the Orbital Corridor will result in loss of a significant portion of the Medium Quality vegetation on Lot 18 and will truncate any potential connection between the vegetation on the Subject Lands and the Duncans Creek riparian corridor. We consider that this loss of connectivity with local riparian / vegetation corridors to be a major constraint on the viability of the vegetation on the Subject Lands for conservation purposes.

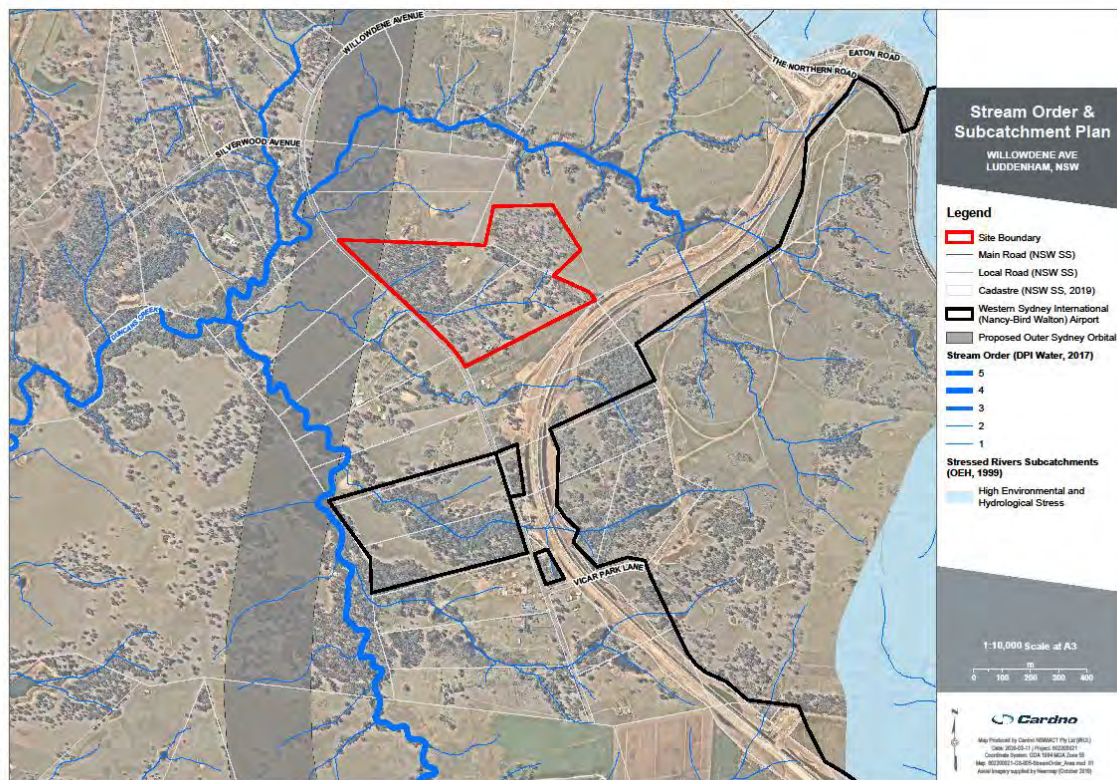


Figure 1-7 Stream order and transport corridor – catchment level



Figure 1-8 Stream order and transport corridor – site level

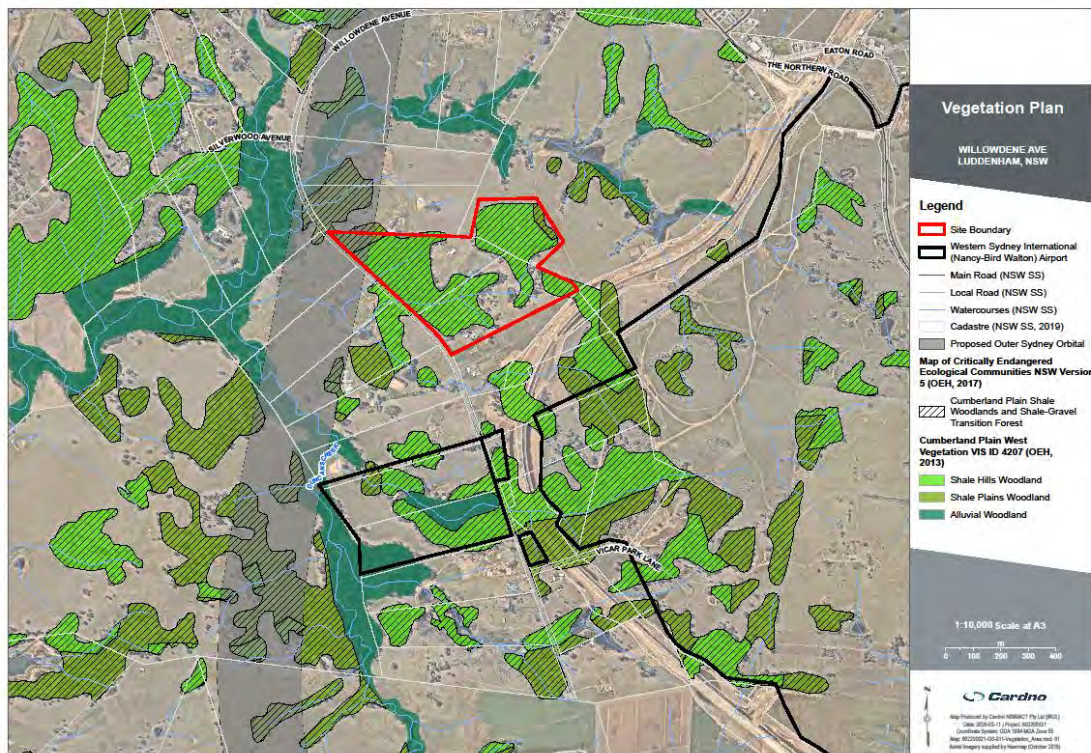


Figure 1-9 Scheduled vegetation map with transport corridors overlaid – catchment level

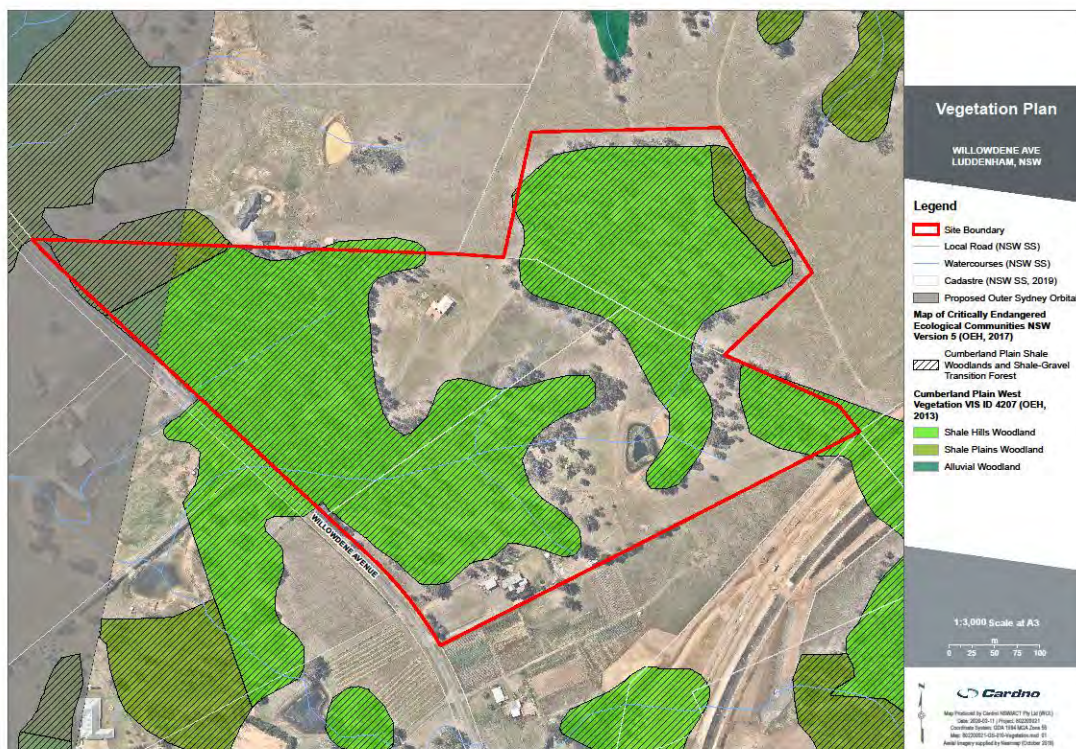


Figure 1-10 Scheduled vegetation map with transport corridors overlaid – site level

1.6.2.4 Proximity to the airport

Figure 1-2 illustrates the location of the Subject Land in relation to the Western Sydney International Airport. The Figure indicates that the Subject Lands range in distance from 250m to approximately 1km from the boundary of the Airport lands and approximately 800m from the southern end of the proposed western runway. The land would be in the order of 400 – 500m from the flight path for this runway. There are a number of controls proposed in the Planning Package that are aimed at protecting the operations of the airport and

managing the associated risks. The location of the Subject Land and their proximity to the airport has implications for at least one of these controls:

- > Wildlife strike risk – Figure 1-11 is an extract from the SEPP Discussion Paper, indicating Wildlife Buffer Zones to the airport. The Subject Lands are located within the 3km Buffer Zone. Airport Safeguarding measures proposed to be included in the SEPP include, amongst others:
 - “implementation of performance-based outcomes and acceptable solutions in the assessment of potentially incompatible land uses;
 - landscape design principles which will reduce wildlife attraction within a 3km, 8km and 13km radius of the Airport as mapped on the Wildlife Map;”

Landuses and their corresponding risk with regard to wildlife strike are described in “*The National Airports Safeguarding Framework, Guideline C – Managing the Risks of Wildlife Strikes in the Vicinity of Airports.*” (Australian Government). The Guideline includes a land use table with corresponding level of risk for wildlife strike and corresponding recommended actions. Conservation in a dryland environment is allocated a Moderate Risk in the table and it is recommended that Mitigation to manage the risk is carried out on land within 3kms of an airport. Conversely, the Agribusiness zone as proposed would permit a range of uses that are listed in the Guideline as resulting in low to very low risk for wildlife strike.

In light of these proposed controls and the potential risk to aviation activities posed by Conservation based land uses, we maintain that more detailed investigations of the implications for wildlife strike should be carried out prior to finalising any decision to zone the Subject Lands for Environmental and Recreation uses.

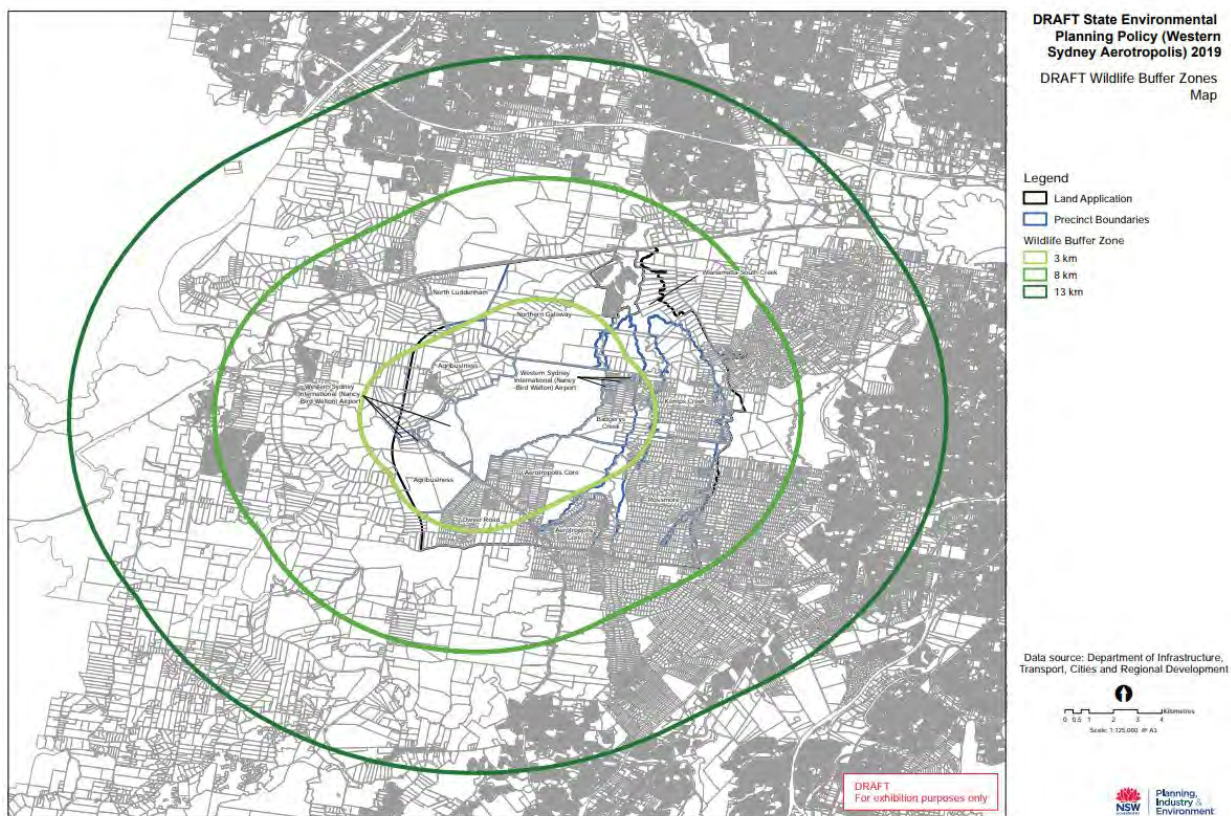


Figure 1-11 Draft Wildlife Buffer Zones Map – extract draft SEPP Western Sydney Aerotropolis, 2019

1.6.2.5 Planning merits of recreational uses

The planning outcome of this proposed rezoning would be a single parcel of recreational land in the order of 2ha in size. The land does not appear to have any inherent recreational values and it would be isolated from other recreational land proposed in the local riparian corridor lands.

From a planning perspective our opinion is that land uses permissible under the Agribusiness Zone would be unlikely to create a significant demand for a dedicated single parcel of recreational land as would be the result of the proposed zoning of the Subject Land. Rather, given that the Agribusiness Zone would be founded on commercial activity, it would seem to be more appropriate to include controls aimed at providing recreational

facilities in a campus style environment. This could be achieved via masterplanning for the Precinct, allowing for recreation uses on public and private land delivered as part of an integrated planning process. This approach would result in an integrated network of recreational facilities within the Precinct to serve the recreational needs of workers and visitors while avoiding the risk of sterilising land that may be suitable for Agribusiness prior to an orderly Precinct masterplanning process.

1.6.2.6 Suitability for agribusiness purposes

Our high level assessment of the land is that there are no significant constraints to development and it would be well suited to agribusiness based land uses.

Hydraulics and flood

The land is not flood affected and does not support designated riparian corridors. Figures 1-7 & 1-8 illustrate that the land supports 1st Order Streams only. In the absence of other constraints, including flood, the presence of these low order streams is not sufficient constraint to preclude the land from development for agribusiness purposes via zoning. Any protection required would be provided under the Water Management Act which would apply at the development application level.

Ecological constraints

Our assessment has found that the conservation value of the scheduled Cumberland Plain Woodland on the land is generally low. Moreover, there are significant tracts of land within the greater landholding that have been cleared of native vegetation and have no value for ecological conservation purposes.

Connectivity to regional transport

Figure 1-12 indicates that the Subject Lands would be immediately adjacent to the realigned Northern Road which would provide direct access to the Airport and, via Elizabeth Drive to the future Western Sydney Orbital. This connectivity to regional transport is a contributing factor to the value of the land for Agribusiness uses.

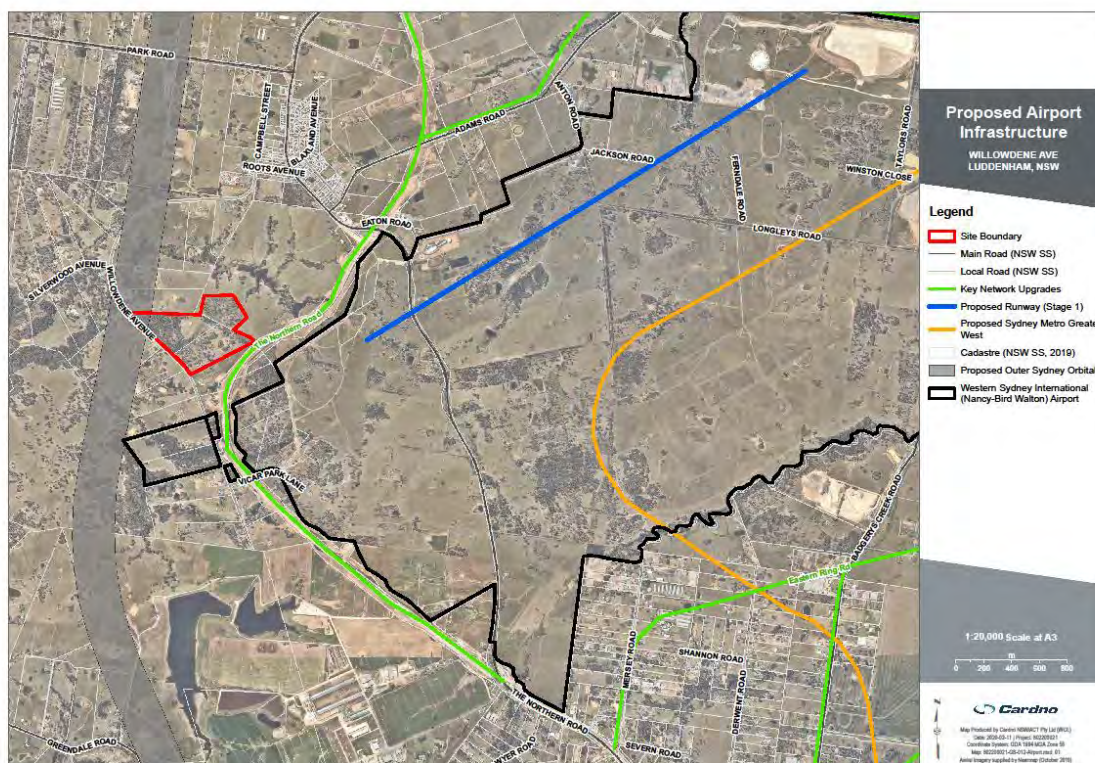


Figure 1-12 Subject lands in context - Connectivity to regional transport

1.6.2.7 Impacts on adjoining properties

Figure 1-13 illustrates that zoning of the entire Subject Lands for Environment and Recreation will result in isolation of the small land parcel to the south east of the Subject Land. This triangular shaped land parcel would be restricted by the Northern Road corridor to the south east, Willowdene Avenue to the west. If the entire Subject Land was zoned for Environment and Recreation, we consider that the viability of this remnant

parcel for development for Agribusiness purposes would be significantly restricted by its size, shape and difficulty of access. Our opinion is that this would be a sub-optimal planning outcome.

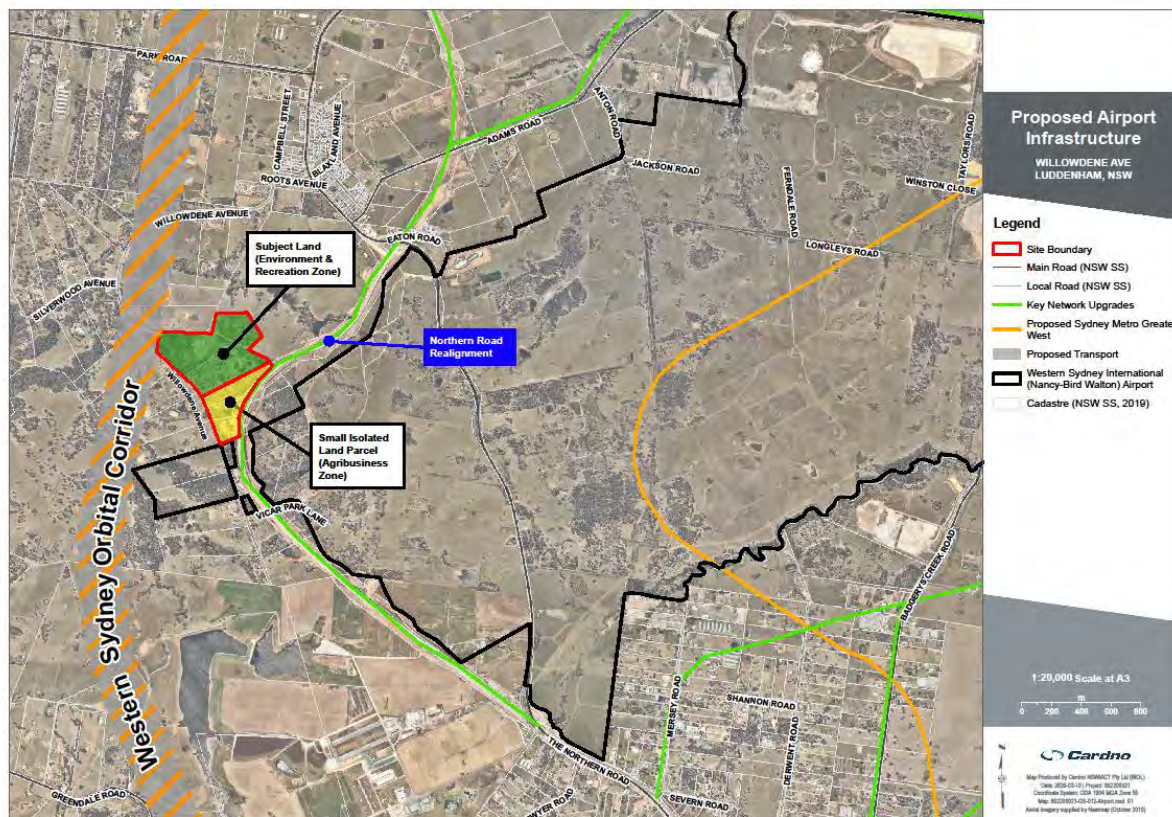


Figure 1-13 Implications for the proposed zone - general planning commentary

1.7 Statutory planning processes

After land zoning is set by the proposed Western Sydney Airport SEPP, development will be subject to a process that includes preparation of Precinct Plans (with allowance for masterplanning by private concerns for land parcels in excess of 100ha in area). Development applications can be lodged for zoned land and will follow the process set by the *Environmental Planning and Assessment Act, 1979*. They will be assessed and determined against the suite of planning laws and statutory controls that apply to the allocated land zoning under the SEPP. Any development application pertaining to the Subject Land would trigger an assessment of impacts on Endangered Ecological Communities listed under the *Biodiversity Conservation Act* against that Act and all other relevant controls and standards. In this regard, the mapped Cumberland Plain Woodland present on the Subject Land would be protected by the relevant legislation and impacts of any proposed development on the Community would require assessment prior to determination of any corresponding Development Application.

In the context of the existing planning regime that applies to the Subject Land, and its potential suitability for uses that would be permissible under the Agribusiness Zone, it is our opinion that:

- > There is sufficient protection for the ecological values of the land under relevant legislation and controls; and,
- > Although zoning of the land as Environment and Recreation would provide some additional statutory protection of these values, the prohibition of Agribusiness based uses on the land would not be justifiable on planning grounds.

1.8 Restriction of development rights and implications for land value

The proposed application of the Environment and Recreation zone will have substantial financial consequences for the landowners. The WSA SEPP Discussion Paper sets out permissible land uses available under the zone as:

- > Environmental protection works

- > Flood mitigation works
- > Environmental facility
- > Information and education facility
- > Kiosk
- > Recreation area
- > Recreation facilities (outdoor)
- > Water recreation structure
- > Road

On 30 April, 2009, the then Department of Planning issued *LEP Practice Note – Standard Instrument for LEPs – Environment Protection Zones (PN 09-002)*. The Department's Practice Note cautioned local councils (and itself) about highly restrictive uses associated with the application of environmental zones. Relevantly:

"Council should be aware that the range of uses should not be drawn too restrictively as they may, depending on circumstances, invoke the Land Acquisition (Just Terms Compensation) Act 1991 and the need for the Minister to designate a relevant acquiring authority. Unless a relevant acquisition authority has been nominated and that authority has agreed to the proposed acquisition, council should ensure, wherever possible, that the range of proposed land uses assists in retaining the land in private ownership." (DoP Practice Note 09-002, p.2).

Our opinion is that the currently proposed zoning of the Subject Land as Environment and Recreation incorporating the highly restrictive land uses listed above meets the circumstances cautioned against by the Department.

1.9 Conclusions and recommendation

Cardno has carried out a high level assessment of the land that is the subject of the submission in order to gain an understanding of:

- > Its value for conservation and environmental purposes.
- > Its value for recreational purposes.
- > The positive and negative implications for the future planning and operation of the Aerotropolis and the Western Sydney Airport of the proposed zoning of the land as Environment and Recreation.
- > The suitability of the land for Agribusiness purposes.
- > The potential consequences for property value.

Based on the outcomes of this assessment, our conclusions are:

- > The Subject Land does not display sufficient ecological or recreational value to be zoned as Environment and Recreation.
- > Zoning of the Subject Land as Environment and Recreation will potentially isolate adjoining land and impact negatively on its viability for development in accordance with its proposed Agribusiness zone.
- > Implications for airport safety need to be more thoroughly assessed before decisions are made regarding the zoning of the Subject Land.
- > The potential ecological values of the Subject Land would remain protected through legislation and planning controls under an Agribusiness zone.
- > Zoning of the land for Environment and Recreation purposes would represent a missed opportunity for development of Agribusiness based uses on land which has been found to be relatively unconstrained and viable for this use.
- > Zoning of the Subject Land as Environment and Recreation, if it were justifiable on planning and ecological grounds, would be inconsistent with the Department's Practice Note for environmental zonings.

Informed by these conclusions, we recommend that the proposed zoning of the Subject Land as indicated in the draft mapping appended to the Western Sydney Aerotropolis SEPP Discussion Paper should be amended from Environment and Recreation to Agribusiness.

We thank the Department for the opportunity to make this submission on behalf of our client group and we would appreciate your consideration of its content.

Finally, we reiterate our request to meet with the Department during the post exhibition deliberations for the Stage 2 WSA Planning Package. We will be in contact in the coming weeks to formalise this request.

Yours sincerely,



[Redacted]
[Redacted]
for Cardno
[Redacted]
[Redacted]

Biodiversity Values and Advice - Luddenham

80220021

Prepared for

26 February 2020



Contact Information

Cardno (NSW/ACT) Pty Ltd

ABN 95 001 145 035

Level 9 - The Forum

203 Pacific Highway

St Leonards NSW 2065

Australia

www.cardno.com

Phone +61 2 9496 7700

Fax +61 2 9439 5170

Document Information

Prepared for	Anthony Ziino
Project Name	Willowdene Avenue, Luddenham
File Reference	80220021_Luddenham_Ecol ogy_20200226_Rev001.doc m
Job Reference	80220021
Date	26 February 2020
Version Number	Rev0

Author(s):

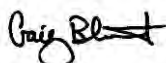


Name: Dr Andrew Smith

Job title: Senior Ecologist

Effective Date 26/02/2020

Approved By:



Name: Craig Blount

Job title: Senior Environmental Scientist

Date Approved 26/02/2020

Document History

Version	Effective Date	Description of Revision	Prepared by	Reviewed by
Rev0	26/02/2020	Final to client	Dr Andrew Smith Dr Adriana Mothe	Dr Craig Blount

© Cardno. Copyright in the whole and every part of this document belongs to Cardno and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or in or on any media to any person other than by agreement with Cardno.

This document is produced by Cardno solely for the benefit and use by the client in accordance with the terms of the engagement. Cardno does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.

Our report is based on information made available by the client. The validity and comprehensiveness of supplied information has not been independently verified and, for the purposes of this report, it is assumed that the information provided to Cardno is both complete and accurate. Whilst, to the best of our knowledge, the information contained in this report is accurate at the date of issue, changes may occur to the site conditions, the site context or the applicable planning framework. This report should not be used after any such changes without consulting the provider of the report or a suitably qualified person.

Table of Contents

1	Background	1
2	Methodology	1
	2.1 Desktop Assessment	1
	2.2 Field Survey	1
3	Results	2
	3.1 Vegetation Mapping	2
	3.2 Flora Species	7
	3.3 Fauna Species	8
4	Discussion	10
5	Conclusions	11
6	References	12

Tables

Table 3-1	Flora species observed.	7
Table 3-2	Fauna species detected.	9

Figures

Figure 3-1	Vegetation Mapping.	6
------------	---------------------	---

1 Background

The owners of approximately 27 ha of land located at Luddenham, adjacent to the western boundary of the proposed Western Sydney Airport, engaged Cardno to undertake a preliminary ecological assessment (the site). The assessment was required to inform a review for the proposed zoning of the site in the draft Western Sydney Aerotropolis State Environmental Policy as Environment and Recreation to ensure that it is consistent with the highest and best use of the land and with proper strategic planning practices.

The site included the following properties:

- > [REDACTED], Luddenham NSW 2745 (hereafter referred to as 260 Willowdene Avenue);
- > [REDACTED], Luddenham NSW 2745 (hereafter referred to as 320 Willowdene Avenue); and
- > [REDACTED] Luddenham NSW 2745 (hereafter referred to as 2215 The Northern Road).

2 Methodology

2.1 Desktop Assessment

Prior to attending the site, Cardno ecologists undertook a desktop study that included a review of:

- > Existing mapping of the site as per the Draft Western Sydney Aerotropolis Plan;
- > Existing vegetation mapping as available in NSW BioNet Vegetation Information System (NPWS 2002);
- > Local threatened species records within the NSW BioNet Atlas; and
- > Relevant Threatened Ecological Community description and assessment guidelines (DEWHA 2010; DoPIE 2019).

2.2 Field Survey

Cardno ecologists Dr Andrew Smith and Dr Adriana Mothe inspected the site on the 16 January 2020 and undertook a random meander transect (RMT) across the three properties with the objective to:

- > Identify biodiversity values at the site, including the presence of native vegetation (including Threatened Ecological Communities (TEC)), threatened flora and fauna species and habitat for fauna;
- > Allocate native vegetation to a Plant Community Type (PCT). In NSW and in accordance with the Vegetation Information System (VIS), native vegetation communities are allocated a PCT number and its common name; and
- > Assess the general condition of the site in terms of disturbance and/or condition.

In particular, the RMT focused on establishing the presence of, or finding signs of occurrence of, the following threatened species and ecological communities given searches of the BioNet atlas and vegetation mapping indicated they had been recorded within and/or in close proximity to the Study Area:

- > Cumberland Plain Land Snail (*Meridolum corneovirens*) – listed as endangered under the NSW *Biodiversity Conservation Act 2016* (BC Act);
- > Grey-headed Flying-fox (*Pteropus poliocephalus*) – listed as vulnerable under the BC Act and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act);
- > Little Eagle (*Hieraaetus morphnoides*) – listed as vulnerable under the BC Act;
- > Dusky Woodswallow (*Artamus cyanopterus cyanopterus*) – listed as vulnerable under the BC Act;
- > *Pimelea spicata* (Spiked Rice-flower) – listed as endangered under the BC Act and EPBC Act; and
- > *Cumberland Plain Woodland in the Sydney Basin Bioregion* – listed as critically endangered under the BC Act and EPBC Act.

3 Results

3.1 Vegetation Mapping

3.1.1

Vegetation present at the property included:

- > Cleared land: Approximately 2.73 ha of the 10.16 ha constituted unsealed access tracks, lawns and residential property with ancillary structures (e.g. water tank) (**Figure 3-1**). This area had undergone clearance and is not native vegetation (**Plate 1**); and
- > Native vegetation: Approximately 7.29 ha of the 10.16 ha constituted native vegetation, which was present on the south-western and north-eastern portion of the land (**Figure 3-1**). This vegetation consists mainly of young trees which had regrowth in an otherwise disturbed area (**Plate 2**). The vegetation therein included native trees with a low native understorey (shrubs and ground layer). Dominant native trees included Forest Red Gum (*Eucalyptus tereticornis*) and Grey Box (*E. moluccana*). Native shrub layer was represented by Native Blackthorn (*Bursaria spinosa*) and wattle regrowth (*Acacia* sp.). The groundcover was poorly represented and included the following native species: Fishweed (*Einadia trigonos* subsp. *trigons*), Kidney Weed (*Dichondra repens*) and Bristly Cloak Fern (*Cheilanthes distans*). Numerous weeds were present in this vegetation zone and there were abandoned vehicles present and evidence of disturbance by rabbits. The vegetation conformed to Plant Community Type (PCT) 850 – Grey Box – Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion, commonly referred to as Cumberland Shale Hills Woodland. This PCT is considered to be commensurate with the Cumberland Plain Woodland in the Sydney Basin Bioregion TEC listed under the NSW Biodiversity Conservation Act 2016 (BC Act) and Commonwealth Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act). The PCT 850 was present in two condition states as follows:
 - PCT 850 - Moderate condition: approximately 6.63 ha; and
 - PCT 850 - Low condition: approximately 0.66 ha.

A dried and significantly eroded creek line is located in the south-eastern portion of the property.



Plate 1: Cleared land within 260 Willowdene Avenue.



Plate 2: Regrowth native vegetation within 260 Willowdene Avenue

3.1.2

Vegetation present at the property included:

- > Cleared land: Approximately 5.53 ha of the 10.16 ha constituted unsealed access tracks, lawns and residential property with ancillary structures (e.g. underground water tank and waste treatment) (**Figure 3-1**). This area had undergone clearance and was not native vegetation (**Plate 3**); and
- > Native vegetation: Approximately 4.63 ha of the 10.16 ha constituted native vegetation (**Figure 3-1**), which was present on the western and northern part of the property but it consisted of highly disturbed land currently used for grazing by cattle and goats (**Plate 4**). This vegetation only contained remnant native trees with no understorey (i.e. shrub and ground layers). At the time of the site inspection, it was noted that many of the trees appeared to have several levels of decay and borer holes were visible on the trunk. Most of the vegetation therein was in low condition. Remnant native trees included Forest Red Gum (*Eucalyptus tereticornis*) and Grey Box (*E. moluccana*). These trees were likely part of the PCT 850 which is considered to be commensurate with the *Cumberland Plain Woodland in the Sydney Basin Bioregion* TEC listed under the BC Act and EPBC Act. PCT 850 was present in two condition states as follows:
 - PCT 850 - Moderate condition: less than 0.01 ha; and
 - PCT 850 - Low condition: approximately 4.63 ha.

A farm dam was present on the northern portion of the property. No other water bodies were present.



Plate 3: Cleared area and residential dwelling at 320 Willowdene Avenue.



Plate 4: Remnant native trees at 320 Willowdene Avenue.

3.1.3

Only the south-western portion of [REDACTED] was inspected.

Vegetation present at the property included:

- > Cleared land: Approximately 2.15 ha of the 6.75 ha (study area part of the property) constituted cleared land (**Figure 3-1**). The area had undergone clearance and was not native vegetation (**Plate 5**).
- > Native vegetation: Approximately 4.61 ha of the 6.75 ha (study area part of the property) constituted native vegetation (**Figure 3-1**). The vegetation therein included native trees, with very poor representation of native shrub and ground layers (**Plate 6**). Many of the trees present therein appeared to be regrowth. Native species present therein included Forest Red Gum (*Eucalyptus tereticornis*), Grey Box (*E. moluccana*), Native Cherry (*Exocarpos cupressiformis*), Native Blackthorn (*Bursaria spinosa*), Fishweed (*Einadia trigonos* subsp. *trigons*), Kidney Weed (*Dichondra repens*) and Bristly Cloak Fern (*Cheilanthes distans*). Numerous weeds were present, including African Olive (*Olea europaea* subsp. *cuspidata*). It is considered that most of the vegetation in this area was in low condition. Vegetation therein conformed to

PCT 850 which is considered to be commensurate with the *Cumberland Plain Woodland in the Sydney Basin Bioregion* TEC listed under the BC Act and EPBC Act. PCT 850 was present in two condition states as follows:

- PCT 850 - Moderate condition: less than 0.01 ha; and
- PCT 850 - Low condition: approximately 4.61 ha.

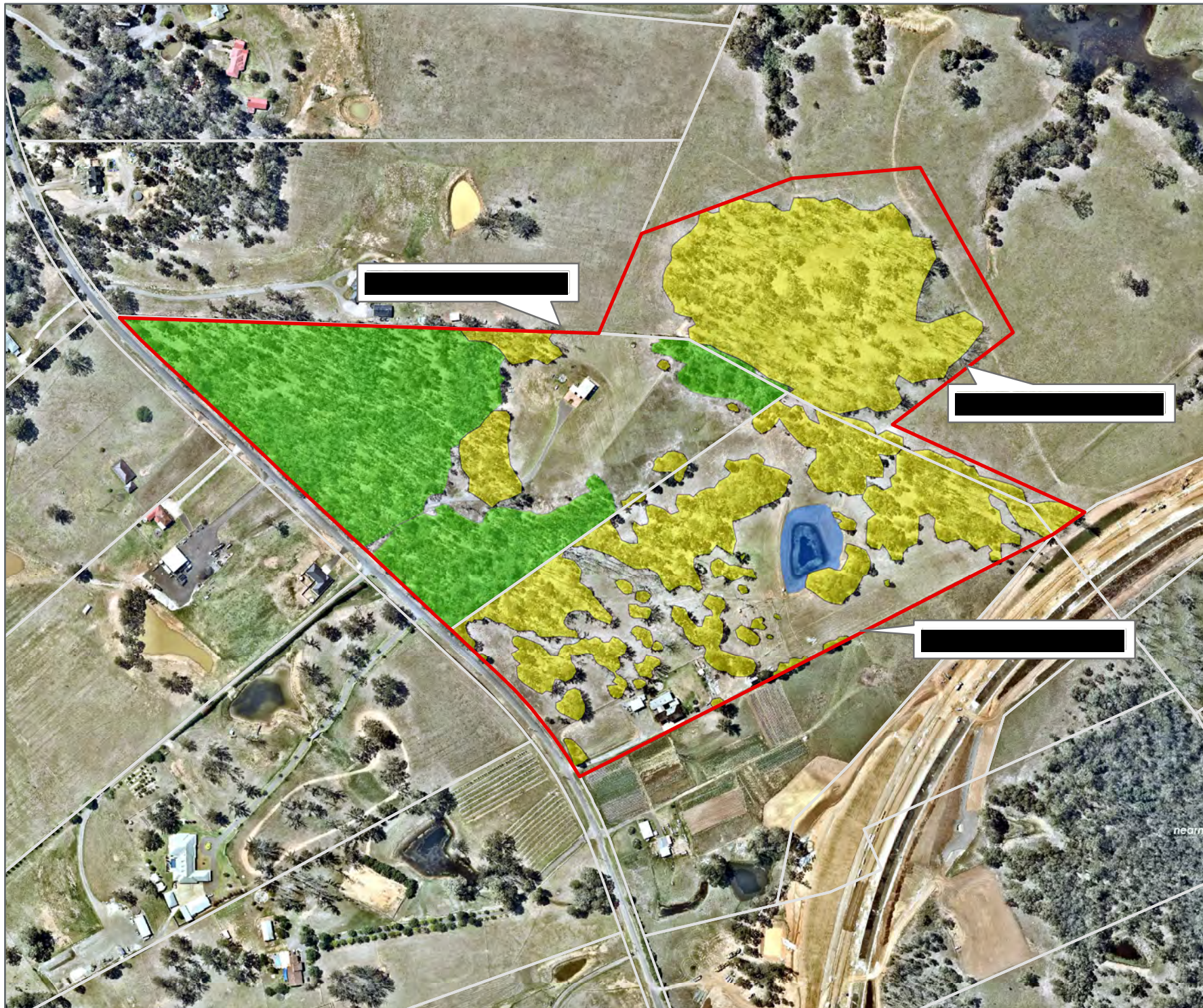
The presence of scats across the area suggested that grazing by cattle and rabbits occurred within the property.



Plate 5: Cleared areas within 2215 The Northern Road.



Plate 6: Native vegetation within 2215 The Northern Road.



Vegetation Mapping

WILLOWDENE AVE LUDDENHAM

Legend

- Study Area
- Cadastre
- PCT 850 Low
- PCT 850 Moderate
- Artificial Dam

FIGURE 3-1

1:5,000 Scale at A4

0 20 40 60 80
m



Cardno

Map Produced by Cardno NSW/ACT (Water & Environment)
Date: 2020-02-26 | Project: 80220021
Coordinate System: GDA2020 MGA Zone 56
Map: Willowdene Luddenham Vegetation mapping.mxd 01

3.2 Flora Species

No threatened flora species were recorded during the site survey. A total of 35 flora species were recorded across the three properties. These included 24 exotic species (69%) and eleven natives (31%). The list of flora species is presented in **Table 3-1** below.

Table 3-1 Flora species observed.

Family	Scientific Name	Common Name	BC Act	EPBC Act
Trees				
Myrtaceae	<i>Eucalyptus acmenoides</i>	White Mahogany	-	-
	<i>Eucalyptus fibrosa</i>	Broad Leaved Ironbark	-	-
	<i>Eucalyptus moluccana</i>	Grey Box	-	-
	<i>Eucalyptus tereticornis</i>	Forest Red Gum	-	-
Oleaceae	<i>Olea europaea</i> subsp. <i>cuspidata</i> *	African Olive	-	-
Pinaceae	<i>Pinus</i> sp.* (Cultivar)	-	-	-
Santalaceae	<i>Exocarpos cupressiformis</i>	Native Cherry	-	-
Shrubs				
Fabaceae - Mimosoideae	<i>Acacia</i> sp.	a Wattle	-	-
Pittosporaceae	<i>Bursaria spinosa</i>	Native Blackthorn	-	-
Ground Cover				
Adiantaceae	<i>Cheilanthes sieberi</i>	Rock Fern	-	-
Anthericaceae	<i>Dichopogon</i> sp.	Chocolate Lily	-	-
Asteraceae	<i>Cirsium vulgare</i> *	Spear Thistle	-	-
Cactaceae	<i>Opuntia stricta</i> *	Prickly Pear	-	-
Chenopodiaceae	<i>Einadia trigonos</i> subsp. <i>trigonos</i>	Fishweed	-	-
Commelinaceae	<i>Commelina cyanea</i>	Native Wandering Jew	-	-
Convolvulaceae	<i>Dichondra repens</i>	Kidney Weed	-	-
Malvaceae	<i>Malva</i> sp.*	Mallow	-	-
	<i>Sida rhombifolia</i> *	Paddy's Lucerne	-	-
Oxalidaceae	<i>Oxalis perennans</i>	-	-	-
Poaceae	<i>Aristida ramosa</i>	Purple Wiregrass	-	-
	<i>Chloris ventricosa</i>	Tall Chloris	-	-
	<i>Cynodon dactylon</i> *	Common Couch	-	-
	<i>Enteropogon</i> sp.	Windmill Grass	-	-
	<i>Eragrostis curvula</i> *	African Lovegrass	-	-

Family	Scientific Name	Common Name	BC Act	EPBC Act
	<i>Panicum</i> sp.	-	-	-
	<i>Themeda triandra</i>	Kangaroo Grass	-	-
	<i>Vulpia</i> sp.*	Rat's-tail Fescue	-	-
Portulacaceae	<i>Portulaca oleracea</i>	Purslane	-	-
Sinopteridaceae	<i>Cheilanthes distans</i>	Bristly Cloak Fern	-	-
	<i>Solanum prinophyllum</i>	Forest Nightshade	-	-
Solanaceae	<i>Solanum pseudocapsicum</i> *	Jerusalem Cherry	-	-
	<i>Solanum</i> sp.*	-	-	-
Urticaceae	<i>Urtica incisa</i>	Stinging Nettle	-	-
Epiphytes				
Loranthaceae	<i>Amyema miquelii</i>	Mistletoe	-	-
Vines				
Fabaceae/faboideae	<i>Desmodium varians</i>	Slender Tick-trefoil	-	-

Notes: * = Introduced.

3.2.2 Weeds

Two weed species are listed as primary weeds within the Greater Sydney Local Land Services area, which includes the Liverpool LGA where the sites are located. Primary weeds and their biosecurity duty under the NSW *Biosecurity Act 2015* (Bio Act) were:

- > Prickly Pear (*Opuntia stricta*): its biosecurity duty is 'Prohibition on Dealings', the plant "Must not be imported into the State or sold". This species is also listed as a Weed of National Significance (WoNS); and
- > African Olive (*Olea europea* subsp. *cuspidata*): the biosecurity duty for this plant is 'Regional Recommended Measure'. An exclusion zone is established for all lands in Blue Mountains City Council local government area and in Penrith local government area west of the Nepean River. The remainder of the region is classified as the core infestation area. Whole region: The plant or parts of the plant are not traded, carried, grown or released into the environment. Exclusion zone: The plant is eradicated from the land and the land kept free of the plant. Core infestation area: Land managers prevent spread from their land where feasible. Land managers reduce impacts from the plant on priority assets.

It is noted that in accordance with the Bio Act, all landowners must comply with the 'General Biosecurity Duty' which states that "All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable". Under the same act, management of primary weeds must be done in accordance with their biosecurity duty

3.3 Fauna Species

No threatened fauna species were observed during the site survey. A total of 21 fauna species were recorded, including 19 native and two introduced species. Species included one frog, two reptile, 17 bird and one mammal species. Most of the fauna species detected were birds that are common to the general locality. The introduced species observed included the Indian Myna and Rabbit. A full list of the fauna species observed within the Study Area is given in **Table 3-2**.

Table 3-2 Fauna species detected.

Family	Scientific Name	Common Name	BC Act	EPBC Act
Frog				
Hylidae	<i>Litoria dentata</i>	Bleating Tree Frog	-	-
Reptiles				
Scincidae	<i>Lampropholis guichenoti</i>	Pale-flecked Garden Sunskink	-	-
Varanidae	<i>Varanus varius</i>	Lace Monitor	-	-
Birds				
Acanthizidae	<i>Acanthiza nana</i>	Yellow Thornbill	-	-
Columbidae	<i>Geopelia striata</i>	Peaceful Dove	-	-
	<i>Ocyphaps lophotes</i>	Crested Pigeon	-	-
Artamidae	<i>Cracticus tibicen</i>	Australian Magpie	-	-
Corvidae	<i>Corvus coronoides</i>	Australian Raven	-	-
Maluridae	<i>Malurus cyaneus</i>	Superb Fairy-wren	-	-
Monarchidae	<i>Grallina cyanoleuca</i>	Magpie-lark	-	-
Meliphagidae	<i>Manorina melanocephala</i>	Noisy Miner	-	-
Sturnidae	<i>Acridotheres tristis</i> *	Indian Myna	-	-
Hirundinidae	<i>Hirundo neoxena</i>	Welcome Swallow	-	-
Meliphagidae	<i>Manorina melanophrys</i>	Bell Miner	-	-
Nectariniidae	<i>Dicaeum hirundinaceum</i>	Mistletoebird	-	-
Pachycephalidae	<i>Pachycephala rufiventris</i>	Rufous Whistler	-	-
Psittacidae	<i>Psephotus haematonotus</i>	Red-rumped Parrot	-	-
Monarchidae	<i>Myiagra cyanoleuca</i>	Satin Flycatcher	-	-
Rhipiduridae	<i>Rhipidura albiscapa</i>	Grey Fantail	-	-
	<i>Rhipidura leucophrys</i>	Willie Wagtail	-	-
Mammals				
Leporidae	<i>Oryctolagus cuniculus</i> *	Rabbit	-	-

Notes: * = Introduced.

4 Discussion

The site was mapped as 'Potential and Existing Conservation Land' in the Conservation Values – Western Sydney Aerotropolis map of the NSW Department of Planning and Environment's *Western Sydney Aerotropolis – Land Use and Infrastructure Implementation Plan – Stage 1: Initial Precincts* (DoPE 2018). In that map, the site was part of the proposed 'Agriculture and Agribusiness' initial precinct.

The NSW Department of Planning, Industry and Environment (DPIE) released the *Western Sydney Aerotropolis Plan – Draft – for public comment* in December 2019 (DPIE 2019). The site is mapped as part of the Agribusiness initial precinct and is zoned as 'Environment and Recreation' in the Structure Plan – Agribusiness map.

The preliminary assessment of the site indicates that large proportions of the three properties have been disturbed or have had the land cleared of vegetation. Vegetation at the site included:

- > Areas cleared of native vegetation (approximately 10.32 ha of the 27.12 ha of the Study Area) that were considered to have low ecological value. These areas included mowed lawns, housing and other hard surface infrastructure. Although these areas are currently mapped as having environmental importance appears to have a low level of justification. It is recommended that these mapped areas are not included among the areas of ecological importance in the final Structure Plan for Western Sydney Aerotropolis i.e. 'Environment and Recreation';
- > Areas with native vegetation that were present in low to moderate condition and were considered to be commensurate with the *Cumberland Plain Woodland in the Sydney Basin Bioregion*, which is listed as critically endangered under the BC Act and EPBC Act. Based on this preliminary assessment:
 - At 260 Willowdene Avenue, approximately 7.29 ha of native vegetation was considered to be commensurate with the Cumberland Plain Woodland TEC, however, it occurred in a low to moderate condition. Vegetation in moderate condition had the potential to constitute 'significant vegetation' as per the Liverpool LEP 2008. Its current mapping as 'Environment and Recreation' in the draft Structure Plan for Western Sydney Aerotropolis, however, is questionable, due to the lack of connectivity with other patches of native vegetation in moderate to good condition in the local area (i.e. the property is bounded by Willowdene Avenue on the south and cleared or highly impacted vegetation to other sides);
 - At 320 Willowdene Avenue, there was approximately 4.63 ha of highly disturbed native vegetation that was limited to remnant trees within little to not native understorey. Many of the trees were dead stags or had numerous dead limbs with many trees having signs of borer attack. As such, this vegetation is considered to be mostly in a poor condition with limited ecological value. Notwithstanding this, the remnant trees are likely to form part of a Cumberland Plain Woodland TEC. Given most of the vegetation in this lot was considered to be in a low condition, its inclusion as 'Environment and Recreation' in the draft Structure Plan for Western Sydney Aerotropolis is questionable; and
 - At 2215 The Northern Road, approximately 4.61 ha of native vegetation is considered to form part of the Cumberland Plain Woodland TEC, however, it is mostly highly disturbed with a highly disturbed understorey (from cattle grazing) and many trees had died or were showing sign of die back from borer attack. Overall, this vegetation is in low condition and its inclusion as 'Environment and Recreation' in the draft Structure Plan for Western Sydney Aerotropolis is questionable.

5 Conclusions

Based on the preliminary assessment, it is concluded that mapping of many areas of the site as 'Environment and Recreation' in the draft Structure Plan for Western Sydney Aerotropolis warrants modification to more accurately reflect present condition. This is particularly so for 2215 The Northern Road and 320 Willowdene Avenue, where the lack of significant biodiversity value at the properties warrants zoning as Primary Production (RU1) as per the Liverpool LEP 2008. It is noted that the portion of 260 Willowdene Avenue, where Cumberland Plain Woodland in moderate condition occurs, could justifiably continue to be identified as Environmentally Significant Land as per the Liverpool LEP 2008. Given the condition of this area, it would have potential to provide important habitat to native fauna. Notwithstanding this, given this area of vegetation would become isolated from other intact patches of native vegetation as a consequence of the Structure Plan for Western Sydney Aerotropolis, the long term ecological value of this vegetation and its preservation remains questionable.

In summary, it can be concluded that:

- > Limited information was available for justifying some areas presently mapped as 'Environment and Recreation', or conversely, for not being included in this category. Given many of the Environment and Recreation areas presently mapped within the site consist of mowed lawns, housing or have hard surfaces. They would have little ecological value and should probably not be in this category. In contrast, there are other areas within the Western Sydney Aerotropolis zone not included in this category that contain patches of the ecologically important Cumberland Plain Woodland;
- > The 'Environment and Recreation' mapping also included areas that were degraded from grazing by cattle or other live stock. Some areas also included cleared land and patches of paddock trees. The low ecological value of these areas does not justify them being currently mapped as 'Environment and Recreation';
- > Given digital mapping of the site (e.g. shapefile) is not available there is limited information for accurately assessing the quality of the proposed environmental zones;
- > Part 4 of the Draft DCP outlines Risk Minimisation and Management measures. Crucial Performance Outcomes are stated regarding the risk of bird strikes to aircraft and bush fire risk. The DCP needs to be amended to ensure any proposed environmental areas do not impact on the ability to comply with these risks;
- > The National Airports Safeguarding Framework (NASF) Guideline C: Managing Risks of Wildlife Strike in the Vicinity of Airports includes landscape design principles which will reduce wildlife attraction within a 3km, 8km and 13km radius of the Airport as mapped on the Wildlife Map; and
- > It is to be noted that this preliminary assessment assigns vegetation condition based on preliminary assessment only. In order to more accurately determine the condition of PCTs present at the site, it is recommended that detailed floristic plots are undertaken.

Our overall conclusion is that zoning of the entire Subject Land as Environment and Recreation is inappropriate with respect to the ecological values evident on the land. Moreover, the ecological value of the majority of the Cumberland Plain Woodland community on the land is in poor ecological condition and would require substantial rehabilitation work to bring it to an ecologically viable condition. The CPW on the land is also isolated and would be further isolated from connections with local ecological corridors by the works proposed in the draft Western Sydney Aerotropolis Plan.

6 References

DEWHA (Commonwealth Department of the Environment, Water, Heritage and the Arts) (2010). *Cumberland Plain Shale Woodlands and Shale-Gravel Transition forest. A guide to identifying and protecting the nationally threatened ecological community.*
<https://www.environment.gov.au/system/files/resources/3c01d3d1-c135-4d91-a605-f5730975d78c/files/cumberland-plain-shale-woodlands.pdf>

DoPE (NSW Department of Planning and Environment) (2018). *Western Sydney Aerotropolis. Land use and infrastructure implementation plans. Stage 1: Initial Precincts.* August 2018.

DoPIE (NSW Department of Planning, Industry and Environment) (2019). *Cumberland Plain Woodland in the Sydney Basin Bioregion - critically endangered ecological community listing. NSW Scientific Committee - final determination.*
<https://www.environment.nsw.gov.au/Topics/Animals-and-plants/Threatened-species/NSW-Threatened-Species-Scientific-Committee/Determinations/Final-determinations/2008-2010/Cumberland-Plain-Woodland-critically-endangered-ecological-community-listing>

NPWS (NSW National Parks and Wildlife Service) (2002). *Native Vegetation Maps of the Cumberland Plain Western Sydney.*
<https://www.environment.nsw.gov.au/resources/nature/cumbPlainMappingInterpguidelines.pdf>

NSW State Government (2019). *Western Sydney Aerotropolis Plan. Draft – for public comment.* December 2019

About Cardno

Cardno is a professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage and deliver sustainable projects and community programs. Cardno is an international company listed on the Australian Securities Exchange [ASX:CDD].

Contact

Level 9 - The Forum
203 Pacific Highway
St Leonards NSW 2065
Australia

Phone +61 2 9496 7700
Fax +61 2 9439 5170

Web Address
www.cardno.com

