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Sent: Friday, 2 November 2018 4:30 PM
To: [redacted]
Subject: Submission Details for company Cardno (NSW/ACT) Pty Ltd (org_comments)
Attachments: 292190_LandHoldingsAtLuddenham_SubmissionToExhibitionOfTheDraftLUIP_2018-11-2.pdf

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Agreed to false or misleading information statements: yes

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Organisation: Cardno (NSW/ACT) Pty Ltd (Principal, Manager Urban Planning)
Govt. Agency: No
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Content:
Please find attached Cardno's submission to the exhibition of the draft LUIPP on behalf of a consortium comprising 22 parties with interests in approximately 268 hectares of land adjacent to the western boundary of the proposed Western Sydney Airport.

we look forward to the Department's response to this submission.

John O'Grady,
Manager Urban Planning,
Cardno (NSW/ACT) Pty Ltd

IP Address: - 116.50.58.180
Submission: Online Submission from company Cardno (NSW/ACT) Pty Ltd (org_comments)
https://majorprojects.accelo.com/?action=view_activity&id=292190

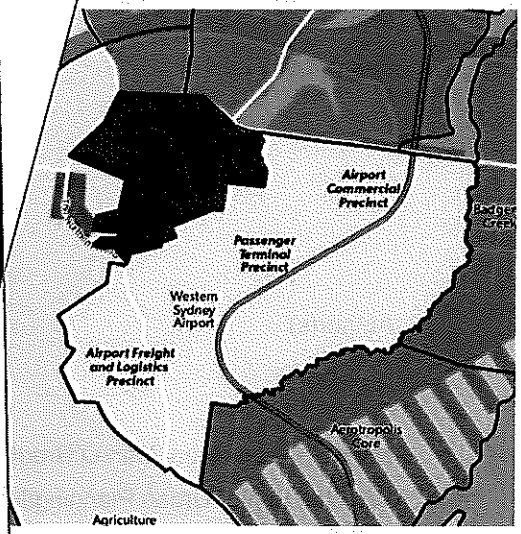
Submission for Job: #9552
https://majorprojects.accelo.com/?action=view_job&id=9552

Site: #0
https://majorprojects.accelo.com/?action=view_site&id=0

Western Sydney Aerotropolis Stage 1 Land Use and Infrastructure Plan

Submission

80219020



Prepared for

Consortium of land owners located to east of the village of Luddenham

2 November 2018

Cardno®

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Document Information

Prepared for	Consortium of land owners located to east of the village of Luddenham
Project Name	Western Sydney Aerotropolis Stage 1 Land Use and Infrastructure Plan
File Reference	Document2
Job Reference	80219020
Date	November 2018
Version Number	B
Effective Date	2/11/2018
Date Approved	2/11/2018

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Document History

Version	Effective Date	Description of Revision	Prepared by	Reviewed by
A	26 October	Draft	Gilead Chen/John O'Grady	John O'Grady
B	1 November	Final Draft	Gilead Chen/John O'Grady	John O'Grady
C	2 November	Final	Gilead Chen/John O'Grady	John O'Grady

Executive Summary

Cardno has been commissioned by a consortium of 22 owners of land situated adjacent to the western boundary of the proposed Western Sydney Airport to prepare a submission on their behalf to the exhibition of the draft Western Sydney Aerotropolis Land Use and Infrastructure Implementation Plan (**the draft LUIIP**). The consortium collectively owns a total of 268.1 hectares of land located adjacent to the western boundary of the proposed airport and extending west to a line close to the eastern edge of Luddenham Village. The land lies within an area coloured yellow and identified on the draft LUIIP Structure Plan as "*Agriculture and Agribusiness*".

The submission has been prompted by the change in the draft LUIIP to historic land use planning for their land. Specifically, the land has changed from employment and urban uses described in recent adopted regional strategic plans to agriculture and agribusiness.

Land to which the submission applies

The land in its context with the draft LUIIP Structure Plan is indicated below.

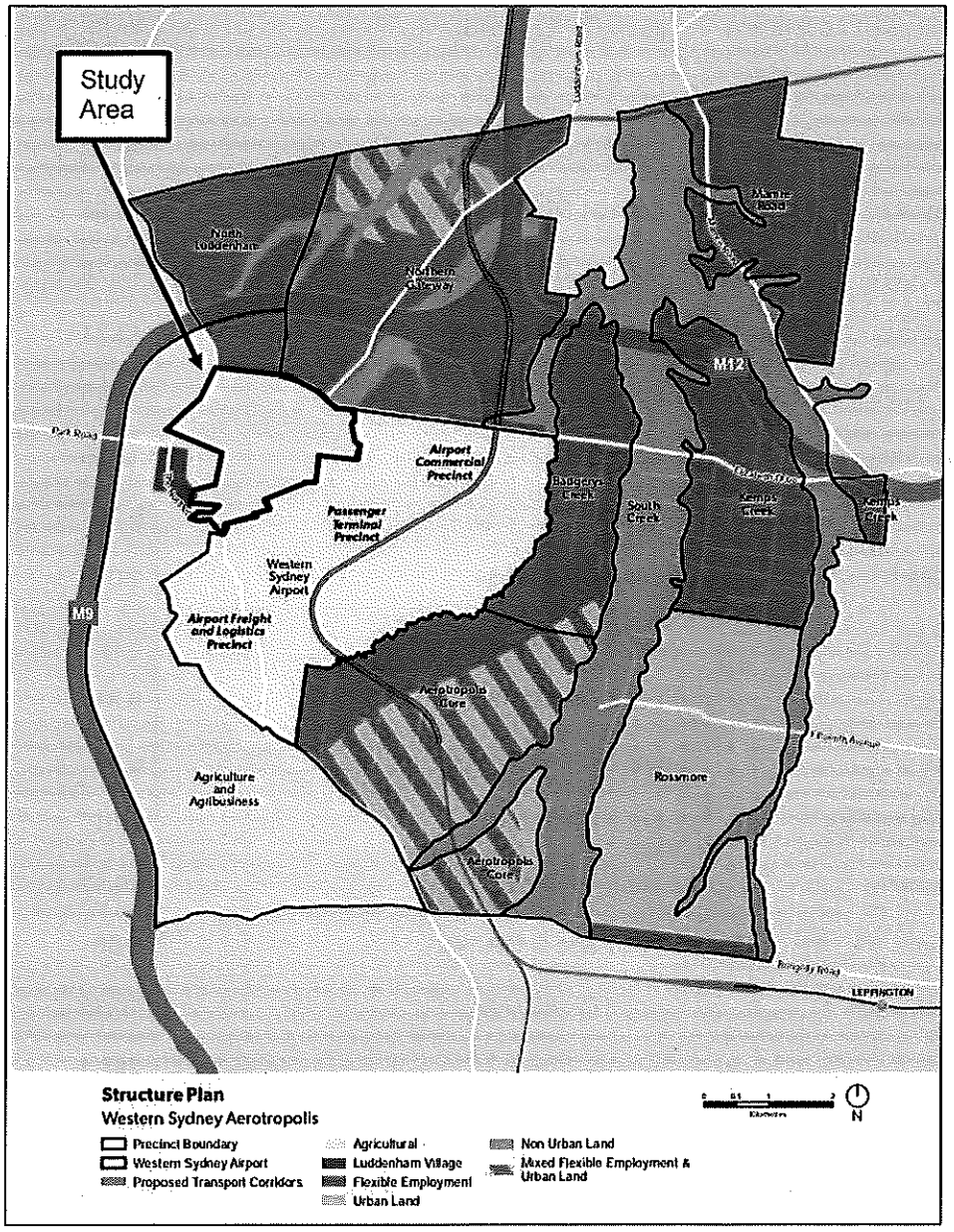

Figure 1-1 Structure Plan – Western Sydney Aerotropolis

Source: Department of Planning & Environment, 2018, Western Sydney Airport – Land Use and Infrastructure Implementation Plan (Stage 1: Initial Precincts)

The consortium of landowners that has commissioned Cardno to prepare this submission has interests in the following land parcels.

Address	Legal Title	Area (Hectares)
2600 Elizabeth Drive, Luddenham	Lot 1 DP 220176	11.53
2550 Elizabeth Drive, Luddenham	Lot 2 DP 220176	11.53
2680 Elizabeth Drive, Luddenham	Lot 9 DP 1240511	11.33
2448 & 2450 The Northern Rd, Luddenham	Lot 1 DP 517853	7.77
2422-2430 The Northern Road, Luddenham	Lot 7 DP 1240511	10.28
2422-2430 The Northern Road, Luddenham	Lot 6 DP 1240511	13.27
2422-2430 The Northern Road, Luddenham	Lot 5 DP 1240511	13.52
140 Adams Road, Luddenham	Lot 103 DP 846962 and Lot 4 DP 1240511	14.20
140 Adams Road, Luddenham	Lot 104 DP 846962 and Lot 3 DP 1240511	15.86
180 Adams Road, Luddenham	Lot 105 DP 846962	15.78
230 Adams Road, Luddenham	Lot 106 DP 846962	43.71
2382 The Northern Road, Luddenham	Lot 1 DP 232996	16.18
2310 The Northern Road, Luddenham	Lot 2 DP 827223	12.95
2292 The Northern Road, Luddenham	Lot 3 DP 827223	9.06
90 Adams Road, Luddenham	Lot 2 DP 519034	1.01
65 Adams Road, Luddenham	Lot 2 DP 250030	7.28
40 Eaton Road, Luddenham	Lot 4 DP 1234822	9.31
70 Eaton Road, Luddenham	Lot 70 DP 1091926	6.88
105-115 Adams Road, Luddenham	Lot 3 DP 250030	9.51
145 Adams Road, Luddenham	Lot 5 DP 250030	10.12
1 Anton Road, Luddenham	Lot 1 Sec C DP 1451	6.88
205 Adams Road, Luddenham	Lot 2 DP 623799	10.12
	Total Area	**268.1**

Table 1-1 Consortium of landowners

Source: Cardno, 2018

For the purposes of a holistic urban planning assessment, Cardno has identified a study area that includes all of the Consortium lands listed above but extends to boundaries as indicated at Figure 1-2.

The nominated study area (**the study area**) includes the Consortium's landholding and expands to include land bounded by Elizabeth Drive, the Northern Road and the western boundary of the proposed airport that falls within the Western Sydney Employment Area (**WSEA**) as indicated in *State Environmental Planning*

Policy (Western Sydney Employment Area) 2009 (**SEPP-WSEA, 2009**). The study area has a total area of 387 hectares.

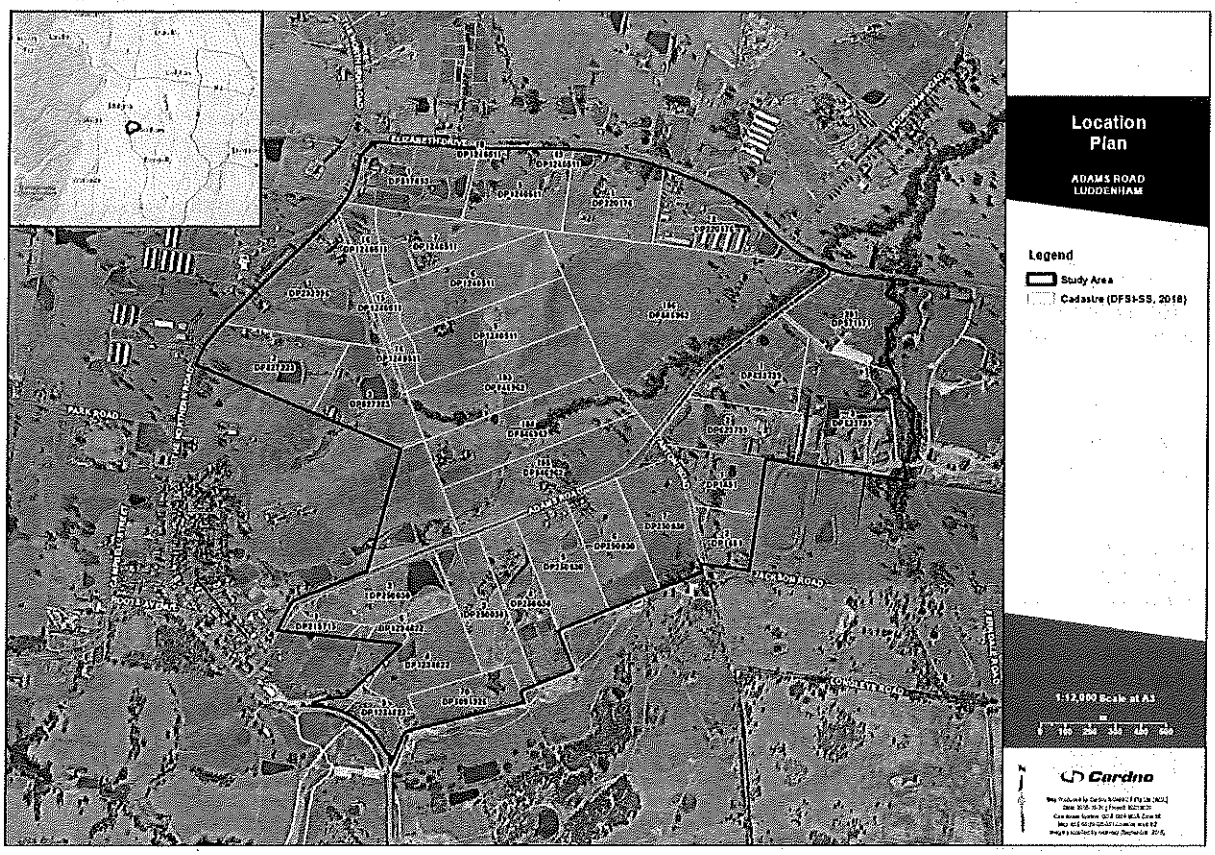

Figure 1-2 **Location Map**
Source: Cardno, 2018

Process

Cardno has carried out an assessment of this study area using the following process:

1. Review of the strategic planning background of the study area in the context of current and historic regional planning;
2. Undertaking of a strategic land use and high level land capability assessment of the study area to:
   - Identify physical and environmental factors affecting the capability for development of the Study Area lands for agricultural and employment uses;
   - Determine an appropriate developable land area for the Study Area and make a high level assessment of the potential quantum of developable land.
3. An analysis of Australian and international precedents of agribusiness related land uses and implications for introducing agribusiness within the study area.
4. A high level economic analysis of the study area with respect to various land use scenarios in order to form an opinion on the economic viability of high intensity agriculture in Western Sydney and the outcomes of agriculture / agribusiness against flexible employment land uses with regard to employment generation and economic returns.
5. A high level review of the implications of the existing and planned transport infrastructure in the locality with respect to the suitability of the study area for the land uses contemplated by the draft LUIIP.

Outcomes

The outcomes of this process and recommendations with regard to the draft LUIIP as it applies to the study area are summarised below.

1. Strategic planning

The study area has historically been included within the Western Sydney Employment Area under *State Environmental Planning Policy (Western Sydney Employment Area) 2009* and its 2014 Amendment. It was identified as "employment lands" in the draft WSEA Structure Plan (Department of Planning and Infrastructure, 2013) and was partially identified as "Industrial and Urban Services" Land in the Western City District Plan.

Conversely, the Study Area is generally not included in mapping of agricultural production lands in currently adopted strategic planning for Western Sydney. It is excluded from mapping of biophysical strategic agricultural land (**BSAL**) under *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) -Biophysical Strategic Agricultural Land Mapping*; and is not included in the Metropolitan Rural Area mapped in the Western City District Plan.

The Western Sydney Airport Environmental Impact Statement points to a decline in agricultural production activities in Western Sydney, particularly in the vicinity of the new airport and a transition of land use in the vicinity from "*rural residential and agricultural lands to more developed land uses*" (Western City Airport EIS).

Strategic planning objectives within key plans (A Metropolis of Three Cities, The Western City District Plan and the draft Aerotropolis LUIIP) are aimed at increasing employment opportunities on land in the vicinity of the Western Sydney Airport.

We understand that the NSW Department of Primary Industry is currently preparing a study to assess the viability of Agribusiness in Western Sydney and that this will inform the preparation of the Stage 2 LUIIP. Our opinion in this regard is that allocation of the Agribusiness land use category to any location within the draft Structure Plan should be postponed until the findings of the Primary Industry study are released and the use should only be indicated on the Structure Plan if the Study finds that the agribusiness use would be viable in the specific location proposed.

2. Land capability and land use planning

Capability assessment has been carried out with reference to existing mapping bases. The findings of the assessment in summary are:

- The land is essentially unsuitable for intensive agricultural uses. The NSW Office of Environment and Heritage Land and Soil Capability mapping (OEH, 2017) maps the land as having Moderate to Very Severe Limitations for high intensity agricultural land use practices.
- The study area lies within the same water catchment as the Northern Gateway and land use planning should reflect this.
- The land within the study area is not flood prone and is not subject to bushfire hazard.
- The majority of the study area would not be affected by airport noise for employment land use purposes. Airport noise would, however, be a significant restriction on intensive livestock farming practices.
- When constraints to development are accounted, (specifically riparian corridor and topographical constraints), the land would be likely to yield approximately 217 hectares of its total 387 hectares as land generally unconstrained for conventional development.

3. Review of precedents for agribusiness

Cardno has carried out a high level review of precedents for agribusiness in Australia and overseas. We have also had informal discussions with officers of the NSW Department of Primary Industry on the topic of intensive agriculture and potential land use conflicts if these uses are located in close proximity to airports.

The outcomes of this review are:

- Agribusiness initiatives have been successful locally and overseas where they build on already strong centres of intensive agricultural industry and where intensive agriculture is an existing key contributor to the local or national economy.
- Agribusiness precincts exhibit the following key characteristics:
    - They are initiated and supported by Government;

- They have access to but are located remote from transport hubs;
- They include clusters of food-related enterprises, and are not only agriculture focussed;
- They include concentrations of functions and cooperation in activities, enabling sharing of resources and facilities (i.e. energy);
- They incorporate a diverse range of uses which complements agribusiness such as business parks, offices, warehousing and logistics services, distribution centres, universities and research institutes and government institutions; and
- They are often anchored by major universities and research institutes or significant tenants.

- There is significant potential for conflict between airport uses and the forms of intensive agriculture associated with Agribusiness. Such conflicts may include aircraft noise impacts on intensive livestock farming.
- Conversely, intensive cropping has the potential to attract bird life which may constitute a hazard to aviation. The National Airports Safeguarding Framework (NASF) identifies a range of uses associated with Agriculture and Agribusiness (piggeries, fruit tree farming and food processing) as of high risk for bird strike within an 8km radius of an airport. Dairy and poultry farming is identified as high risk within a 3km radius. For new development, most of these uses are identified as Incompatible with aircraft operations within 3 to 8km radii.
- Close co-location of differing intensive agricultural activities may be a biosecurity hazard. Colocation of incompatible agricultural enterprises requires substantial land buffers between the uses to control biosecurity contamination hazards which may result in inefficient use of land resources.

4. Economic implications

Analysis of the implications for the local and regional economy of development within the study area has been carried out by HillPDA. The analysis has concluded:

- The economic viability of traditional agricultural practices and of high tech / intensive agriculture is likely to be significantly impacted in the Study Area as a result of environmental factors associated with the proximity of the Western Sydney Airport.
- The study area is far more economically viable for flexible employment uses than for agricultural and agribusiness uses. This is the result of:
    - Its identified environmental suitability for employment related uses and its OEH mapped incompatibility with agricultural uses; and
    - Its proximity to the airport and to a committed suite of transport infrastructure improvements that will greatly enhance its connectivity to local and international markets.
- Under flexible employment uses it has been estimated that the study area would generate 23,000 new jobs and would contribute a Gross Value Add (GVA) to the economy of $2.38 billion. This is compared with 1,550 new jobs and a GVA of $237 million under high tech agricultural uses and 4,850 jobs and a GVA $635 million under logistics related uses.

5. Transport infrastructure implications

Our investigations have found that the study area will be uniquely connected to a comprehensive transport infrastructure network via improvements which are either committed or currently under construction. Planned and commenced transport infrastructure improvements are mapped at Figure 2-3. They will:

- Better connect the study area to the proposed Northern Gateway and to the M4 Motorway (via amplification and re-alignment of the Northern Road so that it will run through rather than around the study area with a new intersection at Adams Road);
- Improved freight carrying capacity via upgrades to the Northern Road and Adams Road coupled with existing freight capacity on Elizabeth Drive. We understand also that Anton Road is to be upgraded to provide access to the airport for fuel delivery.
- General improvements to transport connections locally and regionally via construction of the new M12 Motorway. The proposal will include a new at grade connection to The Northern Road, providing direct access between the study area and the airport along with the Parramatta, Liverpool and Sydney CBD's.

- Connection to the under investigation M9 multi-modal corridor (Outer Sydney Orbital) which would provide comprehensive north-south regional transport access.
- Comprehensive access to public transport to regional centres via:
    - The planned Northern Road Rapid Bus Service; and
    - Direct connection to the proposed south west rail link and the potential extension to the Sydney West Metro via rail stations at the airport.

Recommendations

Our detailed recommendations are based on the following findings:

- Precedents and objectives in strategic planning for western Sydney which are based on job creation around the airport and identify the land for employment purposes;
- Flexibility in landuse outcomes that are inherent in the Flexible Employment landuse category - Agribusiness may not be a suitable use for the land but the Flexible Employment category would allow for this use without precluding other employment generating uses
- Comprehensive connectivity of the study area to local and regional transport infrastructure, current and planned;
- Water catchment related planning principles;
- Identified high land capability for employment related land uses (land is not flood affected and would not be significantly affected for employment uses by airport noise);
- Identified general unsuitability for intensive agricultural purposes;
- Locational inconsistency with representative national and international examples of Agribusiness and identified conflicts between agribusiness and airport related activities.

On the basis of these investigations our recommendations with regard to the Study Area and its classification in the Stage 2 LUIIP are:

- The Study Area should be incorporated into the area indicated on the draft Structure Plan (Figure 1-1) as the Northern Gateway;
- The designation of the Study Area on the draft Structure Plan should be changed from Agriculture and Agribusiness to Flexible Employment
- Any decision to retain the Agribusiness category in the LUIIP structure plan must be informed by the outcome of the Department of Primary Industries study on the viability of agribusiness in this locality.

We recommend that the next iteration of the Land Use and Infrastructure Implementation Plan should reflect this revised categorisation.

Table of Contents

Appendices

Tables

Figures

1 Introduction

1.1 Background and synopsis of recommendations

The Western Parkland City is one of three identified in the 40 year vision for Greater Sydney - A Metropolis of Three Cities. The city is to develop around the planned Western Sydney Airport. The Western Sydney Aerotropolis Land Use and Infrastructure Implementation Plan is the urban planning vehicle for delivery of the Western Parkland City as a hub for employment and housing around the developing Airport. The draft LUIIP formulates a vision and identifies a first-stage Structure Plan to illustrate the rationale for three initial precincts within the Aerotropolis.

The consortium that has commissioned Cardno to prepare this submission collectively owns approximately 275 hectares of land located adjacent to the western boundary of the proposed airport and extending west to a line close to the eastern edge of Luddenham Village. The land lies within an area coloured yellow and identified on the draft LUIIP Structure Plan as "*Agriculture and Agribusiness*".

- The Study Area should be incorporated into the area indicated on the draft Structure Plan (Figure 1-1) as the Northern Gateway;
- The designation of the Study Area on the draft Structure Plan should be changed from Agriculture and Agribusiness to Flexible Employment
- Any decision to retain the Agribusiness category in the LUIIP structure plan must be informed by the outcome of the Department of Primary Industries study on the viability of agribusiness in this locality.

These recommendations have resulted from a process of urban planning, environmental and economic investigations that is described in the submission.

1.2 Objectives of this submission

The draft LUIIP has a function to *"provide a foundation for a conversation with the community and industry, enabling a collaborative approach to the finalisation of the Plan, which will set the strategic direction for the Aerotropolis."* (Draft LUIIP, Executive Summary). In response, the overarching objectives of this submission are:

- To carry out a high level capability and suitability analysis of the subject land in order to inform decisions on its highest and best use from an urban planning perspective
- To carry out a comparative analysis of potential future uses of the land in order to ascertain the comparative benefits of each landuse for the local and broader economy; and
- To provide Department of Planning and Environment (**DPE**) with a more detailed urban planning analysis of the study area than is currently available in order to facilitate its decision making process with regard to its finalisation of the draft LUIIP.

1.2 Land to which the submission applies

The consortium of landowners that has commissioned Cardno to prepare this submission has interests in the following land parcels.

Address	Legal Title	Area (Hectares)
2600 Elizabeth Drive, Luddenham	Lot 1 DP 220176	11.53
2550 Elizabeth Drive, Luddenham	Lot 2 DP 220176	11.53
2680 Elizabeth Drive, Luddenham	Lot 9 DP 1240511	11.33
2448 & 2450 The Northern Rd, Luddenham	Lot 1 DP 517853	7.77
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	Total Area	**268.1**

Table 1-2 Consortium of landowners

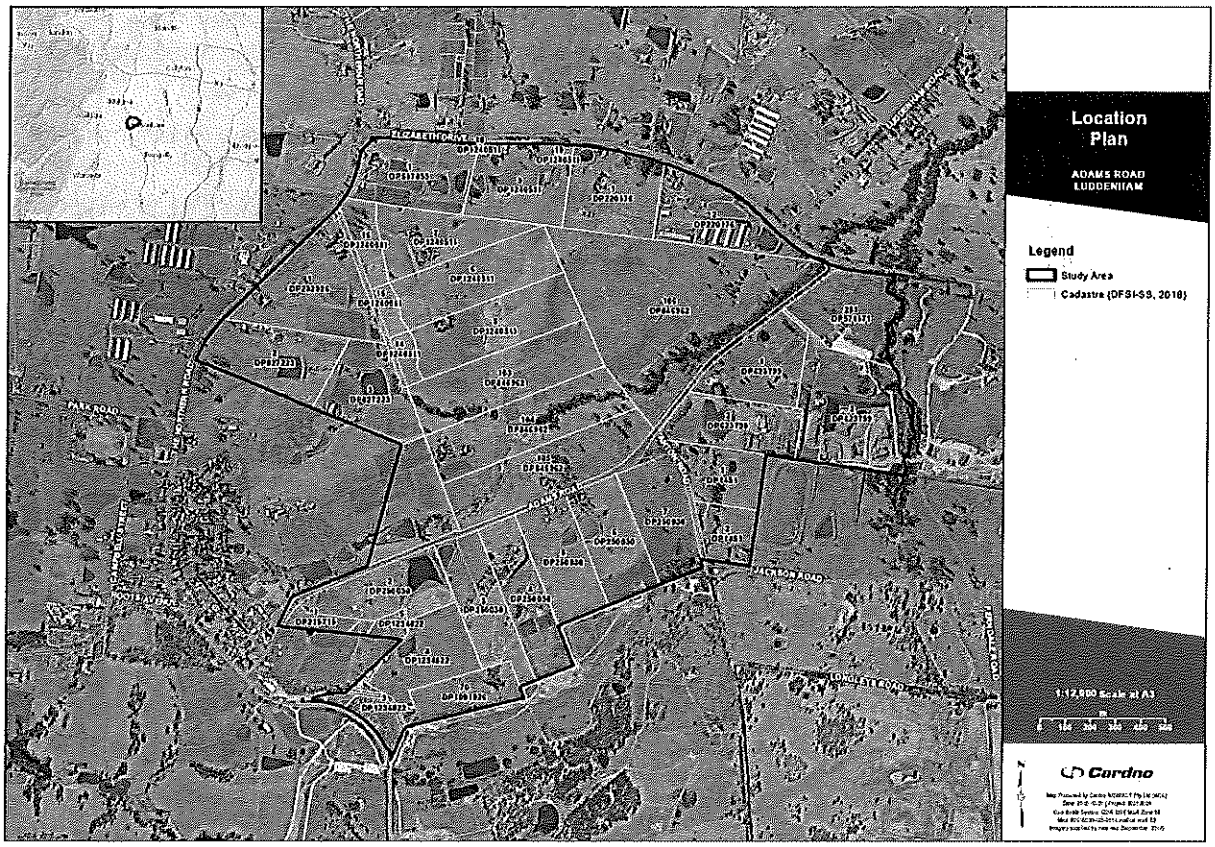

Figure 1-3 Location Map

Source: Cardno, 2018

For the purposes of a holistic urban planning assessment, Cardno has identified a study area that includes all of the Consortium lands listed above but extends to boundaries as indicated at Figure 1-3.

The nominated study area (**the study area**) includes the Consortium's landholding and expands to include land bounded by Elizabeth Drive, the Northern Road and the western boundary of the proposed airport that falls within the Western Sydney Employment Area (**WSEA**) as indicated in *State Environmental Planning Policy (Western Sydney Employment Area) 2009* (**SEPP-WSEA, 2009**). The study area has a total area of 387 hectares.

1.3 Process for preparation of this submission

The recommendations of this submission have been informed by the following process:

1. Review of the strategic planning background of the study area in the context of current and historic regional planning;
2. Undertaking of a Strategic Land Use and high level land capability Assessment of the Study Area to:
    - Identify physical and environmental factors affecting the capability for development of the Study Area lands for agricultural and employment uses;
    - Determine an appropriate developable land area for the Study Area and make a high level assessment of the potential quantum of developable land.
3. A high level economic analysis of the Study Area with respect to various land use scenarios in order to form an opinion on the economic viability of high intensity agriculture in Western Sydney and the outcomes of agriculture / agribusiness against flexible employment land uses with regard to employment generation and economic returns.
4. A high level transport infrastructure capability assessment incorporating:

- An overview of strategic transport and land use planning documents as they relate specifically to the Study Area and the proposal, including transport related components of the above described strategic plan as well as;
- Provide a first principles transport assessment on the potential impact of a redesignation of the land. This will strategically consider implications for the road network, public transport and active transport with respect to potential land uses. (Note that this will be a strategic assessment only, and will not include any modelling or traffic generation forecasts).

2 What the draft LUIIP Proposes for the Subject Land

2.1 Proposed uses

The draft LUIIP is to be delivered sequentially to align with infrastructure investment and population growth. The first stage draft LUIPP prioritises the Aerotropolis Core, the Northern Gateway and South Creek as the first three stages in delivery of the Western Parkland City. In brief the functions of the three precincts in the first stage are:

- Aerotropolis Core: A business and research precinct based on aerospace, defence and aviation.
- Northern Gateway: A precinct centred on the Airport's northern entrance including the Sydney Science Park and proposed to include research and education associated with food production and processing.
- South Creek: the core of a multi-purpose open space, amenity, water quality and biodiversity network for the new city.

The Study Area falls within a proposed second stage LUIIP which DPE has advised in its letter to Cardno (Appendix C) of 12 October 2018 is planned to be released at the end of 2019. The Stage 2 LUIIP may include amendments to the precincts as they appear in the draft Structure Plan.

The current draft Structure Plan identifies the Study Area as 'Agriculture and Agribusiness' (Figure 2-1). The following land use forms are mentioned in the draft LUIIP as potentially suitable within the agriculture or agribusiness lands:

- Ongoing agriculture production such as dairying and poultry farming;
- Intensive horticulture such as mushroom and tomato farming;
- Food processing; and
- Food research and technology.

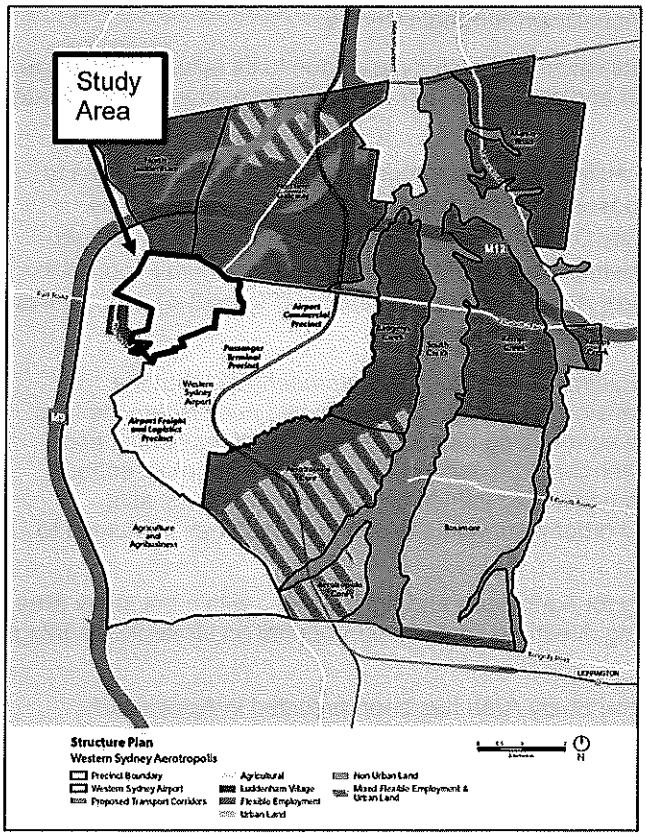

Figure 2-1 Structure Plan – Western Sydney Aerotropolis
Source: Department of Planning & Environment, 2018, Western Sydney Airport – Land Use and Infrastructure Implementation Plan (Stage 1: Initial Precincts)

3 Strategic Planning

Since the introduction of the State Environmental Planning Policy (Western Sydney Employment Area) 2009, the study area has been consistently identified as 'urban land' or 'employment land'. The draft LUIIP is the first strategic planning document that identifies the study area for agribusiness and agriculture purposes. However, Cardno is aware of no planning justification or business case to determine the suitability of including an agribusiness and agriculture precinct to the west of the new airport.

Based on our investigation, agribusiness and agriculture will not align to the vision and directions set out in *A Metropolis of Three Cities, The Western City District Plan* and the relevant SEPPs. Our opinion is that these are not the highest and best uses for the study area for the following reasons:

- *A Metropolis of Three Cities* and *The Western City District Plan* both identify the Study Area as 'Land Release Area' and 'Potential Future Industrial/Employment Land' which is contrary to the agribusiness and agriculture uses identified in the draft LUIIP. The inconsistency of land uses would undermine the integrity of the strategic planning frameworks and accompanying studies (including stakeholder engagements) undertaken by the Department over the past 10 years.
- Part of the study area is located within the *Western Economic Corridor* as indicated in Figure 3-1. Objective 15 of The Western City District Plan intents to create better connection and increase competitiveness of the Eastern, GPOP and Western Economic Corridors. Enabling agribusiness and agriculture uses would compromise economic benefits and reduce opportunities for job creation within in the Western Economic Corridor, in conflict with this Objective of *A Metropolis of Three Cities* and *The Western City District Plan*.
- Agribusiness and agriculture use are contrary to the intent of *State Environmental Planning Policy (Western Sydney Employment Area) 2009* (Figure 3-3) and *Western Sydney Aerotropolis* (formerly the Western Sydney Priority Growth Area) of promoting economic development and the creation of employment within Western Sydney Employment Area.
- The study area is ideally situated as it is located approximately 20km from Liverpool and Greater Penrith Strategic Centres and 30km from Campbelltown Strategic Centre.
- The proposed land use represents the underutilisation of the study area due to its failure to leverage on the proximity to the Western Sydney Airport and associated infrastructure investment by the State Government (Figure 3-2).
- No study has been prepared to determine the suitability and appropriateness for the Study Area to be used for 'agribusiness and agriculture' purposes. The study area has not been identified as 'Metropolitan Rural Area' under the Western City District Plan or mapped as biophysical strategic agricultural land (BSAL) under *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) - Biophysical Strategic Agricultural Land Mapping* (Figure 3-4). Hence, it is unlikely that the study area would be suitable for agricultural uses.

It is also recognised in *the Western Sydney Airport – Environmental Impact Statement* (EIS) that the development of the airport in conjunction with the expansion in Western Sydney would necessitate the loss of productive agricultural land and would transform the surrounding landscape from "*rural residential and agricultural lands to more developed land uses*". Furthermore, the accompanied Socio-Economic Impact Assessment highlights a decline in agricultural and manufacturing industries in Western Sydney as a consequence of the proposed airport development and other planned development which has combined to create increased competition for land and labour.

On the basis of this review, our opinion is that planning for agriculture and agribusiness within the study area is inconsistent with current and recent strategic planning directions and is inappropriate on strategic planning grounds.

An overview of the planning documents applicable to the Study Area has been provided in Appendix A.

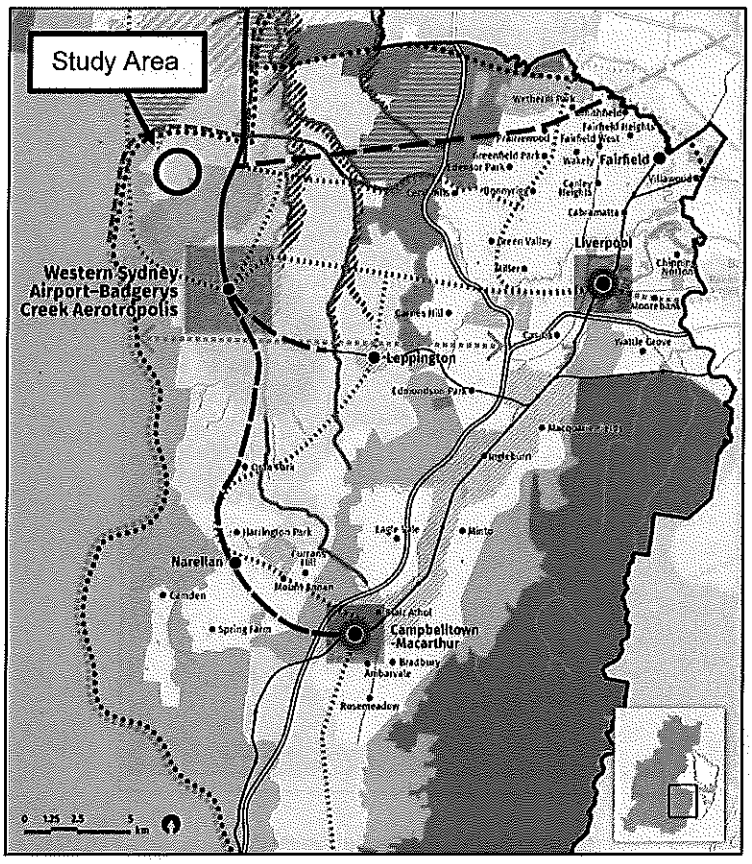

Figure 3-1 Structure Plan for the Western City District
Source: Greater Sydney Commission, 2018, Western Sydney District Plan

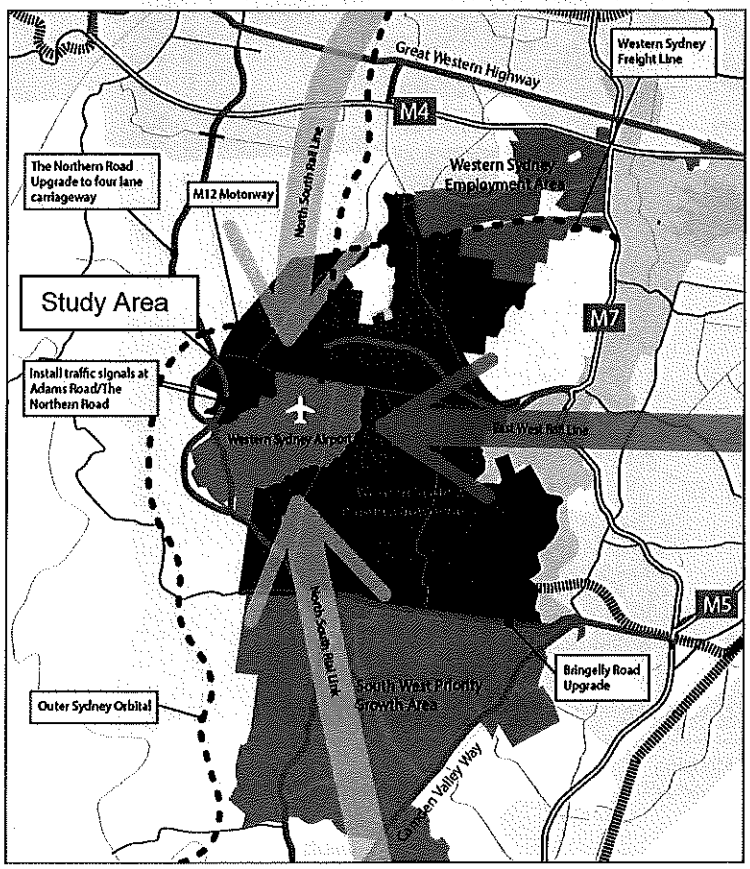

Figure 3-2 Existing and Future Infrastructure
Source: Cardno

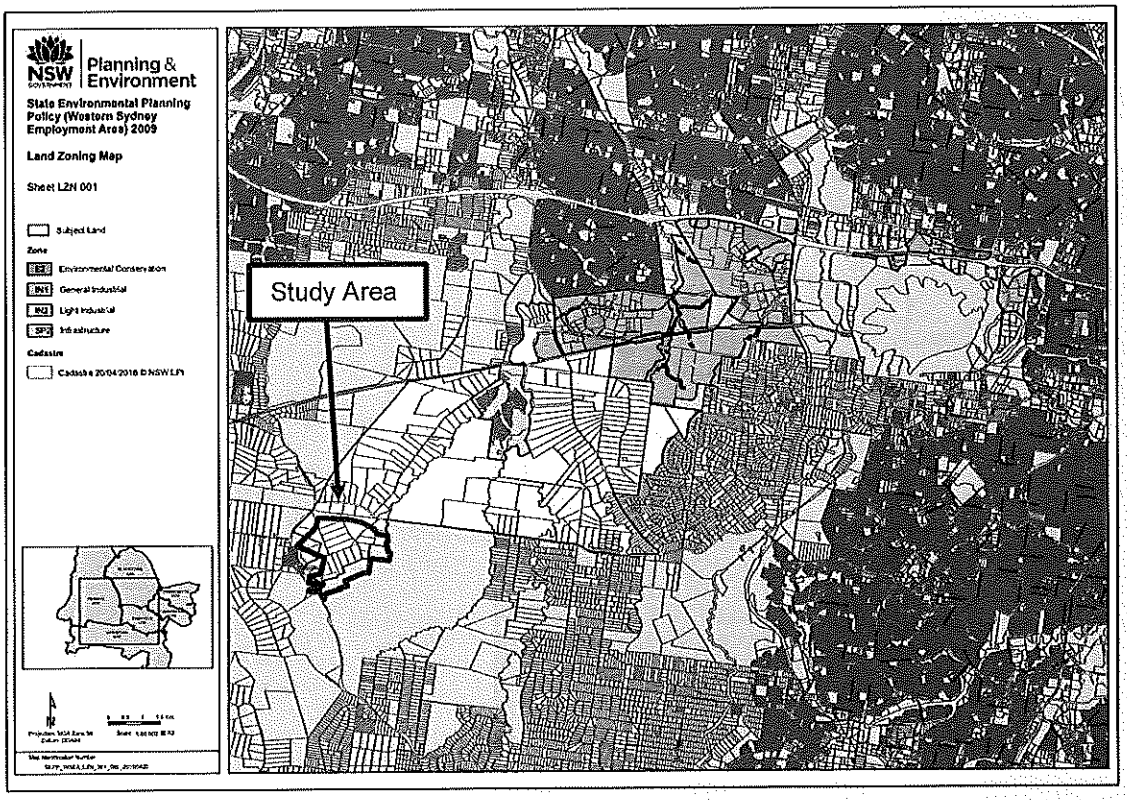

Figure 3-3 Land Zoning Map
Source: NSW Legislation, 2009, State Environmental Planning Policy (Western Sydney Employment Area) 2009

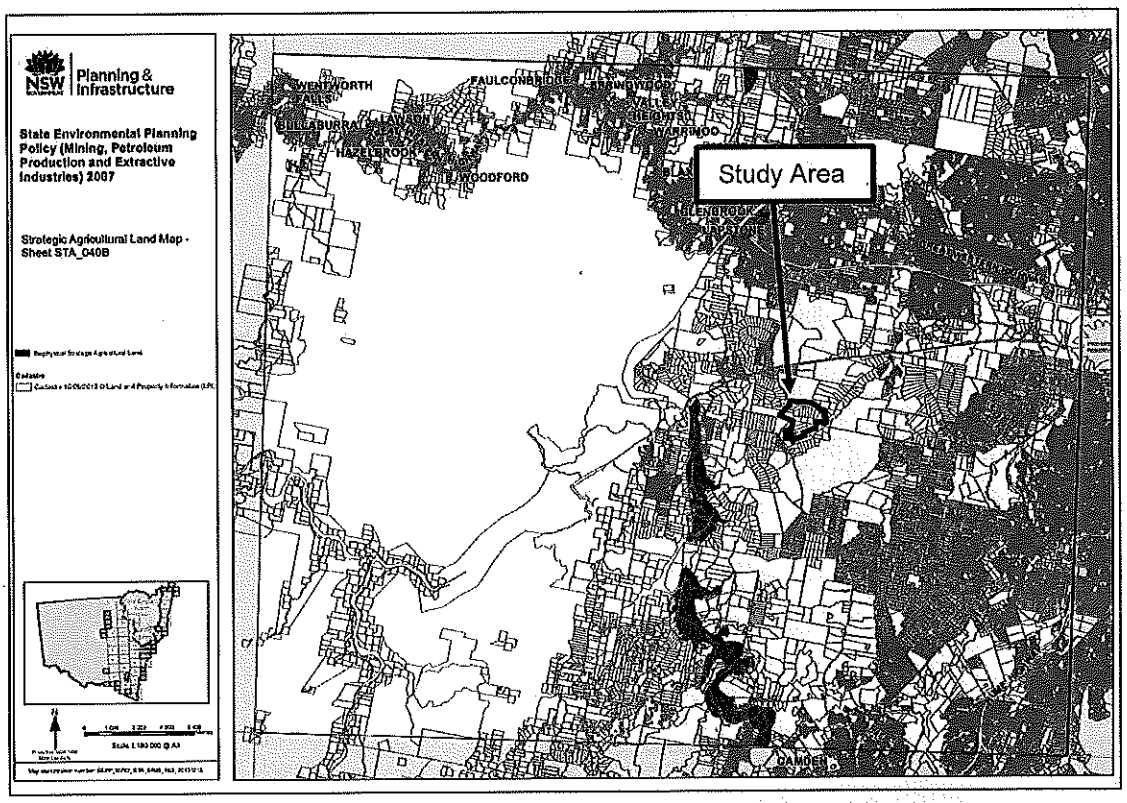

Figure 3-4 Biophysical Strategic Agricultural Land Mapping
Source: NSW Legislation, 2007, State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries)

4 Planned Transport Infrastructure Projects

The Luddenham site is positioned on the western edge of the Western Parkland City, adjacent to the Western Sydney Airport precinct and in close proximity the Badgerys's Creek Aerotropolis, an area of major place-based planning and investment by Federal and NSW Governments.

Section 5 summarises the various transport infrastructure proposals and networks currently being planned / developed in the region surrounding the site. These proposed infrastructure upgrades will enhance connections and accessibility between the Luddenham site and:

> The Aerotropolis;

> Western Sydney Airport precinct; and

> Other strategic centres in Western Sydney and beyond.

4.1 Western Sydney Airport

Construction of the Western Sydney Airport is now underway. Set to open in 2026, Western Sydney Airport is a transformational infrastructure project that will generate economic activity, provide employment opportunities closer to home for people in the Western Sydney region, and meet Sydney's growing aviation needs. Good road and rail links will allow the airport to meet its full potential.

The Western Sydney Airport is located within Badgery's Creek and directly adjacent to Luddenham. The Luddenham site is located immediately north-west of the airport

The Australian and NSW governments are constructing new and upgraded roads around the airport under the $3.6 billion Western Sydney Infrastructure Plan. These upgrades are well underway and will help ease congestion around the airport site.

With the designation of site as the location of Sydney's Second Airport, announcements were made on new and upgraded transport links to the airport and surrounding areas of western Sydney.

> A new east-west motorway M12 to the airport, around the current alignment of Elizabeth Drive between the M7 West link Motorway and The Northern Road.

> Upgrading of The Northern Road (A9) to a minimum of four lanes from Narellan to the M4 Western Motorway.

> Upgrading of Bringelly Road to a minimum of four lanes between The Northern Road and Camden Valley Way.

> New express buses between the airport precinct and Penrith, Liverpool and Campbelltown.

> A North South Rail Link connecting Schofields to Macarthur, with a link to the existing South West Rail Link.

The Luddenham site will benefit directly from the infrastructure upgrades associated with the Western Sydney Airport; they will improve connections and accessibility to the Luddenham site.

These projects are described in more detail in Section 4.2 and Section 5.3.

4.2 Planned and Under Investigation Road Infrastructure Projects

4.2.1 Bringelly Road

The Australian Government is contributing $1.2 billion toward the $1.6 billion project, which will upgrade approximately 35 kilometres of The Northern Road between The Old Northern Road, Narellan and Jamison Road, South Penrith. The project is being delivered in six stages; construction commenced in January 2016 and is expected to be completed in 2020. This will help to cater for the future traffic growth and travel demand generated from developments between Campbelltown and Penrith.

The Northern Road will be upgraded to a dual carriageway with four lanes and provision for six lanes in the future. The project includes various intersection upgrades and a grade separated interchange at Bringelly Road. Provisions for bus routes and shared paths are proposed as part of the upgrade.

Some of the planned upgrades that affect the Luddenham Site are as follows:

> Realignment of the road to bisect the Luddenham site – between Eaton Road and Littlefields Road.

- Access to the Luddenham town centre from north of the realigned The Northern Road and the existing The Northern Road
- Replace the twin bridges over Adams Road at Luddenham with a set of traffic signals.
- Access via Eaton Road via left in / left out intersection.
- A new shared path on the western side of The Northern Road and pedestrian paths on the eastern side of The Northern Road where required.

Roads and Maritime are currently consulting the community over the preferred design for the intersection of Adams Road and Northern Road. The RMS document identifies that the preferred design (subject to community results) is a set of traffic lights facilitating all turning movements. The design is shown in Figure 4-1 below.

Luddenham site connectivity

The upgraded Northern Road will bisect the Luddenham site, providing direct connections to and from the site.

The preferred Adams Road and the Northern Road intersection design provides full access for vehicles turning to and from Adams Road onto the major road, enhancing the development opportunity for the Luddenham site which will be able to locate site accesses and intersections along Adams Road. This direct link from the Luddenham site to the upgraded Northern Road allows for easy access to the M12 (which will interchange with the Northern Road north of Elizabeth Drive) from the site, and potentially the M9 Outer Sydney Orbital. The Northern Road also provides connection to Bringelly Road and Leppington town centre to the south and Penrith to the north.

Further to the Adams Road connection, The Northern Road upgrade also includes direct access to Eaton Road (likely to be a left in / left out sign controlled intersection). This additional access point to the Luddenham site allows for further dispersion of future traffic (and therefore improved capacity).

Overall, The Northern Road upgrade will provide the subject site with the following benefits:

- Unrestricted turning movements for Adams Road and the Luddenham study site. This allows for easy access to other significant sites to the north and south.
- Capacity increase with a full four way intersection with bus lanes on The Northern Road.
- Pedestrian and Cyclist Crossing Facilities which will promote active transport and healthy lifestyle / employment choices.
- Increased capacity through additional access point via Eaton Road, having the ability to disperse traffic from the Luddenham site to The Northern Road.

The Leppington town centre will have its own employment densities with essential services, retail and commercial facilities. The Luddenham site has the potential to enjoy access to the services and vice versa the Leppington town centre benefiting from increased employment densities to the north and retail attraction.

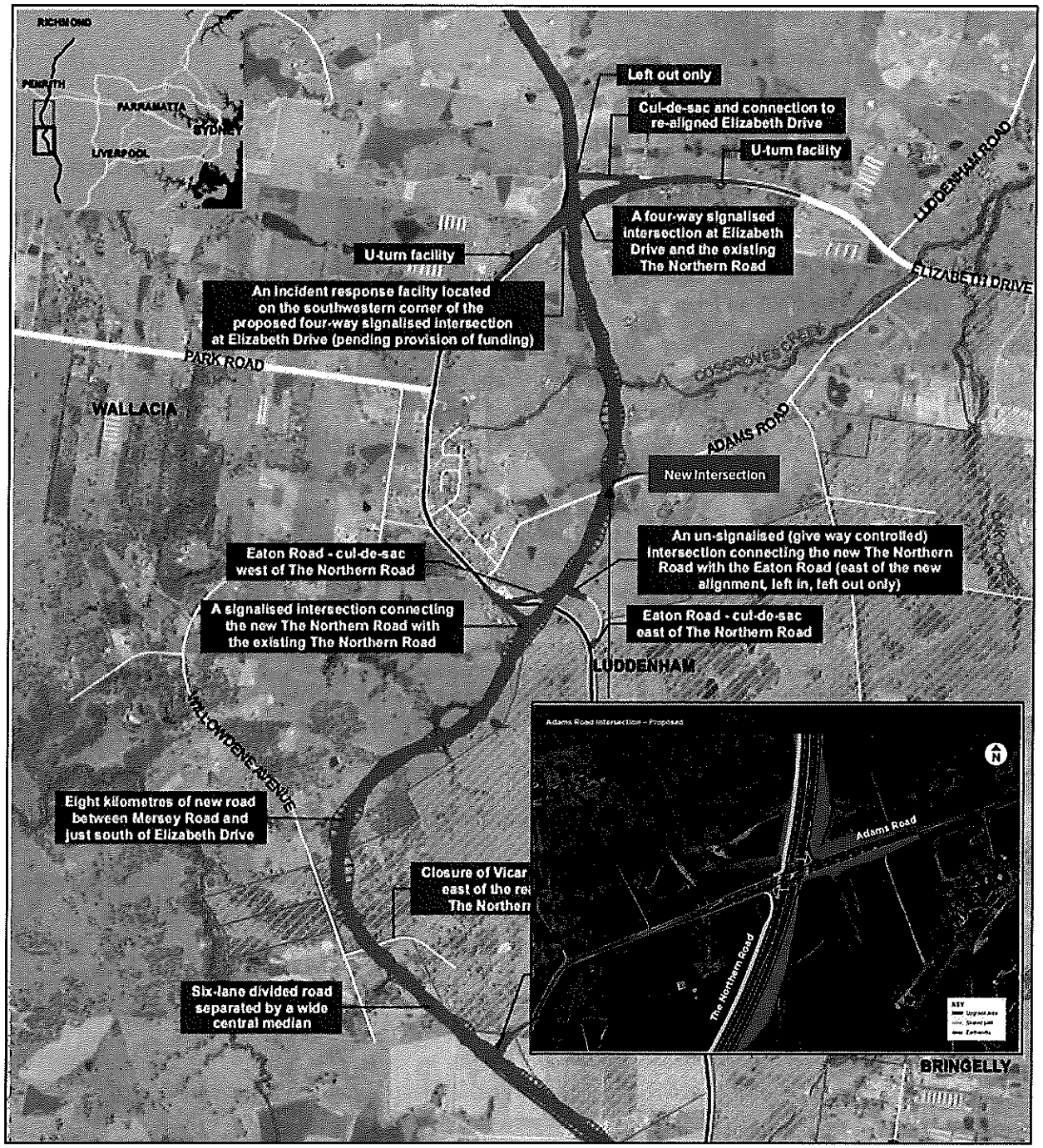

Figure 4-1 Proposed Intersection The Northern Road/ Adams Road

Source: TNSW

4.2.2 Bringelly Road

The Australian Government is contributing $407 million toward the $509 million upgrade of Bringelly Road. The project involves the upgrade of approximately 10 kilometres of Bringelly Road between Camden Valley Way and The Northern Road. The project is being delivered in two stages; construction commenced in January 2015 and is expected to be completed in 2020. The key benefits of the project include:

- Improved access to the Western Sydney Airport site at Badgerys Creek, Leppington Railway Station, the new Leppington Town Centre and the M5 and M7 motorways.
- Increased road capacity.
- Improved safety for motorists.

> Better bus priority and facilities.

> More reliable travel times.

> Improved access and safety for pedestrians and cyclists through an off-road shared path.

The key features include:

> Four lanes in each direction between Camden Valley Way and King Street. East of the Upper Canal bridge to Eastwood Road will be a six-lane divided road.

> 80 kilometres per hour speed limit and two-metre-wide shoulders.

> Three-metre-wide off-road shared pedestrian and cyclist path.

> Bus priority at traffic lights and indented bus bays.

Luddenham site connectivity

As Bringelly Road connects to the upgraded Northern Road, this will further enhance regional connectivity to and from the Luddenham site, with Bringelly Road providing direct access with the future Leppington town centre.

4.2.3 M12 Motorway

The Australian Government has committed $997 million to deliver the $1.3 billion M12 Motorway. The project will provide an east-west link between the M7 Motorway and The Northern Road, while also providing a connection to the Western Sydney Airport. The project is currently in the planning stage, with construction expected to commence in 2020 and be completed prior to the Western Sydney Airport opening in 2026.

The new M12 Motorway would provide direct access to Western Sydney Airport and connect to Sydney's motorway network. The corridor route is an east-west 16-kilometre motorway between the M7 Motorway, Cecil Hills and The Northern Road, Luddenham. The motorway would provide increased road capacity and reduce congestion and travel times in the future. It would also improve the movement of freight in and through western Sydney and is expected to serve the Western Sydney Airport Growth Area and the Western Sydney Employment Area.

The key benefits of the project include:

> Direct access to Western Sydney Airport at Badgerys Creek from the M7 Motorway and the upgraded The Northern Road.

> Improved access to the Western Sydney Airport Growth Area and the South West Priority Land Release Area.

> Increased road capacity for future growth and development.

> Improved traffic safety for road users.

> Pedestrian and cyclist infrastructure.

> Improved freight movement to key commercial centres.

> Reduced congestion impact on the community and businesses by providing more capacity.

The key features of the project include:

> A motorway built for four lanes (with provision for up to six lanes) with a central median to separate opposing traffic flows.

> A direct connection to Western Sydney Airport

> A new at grade connection to The Northern Road with traffic lights

> Provision for a motorway-to-motorway interchange at the M7 Motorway

> Provision for a future grade-separated interchange in the vicinity of Devonshire Road/Mamre Road.

The location of the M12 Motorway with the surrounding road network is given in Figure 4-2.

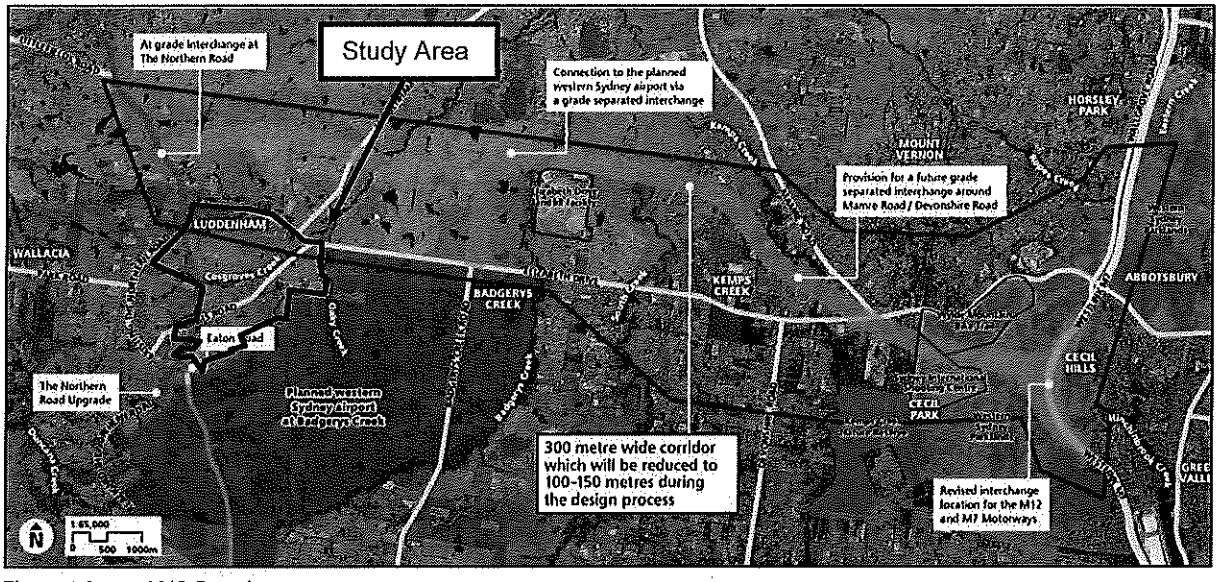

Figure 4-2 M12 Overview

Source: RMS

Luddenham site connectivity

The proposed alignment of M12 Motorway would connect the M7 Motorway near Cecil Park to The Northern Road near Luddenham. The proposed M12 intersection with the Northern Road is in close proximity to the Northern Road / Elizabeth Drive intersection which will enhance regional road network access to the Luddenham site.

4.2.4 Road projects for investigation

Future Transport 2056 identifies other potential projects to be investigated over the next 0 to 20+ years. Of relevance for the Luddenham site are:

- Outer Sydney Orbital from Great Western Highway to Western Sydney Airport – Badgerys Creek Aerotropolis – investigation timeframe 10 to 20 years.
- Outer Sydney Orbital from Western Sydney Airport – Badgerys Creek Aerotropolis to Hume Motorway – investigation timeframe 20+ years.
- Western Sydney Airport – Badgerys Creek Aerotropolis Inner and Outer Ring Roads – investigation timeframe 20+ years.

More detail is provided on the Outer Sydney Orbital in the following section.

4.2.4.1 M9 Corridor (Outer Sydney Orbital)

The Outer Sydney Orbital corridor will provide for future motorway and freight rail connection between Box Hill in the north, and the Hume Motorway near Menangle in the south. The Outer Sydney Orbital (OSO), M9 Motorway was identified in the NSW Long Term Transport Master Plan and it is identified as a proposed outer north-south multi-modal corridor with the potential to accommodate a motorway, passenger rail line and freight rail line that would extend from the Central Coast through to the Illawarra. The Outer Orbital Corridor is one of the planned shared corridors for both road and rail freight.

The recommended corridor assumes the Orbital will eventually be a motorway with up to four lanes in each direction that will interchange with:

- M4 Western Motorway
- M31 Hume Motorway
- the proposed M12 Motorway
- the future Bells Line of Road – Castlereagh Connection Motorway
- arterial roads: Windsor Road, Richmond Road, Great Western Highway, The Northern Road, Greendale Road, Cobbitty Road and Burragorang Road.

It will also provide two freight lines with rail junctions with the Main West Rail Line, the Main South Rail Line and the proposed Western Sydney Freight Line.

Refer to Figure 4-3 for the location of the corridor within the surrounding road network.

Luddenham site connectivity

Although potential access points to the M9 are yet to be determined, if constructed, this project would mean the Luddenham site was in close proximity to a key north-south motorway connection, with good accessibility to the major road network in the region.

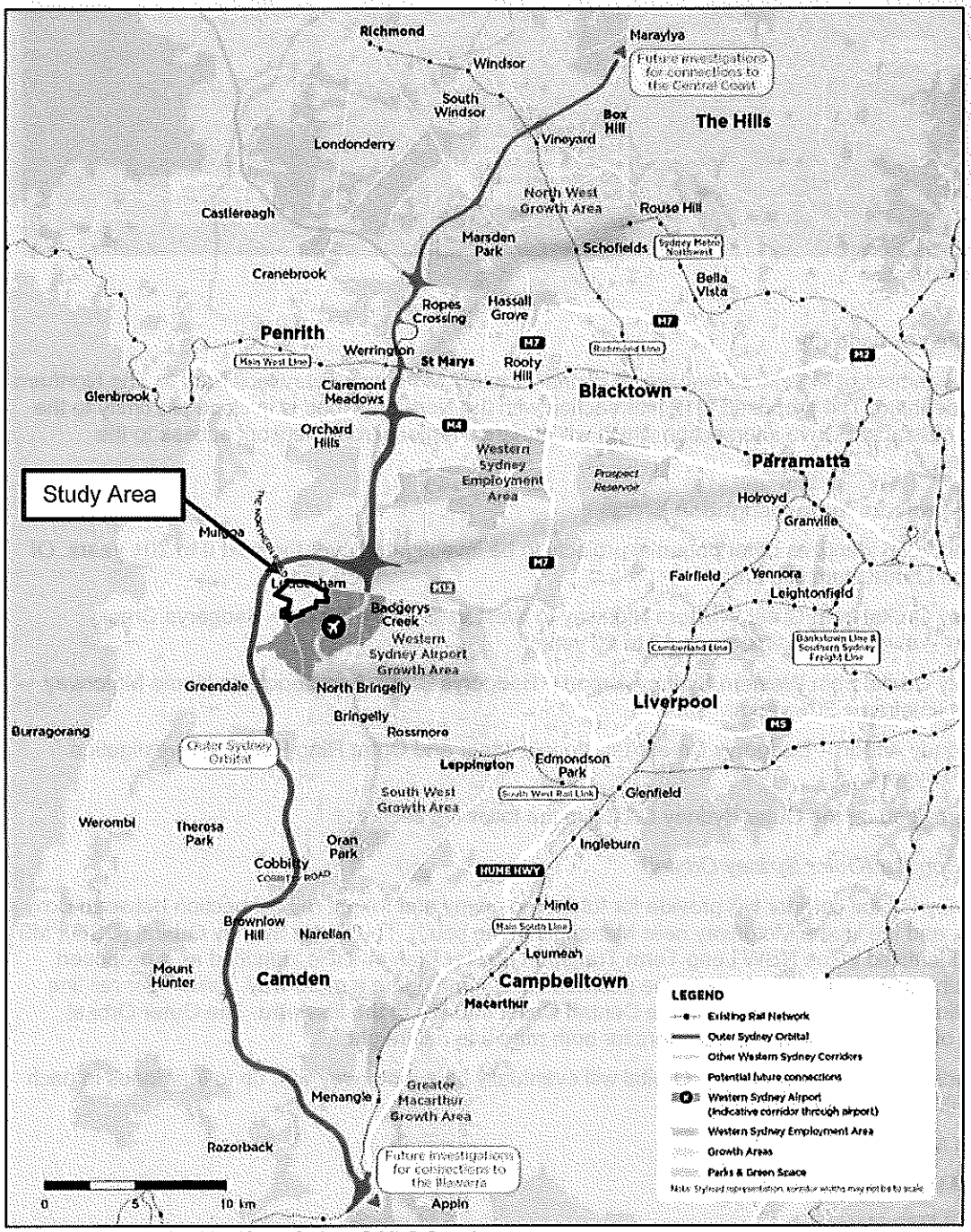

Figure 4-3 M9 Corridor (Outer Sydney Orbital) Overview

Source: TNSW

4.2.4.2 *Opportunity for investigation – Elizabeth Drive*

There is potential to investigate an upgrade of Elizabeth Drive. Elizabeth Drive is an east-west arterial roadway and is highly likely to maintain a key link to developable land along this corridor, including the Luddenham site.

Elizabeth Drive, which is predominately a single lane in each direction could benefit with the final layout of the future Western Sydney Airport site which will inform the design of the North South Rail Line at Elizabeth Drive. Regardless of the design outcome, a crossing above or tunnelling below Elizabeth Drive would be required for the North South Rail Line to continue to the airport and further south. The potential Elizabeth Drive upgrades would provide improved transport capacity to the Luddenham site.

4.3 Planned and Under Investigation Public Transport Infrastructure Projects

4.3.1 Sydney Metro West

Sydney Metro West will link Parramatta directly with the CBD via an underground metro railway. As an extension to this project, the Government has identified potential rail corridors and train link investigation paths could see the Sydney Metro West project extended from Parramatta to the new Western Sydney Airport. The railway servicing the new Western Sydney Airport would be developed and delivered by Sydney Metro.

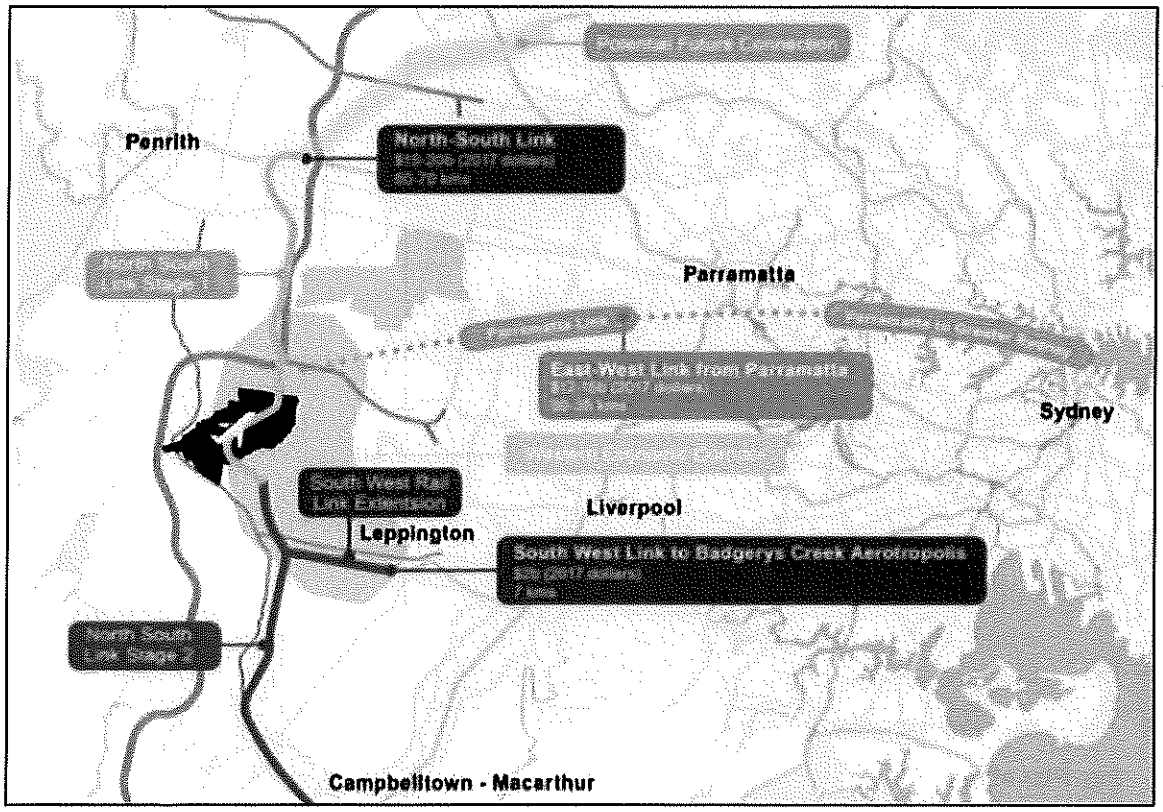

Figure 4-4 Planned Sydney Metro West Overview, Source Sydney Metro

Source: Sydney Metro

4.3.2 Extension of the South West Rail Link and potential North-South Rail Line

The South West Rail Link Extension corridor is planned to be extended from Leppington Station to Badgerys Creek Aerotropolis, to connect with a new North South Rail Line corridor. The North South Rail Line corridor would connect the T1 Western Line near St Marys and T8 South Line near Macarthur via the future Western Sydney Airport site.

The future North South Rail Line and South West Rail Link Extension infrastructure would connect residents in the emerging suburbs of the Western City with jobs and services in the Western Economic Corridor, future Western Sydney Airport site, Western Sydney Airport – Badgerys Creek Aerotropolis, Liverpool, Greater Penrith, Campbelltown–Macarthur and Western Sydney Employment Area.

Luddenham site connectivity

The Luddenham site will directly benefit from the rail line being located within the Western Sydney Airport precinct and nearby the Badgerys's Creek Aerotropolis. There could also be potential for a bus service connecting the Metro Station directly to the Luddenham site and the eastern parts may also be walkable to the Metro station, dependent on the pedestrian access arrangements to the airport.

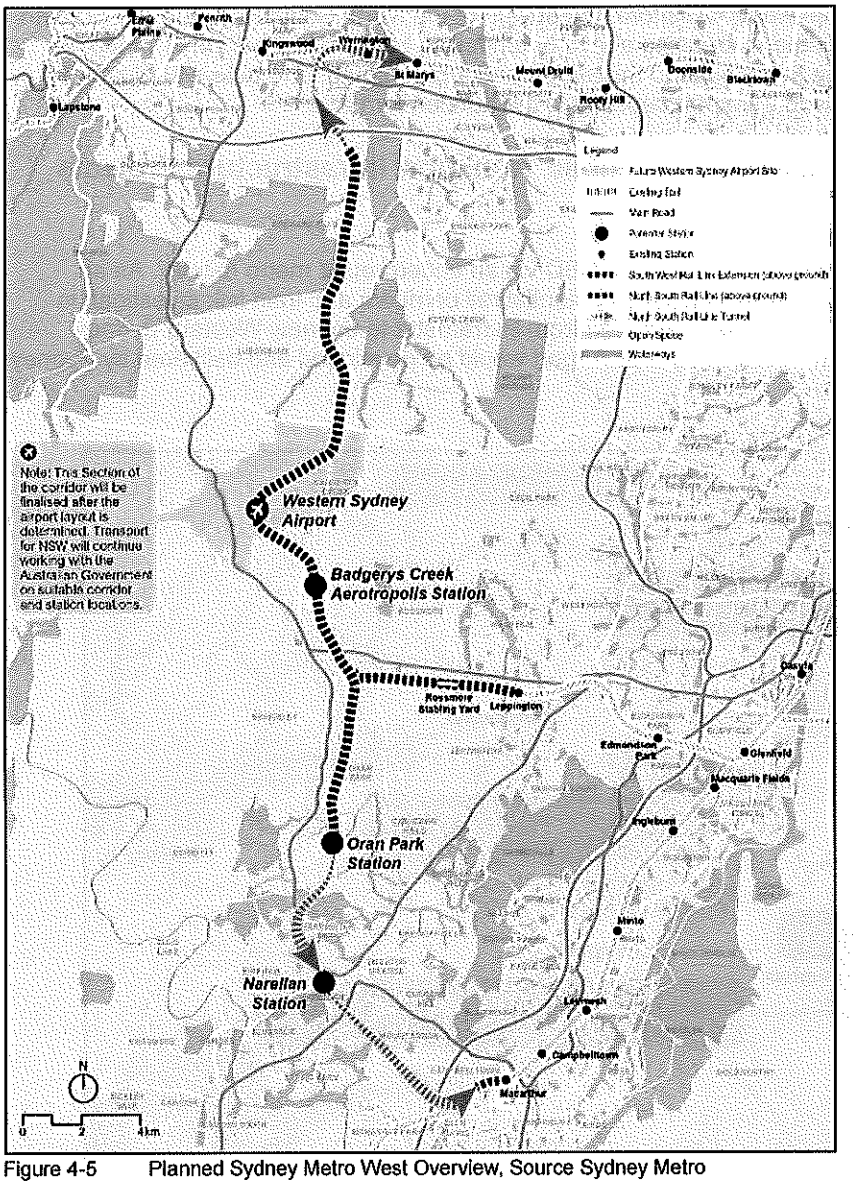

Figure 4-5 Planned Sydney Metro West Overview, Source Sydney Metro

4.3.3 Bus Planning

The State Government has announced that rapid bus services will be established from the town centres of Penrith, Liverpool and Campbelltown to the Western Sydney Airport before it opens in 2026. The road infrastructure upgrades (e.g. The Northern Road which has dedicated bus lanes in each direction) have the ability to facilitate rapid bus routes and furthermore, support the significant employment population and activity around the Airport site.

Luddenham site connectivity

The Northern Road route traverses through the Luddenham site and, with dedicated bus lanes, could provide good public transport accessibility between Luddenham and strategic centres and residential areas north and south. Bus stops within the Luddenham site could be planned to align with employment land uses and other passenger generating land uses.

4.4 Planned Freight Infrastructure Projects

4.4.1 Western Sydney Freight Line and Intermodal Terminal

A Western Sydney Freight Line corridor has been identified between the M7 Motorway and the under investigation Outer Sydney Orbital's freight rail corridor near Luddenham. The corridor would extend between the existing Southern Sydney Freight Line at Leightonfield and Villawood to the Outer Sydney Orbital's freight rail corridor to enable the future transfer of goods across Western Sydney. The Freight rail line would:

> Provide a freight rail connection between Port Botany and Western Sydney.

> Support the movement of container and bulk freight by rail across Greater Sydney.

> Provide freight rail connections to serve employment lands and future industries across the Western Sydney Priority Growth Area.

> Support the further separation of freight and passenger rail.

> Support the growth of freight and the logistics industry in Western Sydney

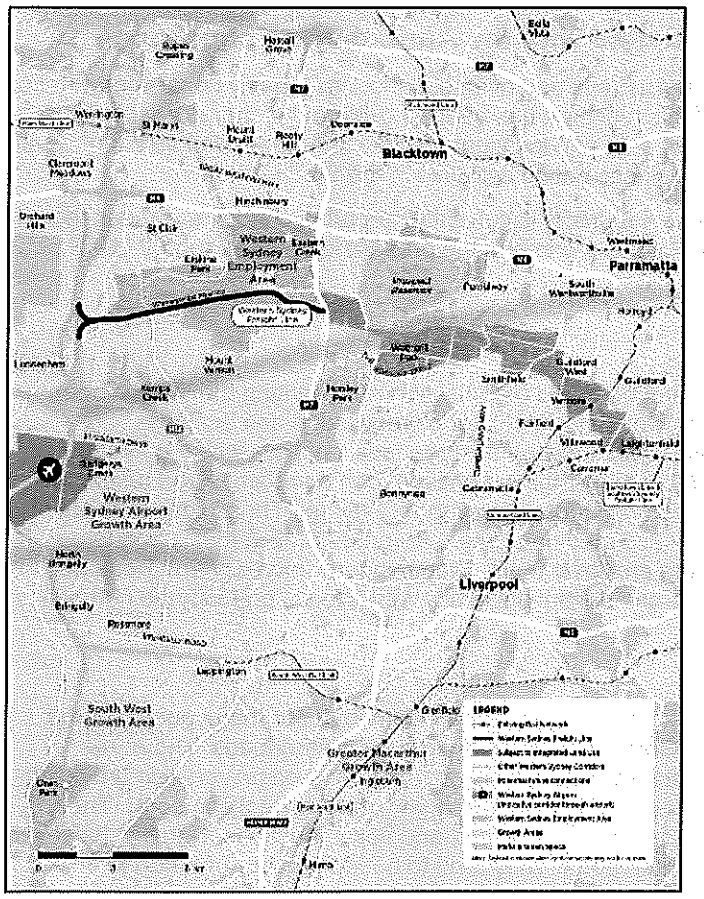

Figure 4-6 Western Sydney Freight Line and Intermodal Terminal Overview

Source: Sydney Metro

Western Sydney Freight Line and Intermodal Terminal Overview, source: Transport for NSW

4.5 Summary

There are a significant number of transport infrastructure proposals and networks currently being planned or under construction in the region of the Study Area. These include the M12 Motorway, Bringelly Road Upgrade, The Northern Road Upgrade, Outer Sydney Orbital (M9 Motorway), Sydney Metro West, extension of the south west rail link and a potential north-south rail corridor, and the Western Sydney Freight Line. These infrastructure upgrades would all provide good connections and accessibility to the Study Area.

Our opinion is that the resultant connectivity of the Study Area to the new airport and to local and regional centres represents a significant opportunity for flexible employment based land uses.

5 Commentary on the Concept of Agriculture and Agribusiness in the Context of the Study Area

In order to gain an understanding of the potential land uses associated with the Agriculture / Agribusiness land use category applied in the draft LUIIP and Structure Plan, and the implications of applying this category to the Study Area, Cardno has carried out some high level research into the concept along with an exploration of some local and international examples of similar facilities.

Our research has found that the concept of Agribusiness is broad. Essentially it includes farming activities and the wide range of activities that support farming including but not limited to research, manufacture and distribution of farm supplies and the storage, processing, marketing, transporting, and distributing of agricultural materials and consumer products produced by production agriculturalists (Ricketts & Ricketts, 2009).

Our opinion, supported by the review that follows, is that Agribusiness in the form that it takes in our reviewed examples would not be a suitable use for the Study Area.

5.1 Examples of development consistent with the Agribusiness concept

We have researched examples of development in Australia and overseas that are broadly consistent with the above concept of Agribusiness. The objective of this research has been to explore the characteristics of these development forms with regard to inclusions, area and locational factors in order to enable a high level commentary on the suitability of developing agribusiness based activities in the Study Area.

We understand that the NSW Department of Primary Industry is currently preparing a study to assess the viability of Agribusiness in Western Sydney and that this will inform the preparation of the Stage 2 LUIIP.

5.1.1 Overseas examples

Food Valley, Netherlands

The Food Valley was established in 2004 as a member-based organisation representing the Wageningen region. The Food Valley is located in Wageningen which has a cluster of knowledge and business associated with food and agribusiness. Food Valley was initiated by three local councils with the aim to "*promote innovation of agri-food clusters by facilitating interaction between food companies and research centres that are developing new and innovative food concepts*" (www.foodvalley.nl). The cluster consists of 135 core members the majority of which are small and medium sized enterprise (SMEs) (60%) and large companies. The Food Valley also benefits from the proximity to the Wageningen University and Research Centre (WUR) which is a world leading agriculture and animal university with a focus on food and nutrition research.

Greenport, Netherlands

To facilitate and stimulate the horticultural industry which is a significant contributor to the economy of the Netherlands, the Government has identified five "Greenport" areas around the Netherlands. The Areas incorporate a "*network of local enterprises, research institutes, local government, and universities providing an integrated network for research and development and innovation*" (www.greenportholland.com). The Greenports tend to be located to provide access to seaports and food and flower auctions. Notably, however, none of these facilities are located directly adjacent to ports. They tend to be in the order of 20-50 kms distant from port facilities.

Agriport A7, Netherlands

Agriport A7 is a 950ha business park connected to a 850ha high tech greenhouse based agricultural production centre located 40km north of Amsterdam. The project was initiated in 2005 with the objective to "*combine different sectors that aim at closing the material cycle, reducing traffic, etc*" (Wubben, 2011). https://ageconsearch.umn.edu/bitstream/121854/2/Wubben-ok.pdf)

The Agriport includes companies active in producing, packaging and transporting agricultural products (Wubben, 2011). Production is at a very large scale with greenhouse sizes ranging from approximately 6 to approximately 41 hectares in area.

Consistent with the high tech approach to agricultural production and logistics, data centres have recently been developed by Microsoft and Google within the confines of Agriport A7.

The complex has access to port facilities but is not located adjacent to them (it is 30 minutes via freeway from the Amsterdam Schipol Airport and 1.5 hours from the Port of Rotterdam).

5.1.2 Australian examples

Australian examples of facilities that may fall within the concept of Agribusiness include:

Golden Plains Food Production Precinct, Victoria, Australia

The Golden Plains Food Production Precinct is Victoria's first designated precinct for intensive food production. The Precinct comprises 4,000 ha of freehold land zoned for farming purposes and is the outcome of a 2014 concept plan developed by the Golden Plains Shire with the objective of maximising land available for high intensity agricultural purposes and facilitating location of complementary industries within the precinct. The precinct was reportedly developed on the back of an already well established agricultural industry - The Golden Plains Shire produces 21% of Victoria's eggs, 11% of poultry, 5% of pigs and 4% of Victoria's sheep and lamb.

It appears that the Precinct has been very successful. According to the Council's website, over $50 million in direct investment has been approved for development including free-range egg farms and a fertiliser plant. The success of the Precinct would, however, seem to be the result of building on an already very healthy high intensity agricultural industry.

The Precinct is located 30km from the Port of Geelong, 90km from the Port of Melbourne and 45km the Avalon Airport passenger and freight terminal.

Northern Adelaide Food Park, Adelaide

The Northern Adelaide Food Park is located at Edinburgh Park, Adelaide. The Food Park will provide opportunities for food and beverage processors, manufacturers, food packaging specialists, cold chain suppliers, and logistics and transport companies to co-locate and collaborate and build productivity through economies of scale.

The Food Park has a total area of 650ha, and individual allotment size ranges from 3,000sqm to 50,000sqm. Existing tenant includes Coles Distribution Centre (92,000sqm) and Ingham Processing Facility (24,000sqm) and Toll. No agricultural production occurs in the Park.

Transform Peel, Western Australia

The Peel Development Commission led the development of the Transform Peel development program which aims to achieve a better environmental outcome for the Peel Harvey catchment and estuary and secures food production for the Metropolitan region and export to international market. The 35 year program is located at Nambeelup in the Peel region of Western Australia, approximately 75km south of Perth and consists of the following three elements:

- Peel Food Zone (PFZ) – The PFZ consists of an area of 42,000ha which includes a hub for intensive food production and research;
- Peel Business Park – The Business Park consists of an area of 1,000ha which provides for a range of industries such as manufacturing, transport and logistics and agribusiness (including food processing and packaging); and
- Peel Integrated Water Initiative – The Peel Integrated Water Initiative provides sustainable water supply to the Peel Business Park and PFZ.

The intent of the Peel Business Park is to attract food manufacture and processing industries, logistics enterprises and support commercial and light industrial activities. It is anticipated the PFZ will be planned and operational by 2021.

An 'Integrated Hub' initiative is being developed which will incorporate research, training, trial cropping and other industry clusters to support the initiative.

PFZ aims to be a *"leading agri-business hub for research, science, innovative food production enterprises and processing facilities"*(http://www.transformpeel.com/). The food zone is a conceptual area to attract and facilitate new agricultural development to the region.

The PFZ is not a formal land use planning zone but will inform local planning in the Shires of Murray and Serpentine-Jarrahdale and the Peel and southern Metropolitan Regions.

The Department of Primary Industries and Regional Development commissioned a study to identified areas suitable for intensifying agriculture within the PFZ. The Study investigated the feasibility of the following six

land use scenarios to be established in the PFZ: Dryland pasture & grazing (Non-Irrigated); Soil-based irrigated horticulture (Annual); Soil-based irrigated horticulture (Perennial); Soil-based irrigated horticulture (Covered); Non Soil-based irrigated horticulture (Protected Horticulture) and Closed-loop livestock systems.

In February 2018, a Memorandum of Understanding (MOU) was signed between the Western Australia Government, Fund Singapore, Murdoch University and Peel Development Commission to drive the commercial agriculture opportunities in Peel.

Agripark, Wagga Wagga

In 2016, Charles Sturt University commenced the development of an AgriSciences Research and Business Park (the Agripark) on their Wagga Wagga campus. The vision for the Agripark is to foster "research, collaboration, innovation and sustainability in the heart of the vibrant Riverina region".

The Agripark intends to co-locate "*international agricultural companies, knowledge-rich agribusiness, market-focused food producers and innovative SMEs*" under one roof. (https://www.smh.com.au/business/companies/universities-look-to-collaborate-and-innovate-with-the-commercial-sector-20170607-gwmla5.html)

Agripark consists of 19 hectares with 23 serviced lots available to be developed. Two hectares of Commons precinct where open space design facilitates collaboration for gathering, exhibition, conferences, pop-up markets, and other network opportunities.

Possible tenants, identified by Charles Sturt University, may include:

- Plant breeding and specialist agronomic supply companies
- Private agricultural research and/or extension providers
- Food research and product development companies
- Agricultural advisors and consultants
- Animal nutrition and veterinary pharmaceutical companies
- Industry associations
- State and Federal Government agencies
- Research partners to Charles Sturt University.

Western Sydney Parklands

Western Sydney Parklands Plan of Management 2020

The Western Sydney Parklands was developed to provide infrastructure and open space for current and future residents and communities in Western Sydney. The Western Sydney Parklands is the largest urban park in Australia and consists of an area of 5,280 hectares and a distance of 27km.

The Western Sydney Parklands Plan of Management 2020 (POM 2020) includes a strategic direction to "*protect and promote the Parklands as a valuable urban agricultural setting with benefits for recreation, tourism, education and the local economy*". The three key objectives for Urban Farming strategic directions are:

- Establish sustainable urban farming in the Parklands;
- Promote urban farming as integral to urban futures; and
- Utilise underdeveloped land for farming in the interim prior to long-term parkland development.

A key outcome for the POM 2020 is to increase land used for urban farming in the Parklands from 2% (106ha) to 8% (415ha). At 2017, the Western Sydney Parklands had increased urban farming land by 80ha to a total of 3.5%.

Future Farming Program

The Western Sydney Parklands initiated the Future Farming Program with support from NSW Government agencies, research and education institutions and the private sectors. The program intends to create "*thriving sustainable commercial farming in the centre of Sydney*". As part of the program, the land will be leased for market gardening, orcharding, agistment, and greenhouses.

The areas identified by Future Farming Program are as follows:

- Pikes Lane, Eastern Creek will become a best practice controlled environmental greenhouse precinct.
- Horsley Park is a farming precinct which provides opportunities for small operators.
- Calmsley Hill City Farm will be a 'working farm' with the aspiration of being a "world-class facility for the teaching, learning, and research of sustainability".
- West Hoxton is targeted at orchards (fruit trees, native plants, ornamental plants) and agistment (goats, cattle and horses).

Horsley Park Precinct – Urban Farming Masterplan

In 2012, the Western Sydney Parklands Trust developed a masterplan for the Horsley Park Precinct (the Precinct).

The vision for the Precinct is to "protect and promote the Parklands as a valuable urban agricultural setting, with benefits for recreation, tourism, education and the local economy". The Precinct is the largest area of proposed agricultural and provides the best opportunity for urban farming purposes. The urban farming area compromises an area of 158.7ha of land and consists of 11 lots ranging in size from 5 to 31ha.

The implementation of the Masterplan is divided into three phases: short (2 years), medium (5 years) and long-term (10 year plus).

Currently, active urban farms cover 35.7ha, with another 24.8 ha to commence soon.

An investigation was conducted into the feasibility of the urban farming initiatives administered and managed by the Trust at Horsley Park (Gil, Kirkland, and Sergi, 2016). The investigation found that there is a lack of reliable workforce to support the urban farm industry and that large-scale farmers are either secure on their land or are moving west of the Blue Mountain to larger lots with smaller overheads and are offsetting the additional transport time and costs to markets. Since the establishment of the initiative at Horsley Park only 35.7ha of the land has been used for active urban farms.

In 2013, Penrith City Council engaged a consultant to investigate the potential development of an agribusiness precinct in Western Sydney. However, Council still has not developed an agribusiness precinct in the LGA.

5.1.3 Commentary

This high level research into precedents for Agribusiness based development locally and overseas has led to the following broad conclusions:

- The scale and form of agribusiness varies from district-wide initiatives driven by government to privately initiated, developed and operated agribusiness parks. In the Netherlands, the agribusiness initiatives have been mostly successful due to the country's favourable geographical and biophysical conditions and the fact that the sector has historically been a key contributor to the economy (The Netherlands is the second largest global exporter of food by dollar value).
- Agribusiness initiatives in Australia have been most successful where they represent formalisation of an already strong intensive agricultural industry.
- Agribusiness precincts exhibit the following key characteristics:
  - They are initiated and supported by Government;
  - They have access to but are located remote from transport hubs;
  - They include clusters of food-related enterprises, and are not only agriculture focussed;
  - They include concentrations of functions and cooperation in activities, enabling sharing of resources and facilities (i.e. energy);
  - They incorporate a diverse range of uses which complements agribusiness such as business parks, offices, warehousing and logistics services, distribution centres, universities and research institutes and government institutions; and
  - They are often anchored by major universities and research institutes or significant tenants.

During the course of our research, Cardno has had informal discussions with officers of the NSW Department of Primary Industry on the topic of intensive agriculture and potential land use conflicts if these uses are located in close proximity to airports. The officers raised the following issues:

- Aircraft noise will potentially conflict with intensive livestock farming. Animals will be sensitive to noise and location of livestock farming within the ANEC contour is likely to impact on animal husbandry practices with respect to care, breeding and raising of livestock.
- Conversely, intensive cropping has the potential to attract bird life which may constitute a hazard to aviation. The National Airports Safeguarding Framework (NASF) identifies a range of uses associated with Agriculture and Agribusiness (piggeries, fruit tree farming and food processing) as of high risk for bird strike within an 8km radius of an airport. Dairy and poultry farming is identified as high risk within a 3km radius. For new development, most of these uses are identified as Incompatible with aircraft operations within 3 to 8km radii.
- Close co-location of differing intensive agricultural activities may be a biosecurity hazard. Colocation of incompatible agricultural enterprises requires substantial land buffers between the uses to control biosecurity contamination hazards. Careful planning would be required to avoid the excessive need for buffer land which would potentially have a significant impact on the quantity of land available for production.

6 Land Capability Assessment

Cardno has carried out a high level land capability assessment in order to identify an approximate quantum of land within the Study Area that is likely to be suitable for development. The analysis has been carried out with reference data bases held by the following Agencies:

- NSW BioNet,
- NSW Environment Protection Authority (EPA),
- Department of Finance, Services and Innovation (DFSI),
- NSW Land and Property Information (LPI); and
- Office of Environment and Heritage (OEH).

The outcomes of this assessment are explained below.

6.1 Water catchment and riparian analysis

The Study Area is contained within the catchment of Cosgroves Creek, one of a series of tributaries that flow north east into South Creek. It is notable that Cosgroves Creek flows across Elizabeth Drive and through the area identified on the draft Structure Plan as the Northern Gateway. The Study Area and the Northern Gateway both lie within the South Creek Sub catchment (Australia Government, 2016).

Stream orders (DPI Water, 2017) are indicated on the Stream Orders and Sub catchment Map at Figure 6-2.

NSW DPI Office of Water defines 'waterfront land' for the purposes of maintaining important environmental functions of waterways. Waterfront land includes the bed and bank of any river, lake or estuary and all land within 40 m of the highest bank of the river, lake or estuary.

Riparian Corridors (RC) lie within waterfront land and form the transition zone between the terrestrial and aquatic environment. The RC performs important environmental functions including:

- Providing bed and bank stability and reducing bank and channel erosion;
- Protecting water quality by trapping sediment, nutrients and other contaminants;
- Providing diversity of habitat for terrestrial, riparian and aquatic plants (flora) and animals (fauna);
- Providing connectivity between wildlife habitats;
- Conveying flood flows and controlling the direction of flood flows;
- Providing an interface or buffer between developments and waterways; and/or
- Providing passive recreational uses.

NSW DPI Office of Water set guidelines for defining RCs to provide guidance on controlled activity approval requirements for development applicants. The RC includes the channel and a vegetated riparian zone (VRZ) on both sides of the waterway (Figure 6-1). The width of the VRZ has been standardised for first, second, third and fourth and greater order waterways (Table 6-1). The defined VRZ allows development applicants to identify constraints and opportunities by the use of the averaging rule and the RC matrix (see below).

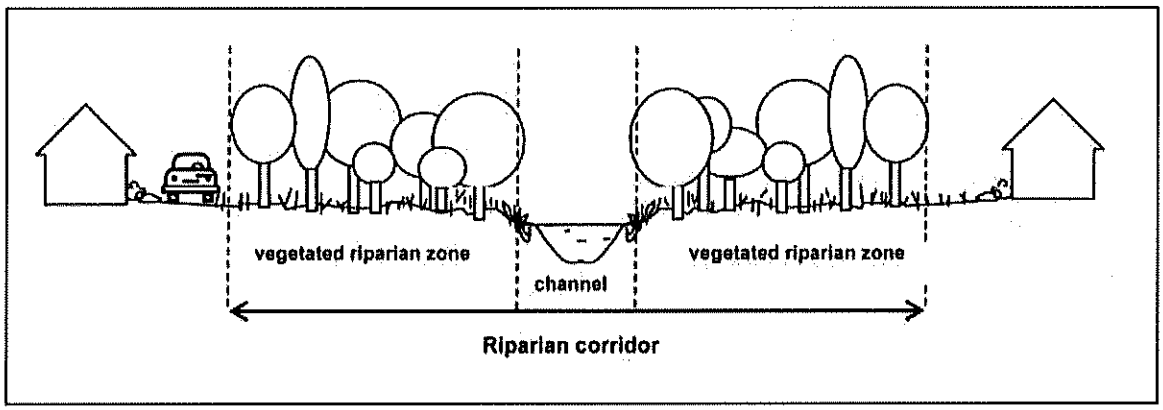

Figure 6-1 The RC and VRZ
Source: Department of Primary Industries, 2012, Guidelines for Controlled Activities on Waterfront Land – Riparian Corridors

The VRZ is based on the Strahler stream order system. Although Council adopts the Horton Stream Order to classify stream order, waterway classification within the DIA based on these two classification schemes are the same within the DIA. Thus, the preliminary mapping of VRZ of waterways within the DIA was undertaken based on the Strahler classification as per NSW DPI Office of Water guidelines. The VRZ starts at the top of bank (ToB) on both sides of a waterway. As ToB surveys have not been formally completed for this study, the preliminary map of VRZs illustrates the predicted VRZ around Council's waterway data. For the purposes of this study the buffering of the Horton Stream orders, as illustrated in Figure 6-2 has been used to indicate VRZ corridor and assess land capability.

Watercourse type	VRZ Width (Each side of watercourse)	Total RC width
1st order	10 metres	20 metres + channel width
2nd order	20 metres	30 metres + channel width
3rd order	30 metres	60 metres + channel width
4th order and greater (includes estuaries, wetlands and parts of rivers influence by tidal waters)	40 metres	80 metres + channel width

Table 6-1 Recommended Riparian Corridor (RC) Widths
Source: Department of Primary Industries, 2012, Guidelines for Controlled Activities on Waterfront Land – Riparian Corridors

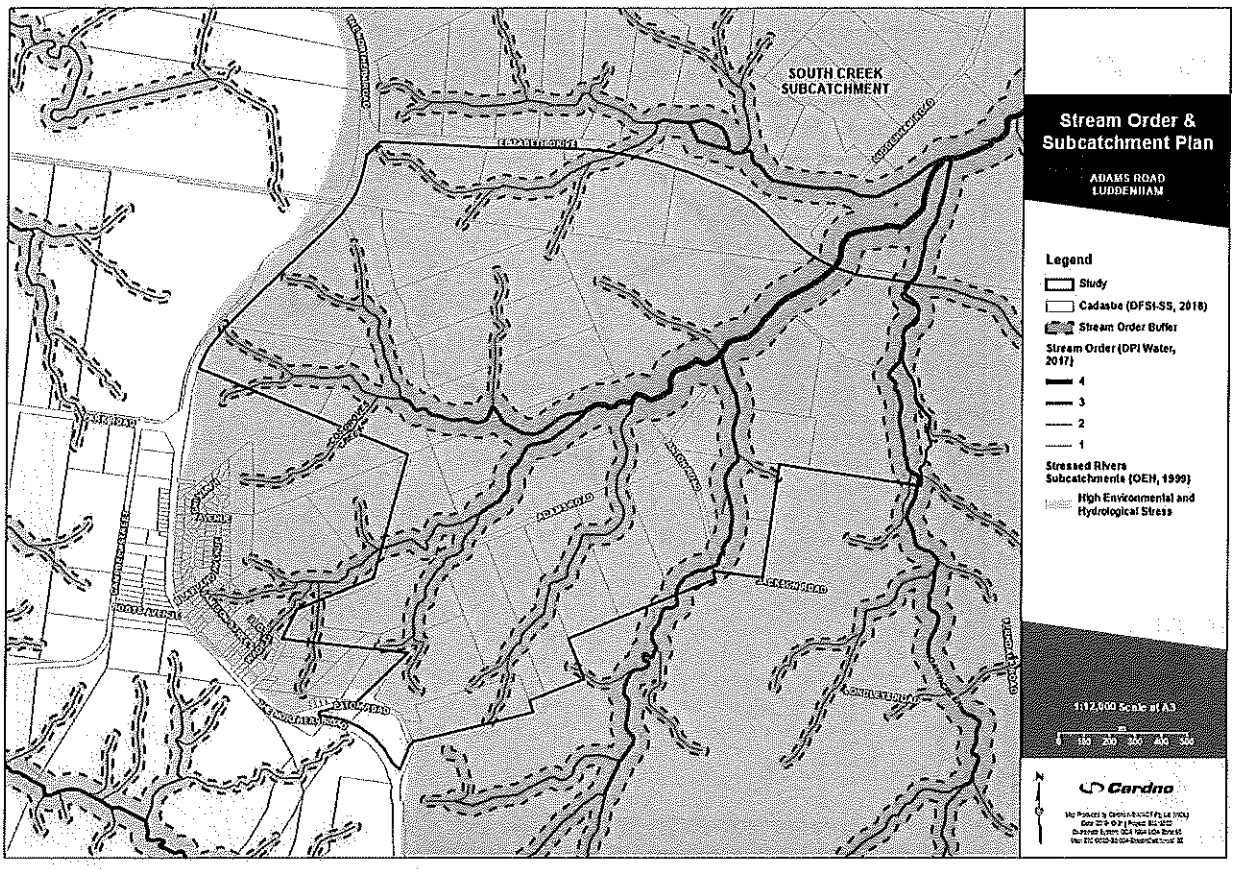

Figure 6-2 Stream Order & Sub catchment Plan
Source: Cardno, 2018

6.2 Flood

Flood information for the Study Area has been gathered with reference to the Penrith Local Environmental Plan, 2010 and the Liverpool Local Environmental Plan, 2008. Figure 6-3 illustrates that the entirety of the Study Area is outside of the 1%AEP and PMF flood extents.

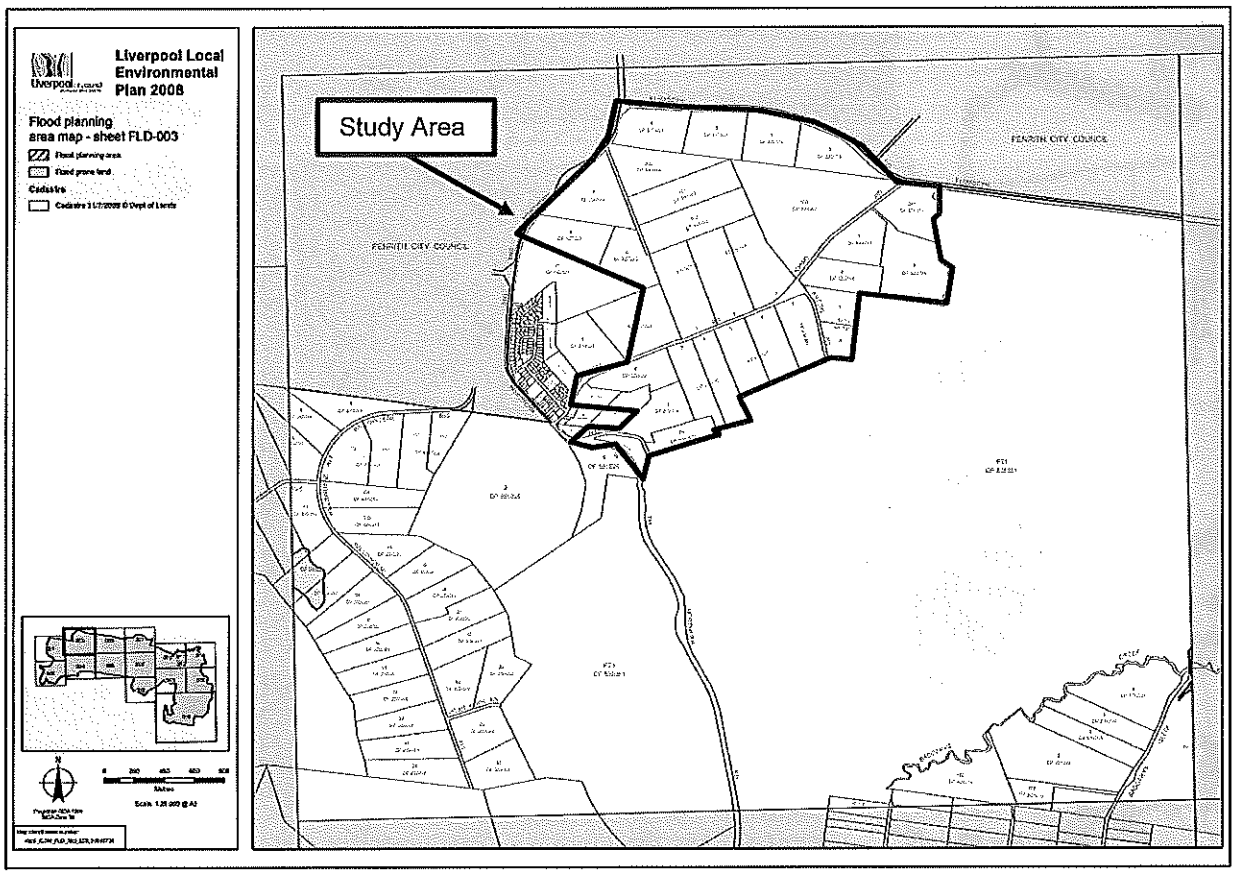

Figure 6-3 Flooding Planning Area Map – Sheet FLD_003
Source: NSW Legislation, 2015, Liverpool Local Environmental Plan 2008

6.3 Topography and slope

Land gradient (slope) data was derived from LPI Lidar data. The assessment revealed that the land is generally undulating with some steeper areas (greater than 15%) in its central northern and southern sectors. Other isolated areas of steep land are adjacent to creeklines and where land has been cut or filled to provide building platforms, agricultural dams and the like. Land with gradients of 10% or less is largely restricted to the ridgelines or to low lying land following the creeklines.

Steep land is generally considered to be a constraint to development. Implications for development on steep land increase with the intensity of development and include:

- Land disturbance due to cut and fill operations to support building platforms, external utility zones around buildings and access roads
- Landslip risk
- Erosion risk
- The rate, volume and quality of water leaving the land
- Loss of vegetation
- Downslope impacts on adjacent land and water quality
- Changes to visual character

For the purposes of assessing the capability of land for this submission, we have made an assumption that land with a gradient greater than 15% would be unsuitable for general development.

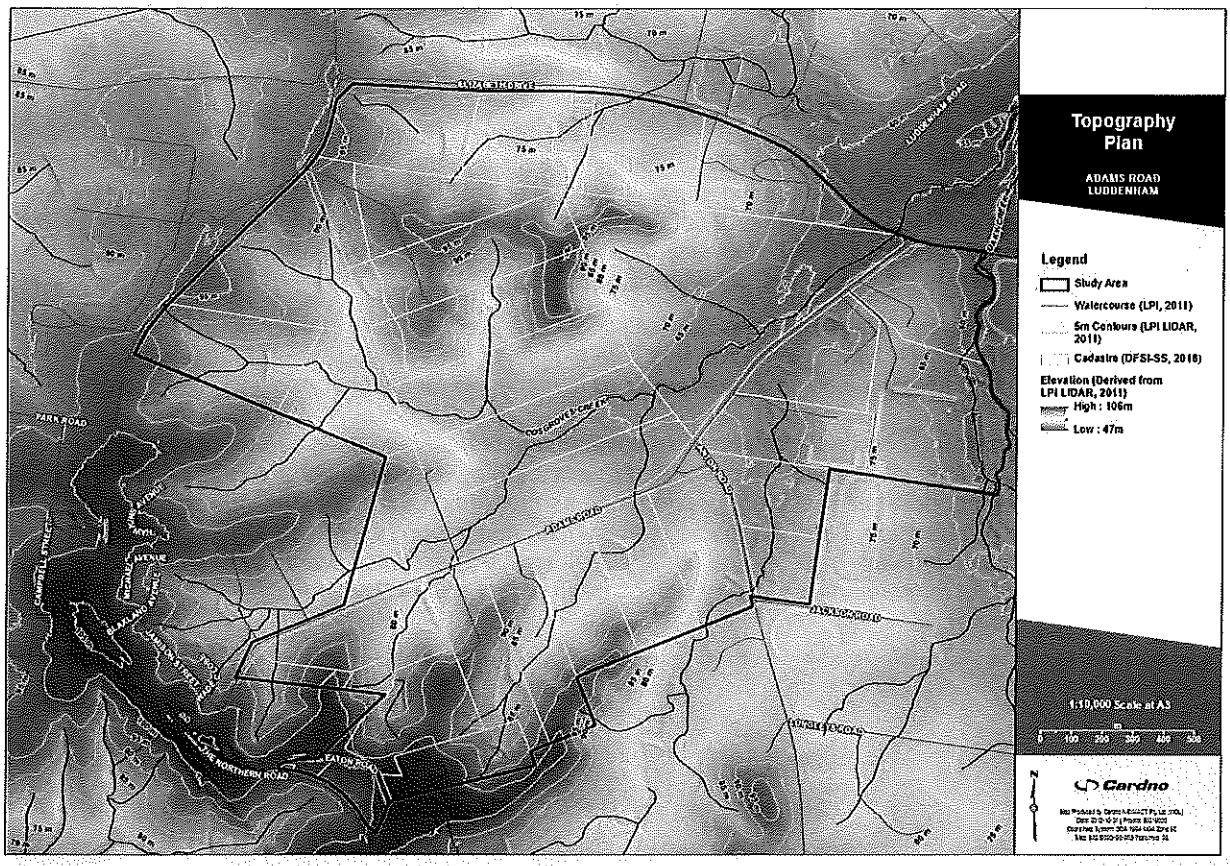

Figure 6-4 Topography Plan
Source: Cardno, 2018

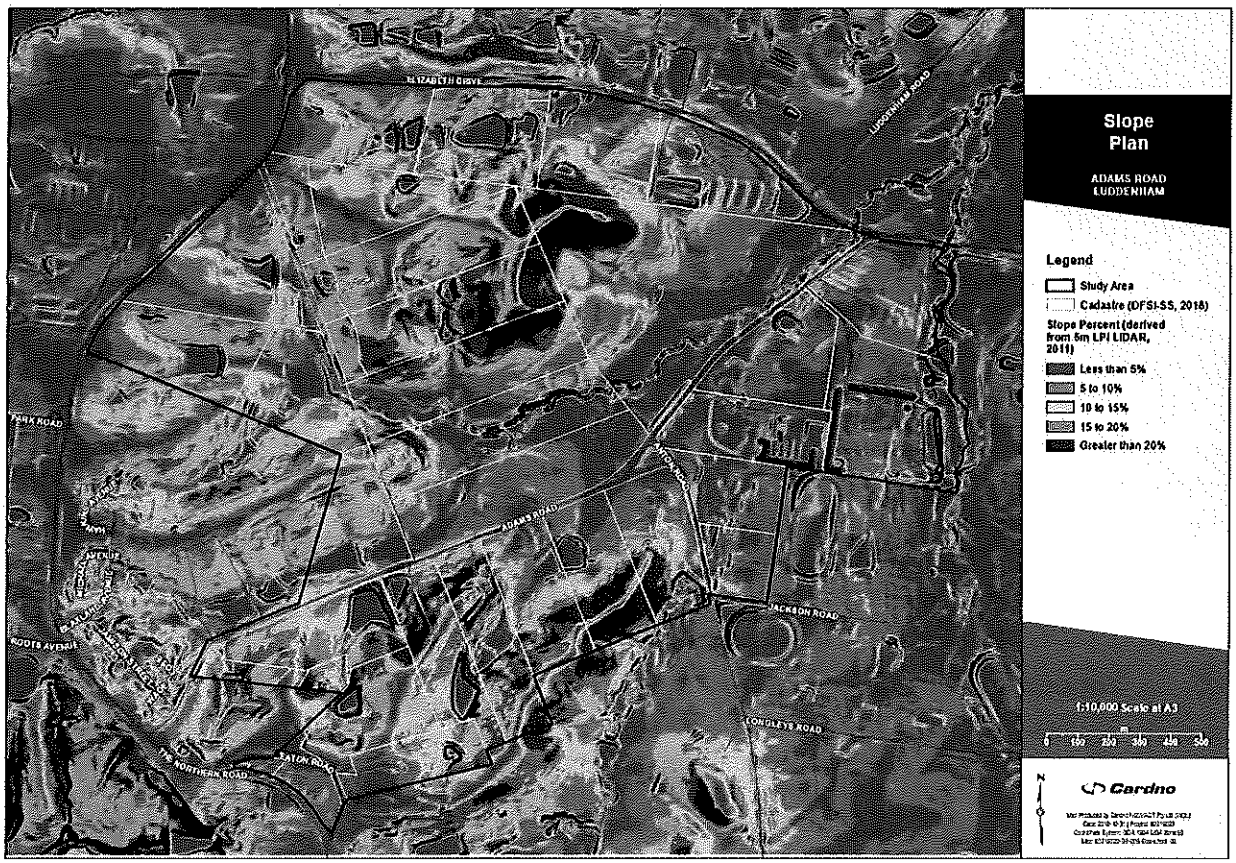

Figure 6-5 Slope Plan
Source: Cardno, 2018

6.4 Land and soil capability

Land and soil capability mapping describes the properties of soils and the landscapes in which they occur. Mapping is used to evaluate land for planning, agricultural use or environmental protection. Mapping by the Office of Environment and Heritage includes 8 categories in its classification system ranging from Very slight to Negligible Limitations (category 1) to Extreme limitations (category 8). Current land / soil capability mapping for the Study Area maps the land within 3 categories:

***4. Moderate to severe limitations**. Land generally not capable of sustaining high impact land uses unless using specialised management practices with high level of knowledge, expertise, inputs, investment and technology. Limitations are more easily managed for lower impact land uses (e.g. grazing).*

6. ***Severe limitations**. Land not capable of sustaining high impact land uses except where resources allow for highly specialised land management practices to overcome limitations (e.g. high value crops). Lower impact land uses (e.g. grazing) can be managed by readily available practices.*
7. ***Very severe limitations**. Land incapable of sustaining many land use practices (e.g. cultivation, moderate to high intensity grazing and horticulture). Highly specialised practices can overcome some limitations for some high value products. Land often used for low intensity land uses (low intensity grazing).*

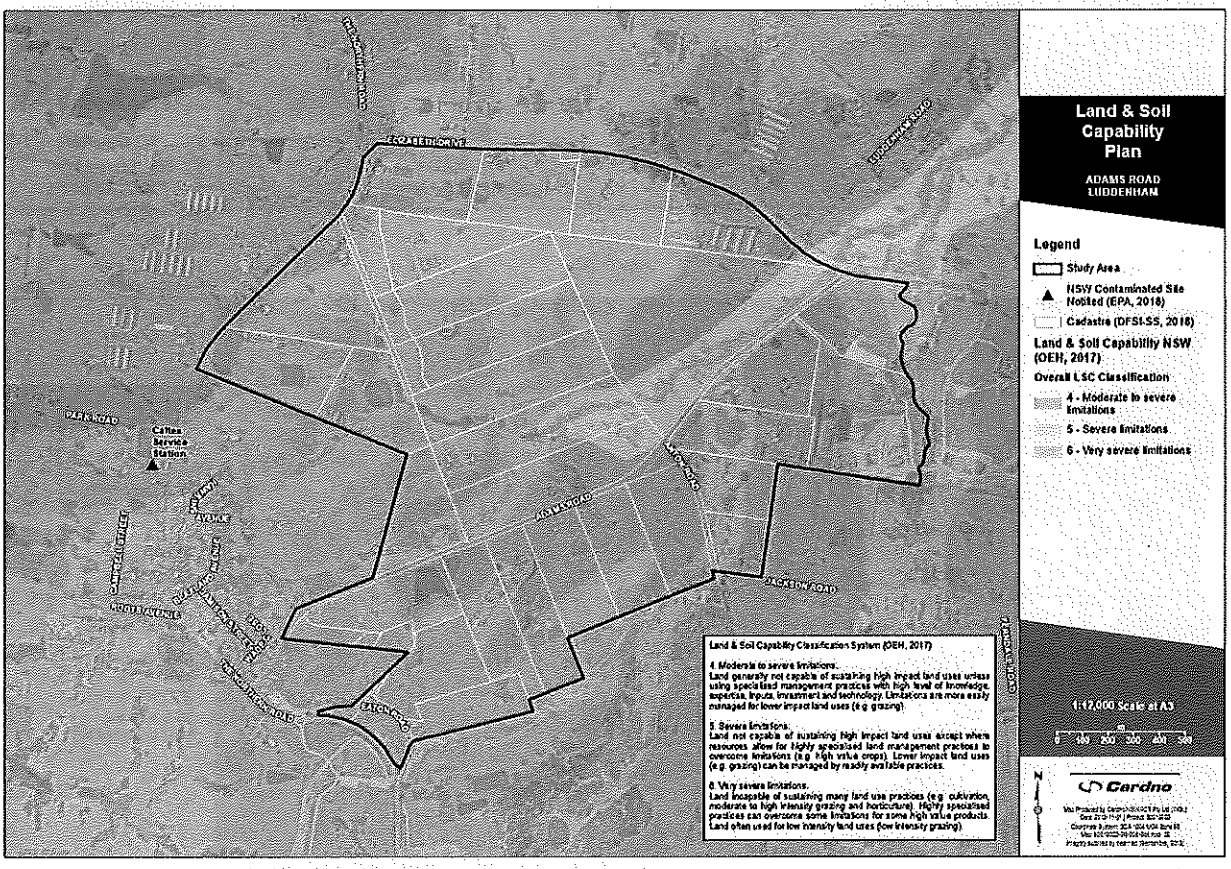

Figure 6-6 Land & Soil Capability Plan
Source: Cardno, 2018

6.5 Vegetation and biodiversity

Land with high biodiversity value tends to be restricted to the Riparian Corridors with some additional small and generally isolated portions of identified land. Apart from where substantial intact and continuous tracts of land are involved, biodiversity values should not be considered a constraint to allocation of land uses at the strategic level. For this reason, biodiversity has not been included as a constraint to development in the Study Area.

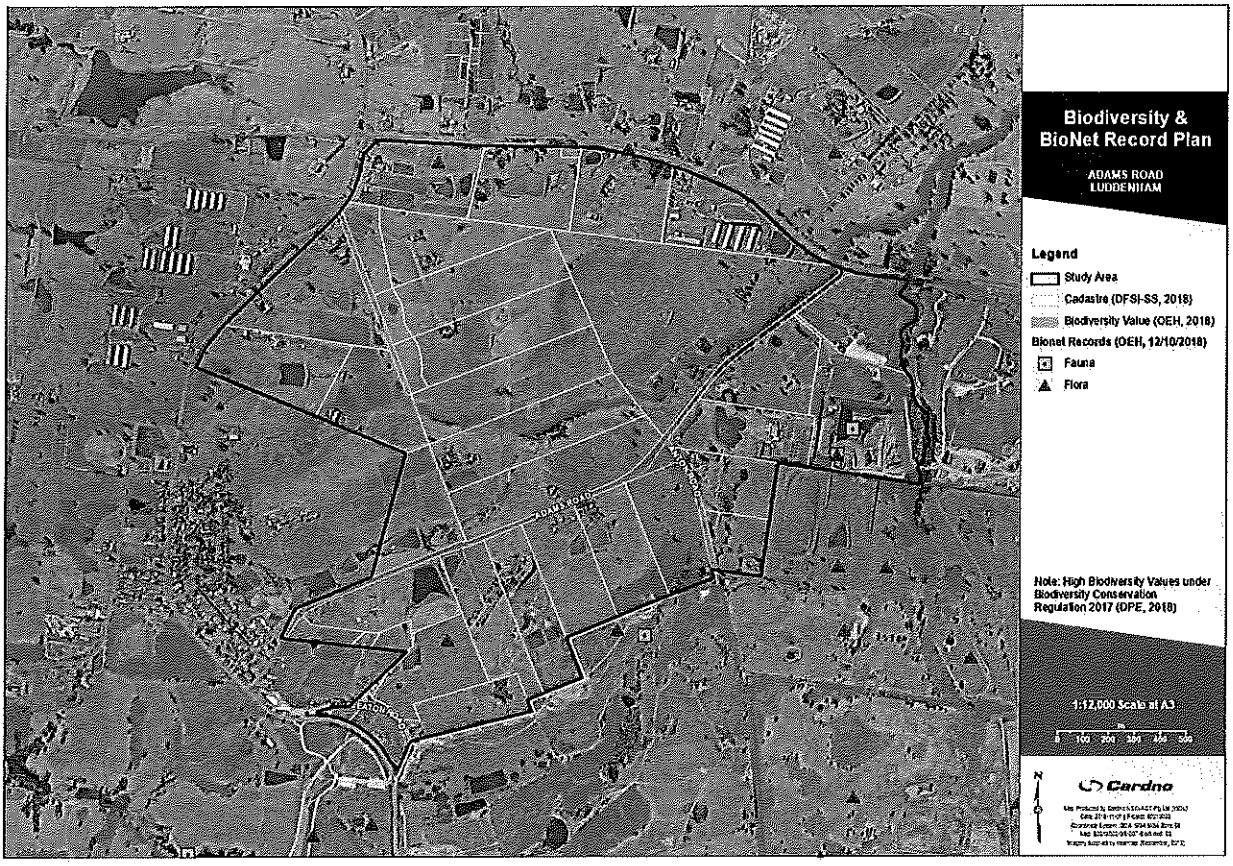

Figure 6-7 Biodiversity & BioNet Record Plan
Source: Cardno, 2018

6.6 Bushfire

Similar to biodiversity values, environmental hazards such as Bushfire Hazard are generally not considered to be absolute constraints on the capability of land for development at the strategic planning level. Some evidence of this the fact that most Planning Instruments, which are the statutory outcomes of the strategic planning process, do not include mapping of Bushfire Prone Land. Zone mapping reflects this further with many Local Environmental Plans including residential zones over land mapped elsewhere as bushfire prone.

Bushfire hazard for the Study Area is mapped in the NSW Rural Fire Service Bushfire Prone Land mapping set. Within the Study Area, only some small portions of land within the designated Riparian Corridors and a very small portion adjacent to Adams Road (consistent with mapped Biodiversity Values) are mapped as having significant levels of bushfire risk (Vegetation Category1).

Figure 6-8 Bushfire Plan
Source: Cardno, 2018

6.7 Airport generated noise

Mapping of the Airport Noise Exposure Concept (**ANEC**) has been derived from noise modelling included in the *Western Sydney Airport Plan, 2016* (Australian Government). The modelling indicates "noise contours" that would be likely to result from aircraft flight paths at the fully operational airport during 2 airport operating modes that are considered typical for operations.

For purposes of assessing appropriate forms of development with respect to exposure to airport generated noise, the Ministerial Directions in Section 9.1 of the *Environmental Planning and Assessment Act, 1979* are relevant:

4) "A planning proposal must not rezone land:

a) for residential purposes, nor increase residential densities in areas where the ANEF, as from time to time advised by that Department of the Commonwealth, exceeds 25, or

b) for schools, hospitals, churches and theatres where the ANEF exceeds 20, or

c) for hotels, motels, offices or public buildings where the ANEF exceeds 30.

5) A planning proposal that rezones land:

a) for residential purposes or to increase residential densities in areas where the ANEF is between 20 and 25, or

b) for hotels, motels, offices or public buildings where the ANEF is between 25 and 30, or

c) for commercial or industrial purposes where the ANEF is above 30,

must include a provision to ensure that development meets AS 2021 regarding interior noise levels."

Based on these guidelines, the majority of the Study Area would be suitable for commercial or industrial purposes, consistent with the Flexible Employment land use category.

With respect to Agribusiness, our advice after conversations with specialists in the Department of Primary Industry (**DPI**) is that aircraft noise is a recognised constraint for the forms of high intensity agriculture pursuits likely to be carried out in the Agribusiness land use area. Specifically, noise can be a constraint with regard to animal husbandry, particularly for high intensity agricultural activities such as poultry or pig farming. On this basis, we assume that these activities may not be feasible within the ANEC 25 contour or greater. For the purposes of this submission, however, we have not excluded this land from the quantum of land

suitable for agribusiness as it may be suitable for other uses described in LUIIP under the category such as logistics, warehousing, agricultural research and the like. Notably, these uses would also be consistent with the Flexible Employment land use category identified in the draft LUIIP.

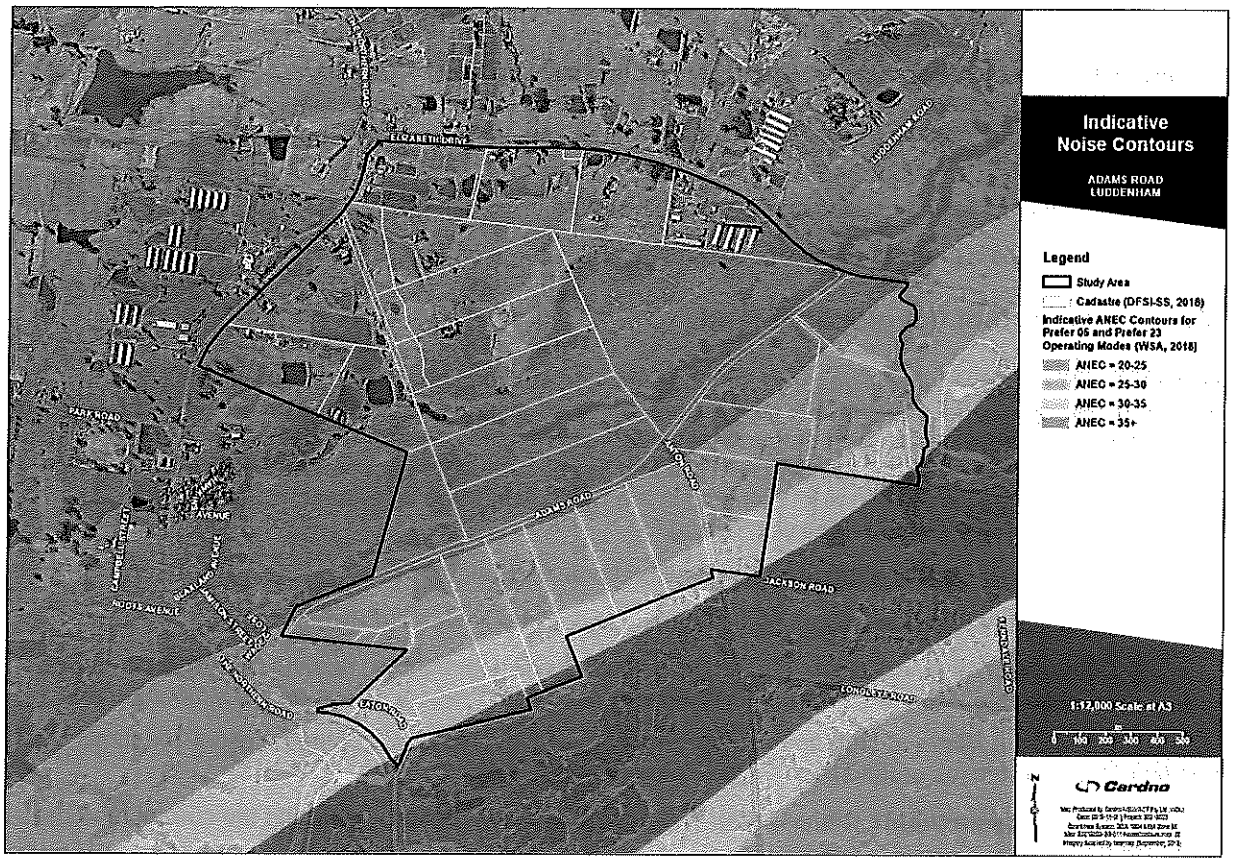

Figure 6-9 Indicative Noise Contours
Source: Cardno, 2018

7 Development Scenarios Analysis

7.1 Land capable of development

Land that is likely to be capable of development has been identified out of the above described constraints analysis process. For the purposes of this high level assessment, the following criteria have been used to exclude land from the quantum of land that may be constrained for development for purposes of "flexible employment" or "agribusiness":

- Land within identified riparian corridors, as illustrated on Figure 6-2;
- Land that has a gradient of greater than 15% as illustrated on Figure 6-5

7.2 Quantum of developable land

The outcome of exclusion of this identified land has resulted in a total quantum of approximately 310 hectares of land that is not substantially constrained for development purposes, out of the total Study Area of 387 hectares. This developable land quantum has been used as the basis for the following economic analysis of the Study Area carried out by HillPDA Land Economists. The economic analysis has provided advice on the economic implications for planning in the Study Area (See letter attached at Appendix B). Specifically, advice has been provided with regard to:

- The economic viability of traditional agricultural practices on this land;
- The viability of high intensity / high technology agriculture in western Sydney; and
- A Comparison of potential job generation between traditional agriculture, high tech agriculture and uses associated with the "Flexible Employment" land use category shown on the structure plan.

HillPDA analysed the following four land use options for the Study Area to compare potential economic benefits with respect to job creation and Gross Value Added (**GVA**):

- **Traditional Agriculture** (Base Case). This is a "do nothing" option – retaining the current land uses of the land.
- **High Tech Agriculture** This relates to more intense forms of agriculture such as hydroponic crop farming. Job density is higher at around 5 workers per hectare
- **Logistics** This includes transport and warehouse uses, cold Storage, food logistics, packaging, agricultural warehousing etc. Job density is assumed at 15.5 per hectare as forecast for the Western Sydney Employment Area
- **Mixed Use / Flexible Employment** including Airport related businesses. This option was based on a range of land uses that generally agglomerate around airports. The mix of land uses was assumed as per the table below based on benchmarking SA2 zones around various airports including Mascot, Tullamarine (Vic), Richmond (SA) and Hamilton (Qld). This option assumes 75% of the developable area is saleable and an FSR ranging from 0.75:1 to 1:1.

Use	Land Use Mix	Jobs/Ha
Retail Trade	22%	158
Accommodation	2%	163
Public Administration	5%	103
Professional, Scientific and Technical Services	6%	297
Wholesale Trade	2%	82
Other Services	6%	87

Transport Support Services	14%	56
Manufacturing	29%	89
Road Transport	15%	36
TOTAL	100%	76

Table 7-1 Assumed Land Use Mix Benchmarked Against Another Airport Sites

Source: Hill PDA

The findings of this analysis are described at Table 7-1. In summary, the findings are:

- Under existing land uses (traditional agriculture), the Study Area has an estimated GVA of $44.86m and generates a total of 487 jobs.
- The high technology, high intensity agriculture scenario would generate a GVA of $237.46m and 1,550 total jobs.
- The logistics and warehousing scenario (consistent with the Agribusiness land use mix) would generate a GVA of $635.51m and 4,805 total jobs.
- The Flexible mixed use / airport related employment scenario (consistent with the Flexible Employment land use mix) would generate a GVA of $2.38 billion and 23,560 total jobs.

The table below provides further detail on the HillPDA assessment.

	Traditional Agricultural (Base Case)	High Tech Agricultural	Logistics (Cold storage, food logistics, packaging, agricultural warehousing etc)	Flexible Mixed Use and Airport related Employment
Number of Jobs	1.57	5	15.5*	76
Total Jobs	487	1,550	4,850	23,560
Gross Value Added/Worker ($)	92,172	153,200	132,260	1,011,118
Total Gross Valued Added ($m)	44.86	237.46	635.51	2,382

Table 7-2 Employment Generation & Gross Value Added by Land Use

Source: Hill PDA

In summary, HillPDA's findings are:

- The economic viability of traditional agricultural practices is likely to be significantly impacted in the Study Area given the proximity of the Western Sydney Airport. High tech agriculture is expected to intensify farming and increase productivity in Australia when located in economically suitable places. However, its viability in the Study Area is likely to be negatively impacted by environmental issues coming out of the proximity of the land to the airport.
- The potential economic benefits under either a logistics land use (GVA +$590m) or more intense airport related employment (GVA +$2,337m) shows a significant economic benefit to the economy compared to the continued traditional agricultural land use.
- Job creation (23,000 new jobs) and GVA ($2.38 billion) would be much higher under flexible land uses consistent with the Flexible Employment land use category.

7.3 Transport infrastructure analysis

Cardno has carried out a review of existing and proposed transport infrastructure associated with the Aerotropolis and, more specifically, the implications of existing and proposed infrastructure for planning in the Study Area. In brief, the findings of the assessment are:

- The Study Area is positioned on the western edge of the Western Parkland City, adjacent to the Western Sydney Airport precinct and near the Badgerys's Creek Aerotropolis, an area of major place-based planning and investment by Federal and NSW Governments.
- Located on the Northern Road, the Study Area is already well connected to Sydney's existing arterial road network and freight network.
- The Study Area is also in proximity to a number of transport infrastructure proposals and projects currently being planned / developed for the Western Parkland City such as the M12 Motorway, Bringelly Road Upgrade, The Northern Road Upgrade, Outer Sydney Orbital (M9 Motorway), Sydney Metro West, extension of the south west rail link and a potential north-south rail corridor), and the Western Sydney Freight Line and Intermodal Terminal.
- The implementation of these new and upgraded transport infrastructure projects in the Western City District will efficiently connect the Study Area to Parramatta, Liverpool, Campbelltown and other regional centres within the Sydney metropolitan area.
- As several of the transport infrastructure projects are currently in investigation or planning stages, there may be the opportunity to identify and integrate access arrangements and connectivity for the Study Area, as the transport projects develop.

Essentially, the findings of the assessment are that the Study Area is well connected to the existing road / freight network and will benefit significantly from the planned transport infrastructure associated with the Western Parkland City and the Aerotropolis which will provide improved connections to regional centres in the metropolitan area and beyond.

7.4 Agribusiness / agrihub scenario

The draft Stage 1 LUIIP indicates that the following developments may be suitable within the agriculture or agribusiness lands:

- Ongoing agriculture production such as dairying and poultry farming;
- Intensive horticulture such as mushroom and tomato farming;
- Food processing; and
- Food research and technology.

Our opinion is that the land within the Study Area may not be suitable for the majority of these agricultural activities for the following reasons:

- The Land and Soil Capability Classification mapping has indicated that the land within the Study Area is moderately to very severely limited with respect to capability for intensive agricultural uses. The majority of the land is classified as having "very severe limitations" meaning that it is incapable of sustaining moderate to high intensity land use practices.
- Our investigations have also found that the Study Area has been excluded from land mapped as Biophysical Strategic Agricultural Land (BSAL) under *SEPP (Mining, Petroleum Production and Extractive Industries) - Biophysical Strategic Agricultural Land Mapping.*
- We understand after discussions with NSW DPI that there are a number of significant limitations to locating the forms of intensive agricultural activities associated with the Agribusiness land use classification in the Study Area. These include:
    - Impacts of airport noise with regard to animal husbandry practices in intensive production;
    - Biosecurity hazards associated with colocation of varying forms of high intensity practices in close proximity to one another;

  These hazards may not necessarily preclude high intensity agricultural activities from the area but they would be significant constraints and due to the need for buffers between incompatible land uses, the productivity of the land would be likely to be substantially reduced in comparison to other employment related land uses.

Economic analysis has found that the agribusiness / agrihub scenario would generate significantly lower outcomes with regard to numbers of new jobs and Gross Value Added to the economy. Compounding this is the feasibility of these uses being taken up in the Study Area, brought into question by our review of comparable Australian and overseas operations which has found that agribusiness / agrihubs:

- Are generally initiated and support by government;
- Are generally located remote from transport hubs (25-50km distant) and none that we have identified are located adjacent to airports;
- Incorporate a diverse range of uses complimentary to agribusiness (business parks, offices, warehousing and logistics services, distribution centres, universities and research institutes and government institutions);
- Are often associated with research and development centres such as universities or government research institutes; and
- Offer a broad range of lot sizes to cater for a variety of demand but tend to cover large land parcels (International examples reviewed occupied between 1900 and 4000ha with Australian operations varying widely and occupying areas between 20 and 42,000ha).

7.5 Flexible employment scenario

The flexible employment scenario incorporates a broad range of land uses including a mix of employment and other complementary uses with links to food research and development associated with the Sydney Science Park, surrounded by retail and commercial. Export related activities such as cold storage, food processing and packaging, agricultural warehousing and logistics are also listed. Notably, S.3.2.2 of the draft LUIIP indicates that the Northern Gateway (flexible employment) Precinct may be suitable for intensive agribusiness uses.

Subsequent to the strategic planning investigations and land capability assessment described in this submission, it is our opinion that the Flexible Employment land use category is the most suitable for the Study Area for the following reasons:

- For the reasons summarised in Section 7 of this submission, the land has been found to be unsuitable for intensive agriculture.
- Historic strategic planning has described the future uses of the land as employment or urban. SEPP (Western Sydney Employment Area) included the land in the WSEA for the purposes of "providing for development including major warehousing, distribution, freight transport, industrial, and high technology and research facilities." The Sydney Metropolitan Plan (A Metropolis for Three Cities) does not include the Study Area in the identified Metropolitan Rural Area. The Western Sydney District Plan included the Study Area in 'Land Release Area' and 'Potential Future Industrial/Employment Land'.
- The Study Area lies within the Oaky / Cosgroves Creek catchment (South Creek Sub-Catchment) which is the same catchment that includes the Northern Gateway Precinct. Sustainable land planning practice is based on water catchments. This approach facilitates holistic considerations that define land parcels on ecological grounds, and provide a planning basis for protection / enhancement of water quality, protection / restoration of water related ecosystems and efficient use of resources. Implementation of a catchment based planning approach to the Study Area would require that it be included as part of a coordinated planning exercise that incorporates the Area with the land to the north of Elizabeth Drive. Logical implementation of this approach would likely result in extension of the land uses associated with the Northern Gateway into the upper reaches of the catchment rather than the current planning in the draft Structure Plan which arbitrarily creates a division between land uses north and south of Elizabeth Drive.
- The land represents a valuable opportunity for development for employment related uses because it is not flood affected, is not impacted by airport noise with regard to these uses and is strategically located to take advantage of existing and proposed transport infrastructure.
- Economic analyses have found that the Flexible Employment scenario will generate major employment opportunities and economic benefits well over and above the results that would come out of development for Agriculture and Agribusiness.

8 Conclusion and Recommendations

In summary, our review of the draft LUIIP with regard to assigned land uses for the Study Area has found:

- Prior to the draft LUIIP, Sydney Metropolitan strategic planning has identified the land for employment purposes. There appears to be no urban planning basis for changing the land use category of the land from employment to agriculture and agribusiness;
- The land lies within the same water catchment as the Northern Gateway and Luddenham North Precincts and land use planning should reflect this;
- The land is not flood prone and would not be significantly affected by airport generated noise with respect to constraints on employment related land uses;
- The land is well connected to regional freight networks and stands to benefit significantly from future transport initiatives associated with the Aerotropolis and the greater Western Parkland City;
- Capability assessment has found that the land is generally unsuitable for intensive agricultural purposes;
- Many of the specific uses identified within the draft LUIIP as suitable for the Agriculture and Agribusiness land use category are inconsistent with safety guides in the National Airports Safeguarding Framework and would be incompatible with aviation practices.
- The land is considered to be inconsistent with representative national and international examples of Agribusiness and Agriports and there are likely to be a number of conflicts between these uses and airport related activities.

On the basis of these findings it is in our opinion that the Study Area should be integrated into the Northern Gateway and Flexible Employment area for the following reasons:

- Strategic planning
    - This would be consistent with the vision and directions outlined in A Metropolis of Three Cities and the Western City District Plan;
    - The Study Area, along with the areas designated as the Northern Gateway, is included in the Western Sydney Economic Corridor;
    - This use would maximise economic outputs and job growth within the Western Economic Corridor and Western Sydney
- Land capability
    - The entire study area is unimpeded by flood constraints and the majority of the land is not impacted by aircraft noise for employment purposes (i.e. Stage 1 combined contour: ANEF 20-25 and 25-30);
    - The land has very limited capability for intensive agricultural purposes. It is identified on the NSW Land and Soil Capability map base as having Moderate to Very Severe Limitations for high intensity agriculture and is not identified in the SEPP (BSAL) as Biophysical Strategic Agricultural Land (BSAL).
- Catchment based planning
    - The land is located within the same catchment (i.e. Oaky and Cosgrove Creeks) as the Northern Gateway. Sustainable urban planning practices dictate that the catchment should be planned holistically.
- Access to transport infrastructure
    - The land is located in close proximity to the North South Rail line, Westlink M7 and Western Motorway and Adams Road/The Northern Road intersection.
- Job creation and value add to the economy
    - Economic analysis by Hill PDA Economic indicates that the highest and best use of the Study Area would be 'flexible mixed uses and airport related employment' as it would

generate significant economic benefit (GVA + $2,337m) to the economy and job growth (23,000 additional jobs) when compared to traditional agricultural or agribusiness uses.

- Agricultural / agribusiness uses would represent an underutilisation of the Study Area's economic potential and would fail to fully capitalise on the investment and benefits generated by the Western Sydney Airport and future infrastructure investment;

- Land use conflicts associated with Agribusiness and Agriports
  - Development of Agribusiness or an "Agriport" on this land would be inconsistent with national and international precedents where these operations are generally located a minimum of 25-50km from transport hubs;
  - There is potential for significant conflicts between airport related activities and intensive agricultural uses.
  - There is also potential for conflicts associated with colocation of incompatible agricultural enterprises. The need for significant buffers between uses to manage biosecurity may lead to inefficient use of the land.
- The Flexible Employment land use category would maximise options for future development of the land
  - Agribusiness may not be a suitable use for the land but the Flexible Employment category would allow for this use without precluding other employment generating uses

On the basis of these findings, it is our opinion that the appropriate land use categorisation for the land that is the subject of this submission is Flexible Employment and that the land should be included in the Northern Gateway Precinct. We recommend that the next iteration of the Land Use and Infrastructure Implementation Plan should reflect this revised categorisation.

APPENDIX

A

STRATEGIC PLANNING REVIEW

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Appendix A – Strategic Planning Review

An historic analysis of regional strategic planning as it relates to the Study Area has been carried out in order to identify the basis for strategic planning for the locality and how it has been translated to the current planning as articulated in the draft LUIIP. Key strategic plans and policies of relevance to the Study Area include:

- State Environmental Planning Policy (Western Sydney Employment Area) 2009 & Amendment (Broader Western Sydney Employment Area) 2014
- Western Sydney District Plan (Greater Sydney Commission)
- Western Sydney Airport Plan (Australian Government)
- Western Sydney City Deal (Australian Government)

A brief review of each of these with respect to their relevance to the Study Area follows.

1.1.1 State Environmental Planning Policy (Western Sydney Employment Area) 2009 (SEPP-WSEA, 2009)

The Western Sydney Employment Area (**WSEA**) was originally identified in SEPP-WSEA, 2009.

The primary aim of the original SEPP was:

"to protect and enhance ….. the Western Sydney Employment Area for employment purposes" (Cl.3(1)).

Particular aims of direct relevance to this submission are in Cl.3(2) of the SEPP:

"(a) to promote economic development and the creation of employment in the Western Sydney Employment Area by providing for development including major warehousing, distribution, freight transport, industrial, high technology and research facilities,

(b) to provide for the co-ordinated planning and development of land in the Western Sydney Employment Area,

(c) to rezone land for employment or environmental conservation purposes,

(d) to improve certainty and regulatory efficiency by providing a consistent planning regime for future development and infrastructure provision in the Western Sydney Employment Area,"

The Study Area is located within Precinct 11 (Broader Western Sydney Employment Area) and currently unzoned.

Clause 12 of SEPP (Western Sydney Employment Land) 2009 enables development to be carried out on unzoned land only with consent and the consent authority must take into account the following:

a) consider whether the development will impact on adjoining zoned land and, if so, consider the objectives for development in the zones of the adjoining land, and

b) satisfy that the development is appropriate and is compatible with permissible land uses in any such adjoining land.

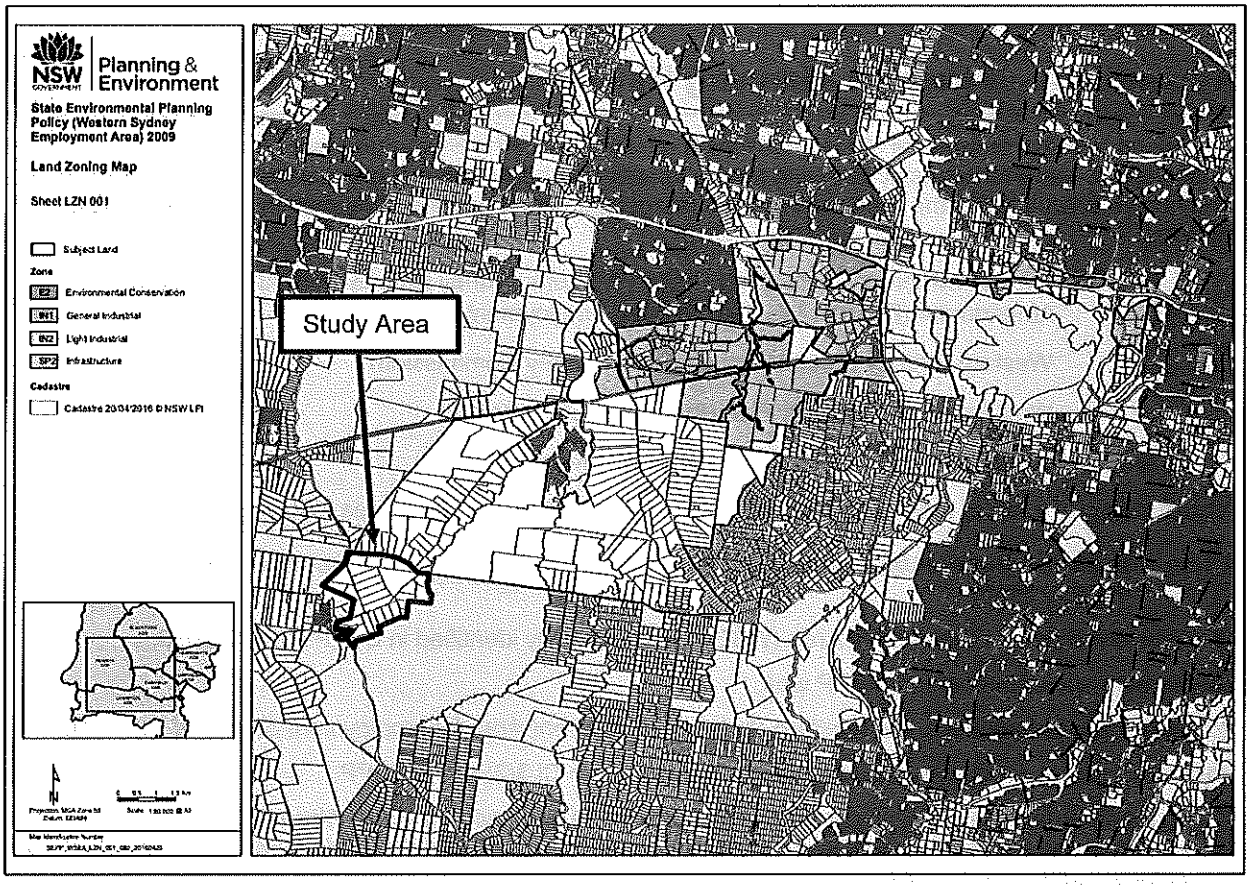

Figure 1-1 Land Zoning Map
Source: NSW Legislation, 2009, State Environmental Planning Policy (Western Sydney Employment Area) 2009

Broader WSEA Draft Structure Plan

In 2013, the NSW Government and the then Department of Planning & Infrastructure prepared a draft Structure Plan and vision for the Broader Western Sydney Employment Area (WSEA). The Broader WSEA is identified as one of nine 'City Shapers' within the former Draft Metropolitan Strategy. The intent of the structure plan was to guide the development of the biggest employment zone in NSW by expanding the WSEA from 2,200 hectares to more than 10,000 hectares. It is anticipated that more than 200,000 jobs will be created over the lifetime of the Broader WSEA, including 57,000 jobs in the next 30 years. In the short to medium term, the main employment sectors for WSEA would be transport, logistics and warehousing with increased opportunities for higher density employment, such as business parks, in the longer term.

The subject lands are located within WSEA and are identified as 'employment land'.

As part of the development of the Structure Plan, Urbis was engaged to prepare an Economic Issues and Driver Study (the Study) for the Broader WSEA. The Study highlighted the importance of the agriculture and agribusiness sector to the economy but noted that the contribution of the sector is declining due to the shift to a low carbon economy. Additionally, the Study also questioned the future role of the agricultural sector in the Sydney Basin due to the "*inherent conflict which existing between many agricultural enterprise, particularly intensive livestock agricultural and urban development*" and the availability of sufficient and suitable land within the Sydney Basin to "*support a commercially viable agricultural business is likely become more and more limited*". The Study recommended the establishment of a research hub focused on agribusiness which may provide "*opportunities to leverage off the agricultural history of the area and the growing interest in locally grown produce*". (Urbis, 2013)

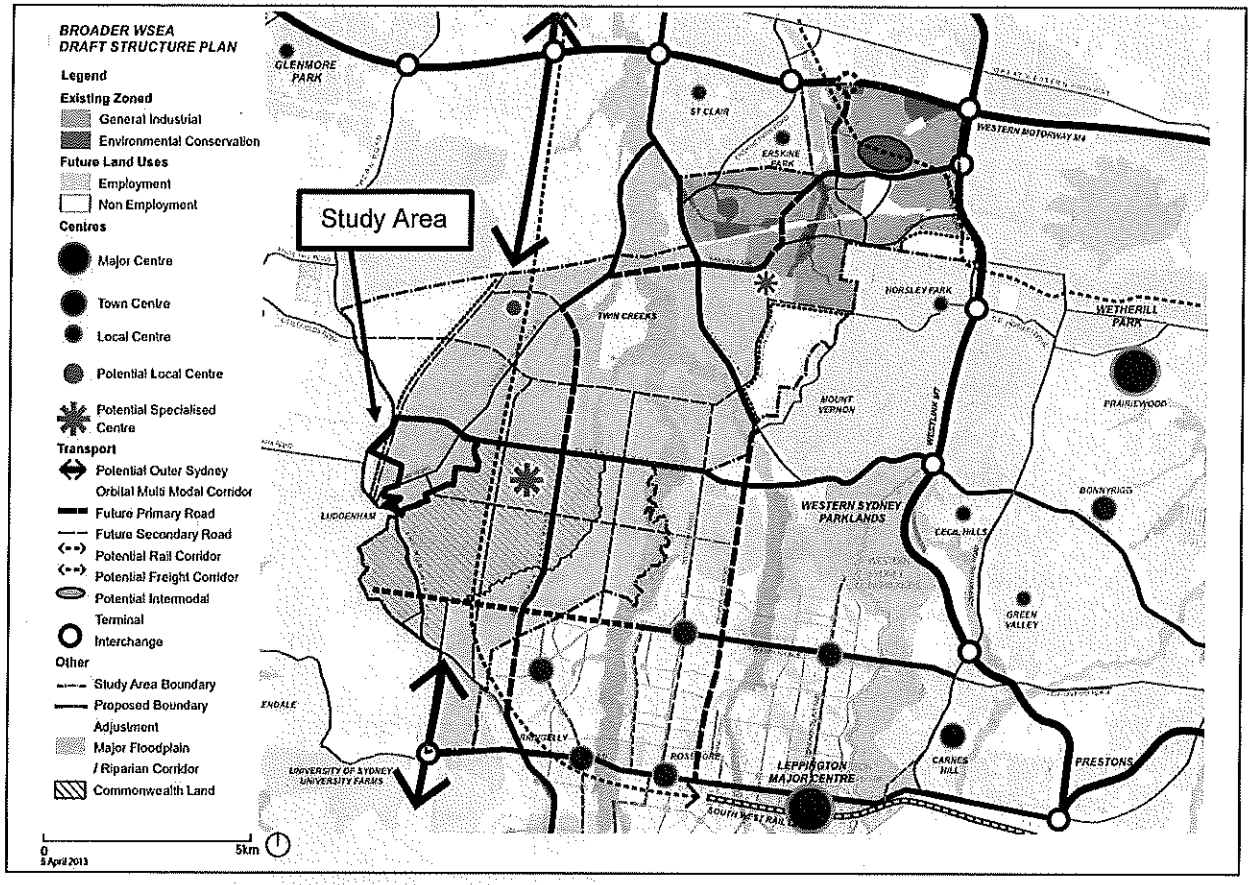

Figure 1-2 Broader WSEA draft Structure Plan
Source: Department of Planning & Environment, 2013, Broader WSEA draft Structure Plan

A Metropolis of Three Cities

A Metropolis of Three Cities (the Plan) sets a 40 year vision and establishes a 20-year plan to manage growth and change for Greater Sydney in the context of social, economic and environmental matters.

The Plan identifies a Metropolitan Rural Area within Greater Sydney with the intent to provide certainty and protection to agricultural industries by preventing inappropriately dispersed urban activities in rural areas. Figure 2-2 indicates that the Study Area is not included in land mapped as 'Metropolitan Rural Area'.

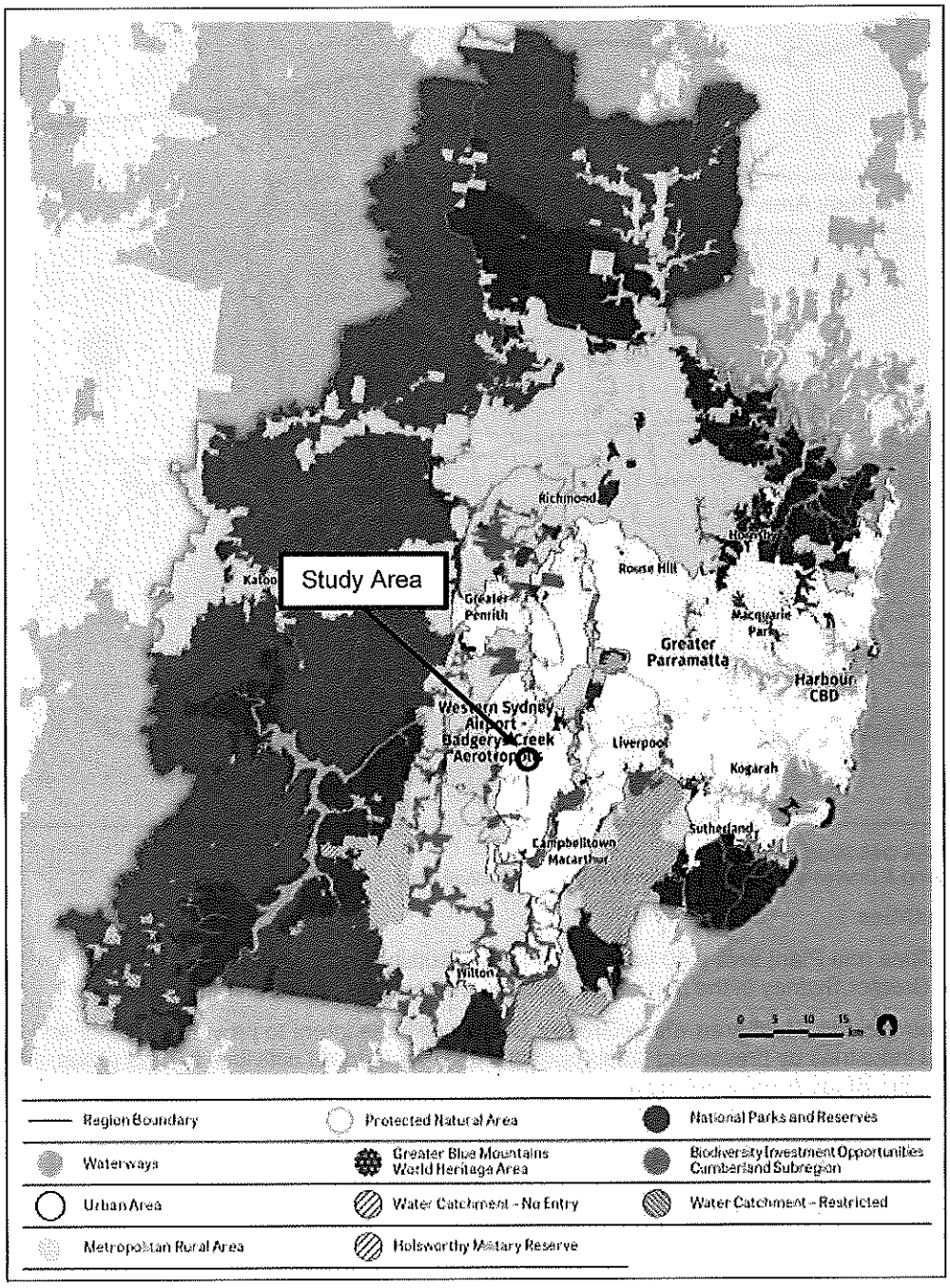

Figure 1-3 Protected Natural Area and Metropolitan Rural Area
Source: Greater Sydney Commission, 2018, Western Sydney District Plan

Western City District Plan

The District Plans are a guide to implement A Metropolis of Three Cities – the Greater Sydney Region Plan at a District level and sets out the planning priorities and actions for each of the Districts. The Study Area is located within the Western City District (**the District Plan**).

Figures 1-5 and 1-6 indicate that the Study Area has been identified as 'Land Release Area' and 'Potential Future Industrial/Employment Land' in the District Plan.

A proportion of the Study Area is also located within the 'Economic Corridor'. The intent of the Western Economic Corridor is to facilitate "*job growth leveraging the investment in infrastructure and new communities*".

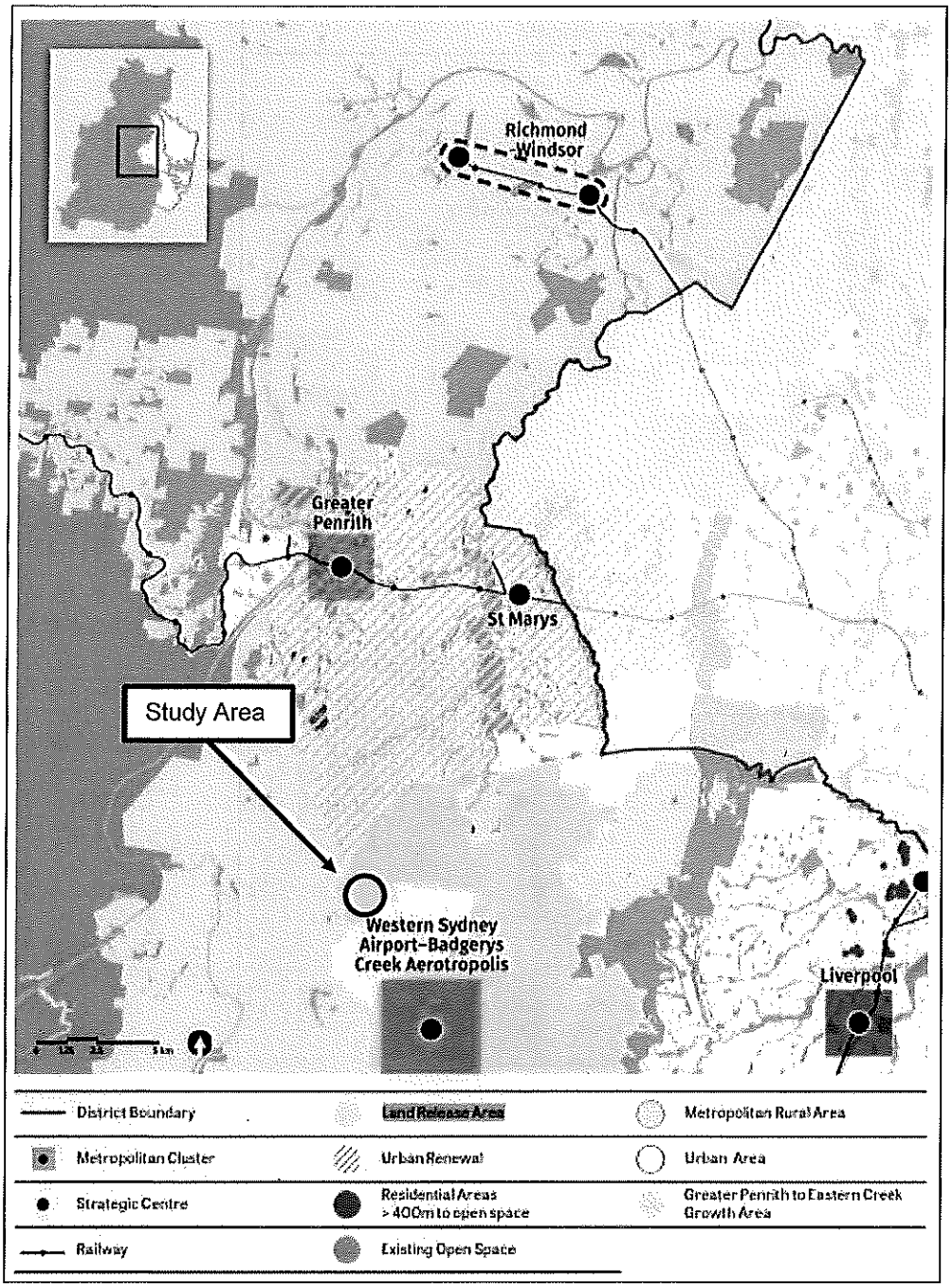

Figure 1-4 Western City District (North) Access to Open Space
Source: Greater Sydney Commission, 2016, Greater Sydney Public Open Space Audit

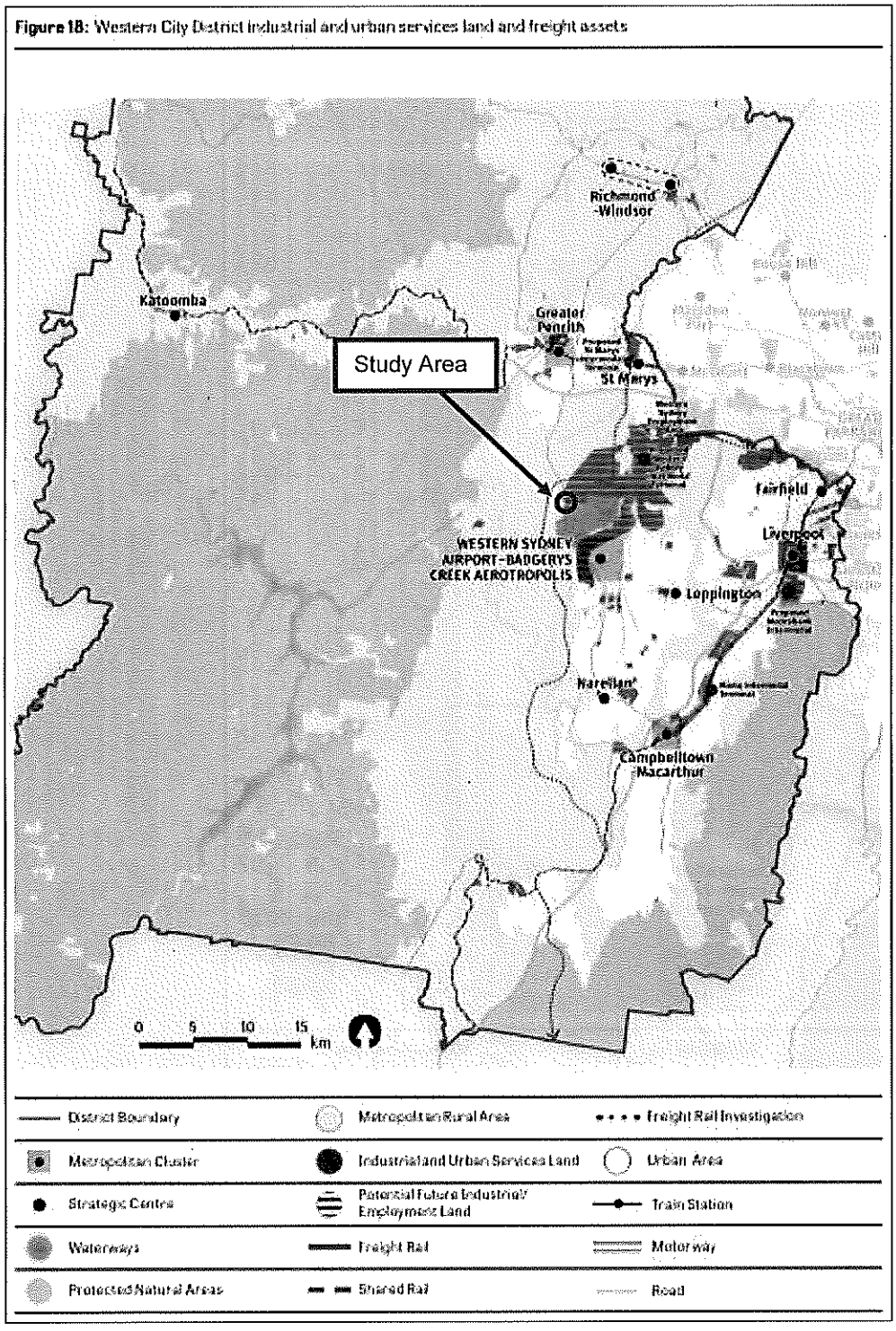

Figure 1-5 Western City District Industrial and Urban Services Land and Freight Assets
Source: Greater Sydney Commission, 2018, Western Sydney District Plan

State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) - Biophysical Strategic Agricultural Land Mapping

The NSW Government has developed a range of measures to ensure agricultural lands are protected from the impacts of mining and coal seam gas (**CSG**). As part of the process, 2.8 million hectares of biophysical strategic agricultural land (**BSAL**) has been identified across NSW.

BSAL is defined as land with a "*rare combination of natural resources highly suitable for agriculture*". BSAL have the best quality landforms, soil and water resources which are capable of sustaining high levels of productivity and require minimal management practices to maintain this high quality. BSAL is able to be used

sustainability for intensive agricultural purposes and is inherently fertile and generally lacks significant biophysical constraints.

Based on the Interim protocol for site verification and mapping of biophysical strategic agricultural land prepared by the Department of Planning & Environment (the Department), BSAL is required to meet the following criteria:

Properties with access to a reliable water supply, defined by:

- *rainfall of 350mm or more per annum (9 out of 10 years), OR*
- *a regulated river (maps show those within 150m), OR*
- *a 5th order or higher unregulated river (maps show those within 150m), OR*
- *an unregulated river which flows at least 95 per cent of the time (maps show those within150m), OR*
- *highly productive groundwater sources, as declared by the NSW Office of Water. These are characterised by bores having yield rates greater than 5L/s and total dissolved solids of less than 1,500mg/L and exclude miscellaneous alluvial aquifers, also known as small storage aquifers.*

  AND

- *land that falls under soil fertility classes 'high' or 'moderately high' under the Draft Inherent General Fertility of NSW (OEH), where it is also present with land capability classes I, II or III under the Land and Soil Capability Mapping of NSW (OEH).*

  OR

- *land that falls under soil fertility classes 'moderate' under the Draft Inherent General Fertility of NSW (OEH), where it is also present with land capability classes I or II under the Land and Soil Capability Mapping of NSW (OEH).*

Strategic Agricultural Land Map - Sheet STA_040B indicates that the Study Area has not been identified as BSAL.

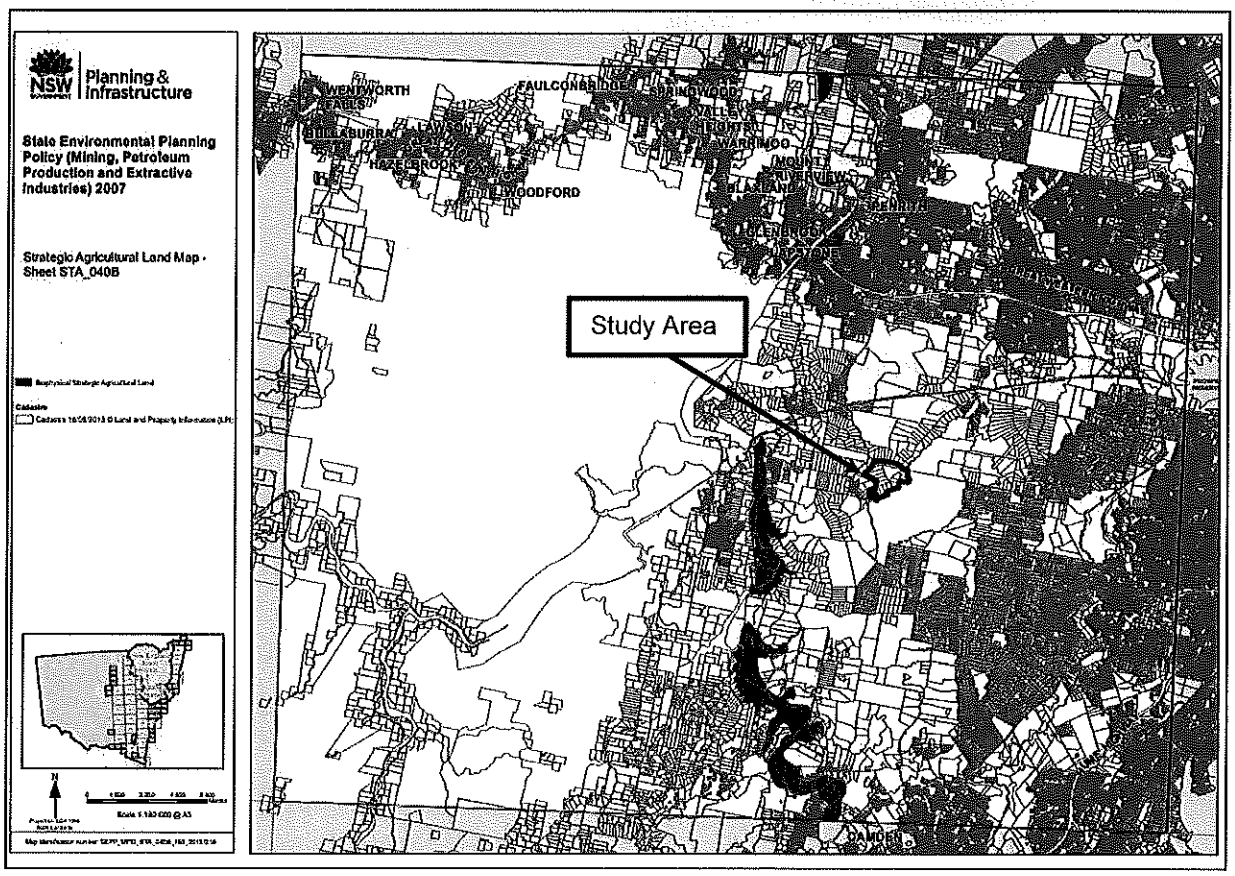

Figure 1-6 Biophysical Strategic Agricultural Land Mapping
Source: NSW Legislation, 2007, State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries)

Western Sydney Airport - Environmental Impact Statement

The Western Sydney Airport – Environmental Impact Statement (**EIS**) was developed to consider and assess the likely environmental impacts of the proposed airport. The EIS recognised that the development of the airport in conjunction with the expansion in Western Sydney would necessitate the loss of productive agricultural land and would transform the surrounding landscape from "*rural residential and agricultural lands to more developed land uses*".

As part of the EIS, a Socio-Economic Impact Assessment was prepared by GHD which indicated that there is a decline in the agricultural and manufacturing industries in Western Sydney as a consequence of the proposed airport development and other planned development which resulted in competition for land and labour.

Figure 2-7 and 2-8 presents the Land Use for Stage 1 and Long Term Strategy for the Western Sydney Airport.

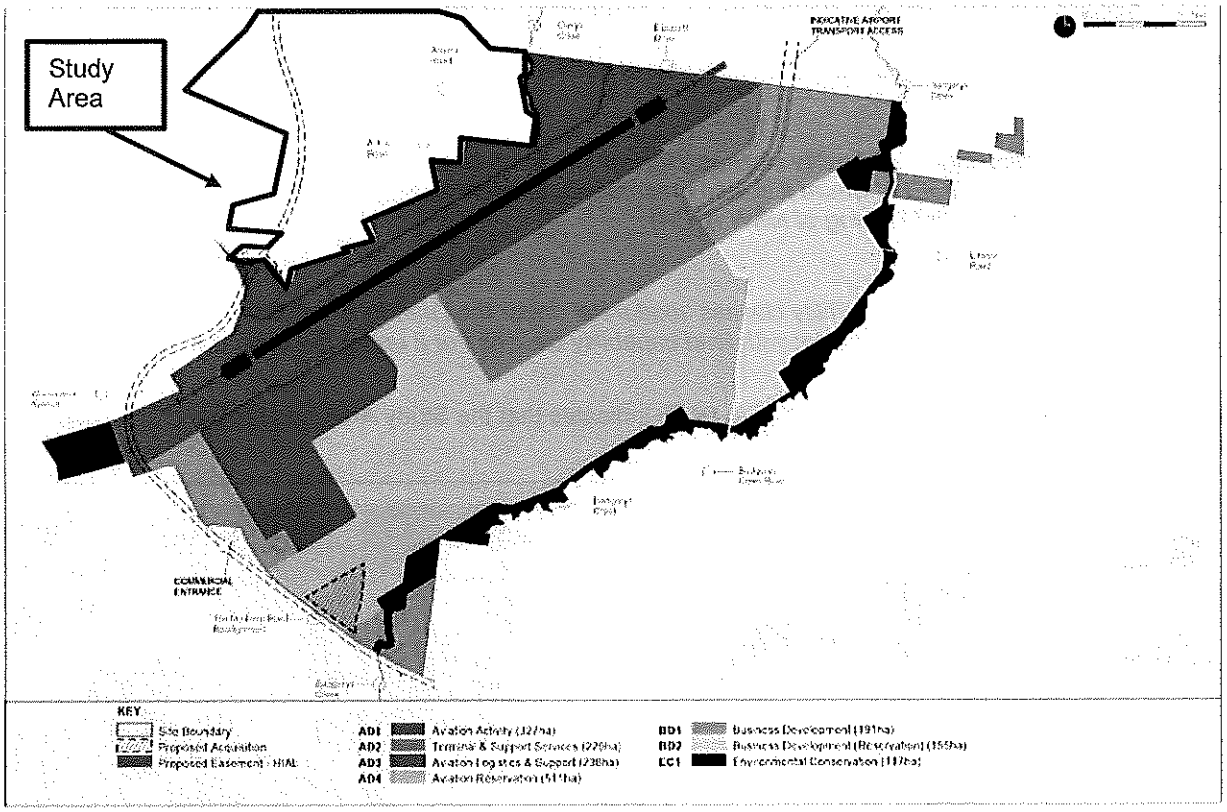

Figure 1-7 Land Use Zones (Stage 1)
Source: Australia Government – Department of Infrastructure and Regional Development, 2016, Western Sydney Airport – Environmental Impact Statement

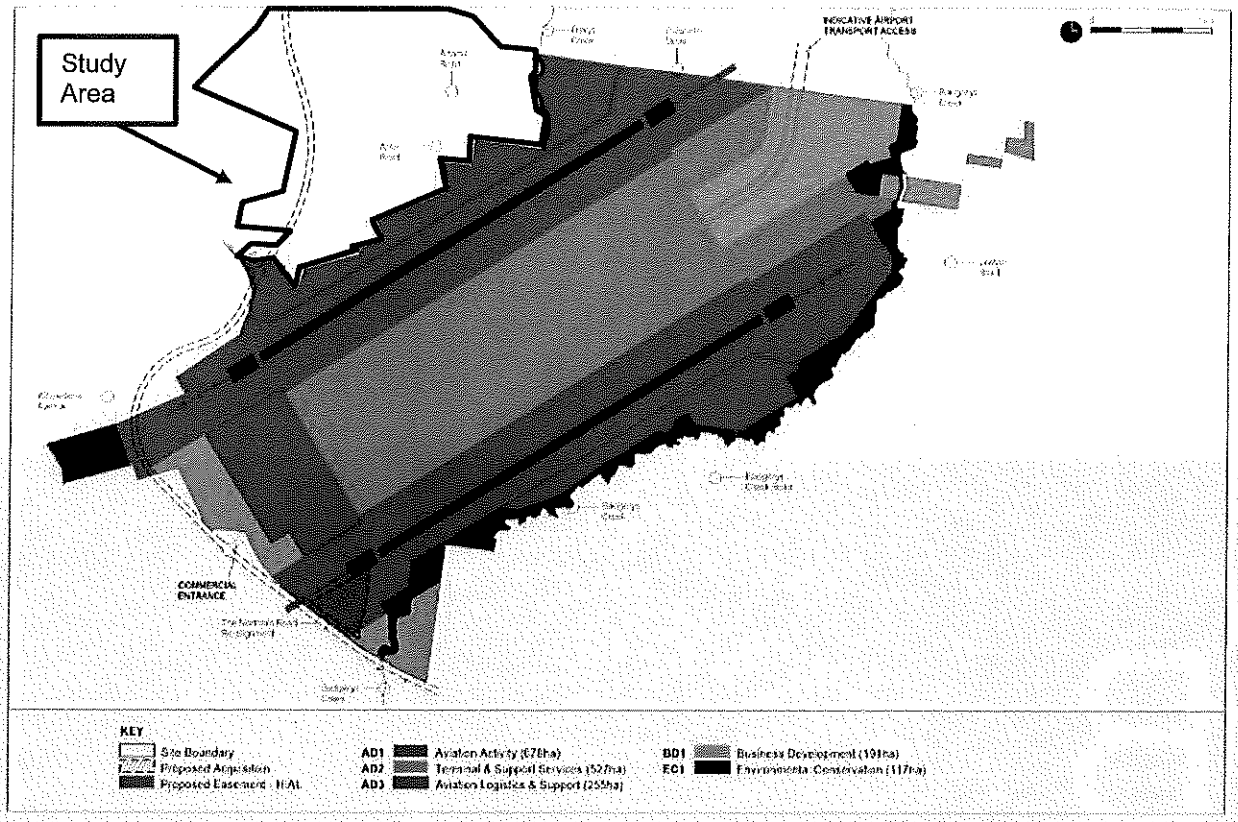

Figure 1-8 Indicative Land Use Zones (Long Term)
Source: Australia Government – Department of Infrastructure and Regional Development, 2016, Western Sydney Airport – Environmental Impact Statement

The Study Area is located directly adjacent to the Western Sydney Airport and approximately 500m from the proposed runway. The Study Area will be buffered by the proposed AD3 – Aviation Logistic & Support zone. The objectives of the AD3 zone are to:

- Facilitate the development of freight services and airport logistics (and ancillary office space);
- Ensure development is compatible, where practicable, with surrounding land uses in this area; and
- Facilitate compatible and ancillary functions within the zone provided that development does not render the land unfit for aviation activities.

APPENDIX

B

ECONOMIC ADVICE - HILLPDA

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John O'Grady
Manager Urban Planning | Cardno
Lvl 9 The Forum, 203 Pacific Hwy
St Leonards, NSW, 2065

2 November 2018

Dear John,

Subject: Economic Advice for Submission to Aerotropolis LUIPP

1.1 Background

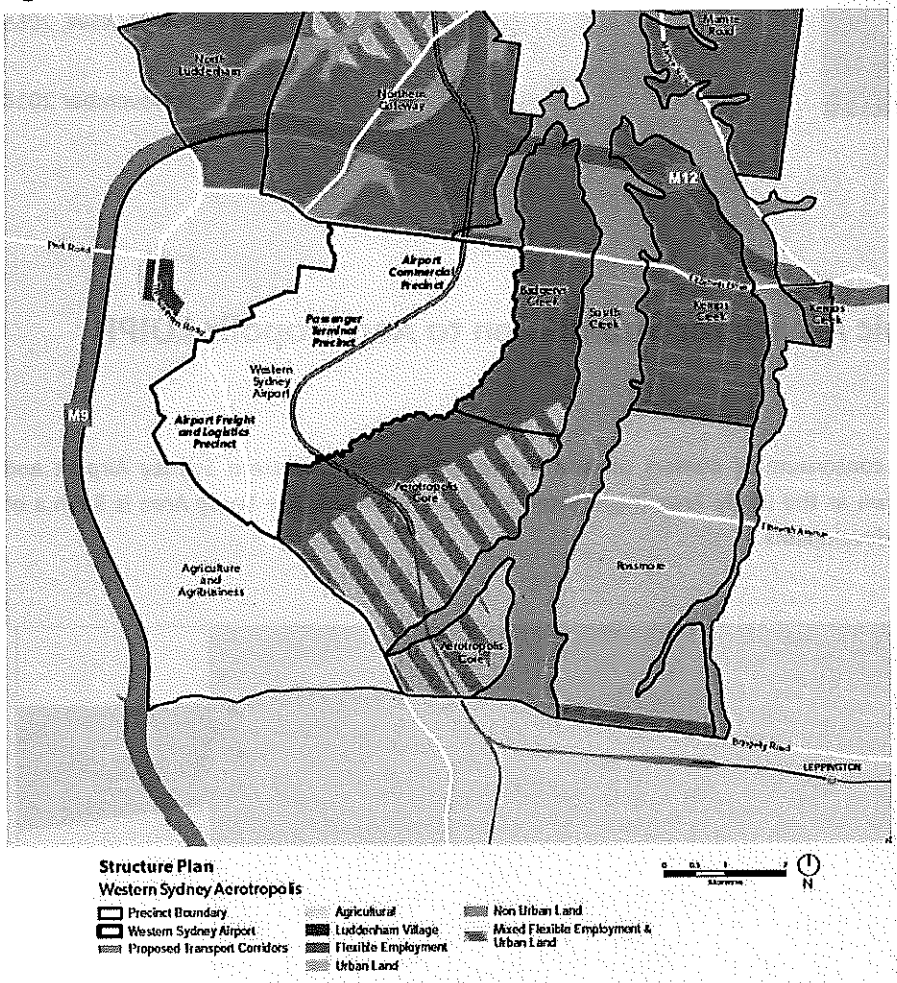
Cardno is representing a consortium of owners of land between the future Western Sydney Airport and Luddenham hereafter known as the Study Area (highlighted in Figure 1 below). The Study Area is 385h.a of which 310h.a is estimated developable.

Figure 1: Study Area

Source: Cardno 2018

In 2018 the Department of Planning & Environment released the draft Western Sydney Aerotropolis – Land Use and Infrastructure Implementation Plan (WSA LUIPP). Under this draft plan the Study Area is earmarked to remain Agriculture and Agribusiness due to its reliable water supplies, good soils, available farm labour, and proximity to markets (WSA LUIPP p62).

Figure 2: WSA LUIPP - Land Use Plan



Source: Western Sydney Aerotropolis Stage 1 Plan p19

Within the zone the permissible land uses would include:

- ongoing agriculture production such as dairying and poultry farming
- intensive horticulture such as mushroom and tomato farming
- food processing, and
- food research and technology.

In the draft WSA LUIPP other land uses include Flexible Employment and Mixed Flexible Employment & Urban Land (depicted in Figure 2 above).

At present there is no clear definition on 'Flexible Employment'; however the structure plan describes it as a mix of employment and other complementary uses and links to food research and development associated with the Sydney Science Park, surrounded by retail and commercial. Also export related activities are mentioned with envisioned land uses such as cold storage, food processing and packaging, agricultural warehousing and logistics.

The consortium is looking to compare the potential job generation between traditional agriculture, high tech agriculture and Mixed Flexible Employment in the Study Area.

1.2 Current Economic Benefits

Luddenham forecasted employment growth, 2016-2036

The table below provides an estimate of the current and future number of full time jobs that are supportable in the Study Area under its current zoning. According to the TfNSW Travel Zone Data currently Luddenham Hall has 647 persons employed in the area. This equates to a density of 1.57/ha of land. Looking forward, the forecast employment is expected to grow to 958 by 2036[1] which equates to 2.8% compounded growth per annum.

Table 1: Luddenham forecasted employment growth, 2016-2036

Year	Mulgoa - Luddenham - Orchard Hills SA2	Luddenham Hall (TZ 4971)
2016	2,834	647
2021	2,910	672
2026	4,310	750
2031	5,680	844
2036	7,483	958

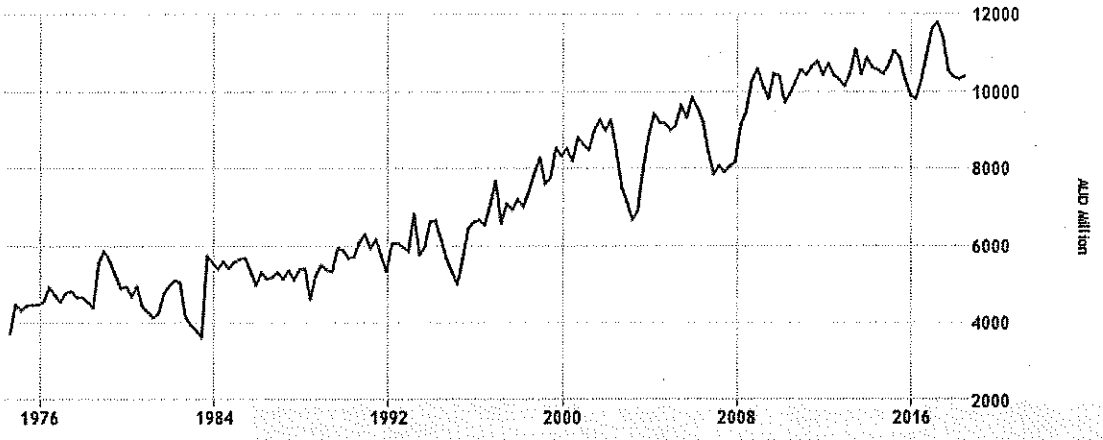
Using ABS Labour force and National Accounts data, HillPDA has estimated a combined Gross Value Added (GVA) currently generated by the Penrith LGA of approximately $7,426 million (in current 2017 dollars). From that we estimate the GVA for the Study Area to be around $45 million.

1.3 Economic Outlook for Agriculture

Agriculture is a growing industry in Australia. Australia's Gross Domestic Product (GDP) from agriculture has increased to $10.4 billion in Q2 2018 up from $10.3 billion in Q1 (figure 3 below). Historically in the last 10 years Agriculture GDP has grown 2.65% per annum. This growth is related to Australia's continued population growth and the implementation of Free Trade Agreements (FTAs) with China, Japan, Korea, New Zealand, Singapore, USA Thailand, Chile, ASEAN and Malaysia. The next FTA's under negotiation are Indonesia and India which will offer very significant additional export growth potential for Australia.

[1] It is unclear if this forecast employment data considers the future Western Sydney Airport.

Figure 3: Australia's GDP from Agriculture



Source: Trading Economics 2018

The major Australian agriculture exports include beef, wheat, meat and wool which total 18.85 billion (in 2015 dollars) or 42% of total agricultural exports.

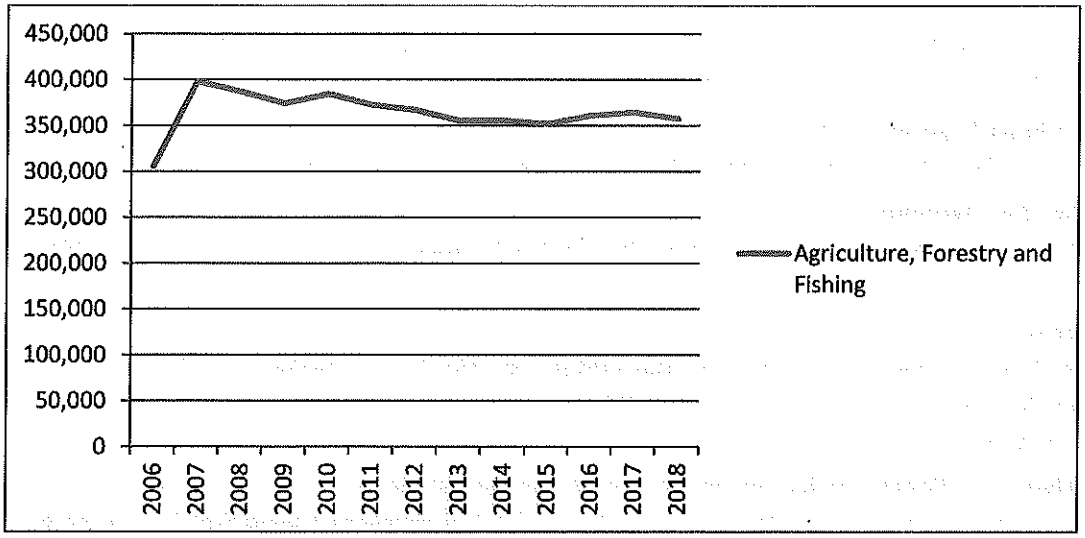
Table 2: Australians major agricultural exports

Major agriculture export products	A$m in 2015	Share of total (%)
Beef	7,401	16.6
Wheat	4,853	10.9
Meat (excluding beef)	3,575	8.0
Wool	3,021	6.8
Alcoholic beverages	2,587	5.8
Sugars, molasses and honey	2,332	5.2
Vegetables	2,260	5.1
Dairy	2,216	5.0
Live animals (excluding seafood)	1,875	4.2
Fruit and nuts	1,762	3.9
Total	**31,882**	**100.0**

Source: DFAT 2018

Conversely employment in agriculture has steadily decreased in the last 10 years. In 2008 total employment was 387,124, which has decreased to 357,717 in 2018 (a rate of -0.79% per annum). This decreasing employment in the sector is a result of urbanisation and increasing use of automation in agricultural production. High intensity / high technology agriculture is developing rapidly across the world and Australia is emerging as a global leader in adopting these new practices in the sector.

Figure 4: Agricultural Employment



Source: IBIS World Report 2018 ANZSIC Codes: A0111, A0113, A0116, A0122, A0123, A0130, A0131, A0139, A0141, A0142, A0143, A0144, A0145, A0146, A0149, A0151, A0152, A0159, A0160, A0171, A0172, A0191, A0192, A0200, A0300, A0410, A0510, A0521, and A0529.

Against this, there are a number of challenges to the agriculture industry in Australia including:

- Large retailers dealing directly with producers, eliminating the wholesaler and driving down profit margins. Many smaller businesses have exited the market in the last five years and there larger scale operations are increasing as players (IBIS Word Report, 2018).
- Currency relationships between the Australian dollar and exports. Increase of the AUD to above $0.75 AUD diminishes the economic attractiveness of Australian commodities.

Essentially, however, intensive agriculture is expected to increase as a component of the Australian economy in the foreseeable future in response to growing national and international demand for agricultural products resulting from rising populations and their expectations for availability of quality products from the sector. We would expect this to occur through the development of high tech facilities, using smaller parcels of fertile land located in close proximity to streamlined distribution facilities.

1.4 Suitability of the Study Area for agricultural purposes

Notwithstanding the healthy future for intensive forms of agriculture in Australia, its allocation as a land use in the Study Area must be considered against it economic viability and the relative viability of other land uses on this land.

We understand that Cardno has carried out a desktop assessment of the capability of the Study Area for various uses and has found that it is identified in relevant land capability mapping as being generally unsuitable for high intensity agricultural uses. Moreover, the close proximity of the land to airport activities along with potential biosecurity hazards associated with co-location of high intensity agricultural activities has been found to be a significant constraint on the viability of high tech / high intensity agriculture on this land.

We further understand that Cardno has examined the connectivity of the Study Area to local and regional transport infrastructure. The outcome of this assessment is that the land would benefit substantially from its proximity to the airport and its direct connections to committed local and regional infrastructure upgrades associated with the development of the Aerotropolis.

1.5 Potential Economic Benefits under different land uses

To understand the potential economic benefits in terms of job creation and Gross Value Added (GVA)[3] of the Study Area, four land uses options were analysed. The land use options assessed:

1. **Traditional Agriculture (Base Case).**
   This is a "do nothing" option – retaining the current land uses which is estimate
2. **High Tech Agriculture**
   This relates to more intense forms of agriculture such as hydroponic crop farming. Job density is higher at around 5 workers per hectare
3. **Logistics**
   This includes transport and warehouse uses, cold Storage, food logistics, packaging, agricultural warehousing etc. Job density is assumed at 15.5 per hectare as forecast for the Western Sydney Employment Area
4. **Mixed Use / Flexible Employment including Airport related businesses**
   This option was based on a range of land uses that generally agglomerate around airports. The mix of land uses was assumed as per the table below based on benchmarking SA2 zones around various airports including Mascot, Tullamarine (Vic), Richmond (SA) and Hamilton (Qld). This option assumes 75% of the developable area is saleable and an FSR ranging from 0.75:1 to 1:1.

Table - Assumed Land Use Mix benchmarked against another airport sites[4]

Land Use	Land Use Mix	Jobs/ha
Retail Trade	22%	158
Accommodation	2%	163
Public Administration	5%	103
Professional, Scientific and Technical Services	6%	297
Wholesale Trade	2%	82
Other Services	6%	87
Transport Support Services	14%	56
Manufacturing	29%	89
Road Transport	15%	36
TOTAL	100%	76

The GVA of the Study Area is currently estimated to be $44.86m. If the site were to accommodate mixed airport related employment it would provide a further $2,337m every year in GVA to a total of $2.38 billion (measured in current 2018 dollars).

Not surprisingly, the flexible employment land use provides the greatest jobs density showing an increase of 23,073 jobs in the Study Area from the base case to a total of 23,560 jobs. These are jobs in full, part-time and casual positions.

The table below provides an estimate of the number of jobs that would be supported on site and the respective GVA.

[3] Gross value added (GVA) of an industry refers to the value of outputs less the costs of inputs. It also measures the contribution that the industry makes to the country's wealth or gross domestic product (GDP)

[4] SA2s used in this analysis include: Botany, Mascot – Eastlakes, Port Botany Industrial, Gladstone Park – Westmeadows, Tullamarine, Keilor, Airport West, Plympton, Kewdale Commercial, Richmond (SA), Canning Vale Commercial, Jandakot, Majura, Eagle Farm – Pinkenba, Hendra, Nudgee – Banyo, Taylors Lakes, Hamilton (Qld), Ascot, and Monterey - Brighton-le-Sands – Kyeemagh.

Table 3: Employment Generation & Gross Value Added by Land Use

	Traditional Agriculture (Base Case)	High Tech Agriculture (1)	Logistics (Cold Storage, food logistics, packaging, agricultural warehousing etc) (2)	Flexible Mixed Uses and Airport related Employment (3)
Number of Jobs per hectare	1.57	5	15.5*	76
Total Jobs	487	1,550	4,805	23,560
Gross Value Added per Worker ($)	92,172	153,200	132,260	101,118
Total Gross Valued Added ($m)	44.86	237.46	635.51	2,382

1. Assumed Hydroponic Crop Farming OD4155

2 Aggregate of transport and warehouse industries IBIS World Report Codes: I4610; I4710; I4720; I4903; I5010; I5021; I5101; I5102; I5220; I5291; I5292a; I5292b; I5301; and I5309

*based on DPE WSEA Structure Plan forecast jobs at 15.5 jobs per hectare

3. IVA/ Worker based off mix of land uses under option 4 above and IVA/ Worker is based off ABS 2016/17 Australia Industry Table 5 Business size by industry division 81550DO001_201617 Australian Industry

In summary, the economic viability of traditional agricultural practices in the Study Area is likely to be significantly impacted given the proximity of the Western Sydney Airport. We expect the future for high tech agriculture to intensify farming with increased productivity. However there are environmental issues arising from the identified low viability of the land for agricultural production and its proximity to the airport that impact on its potential for economic success. Conversely, the connectivity of the land to the airport and to local and regional transport infrastructure would tend to point to the land being more viable for mixed employment based uses.

The potential economic benefits under either a logistics land use (GVA +$590m) or more intense airport related employment (GVA +$2,337m) shows a significant economic benefit to the economy compared to the continued traditional agricultural land use.

Job creation is especially much higher under Options 3 or 4 providing 4,500 to 23,000 more jobs than traditional agriculture.

Yours sincerely,

Signed by

Adrian Hack

Principal, Urban and Retail Economics

M. Land Econ. B.Town Planning (Hons). MPIA

Adrian.Hack@hillpda.com

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APPENDIX

C

WRITTEN CORRESPONDENCE FROM THE DEPARTMENT OF PLANNING DATED 19 SEPTEMBER 2018

Cardno®

NSW GOVERNMENT | Planning & Environment

David Haskew
Senior Partner
HDC Planning

david@hdcplanning.com.au

Dear Mr Haskew

Thank you for meeting with us on 19 September 2018 in relation to the Stage 1 Land Use Infrastructure Implementation Plan (LUIIP) for the Western Sydney Aerotropolis, currently on exhibition.

I note the key matters discussed at the meeting included:

- Multiple sites with multiple landownership to the north, south and west of Elizabeth Drive in the Agriculture and Agribusiness precinct (some within agriculture and some within flexible employment).
- Concerns regarding reflective surfaces in the agriculture and agribusiness precinct, including the potential for distractions to pilots. The Department advised that terms of reference for consultants will require reference to National Airports Safeguarding Framework, which requires consideration of these impacts.
- The criteria that was used to identify the agriculture and agribusiness precinct. The Department advised that precinct has been located where it is due to the existence of existing successful agricultural operations at this location and to the west, the compatibility of agricultural uses with airport operations and the proximity to the airport allowing for east access to move fresh food products to international flights.
- The Department advised that it is waiting on studies undertaken by Infrastructure NSW to inform water management requirements for the Aerotropolis. Once these studies have been completed precinct boundaries may be refined.
- The Department advised that Stage 2 of the LUIIP is currently planned to be released at the end of 2019, and this may include amendments to the precincts identified in Stage 1.

I can advise that the exhibition of LUIIP for the Aerotropolis has been extended until 2 November 2018. You can make a submission on the LUIIP either online via the Department's website or in writing. The LUIIP and other key documents, as well as information on how you can make a submission are available at planning.nsw.gov.au/aerotropolis

Should you have further queries please contact me by phone on 02 9860 1520 or via email at catherine.vanlaeren@planning.nsw.gov.au.

Yours sincerely

12 October 2018

Catherine Van Laeren
Director Aerotropolis Activation

cc.
Paul Buhac – Landowner
John O'Grady – Cardno