Appendix A – Land Use Conflict Risk Assessment

aurecon ARUP

Land Use Risk Assessment (LUCCRA) for Upper South Creek Advanced Water Recycling Centre

Appendix A

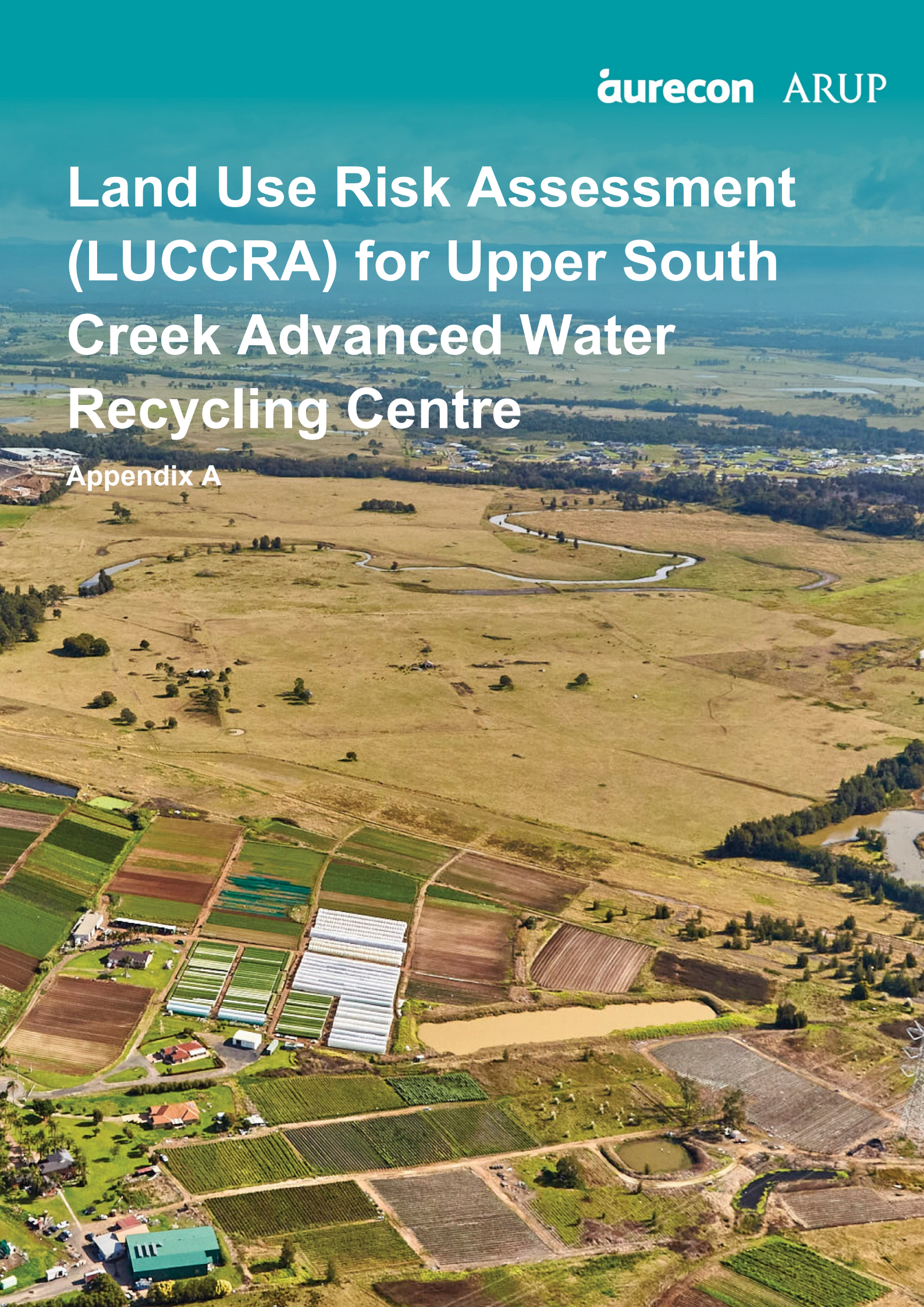


Table of Contents

Document control	
Interim Draft 1	
Prepared by	Fran Dance (Arup) and Isabella Mercuri (Aurecon)
Reviewed by	Caroline Squires (Arup) and Whitney Adam (Aurecon)
Prepared for	Sydney Water
Date	5 February 2021
Interim Draft 2	
Prepared by	Fran Dance (Arup) and Isabella Mercuri (Aurecon)
Reviewed by	Caroline Squires (Arup) and Whitney Adam (Aurecon)
Prepared for	Sydney Water
Date	7 May 2021
Formal Draft 1	
Prepared by	Fran Dance (Arup) and Isabella Mercuri (Aurecon)
Reviewed by	Caroline Squires (Arup) and Whitney Adam (Aurecon)
Prepared for	Sydney Water
Date	02 June 2021
Formal Draft 2	
Prepared by	Fran Dance (Arup) and Isabella Mercuri (Aurecon)
Reviewed by	Caroline Squires (Arup) and Whitney Adam (Aurecon)
Prepared for	Sydney Water
Date	22 June 2021
Final	
Prepared by	Fran Dance (Arup) and Isabella Mercuri (Aurecon)
Reviewed by	Caroline Squires (Arup) and Whitney Adam (Aurecon)
Prepared for	Sydney Water
Date	30 June 2021

Acknowledgement

The authors of this land use conflict risk assessment would like to pay respect to the Darug, Dharawal and Gunungurra people, the Traditional Custodians of the land to which this impact assessment applies; pay respect to the Elders past, present and emerging; and acknowledge their living culture and spiritual connections to the land.

Executive summary

Sydney Water is seeking an approval to build and operate new wastewater infrastructure to service the South West and Western Sydney Aerotropolis Growth Areas, under the *Environmental Planning and Assessment Act 1979* (EP&A Act) as State significant infrastructure (NSW Government). The proposed development will include a wastewater treatment plant in Western Sydney, known as the Upper South Creek Advanced Water Recycling Centre (AWRC). Together, the AWRC and the associated treated water, environmental flows and brine pipelines, will be known as the 'project'.

This report provides a land use conflict risk assessment (LUCRA) to assess potential land use conflicts generated by the project. It is provided as a supporting document to the *Socio-economic and Land Use Impact Assessment* provided to support the Environmental Impact Statement (EIS) for the project (Arup and Aurecon, 2021).

Following the LUCRA guideline (DPI, 2011), the methodology used in this report follows four key steps, including:

- Step 1: Gather information - the development of a baseline understanding of the existing land use context, and proposed changes
- Step 2: Evaluate the risk level of each activity - assess the likely conflict associated with the proposed land use changes, assigning a risk rating based on the anticipated level of conflict consequence and probability
- Step 3: Identify risk reduction management strategies - development of a risk management strategy to explain how Sydney Water could reduce potential risks and the probability of an event occurring
- Step 4: Record LUCRA results - results are recorded in this LUCRA report.

Based on the current land use, and existing future land use aspirations for the assessment area, compared against the proposed development the project will result in the following changes to existing/future landscape:

- AWRC – a change from rural landscape, research and commercial agriculture to the provision of infrastructure and water recycling facilities. This will go from no prominent current buildings to new built structures. This will integrate with longer term aspirations for enterprise and agribusiness growth and change as part of the Aerotropolis and associated developments
- Environmental flows pipeline and treated water pipeline – a temporary change from existing land use during construction, but no substantial permanent change in existing land use noting the majority of the project will be located underground. No impacts on future land use aspirations for enterprise and agribusiness growth and change is expected as part of the Aerotropolis and associated developments
- Brine pipeline - a temporary change from existing land use during construction, but no substantial permanent change in existing or future proposed land use noting the majority of the project will be located underground.

Overall, this LUCRA has demonstrated that the project is unlikely to result in any conflicts that will prevent or stop neighbouring land uses, including agricultural industries from continuing to operate. There are some anticipated conflicts which may impacts on patterns of activity. These include:

Construction	• There is potential for some temporary impacts to neighbouring transport and access, with localised congestion particularly around the pipeline construction and for those properties sharing access with the project • No significant amenity impacts are anticipated. However, there may be some minor noise and air quality impacts to neighbouring properties associated with construction activities • Change in character from agriculture to infrastructure may present some conflict for existing land uses However, it is noted that this character change is anticipated with or without the project • The land use impacts and requirements for property easements and construction on some productive land has the potential to impact the agricultural industry and economy.
Operation	• The project is not expected to impact the local road network during operation • Some slight exceedances of noise criteria associated with the AWRC may be experienced during the night-time period – particularly affecting neighbouring residents in Badgerys Creek and Kemps Creek – although these are not expected to impact on the continued land use of these areas • There is a high risk of wildlife hazards, given the availability of open water as part of the landscaped area. Stakeholder engagement has suggested that there is potential for a biosecurity risk associated with this and the close proximity of poultry farms to the site, and the risk that visiting birds to the AWRC will bring pests and disease which will affect farming activities • There is potential for concern among neighbouring properties, particularly agricultural properties with regard to the change from an established rural landscape and lifestyle, to more infrastructure focused urban development (particularly around the facility itself). However, the surrounding areas to the project, within which the identified neighbours are located, are predominantly located within land under the Aerotropolis SEPP. As such, these areas are likely to experience significant urban development.

It is noted that construction and operational impacts within the LUCRA relate to broader impacts associated with the socio-economic and land use impact assessment, as well as noise, air quality, visual, and traffic assessments. In such instances, the relevant technical assessments have analysed the potential impacts and identified relevant mitigation and management measures.

A series of additional mitigation measures are summarised in the LUCRA that will help to address many of the conflicts further.

	Identified potential conflict	Management strategy (method of control)
Construction		
LUCRA1	Consultation with neighbouring agricultural properties (linked to SELU3 mitigation within the socio-economic and land use impact assessment	Consultation with agricultural businesses in the LUCRA study area will be undertaken to mitigate potential impacts during construction, including access impacts (including inter-property and driveway access requirements), noise and visual impacts to livestock and potential air quality and biosecurity risks to livestock and crops. This will include the approach to phasing of construction to minimise impacts to agriculture (e.g. cattle movements).

	Identified potential conflict	Management strategy (method of control)
Operation		
LUCRA2	Biosecurity concerns regarding birdlife attracted to the AWRC and neighbouring poultry farming during operation	Development of a bird control and biosecurity strategy (integrated into the operational Wildlife Management Plan) to implement and monitor measures to reduce risk of disease and bird/wildlife attraction. This will include a strategy for ongoing management, including a process to action accordingly any complaints received from neighbouring sites. This should integrate with any recommendations and mitigation measures included in the Wildlife Hazard Assessment (Avisure, 2020).

Post-mitigation, the majority of impacts are reduced to below material levels. Two more significant impacts would remain regarding:

- Landscape and visual impacts of the AWRC during construction and concern among neighbouring properties, particularly agricultural properties with regard to the change from an established rural landscape and lifestyle, to more infrastructure focused urban development (particularly around the facility itself)
- Potential for some temporary impacts to neighbouring transport and access, with localised congestion particularly around the pipeline construction and for those properties sharing access with the project.

Both of these impacts are considered unavoidable noting the existing rural character (and therefore change associated with the project) and the interaction between the pipelines and the road network. Efforts will be made to further reduce any potential impacts as the project progresses.

1 Introduction

Sydney Water is seeking an approval to build and operate new wastewater infrastructure to service the South West and Western Sydney Aerotropolis Growth Areas, under the *Environmental Planning and Assessment Act 1979* (EP&A Act) as State significant infrastructure (NSW Government). The proposed development will include a wastewater treatment plant in Western Sydney, known as the Upper South Creek Advanced Water Recycling Centre (AWRC). Together, the AWRC and the associated treated water, environmental flows and brine pipelines, will be known as the 'project'. An overview of the location of the proposed infrastructure is provided in Figure 1-1.

This report provides a land use conflict risk assessment (LUCRA) to assess potential land use conflict generated by the project. It is provided as a supporting document to the *socio-economic and land use impact assessment* provided to support the Environmental Impact Statement (EIS) for the project (Arup and Aurecon, 2021). For further detail on project context and proposals, this LUCRA should be ready alongside the socio-economic and land use impact assessment.

1.1 Purpose of this report

This report has been developed to address the Planning Secretary's Environmental Assessment Requirements (SEARs) issued on 28 January 2021 for the project. Table 1-1 outlines the SEARs that relate to the LUCRA.

Table 1-1: Secretary's Environmental Assessment Requirements (SEARs) relevant to this assessment

Relevant SEAR	Reference in the LUCRA
Agricultural Land – including:	
27. Identify potential impacts of the proposed development on the operations of impacted agricultural industries and detail the mitigation measures to enable the agricultural industries to continue to operate. This could be detailed in a Land Use Conflict Risk Assessment (LUCRA) in consultation with DPI Agriculture.	This LUCRA responds to the requirement in this SEAR. Section 4 provides a summary of the potential impact of the project on neighbouring agricultural properties. Section 5 summarises the risk reduction controls, and residual impacts. Sections 8.2 and 8.3 of the socio-economic and land use impact assessment summarise the potential land use and property impacts of the project. Consultation was undertaken with DPI Agriculture through a workshop in March 2021. Comments provided have been integrated into this LUCRA. The minutes of this session are provided at Annexe C.
28. Consult with the owners / managers of affected and adjoining neighbours and agricultural operations in a timely and appropriate manner about the project, the likely impacts and suitable mitigation measures or compensation.	A range of stakeholders have been consulted during the development of the Project. Sydney Water has in particular sought to engage with landowners on properties impacted by and/or adjacent to the project. This is summarised in Section 3.5 of this LUCRA.

LUCRA is defined by the NSW Department of Primary Industries (DPI) as a system to identify and assess the potential for land use conflict to occur between neighbouring land uses. It helps land managers and consent authorities assess the possibility for and potential land use conflict. Land use conflicts occur when one land user is perceived to infringe upon the rights, values or amenity of another. This report has been developed in alignment with the *Land Use Conflict Risk Assessment Guide* (DPI, 2011).

The purpose of this report is to:

- Identify and address potential for land use conflict issues and risk of occurrence before new land use (in this instance the project) proceeds
- Assess the effect of the proposed land use on neighbouring land uses
- Develop the understanding of potential land use conflict to inform and complement the project
- Recommend strategies to minimise the potential for land use conflicts to occur.

1.2 Report structure

The report is structured as follows:

- Section 1 – Introduction
- Section 2 – Methodology
- Section 3 – Background information and context
- Section 4 – Land use conflict risk assessment
- Section 5 – Risk reduction controls and mitigation measures
- Section 6 – References
- Annexe A – Agricultural industry research
- Annexe B – List of biosecurity guidance provided by DPI Agriculture
- Annexe C – Minutes from consultation with DPI Agriculture.

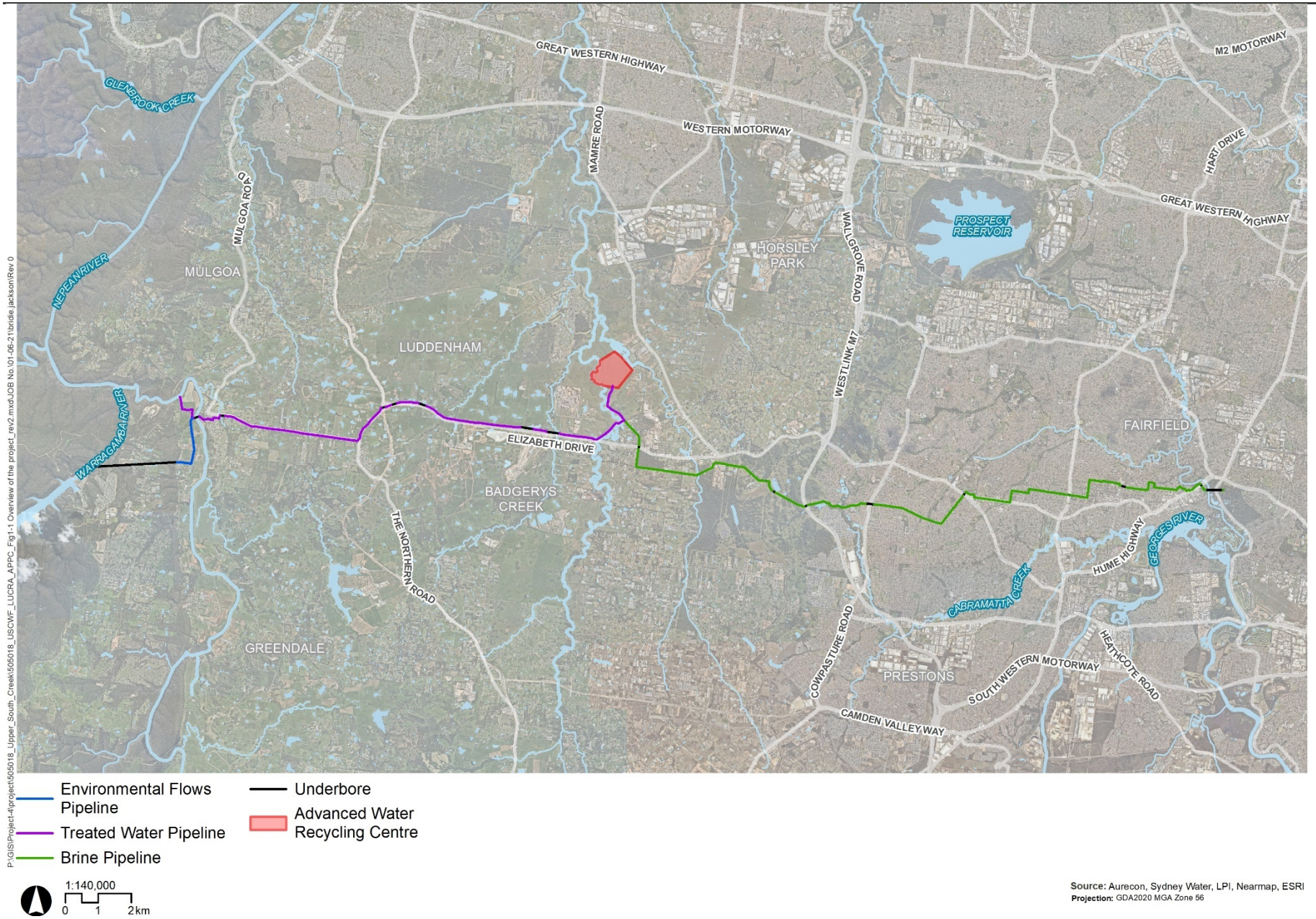


Figure 1-1 Project overview

2 Methodology

2.1 Assessment methodology

Following the LUCRA guideline (DPI, 2011), the methodology used in this report follows four key steps described in this section.

2.1.1 Step 1: Gather information

The first stage involves the development of a baseline understanding of the existing land use context and proposed changes. It involves the following activities:

- Summary of the project (Section 3.1)
- Description of the existing land use environment and activities, including:
  - Topography, climate and natural features on the site and on adjacent properties (Section 3.2)
  - Key activities and land uses on the site and on adjacent properties (Section 3.2)
  - Future land use context of the site, and in the locality, informed by a review of strategic planning documents and land use (Section 3.2)
  - Wider land use context and character (Section 3.2).
- Description of the existing agricultural context within the locality, having regard to the SEARs requirements (Section 3.3), including:
  - Key activities and agricultural industries
  - Description of significant rural landscapes
  - Review of feedback from consultation with impacted landowners for the project about current operations and potential concerns and opportunities
  - A review of the Australian Farm Institute Research Report Managing farm-related land use conflicts in NSW (Australian Farm Institute, 2020).
- Summary of site history (Section 3.4)
- Details of any consultation and engagement activities (Section 3.5).

Step 1 also includes the identification of anticipated changes to the land use, and comparison with the existing land uses to identify incompatibility or conflict issues. This is summarised in Section 4 of this report.

Consultation was undertaken with DPI Agriculture through a workshop in March 2021. Comments provided have been integrated into this LUCRA. The minutes of this session are provided at Annexe C.

2.1.2 Step 2: Evaluate the risk level of each activity

This stage draws on Step 1 to assess the likely conflict associated with the proposed land use changes, in the context of the existing conditions. It involves the following activities:

- Review of specialist studies and project information to identify potential land use risks
- Conduct a risk assessment applying the LUCRA matrix and measures of consequence.

Each of the identified potential changes has then been assigned a risk rating based on the anticipated level of conflict. This evaluation of risk using the guideline's Risk Ranking Matrix to consider the potential consequence of the proposed change ranging from severe to negligible (as shown in Table 2-1) against the probability of change ranging from almost certain to rare (as shown in Table 2-2), to give an overall rating, as summarised in Table 2-3.

Table 2-1: Consequence of change or conflict

Level: 1	**Descriptor: Severe**
Description	Severe and/or permanent damage to the environment Irreversible Severe impact on the community Neighbours are in prolonged dispute and legal action involved
Example/ Implication	Harm or death to animals, fish, birds or plants Long term damage to soil or water Odours so offensive some people are evacuated or leave voluntarily Many public complaints and serious damage to Council's reputation Contravenes Protection of the Environment & Operations Act and the conditions of Council's licences and permits. Almost certain prosecution under the POEO Act
Level: 2	**Descriptor: Major**
Description	Serious and/or long-term impact to the environment Long-term management implications Serious impact on the community Neighbours are in serious dispute
Example/ Implication	Water, soil or air impacted, possibly in the long term Harm to animals, fish or birds or plants Public complaints. Neighbour disputes occur. Impacts pass quickly Contravenes the conditions of Council's licences, permits and the POEO Act Likely prosecution
Level:3	**Descriptor: Moderate**
Description	Moderate and/or medium-term impact to the environment and community Some ongoing management implications Neighbour disputes occur
Example/ Implication	Water, soil or air known to be affected, probably in the short term No serious harm to animals, fish, birds or plants Public largely unaware and few complaints to Council May contravene the conditions of Council's Licences and the POEO Act Unlikely to result in prosecution
Level: 4	**Descriptor: Minor**
Description	Minor and/or short-term impact to the environment and community Can be effectively managed as part of normal operations Infrequent disputes between neighbours
Example/ Implication	Theoretically could affect the environment or people but no impacts noticed No complaints to Council Does not affect the legal compliance status of Council

Level: 5	Descriptor: Negligible
Description	Very minor impact to the environment and community Can be effectively managed as part of normal operations Neighbour disputes unlikely
Example/ Implication	No measurable or identifiable impact on the environment No measurable impact on the community or impact is generally acceptable

Table 2-2: Probability of change or conflict

Level	Descriptor	Description
A	Almost certain	Common or repeating occurrence
B	Likely	Known to occur, or 'it has happened'
C	Possible	Could occur, or 'I've heard of it happening'
D	Unlikely	Could occur in some circumstances, but not likely to occur
E	Rare	Practically impossible

Table 2-3: Overall change or conflict risk rating

	Probability					
Consequence		A	B	C	D	E
	1	25	24	22	19	15
	2	23	21	18	14	10
	3	20	17	13	9	6
	4	16	12	8	5	3
	5	11	7	4	2	1

A rank of 25 is the highest magnitude of risk; a highly likely, very serious event. A rank of 1 represents the lowest magnitude or risk an almost impossible, very low consequence event. High-risk risks score higher than 10. The initial land use conflict risk assessment ratings are recorded in Section 4.

2.1.3 Step 3: Identify risk reduction management strategies

In response to the risks identified, this stage includes development of a risk management strategy to explain how Sydney Water could reduce potential risks and the probability of an event occurring. The outputs of Step 3 are presented in Section 5.

2.1.4 Step 4: Record LUCRA results

In the final stage the results are recorded in a LUCRA report (this Report).

2.2 Information gathering and data sources

A range of information sources have been drawn upon to inform this LUCRA, including:

- The LUCRA Guideline (DPI, 2011)

- Relevant environmental planning instruments (Local Environmental Plans for the five relevant local government areas) and State Environmental Planning Policies (SEPP), including the State Environmental Planning Policy (Western Sydney Parklands) 2009 and State Environmental Planning Policy (Western Sydney Aerotropolis) 2020, to identify existing and proposed land uses, and understand the land use constraints
- Specialist inputs from the EIS to inform the assessment, including:
  - *Upper South Creek Advanced Water Recycling Centre - Landscape and Visual Impact Assessment*
  - *Upper South Creek Advanced Water Recycling Centre – Contaminated land and Soils Impact Assessment*
  - *Upper South Creek Advanced Water Recycling Centre - Hydrology and Flooding Assessment*
  - *Upper South Creek Advanced Water Recycling Centre – Health Risk Impact Assessment*
  - *Upper South Creek Advanced Water Recycling Centre - Traffic and transport Assessment*
  - *Upper South Creek Advanced Water Recycling Centre - Noise and Vibration Impact Assessment*
  - *Upper South Creek Advanced Water Recycling Centre - Air Quality Impact Assessment*
  - *Upper South Creek Advanced Water Recycling Centre – Biodiversity Development Assessment Report*
  - *Upper South Creek Advanced Water Recycling Centre – Socio-economic and Land Use*
- Outputs from stakeholder and community engagement coordinated with the wider EIS and project team
- Consultation was undertaken with DPI Agriculture through a workshop in March 2021. Comments provided have been integrated into this LUCRA. The minutes of this session are provided at Annexe C.

2.3 Limitations of this report

This LUCRA has been based on available information at the time of writing and has been designed to respond to the SEARs specific to the project. The report assumes the following:

- This report has been prepared and reviewed by socio-economic and land use specialists from Aurecon and Arup. Taking into account the potential level of land use conflict (assessed to be low) and the nature of the project, no inputs from specialists such as agronomists or biosecurity specialists have been considered necessary.
- Background and baseline information reported in this assessment is based on desktop research and engagement undertaken (and summarised in Section 3 of this report, and Chapter 6 of the EIS).
- This land use impact assessment is based on the project definition, including understanding of construction activity, operations, staging and timing as provided by Sydney Water and as known at time of writing.

- The impact assessment in relation to technical topic areas is based on information provided in the specialist technical impact assessments completed for the project. No independent verification of the results of these reports has been undertaken as part of the socioeconomic and land use impact assessment.
- The COVID-19 pandemic has affected how people live, work and move around. Some data used to inform the LUCRA may differ because of these changes. At the time of writing, ABS was exploring administrative and transactions data to inform official social and economic statistics in response to COVID-19. This information was not available at the time of writing this assessment.

2.4 Study area

The project is predominately located in Western Sydney in NSW, spanning across five local government areas (LGAs). The five LGAs are:

- Wollondilly Shire Council
- Penrith City Council
- Liverpool City Council
- Fairfield City Council
- Canterbury Bankstown City Council.

The AWRC is the main feature of the project, located in the suburb of Kemps Creek in the Penrith City Council LGA.

The local influence area, introduced in the land use and socio-economic impact assessment has been used for the LUCRA. This represents a 25-metre buffer around the impact assessment area and the area immediately adjacent to the project which is likely to be influenced by particular project impacts, particularly amenity and access impacts

This local influence area has been divided into three geographical areas for this assessment: western, central and eastern. This acknowledges the different land use and socioeconomic characteristics travelling west to east along the project – from the transitional agricultural/rural to urban development within the west, to the more urban and mixed-use suburbs in the east. The boundaries of each of these areas are defined by ABS State Suburbs and are shown in Figure 2-1 to Figure 2-8. Where relevant the report also comments on a broader local scale context and impact.

For the socio-economic and land use impact assessment a broader socio-economic study area was also identified. This represents communities most likely to indirectly interact with the project. This is shown on figures for information, but has not been used in this assessment.

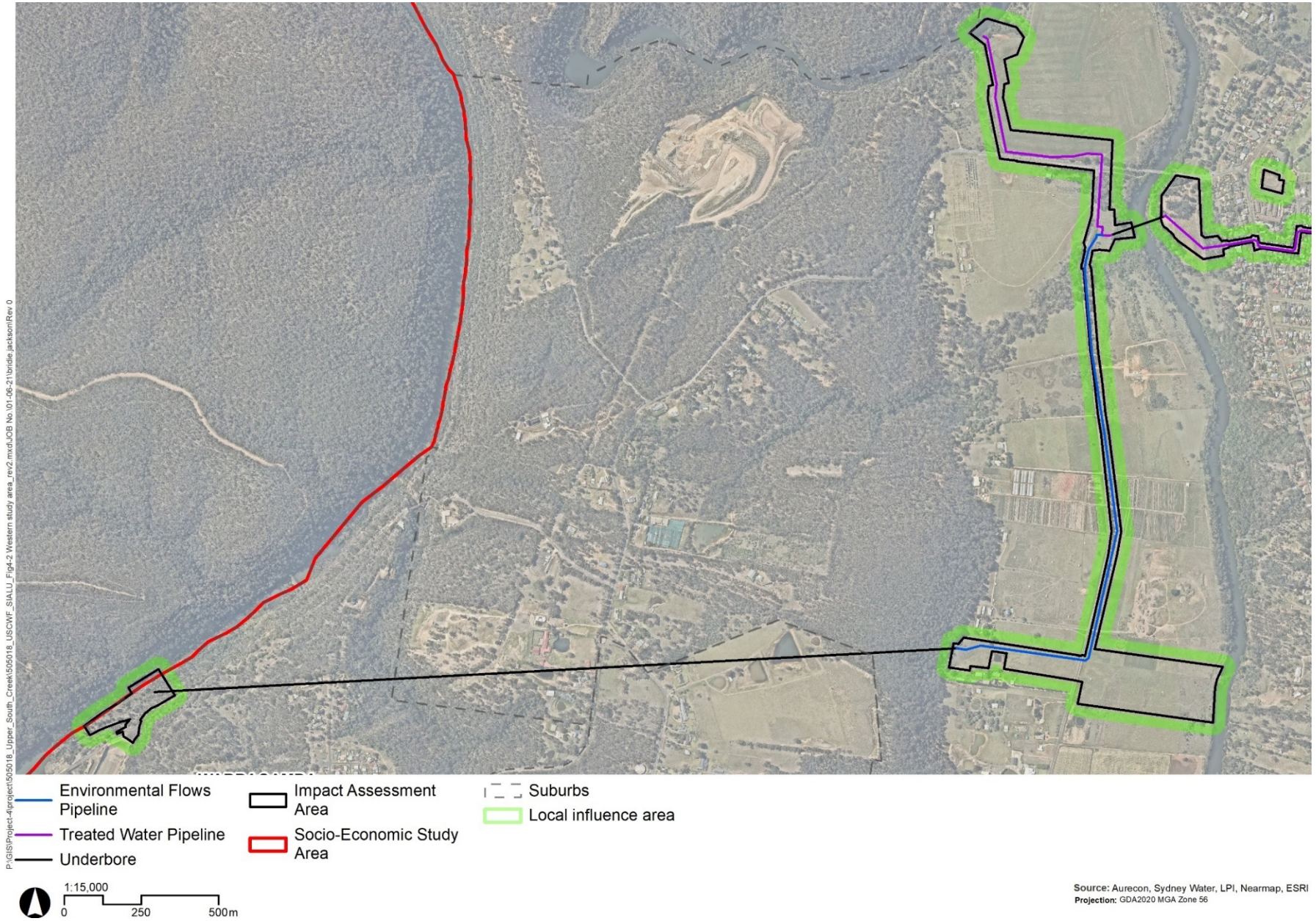


Figure 2-1 Western LUCRA study area (map 1 of 2)

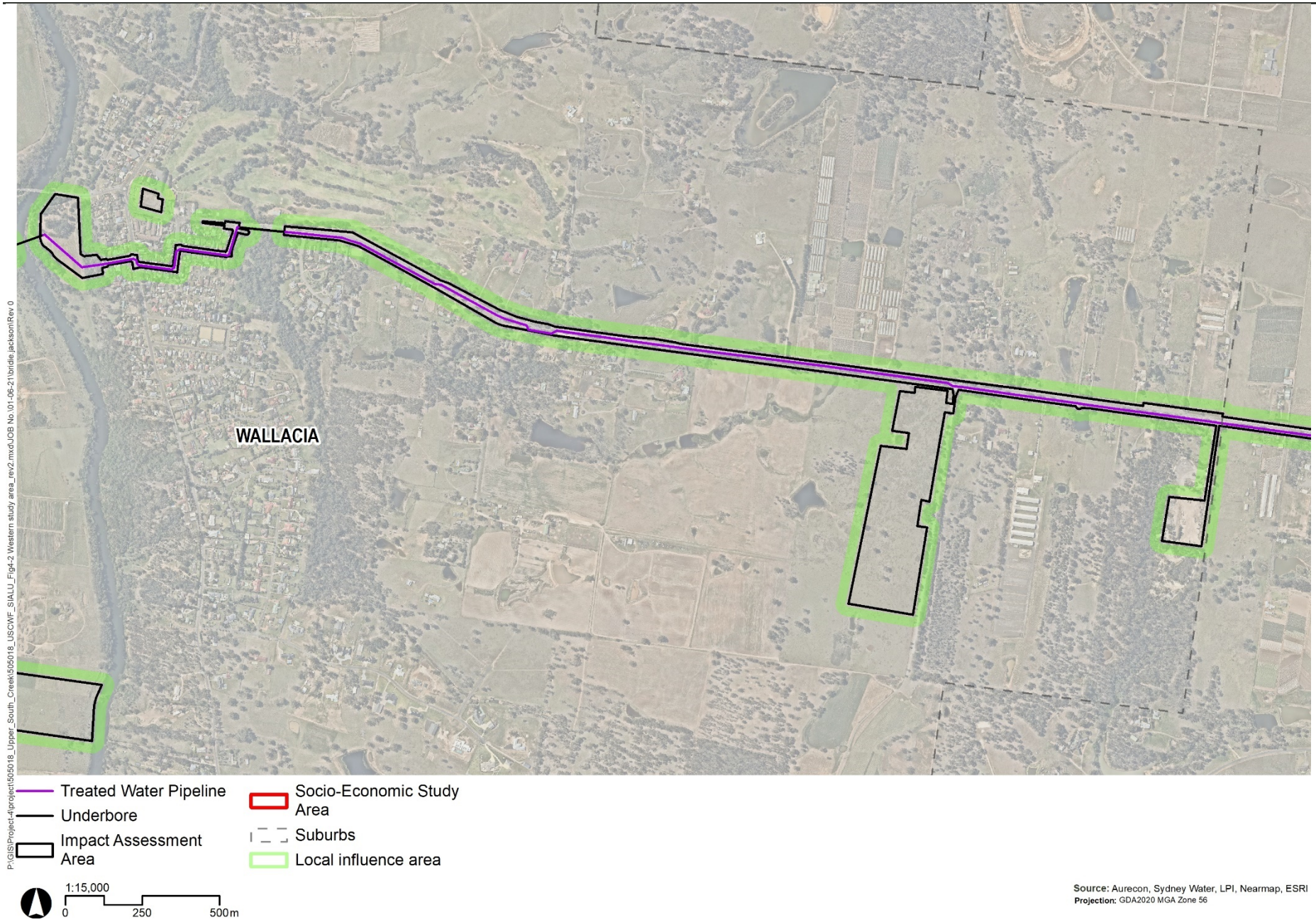


Figure 2-2 Western LUCRA study area (map 2 of 2)

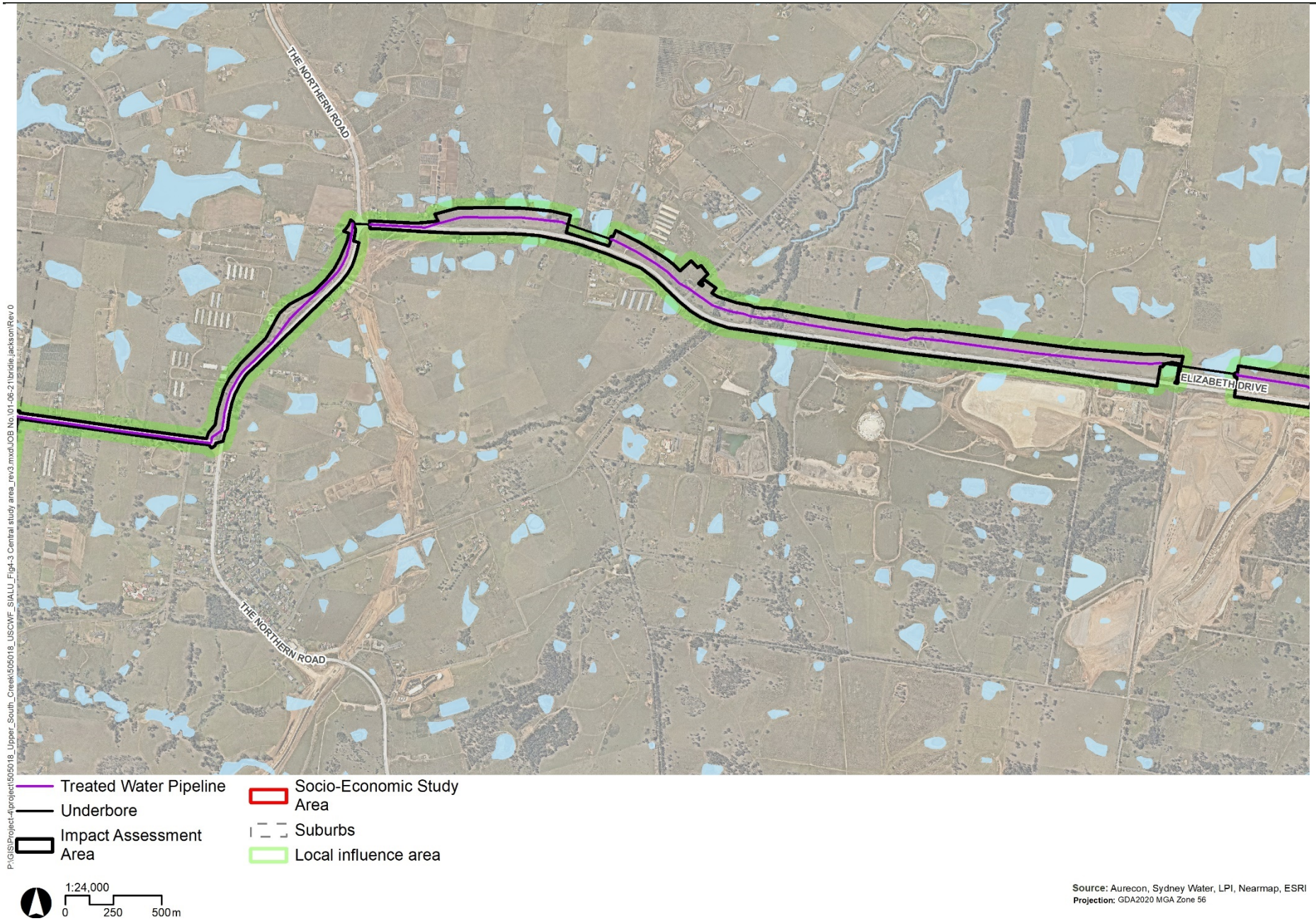


Figure 2-3 Central LUCRA study area (map 1 of 3)

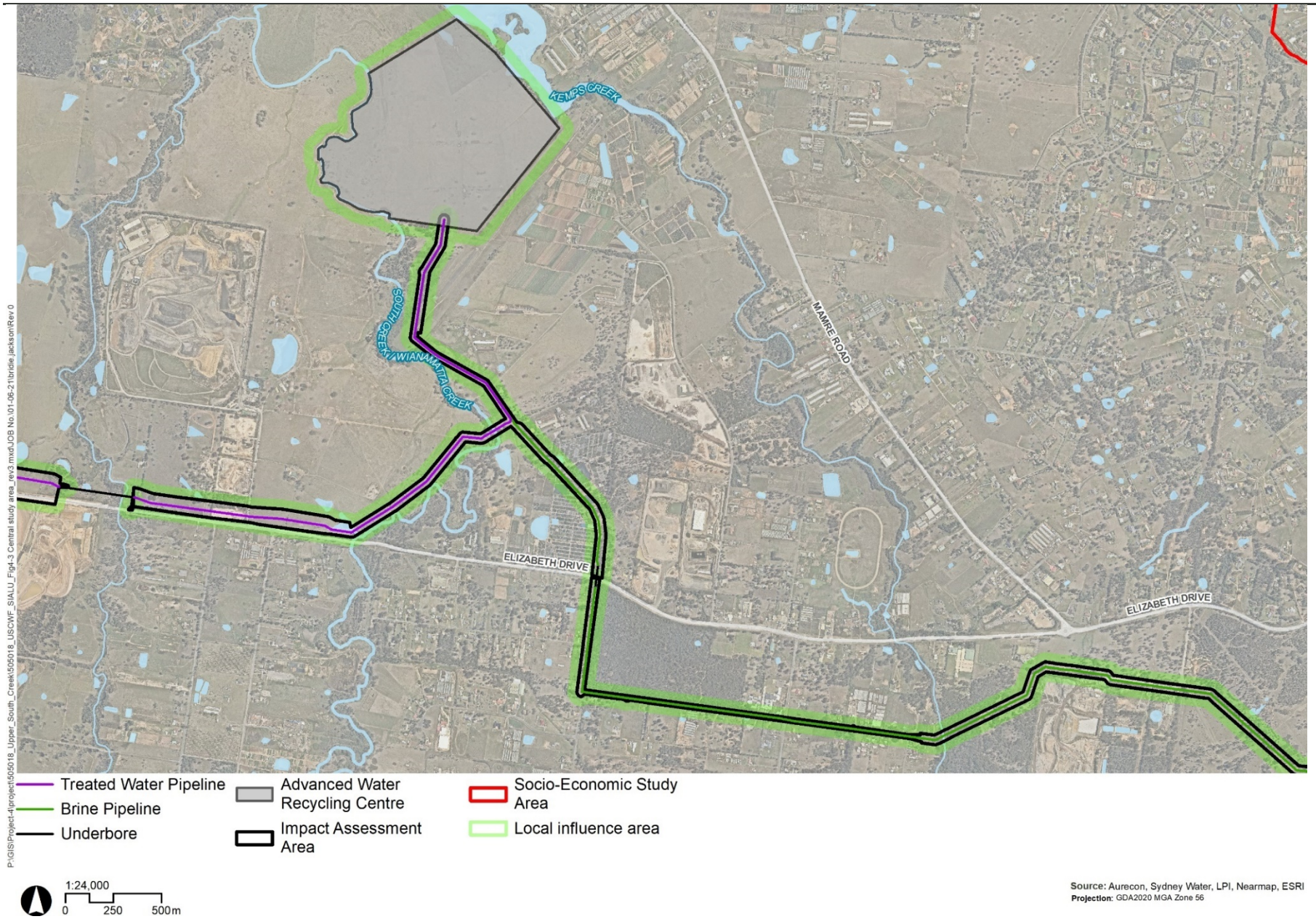


Figure 2-4 Central LUCRA study area (map 2 of 3)

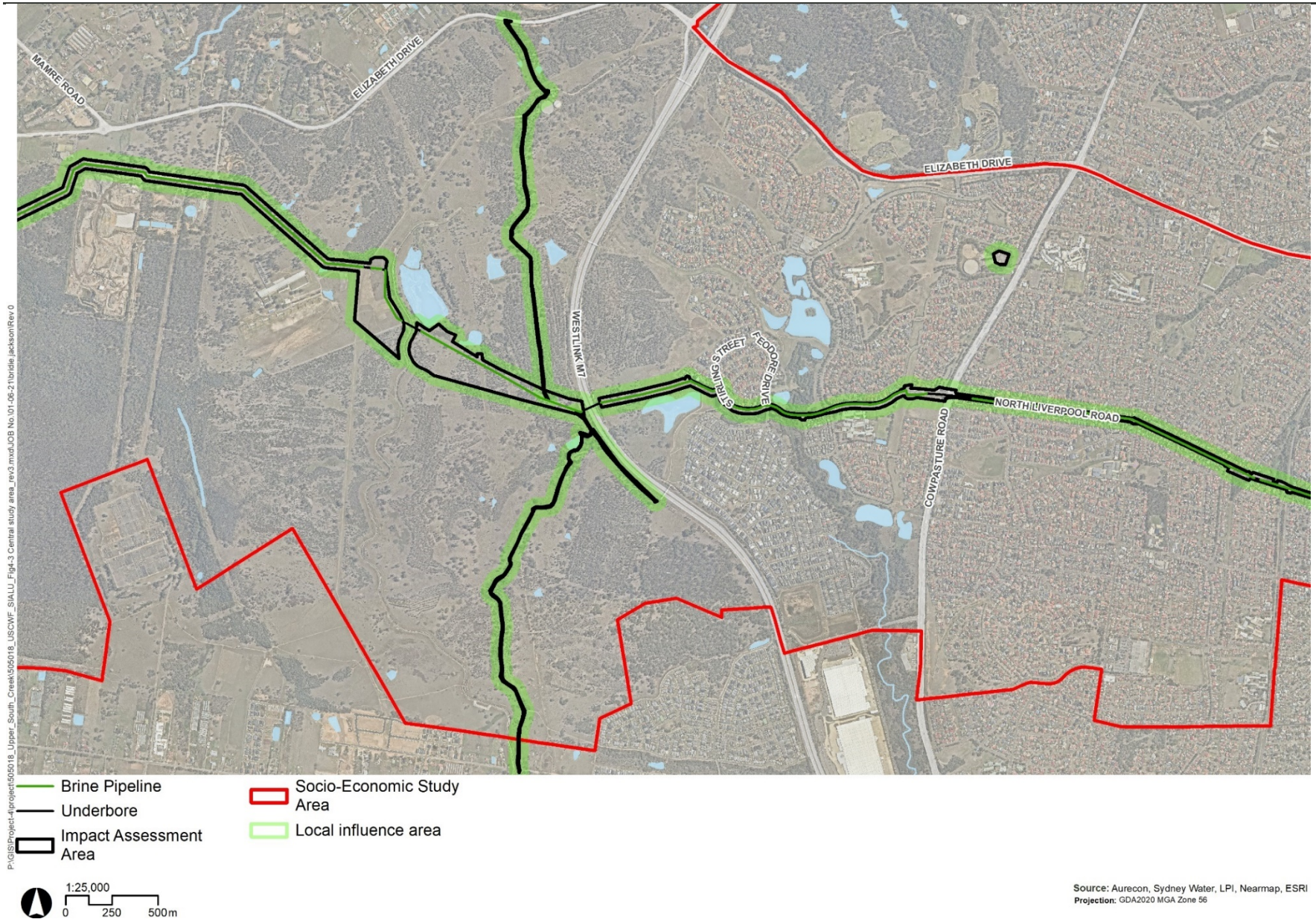


Figure 2-5 Central LUCRA study area (map 3 of 3)

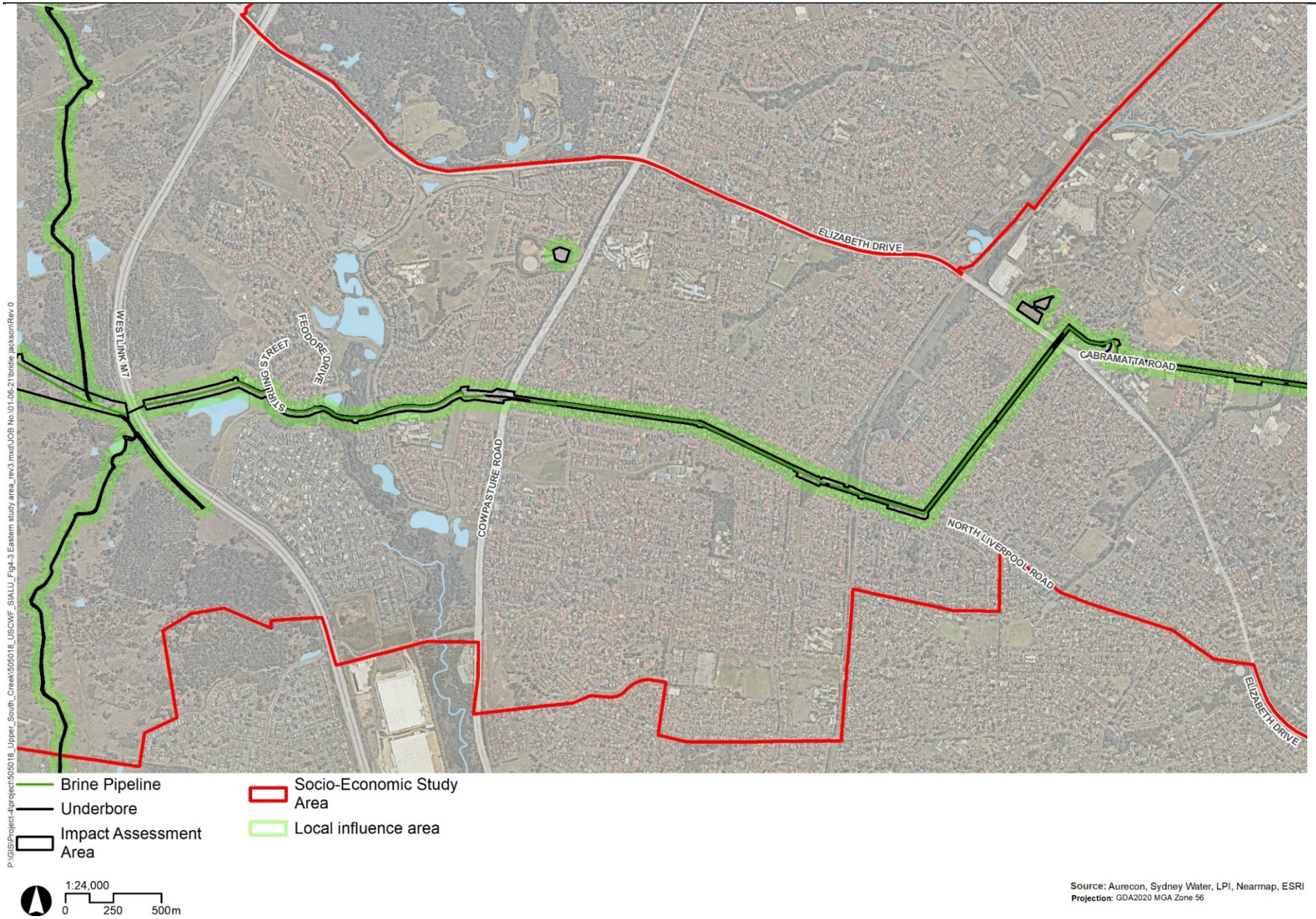


Figure 2-6 Eastern LUCRA study area (map 1 of 3)

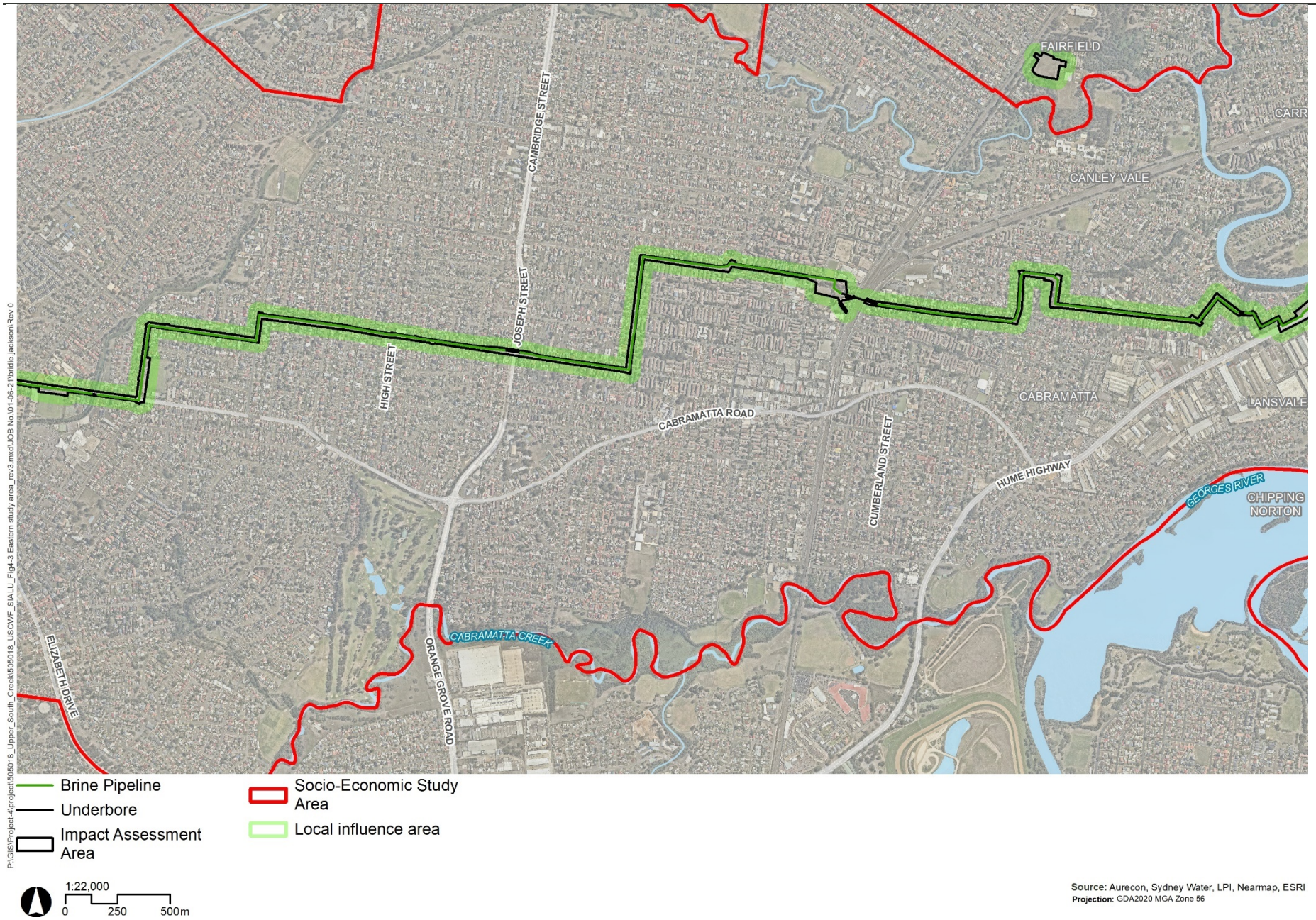


Figure 2-7 Eastern LUCRA study area (map 2 of 3)

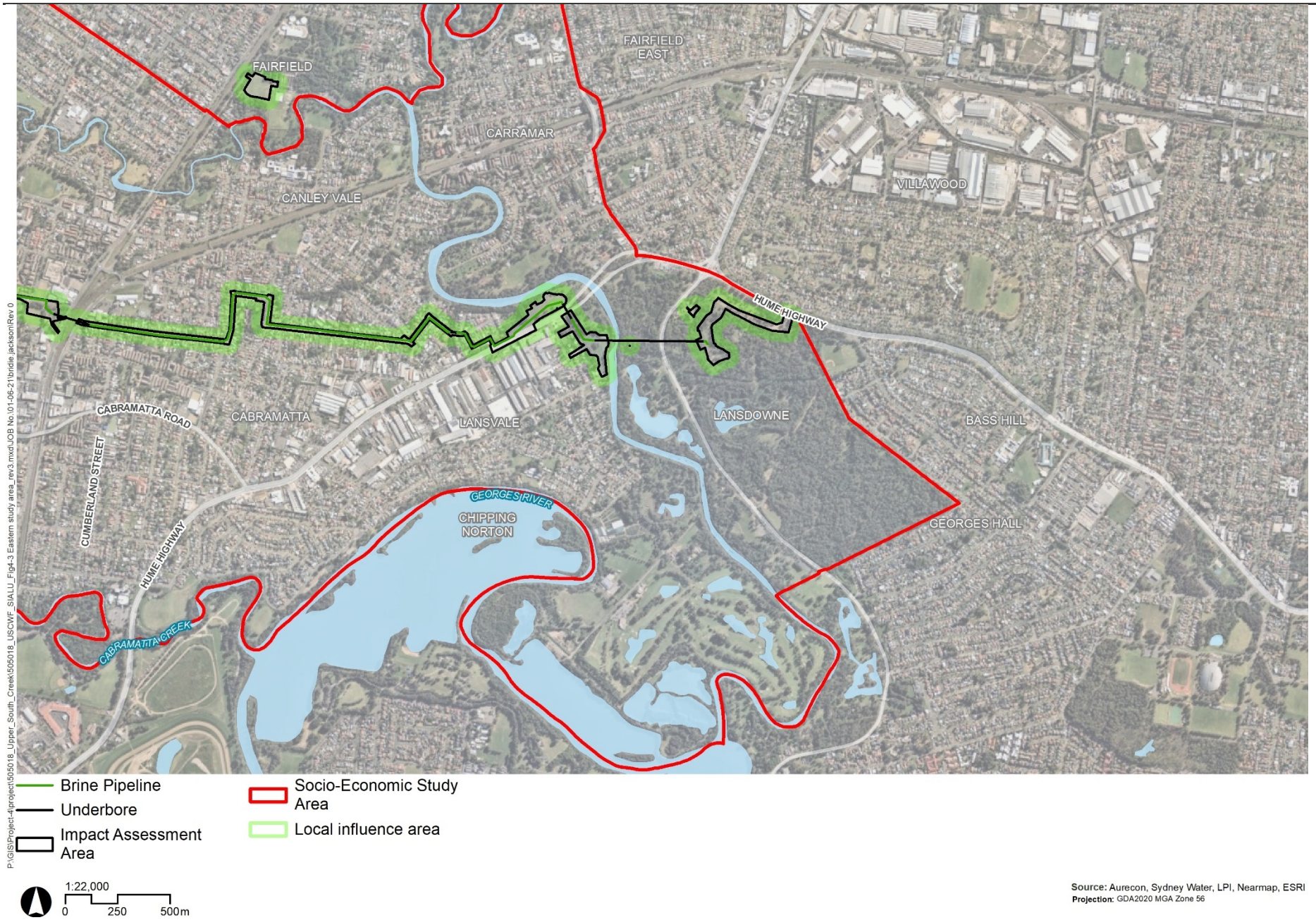


Figure 2-8 Eastern study area (map 3 of 3)

3 Background information and context

This section presents the background and context of the project, gathered following Step 1 of the LUCRA guideline as well as a brief overview of the project. More information about the project and existing environment is provided in the Socio-economic and Land Use Impact Assessment and wider EIS.

3.1 Proposed development

An overview of the location of the proposed infrastructure is provided in Section 2.4 and 3.1. The four main features of the project are the AWRC, treated water pipeline, environmental flows pipeline and the brine pipeline. Table 3-1 provides a summary of the project and the likely activities to occur at each of the main features. The Socio-economic and Land Use Impact Assessment and Chapter 3 of the EIS provide a more detailed description of these features.

For Stage 1 of project operation, the project will operate at 50ML/day. Sydney Water will build the project to accommodate all flows from the Water Recycling Centre when it reaches an ultimate capacity of 100ML/day. This is to avoid the additional community and environmental disturbance that will occur if they needed to be duplicated in the future. For the purposes of the LUCRA, it is considered that impacts would be similar across all stages. As such, this LUCRA has been undertaken on the basis of the project at ultimate capacity.

Table 3-1: Activities associated with the Project

Project feature	Description	Activities
AWRC	On an approximately 42ha operation area, the AWRC will contain a series of treatment units, pumping station buildings, and supporting infrastructure including solar panels, three onsite detention basis, and parking for approximately 30 vehicles. The AWRC site will also contain a 42ha landscaped green space area. This will contain new infrastructure from the Water Recycling Centre to South Creek to release excess treated water and wet weather flows. Access to the site (during construction and operation) will be via a new road off Clifton Avenue. This access road will be built before construction of the AWRC and has not been included in the scope of works assessed by the EIS.	The AWRC will produce: • High-quality treated water suitable for a range of uses including recycling and environmental flows • Renewable energy, including through the capturing of heat for cogeneration • Biosolids suitable for beneficial reuse • Brine, as a by-product of reverse osmosis treatment.
Treated water pipeline and environmental flows pipeline	• The treated water pipelines is a pipeline about 17 km long from the AWRC to the Nepean River at Wallacia Weir, for the release of treated water • The environmental flows pipeline is a pipeline about 5 km long from the main treated water pipeline at Wallacia to a location between the Warragamba Dam and Warragamba Weir, to release high-quality treated water to the Warragamba River as environmental flows.	The treated water pipeline will be up to 1.2 m in diameter. The environmental flows pipeline will be approximately 0.6 m in diameter.

Project feature	Description	Activities
Brine pipeline	The Brine pipeline is about 24 km long that transfers brine from the AWRC to Lansdowne, in south-west Sydney, where it connects to Sydney Water's existing Malabar wastewater network.	The brine pipeline will be about 0.6 m in diameter.
Compound sites	A total of 15 compound sites are required across the length of the project. This includes: • Three main compounds: – C5 – 1 Park Road, Wallacia – C6 – 344 Park Road, Wallacia – C8 – the AWRC site) • Seven smaller satellite compound sites across the length of the project: – C3 - Treated water release location near Wallacia Weir at Nepean River – C7 - Elizabeth Drive between The Northern Road and Luddenham Road – C9 Western Sydney Parklands, near Liverpool Offtake Reservoir – multiple small compound sites, including M7 tunnelling – C10 – Liverpool reservoir, Cecil Hills – C11 - Plan DP262454 Lot 419, Bonnyrigg – C12 - East Parade, Fairfield – C14 - Lansvale Park, Lansdowne - west of Henry Lawson Drive and Prospect Creek (also trenchless) • Seven compound sites required for tunnelling/trenchless construction works – C1 - Warragamba River via Core Park Road – C2 - Bent Basins Road, Wallacia – C4 - West of Wallacia and Nepean River – C9 Western Sydney Parklands, near Liverpool Offtake Reservoir – multiple small compound sites, including M7 tunnelling – C13 - Cabravale Park – C14 - Lansvale Park, Lansdowne - west of Henry Lawson Drive and Prospect Creek (also satellite) – C15 - Lansdowne east of Henry Lawson Drive.	Compound sites would be required for the construction of the project and would be used for the following purposes: • Site offices, amenities and parking • Delivery and storage of stockpiles, materials, equipment and structural elements • Fabrication and assembly • Establishment of entry or exit shaft for tunnelling.

3.2 Nature of land use change

Western Sydney is currently experiencing rapid growth and development. It is recognised that strategic growth across the area will see a significant change in land use within key suburbs due to a growing population, job creation, key infrastructure and social infrastructure. Land use mapping and existing Council zoning demonstrate an area currently characterised by predominantly agricultural land and rural landscapes, with pockets of rural residential uses and small rural villages. However, the western and central LUCRA study areas are the subject of substantial development aspirations.

The SEPP (Western Sydney Aerotropolis) 2020 sets the context of this growth, which will see a significant change to the character and land use within the central and western LUCRA study areas to higher density, mixed-use, urban and industrial uses. For the purposes of this assessment, the Western Sydney Aerotropolis is not considered to constitute 'existing land use' as it is uncertain to what extent development outlined in the SEPP will be underway or in place when the project is operational. However, there are a clear commitment and a strong support for this anticipated change in character and development associated with the development plans in the longer term, and impact should be considered in this context. In addition, the project is considered essential to supporting this planned growth and providing infrastructure to support current and future communities.

3.2.1 Advanced water recycling centre

Table 3-2 summarises the land use context for the AWRC.

Table 3-2: AWRC character and land use

Project feature	Topography, climate and natural features	Site land use and activities	Wider local land use and activities
Current land use	The AWRC site is located within a regional alluvial plain associated with the South Creek and Kemps Creek watercourses. The site is located between South Creek and Kemps Creek (a tributary of South Creek) and close to their confluence with Badgerys Creek. A reservoir body associated with Kemps Creek is located immediately to the north of the site. A portion of land zoned for environmental conservation around South Creek is located within the site boundary.	The land within the AWRC site boundary is currently used for research related activities and cattle grazing by the University of Sydney. It is understood that the site is not used regularly. While no buildings exist on the site, there is some evidence of its former structures and uses. It is predominantly cleared of native vegetation, with some remaining remnants along its boundaries.	Wider land use and activities in proximity to the AWRC site include: • The Suez Kemps Creek Resource Recovery Centre (south west) • Agricultural uses, primarily grazing or native vegetation along creek lines • Existing rural residential and agricultural land uses along Mamre Road and Clifton Avenue (south and east) • Rural residential dwellings about 300-400 metres to the north-east of the site • The Twin Creeks residential estate (about 800 to 900 metres north-west).

Project feature	Topography, climate and natural features	Site land use and activities	Wider local land use and activities
Future Land use	The topography in the area is predominately flat, with a gentle slope towards the north. It is listed as an item of local heritage under *Penrith City Council Local Environmental Plan* (LEP) as the site of the Fleurs Radio Telescope and for its use in astronomical research (Penrith City Council, 2010).	The AWRC is located within the Aerotropolis Boundary as identified in the Aerotropolis SEPP's Aerotropolis Boundary Map (NSW Government, 2020), predominantly within the Kemps Creek precinct. The Kemps Creek Precinct has not yet been rezoned and as such the existing RU2 zoning within the Penrith LEP applies. The westernmost part of the site is zoned for environment and recreation, continuing to provide a buffer between kemps Creek and the project.	Within the wider LUCRA study area land use zoning is consistent with the site itself and is zoned predominantly as RU2 Rural Landscape under the Penrith City Council LEP or for Environment and Recreation under the Aerotropolis SEPP.

3.2.2 Treated water pipeline

Table 3-3 summarises the land use context for the treated water pipeline.

Table 3-3: Treated water pipeline character and land use

Project feature	Topography, climate and natural features	Site land use and activities	Wider local land use and activities
Current land use	The treated water pipeline follows gently sloping topographies, with elevations generally ranging from 30 m to 90 mAHD, from the low-lying areas around the South Creek/Kemps Creek through to the Nepean River valley, traversing a small ridge in the vicinity of The Northern Road, Luddenham. The pipeline traverses varied soil and topographical landscapes. The pipeline crosses waterways including South Creek, Badgerys Creek, Oaky Creek, Cosgroves Creek, Nepean River and Megarritys Creek. The treated water release location is on the Nepean River at Wallacia weir.	The treated water pipeline will be located on largely cleared land within or adjacent to existing road corridors along Elizabeth Drive and Park Road. The predominant land uses for this land is road infrastructure, with rural residential uses or grazing along the road edges. In the very westernmost point of the Project, the pipeline passes through two public reserves – Blaxland Crossing and Fowlers Reserve. Items of Aboriginal heritage and non-Aboriginal heritage remain along some sections of the alignments. The Wallacia weir (release location for the treated water pipeline) plays a key role in supporting direct river extraction. While the weir itself has limited public access, it supports popular recreational areas upstream for picnics. While water-based recreation is not permitted at the weir, the river and waterways are	Land uses within the surrounding area are largely consistent with the land uses along the treated water pipeline alignment – predominantly road infrastructure, rural residential uses or native vegetation grazing. The Blue Mountains National Park and World Heritage area is downstream of the treated water release location at Wallacia weir, on both sides of the Nepean River. The treated water pipeline passes through existing road infrastructure within the village of Wallacia (1,700 people) and passes to the north of Luddenham (1,828 people), both home to a range of residential properties and local services.

Project feature	Topography, climate and natural features	Site land use and activities	Wider local land use and activities
	Some native vegetation remains within this land, including in road verges, with larger areas around Wallacia and Warragamba, near the Nepean River.	popular for fishing, boating and swimming.	
Future Land use		A large proportion of the treated water pipeline is proposed on land within the Aerotropolis SEPP: Within the Western LUCRA study area, the predominant land use zone is AGB AgriBusiness. This will see a significant change to the character and land use. Within the central LUCRA study area, land use zones include: land zoned for infrastructure, land zoned for enterprise under the Aerotropolis SEPP, and land zoned for agribusiness.	All land use zones within the project site are also identified within neighbouring land – both within the **Aerotropolis** SEPP and Wollondilly Shire Council LEP.

3.2.3 The environmental flows pipeline

Table 3-4 summarises the land use context for the environmental flows pipeline.

Table 3-4: Environmental flows pipeline character and land use

Project feature	Topography, climate and natural features	Site land use and activities	Wider local land use and activities
Current land use	The environmental flows pipeline follows gently sloping topographies, in the Nepean River valley. The pipeline traverses varied soil and topographical landscapes. The environmental flows release location is on the Warragamba River upstream of the weir. Some native vegetation remains within this land, including in road verges.	The environmental flows pipeline will be located on largely cleared land within or adjacent to the existing road corridor. The predominant land uses for this land is road infrastructure, with rural residential uses, market gardens or grazing along the road edges.	Land uses within the surrounding area are largely consistent with the land uses along the environmental flows pipeline alignment – predominantly road infrastructure, rural residential uses or native vegetation grazing.
Future Land use		The environmental flows pipeline is located on land covered by the Wollondilly Shire Council LEP (Wollondilly Shire Council , 2011). This land is predominantly zoned as RU1 Primary Production, which aims to encourage sustainable primary production and maintain and enhance the natural resource base.	All land use zones within the project site are also identified within neighbouring land – both within the **Aerotropolis** SEPP and Wollondilly Shire Council LEP.

3.2.4 Brine pipeline

Table 3-5 summarises the land use context for the brine pipeline.

Table 3-5: Brine pipeline character and land use

Project feature	Topography, climate and natural features	Site land use and activities	Wider local land use and activities
Current land use	The brine pipeline alignment, heading east from the AWRC site follows gently sloping topographies, rising from 40 mAHD to a high point at Cecil Hills (80 mAHD) before sloping down again towards Prospect Creek and the Georges River in Fairfield. The pipeline traverses varied soil and topographical landscapes. The brine pipeline crosses waterways including Kemps Creek, Clear Paddock Creek, Green Valley Creek, and Prospect Creek and the WaterNSW Upper Canal. The project will cross some parkland areas including Western Sydney Parklands, Lansdowne Reserve, Mirambeena Regional Park, Shortland Brush and Lansvale Park.	The brine pipeline will be located on largely cleared land within or adjacent to existing road corridors. Within the central LUCRA study area, the predominant land uses are road infrastructure, rural residential (around Kemps Creek), or grazing. Some native vegetation remains within this land, including in road verges. Within the eastern LUCRA study area, the predominant land uses along the brine pipeline's alignment are road infrastructure or residential (predominantly low density, but ranging to high density). Across much of the pipeline, the land is heavily disturbed by existing residential development in suburbs such as Cecil Hills, Bonnyrigg, Mount Pritchard, Cabramatta, Canley Vale and Canley Heights.	Surrounding land uses largely mirror those along the brine pipeline alignment. The land surrounding the central LUCRA study area is predominantly rural residential land uses and grazing of native vegetation. Within the LUCRA eastern study area the surrounding land uses are largely residential suburbs ranging from low density to high density apartments. The brine pipeline runs through the Western Sydney Parklands - the Cecil Park and Cowpasture precincts. This also includes the Sydney International Shooting Centre, a key recreational asset. There is also a range of major transport infrastructure immediately adjacent to the pipeline alignment, including the M7 motorway, Liverpool to Parramatta transitway and T2, T3 and T5 rail lines.
Future Land use		The brine pipeline is proposed on land predominantly zoned under the Penrith City Council, Liverpool City Council and Canterbury-Bankston Council LEPs as R2 Low Density Residential (10km), alongside smaller areas of R1 General Residential (0.4km), and R4 High Density Residential (0.5km). The aspirations for these areas are to provide residential development and supporting uses, of varying densities. The other predominant land use zones are RU4 Primary Production Small Lots (3km) and RU2 Rural Landscape (2km (1.4km), which focus on sustainable primary production and maintain and enhance the natural resource base.	Land use zoning is relatively consistent between neighbouring sites and the project site. The LUCRA study area contains land predominantly zoned as R2 Low Density Residential, R1 General Residential and R4 High Density Residential. The social influence area also contains further land within the Western Sydney Parklands, which includes the Precinct of Cecil Park North – an area for bushland and rural residential uses.

Project feature	Topography, climate and natural features	Site land use and activities	Wider local land use and activities
		The brine pipeline also passes through the Western Sydney Parklands, and intersects with Cecil Park and Cowpasture Precincts (Western Sydney Parklands Trust, 2018). Future aspirations for these areas are to continue current uses around bushland habitat and recreation and landscape open space. A very small portion of the western most part of the Brine Pipeline falls within the Aerotropolis SEPP, zoned as ENZ Environment and Recreation and SP2 Infrastructure.	

3.2.5 Proposed land use change

Based on the current land use and existing future land use aspirations for the assessment area, compared against the proposed development summarised in Section 3.1, it is considered that the project will result in the following changes to existing/future landscape:

- AWRC – a change from rural landscape, research and commercial agriculture to a provision of infrastructure and water recycling facilities. This will go from no prominent current buildings to new built structures. This will integrate with longer term aspirations for enterprise and agribusiness growth and change as part of the Aerotropolis and associated developments.
- Environmental flows pipeline and treated water pipeline – a temporary change from existing land use during construction, but no substantial permanent change in existing land use noting the majority of the project will be located underground. No impacts on future land use aspirations for enterprise and agribusiness growth and change is expected as part of the Aerotropolis and associated developments.
- Brine pipeline - a temporary change from existing land use during construction, but no substantial permanent change in existing or future proposed land use noting the majority of the project will be located underground.

3.3 Agricultural sector analysis

In response to the project SEARs, further investigation has been undertaken to define the agricultural land uses and context within the LUCRA study area for the project. This section provides an overview of this research, with further detail provided in Annexe A.

3.3.1 Agricultural activity

The Western Sydney area is a key contributor to agricultural activity and outputs within Sydney and NSW. Agricultural activity in Greater Sydney contributes approximately 6% to the total Gross Value output of NSW (2018-19), with Urban-Rural Sydney contributing approximately two thirds of this. The project is located within the Sydney – South West area, which contributed 31% of the gross value delivered in Urban-Rural Sydney, representing 1% of the NSW total gross value in 2018-19.

The project falls largely within the Sydney-South West area (at which reporting is undertaken on agricultural outputs), as shown in Figure 3-1. While this area covers a larger remit than the LUCRA study area for the project, it can provide us with some context on agricultural activity in and around the area.

It is also noted that a part of the project, particularly the treated water pipeline and environmental flows pipeline falls outside of Sydney-South West, and within the Sydney-Outer West and Blue Mountains area. This area is significantly larger than the LUCRA study area for the project, stretching over 30 kilometres to the west and south and approximately 20 kilometres to the north. As such, this analysis has focussed on the Sydney-South West area.

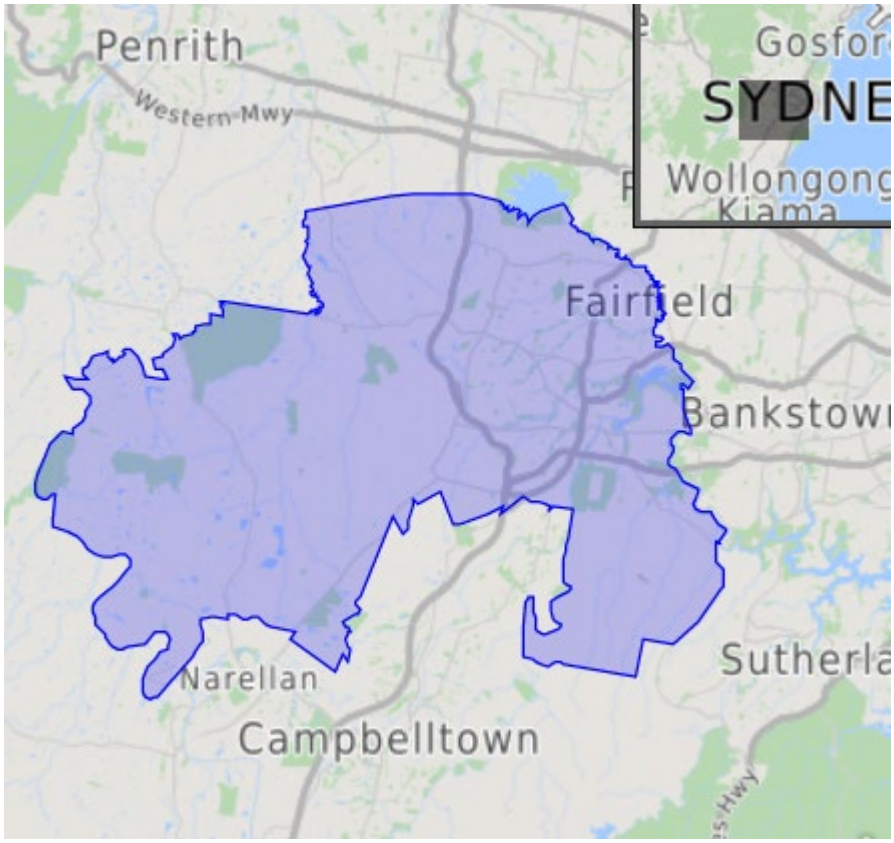


Figure 3-1 : Sydney South-West Area (ABS Quick Stats, 2016)

The Sydney – South West area is important for the production of livestock for consumption (namely poultry), livestock products (eggs) and vegetables in Greater Sydney. The AWRC site would be located within the Penrith LGA, which is home to a large number of these agricultural activities. There is a predominant focus on intensive plant and animal production, similar to the wider Sydney South West area.

The primary commodities produced in the Sydney South West area are:

- Livestock – primarily poultry (50% of total Gross Value of commodities produced in the Sydney South-West , and approximately 46% of all live poultry (chicken) produced in Greater Sydney

- Vegetables – lettuce, mushrooms, tomatoes and miscellaneous market garden vegetables (27% of total Gross Value of commodities produced in the Sydney South-West region)
- Nurseries and cut flowers (12% of total Gross Value of commodities produced in the Sydney South-West region)
- Livestock products – primarily chicken eggs (10% at 8.7 million dozen hen eggs (for human consumption) and 24% of what was produced in all of Greater Sydney)

Penrith specifically is a leader in egg production contributing 18% of the total egg output in NSW in 2015-2016, and produces nearly 1% of all of NSW's total agricultural output.

Agriculture in the socio-economic study area only employs approximately 1,413 people (1.14% of all jobs), not accounting for jobs in the longer supply chain.

3.3.2 Agricultural land use and property

The ABS 2015-16 Agricultural Census identifies the total area of land holdings used for agricultural activities and dedicated to production of different agricultural commodities. The data suggests that Sydney – South West region represents 4% of all agricultural land in Greater Sydney, and 22% of all land for vegetable growth.

As outlined in Section 3.3.1, some of the land within the impact assessment area is used for agricultural purposes. Table 3-6 summarises the existing land use within the LUCRA study area which is associated with agricultural uses. This demonstrates the predominant location of agricultural land is around the AWRC, treated water pipeline and environmental flows pipeline (largely within the LUCRA central and western study areas). The LUCRA eastern study area contains only very limited agricultural land uses and no primary production.

Table 3-6: Agricultural land use in the LUCRA study area[1]

Zone	AWRC Ha	Brine pipeline Ha	Treated water and environmental flows pipelines Ha
Primary Production	0	0	12.44
Rural Production	79.58	10.39	35.07
Primary Production Small Lots	0	14.50	0
Rural village	0	0	3.15
Other land use	13.41	68.14	25.80
% agricultural	85%	27%	66%

Figures A-1 to A-3 in Annexe A show the split of agricultural land uses across the LUCRA study area and the wider local area. This shows that a large proportion of land is being used for grazing (either native pasture species or modified pastures), or otherwise for rural residential and farm infrastructure. There are also some more intensive horticulture and poultry farming uses in close proximity to the project. However, as noted previously, a large proportion of this land is identified for future employment or residential development as part of the Aerotropolis SEPP (see Section 3.2).

[1] Note this is based on land use zoning within the LEPs for the respective LGAs crossed by the project, noting this largely mirrors existing land use.

These figures also show an area of Biophysical Strategic Agricultural Land (BSAL) within the LUCRA study area. Approximately 1.9 km of pipeline runs directly through BSAL.

There are approximately 60 agricultural properties, predominantly in private ownership, which intersect with the project (and require temporary access arrangement during construction). A total of 71 properties will require permanent easements during operations. Approximately half of these are currently used for agricultural purposes. With regard to agricultural land use classifications, these are predominantly grazing of native pastures, or used for agricultural research purposes, with a small number of properties used for intensive husbandry and poultry farming.

3.3.3 The future of agriculture

Agricultural land is undergoing change as urban development in Western Sydney intensifies. Penrith and Wollondilly Councils have prepared draft Strategies that provide strategic direction for planning and management of rural lands in their local government areas. Both Strategies identify the challenge to managing rural lands in the face of changes to the development and the rural landscape proposed, particularly due to expanding urban development and development catalysed by the new Western Sydney International Airport. Both strategies look to protect current productive agricultural land and balance the protection of agriculture with the planned growth and development of the LGA.

A literature review of the Managing farm-related land use conflicts in NSW Research Report (Australian Farm Institute, 2020) has been undertaken to inform an understanding of potential conflicts. Key points included:

- Economic concerns – risks of biosecurity breaches from poor neighbouring land management and trespass; uncertainties of future production limiting on-farm investments
- Personal impacts – stress due to uncertainty of the future viability of farming and animosity with neighbours; living with uncertainty about the continuity of agriculture
- Social impacts – established rural lifestyle replaced with urban setting and loss of/ sterilisation of agricultural production due to increased residential development
- Environmental impacts – soil health compromised due to prevention of organic fertiliser application.

3.4 Site planning history

The project's pipeline crosses a large proportion of Western Sydney from east-west. The Western Sydney area has been home to predominantly agricultural and rural land use between the Warragamba River and the Westlink M7 from the late 18th century until present day, with the urban development of Western Sydney resulting in more mixed, urban residential uses in the eastern LUCRA study area. Individual sites along the pipelines have their own unique history, including the Blaxland's brewery at the site of treated water release.

The AWRC site itself has a long history. Formerly McGarvie-Smith Farm, it was purchased in 1936 by Sydney University in association with the McGarvie Smith Institute for the training of veterinary students. Until 1923 it was the only veterinary research facility in NSW.

A large portion of McGarvie-Smith Farm was leased to CSIRO for the Division of the Radiophysics. A diversionary airfield was built in 1942 and named the Fleurs Aerodrome after the property of the same name. In 1954, the Fleurs Radio Telescope Station was established on the property immediately to the north of the Fleurs Aerodrome. Between 1954 and 1964, three major telescopes were constructed at the station (Mills Cross, Shain Cross and Chris Cross).

By the 1980s the farm was seeing less and less usage by the university and was declared surplus to requirements in 1983. From that point on, the farm has only been in casual use.

There are no known recent approvals or development applications on the AWRC site. Major development proposals in proximity to the AWRC and pipelines are summarised in Section 3.2. In particular, the treated water pipeline intersects with the Aerotropolis SEPP and proposed Western Sydney Metro alignment.

3.5 Consultation and engagement

A range of stakeholders have been consulted during the development of the Project. This included:

- The Department of Agriculture, Water and Environment
- The NSW Department of Primary Industries
- Local councils
- Agricultural property owners and occupiers that would potentially be directly or indirectly impacted by the project.

Consultation was undertaken with DPI Agriculture through a workshop in March 2021. Comments provided have been integrated into this LUCRA. The minutes of this session are provided at Annexe C.

Sydney Water has in particular sought to engage with landowners on properties impacted by and/or adjacent to the project. This includes:

- Letters and emails to 45 impacted landowners
- Phone calls to 24 landowners
- Door knocks with over 18 landowners.

Landowners have also attended the online and in person engagement sessions for the project. Discussions continue in order to understand the extent of impact and how these can be minimised and managed.

Based on this consultation feedback, including individual engagement with landowners regarding potential land use conflict and compatibility includes:

- Concerns about property easements and the direct impact of construction, preventing agricultural land uses from occurring, and impacting on business continuity
- Concerns regarding land severance or fragmentation as a result of property easements and construction, which might impact on business continuity
- Concerns about property access, particularly at cattle and livestock grazing properties – and reference to the need for notice to ensure owners can adapt cattle moving processes
- Identification of risks associated with biosecurity and COVID-19 restrictions at some properties, including nearby duck and chicken farms

- Concerns regarding water, soil and air quality impacts, and the resultant impact on crops, livestock and agricultural outputs
- Concerns about wider amenity impacts, including those associated with noise, air quality and visual impacts on neighbouring properties.

4 Land use conflict and risk assessment

4.1 Identification of conflict risks

Drawing on the land use context and project description introduced in Section 3, this section explores the potential conflicts between the proposed project uses, and the neighbouring land uses.

4.1.1 Construction conflict risks

This section focusses on the possible conflict and compatibility of the project with neighbouring land uses during construction. It is noted that this assessment does not take into consideration future land uses beyond current land use zone, with the exception of considerations associated with the Aerotropolis and Western Sydney Airport development.

Table 4-1 provides an overview of the potential compatibility and conflicts associated with the project construction.

Table 4-1 Potential construction conflicts

Conflict category	Relevant land uses	Potential compatibility / conflicts
Property and access	All neighbouring land uses	**AWRC** Land uses impacted directly by the AWRC include approximately 78 hectares of land currently used for research related activities and cattle grazing by the University of Sydney. This land will be permanently acquired from the current owners, the University of Sydney (negotiations ongoing). The project is not expected to impact the ability of the remainder of the University of Sydney's land to continue operations. The construction of the AWRC is not anticipated to impact any existing property access. Potential impacts associated with additional traffic using shared access roads are covered in *Transport and Access*. Neighbouring properties may experience indirect impacts as a result of project construction – these are covered in the rest of this table. ***Summary: possible source of moderate land use conflicts impacts.*** **Pipelines** The pipelines will impact upon a number properties during construction, as follows: • Treated water pipeline: 23 properties taking an average of 3.7% of the overall lot area of properties • Environmental flows pipeline: 7 properties taking an average of 12.6% of the overall lot area of properties. • Brine pipeline: 27 properties taking an average of 16.3% of the overall lot area of properties. The land will be temporarily unavailable for its existing use during construction. However, predominantly this will only impact upon a small proportion of the overall property, and structural impacts are

Conflict category	Relevant land uses	Potential compatibility / conflicts
		not anticipated. In addition, construction is not expected to continue along the whole alignment for the full construction timeframe. As such impacts are not anticipated throughout the construction period. A number of these properties are on currently operational agricultural land. Where pipelines interest with this land, there is potential for some reduction in productive land available for agricultural uses for the period of construction (business and economic impacts are considered in other sections). Within the eastern LUCRA study area in particular, the construction will occur in proximity of residential areas. This is likely to impact on amenity (see following rows), but will not prevent the existing residential land uses from continuing. The construction of the pipelines may also temporarily impact access to some properties. Access will be managed through consultation with residents and in accordance with Traffic Management Plan. ***Summary: possible source of moderate land use conflicts impacts.***
Transport and traffic	Grazing agriculture Horticultural agriculture Rural residential / rural landscape areas Village / urban centre Low-medium density residential High density residential / urban centre Road infrastructure Public reserve and open space Future development and land use	**AWRC** • Around 200 construction workers are required for the proposed AWRC during peak construction periods. The Traffic and Transport Assessment predicts the highest peak traffic volumes would be between The Northern Road and the AWRC which would generate 400 light vehicle movements and 302 heavy vehicle movements during standard construction hours (two-way movements) • This is likely to result in increased traffic on the local road network and impacts on travel times for a number of agricultural and rural residential properties sharing access with the AWRC – while this is expected to result in some nuisance, it is not expected to impact on neighbouring properties' ability to maintain existing land uses • Businesses on Clifton Avenue such as Andreasens Green Wholesale Nurseries and CR and M Ash and Sons Poultry Farm would be particularly impacted by construction traffic. This may cause nuisance and frustration for neighbouring properties. This may also impact on business activities e.g. movement of cattle – and potential safety risks associated with this (as was raised during consultation) • Additional traffic may also impacts local amenity (see Noise and Air Quality within this table) • Traffic and congestion impacts from the AWRC are not anticipated to have significant effects beyond the immediately neighbouring properties. ***Summary: likely source of minor land use conflicts impacts.***

Conflict category	Relevant land uses	Potential compatibility / conflicts
		Pipelines • Up to 200 construction worker staff would be required to construct the pipelines for the project (noting that this would fluctuate across the construction program) • Construction would require some road closures and temporary access changes to surrounding properties for trenching and trenchless pipe installations. Sections of the local road network, including pedestrian pathways would be partially and/or completely closed to allow for construction activities to take place. This would result in the requirement for detours and disruption to traffic in some areas • Parking arrangements would be altered in some sections of the impact assessment area during construction. This would include parking restrictions on along road corridors that require trenching and trenchless pipe installations to allow for safe construction vehicle movements around construction areas and space for construction equipment and machinery • These transport and access impacts may alter the way of life and routines for neighbouring properties and their activities – for example causing nuisance to neighbouring residential uses and impacting on ability of agricultural users to travel locally. This may also impact business activities e.g. movement of cattle – and potential safety risks associated with this. However, it is not expected that the impacts would prevent existing land uses from occurring • Access for emergency vehicles and services would be maintained during the construction phase of the project. ***Summary: likely source of moderate land use conflicts impacts.*** Further detail on transport impacts is provided in the Traffic and Transport Assessment accompanying the EIS.
Water quality	Creeks, waterways and conservation areas Grazing agriculture Horticultural agriculture Rural residential / rural landscape areas Village / urban centre Low-medium density residential	**AWRC and pipelines** • The Water Quality Impact Assessment assessed potential construction water quality impacts. The project has some minor potential to cause impacts if not appropriately managed – particularly in close proximity to the project. However, these are not expected to be significant in nature. ***Summary: possible source of minor land use conflicts impacts.***

Conflict category	Relevant land uses	Potential compatibility / conflicts
	High density residential / urban centre Western Sydney Parklands Future development and land use	
Noise	Creeks, waterways and conservation areas Grazing agriculture Horticultural agriculture Rural residential / rural landscape areas Village / urban centre Low-medium density residential High density residential / urban centre Western Sydney Parklands Future development and land use	**AWRC** • The AWRC is to be located in a rural area with noise levels currently consistent with a rural setting. • Construction noise impacts at the nearest sensitive receivers are likely to be above noise management levels however would not exceed the highly noise affected levels. This assumes that works would be undertaken during standard hours (during the day) and that mitigation measures are applied during construction. • The expected noise levels experienced would be generally low and are not likely to negatively impact people's health and wellbeing, or impact business activities and agricultural uses ***Summary: possible source of minor land use conflicts impacts.*** **Pipelines** • For the construction of the pipelines, construction works are likely to be above NMLs for receivers located near construction areas. Some receivers might experience noise levels above the highly noise affected NMLs. • Operation of some of the compound sites is also expected to be above the highly noise affected NMLs at receivers near C6 (treated water pipeline) and C10b, C12 and C13 (brine pipeline). • There may be some vibration impacts experienced by residents and businesses during the construction of the pipelines in some areas. This includes during the tunnelling required from Bent Basin Road to the discharge location. ***Summary: possible source of minor land use conflicts impacts.*** *NB:* While the noise assessment for the EIS does not cover impacts to animals, it is anticipated that impacts would be similar (or less) than those experienced by the nearest human sensitive receivers. Further detail on noise impacts is provided in the Noise and Vibration Impact Assessment accompanying the EIS.

Conflict category	Relevant land uses	Potential compatibility / conflicts
Air quality	Creeks, waterways and conservation areas Grazing agriculture Horticultural agriculture Rural residential / rural landscape areas Village / urban centre Low-medium density residential High density residential / urban centre Western Sydney Parklands Future development and land use	**AWRC and pipelines** • The Air Quality Impact Assessment qualitatively assessed potential construction air quality impacts. It states that dust emissions from construction works have the potential to cause impacts if not appropriately managed – particularly in close proximity to the project. • There is also potential for dust from construction to impact on agricultural activities, including grazing and plat species. These are not expected to be significant in nature, and less than any human impacts. Further detail on air quality impacts is provided in the Air Quality Impact Assessment accompanying the EIS. ***Summary: possible source of minor land use conflicts impacts.***
Biosecurity risk	All neighbouring uses – particularly Grazing agriculture, Horticultural agriculture	**AWRC and pipelines** • The construction of the project is not anticipated to involve activities that will attract significant wildlife to the area and as such contribute to spread of disease and biosecurity risk (see operational conflict risks for potential impacts during operation) ***Summary: negligible land use conflicts impacts.***
Utilities	Grazing agriculture, Horticultural agriculture: Rural residential / rural landscape areas Village / urban centre Low-medium density residential High density residential / urban centre	**AWRC and pipelines** • The project has been designed to avoid any impacts to existing utilities. As such, no impacts to utilities are anticipated. ***Summary: negligible land use conflicts impacts.***

Conflict category	Relevant land uses	Potential compatibility / conflicts
	Future development and land use	
Visual and landscape	Creeks, waterways and conservation areas Grazing agriculture Horticultural agriculture Rural residential / rural landscape areas Village / urban centre Low-medium density residential High density residential / urban centre Future development and land use	**AWRC** • Construction of the AWRC would impact the rural amenity of neighbouring properties as well as certain viewpoints from nearby residential dwellings. • This may prompt a sense of loss of valued character, however, is it is not considered to detract from the ability of neighbouring properties to continue with current land uses and activities • It is also noted that the area is likely to be subject to significant character change as a result of planned growth anyway. ***Summary: possible source of moderate land use conflicts impacts.*** **Pipelines** • Construction of the pipeline routes and compound sites may impact the rural amenity of neighbouring properties as well as certain viewpoints from residential dwellings in close. However, as it will predominantly be located in existing road corridors, this impact is expected to be limited. • While they may prompt a sense of loss of valued character, changes to landscape character are not considered to detract from the ability of neighbouring properties to continue with current land uses and activities. ***Summary: possible source of moderate land use conflicts impacts.*** Further detail on landscape and visual impacts is provided in the Landscape Character and Visual Impact Assessment accompanying the EIS.
Biodiversity	Creeks, waterways and conservation areas Grazing agriculture Horticultural agriculture Rural residential / rural landscape areas Western Sydney Parklands Future development and land use	**AWRC and pipelines** • Some areas of threatened ecological community and habitats for protected species will be directly impacted by the project. While this may impact values of importance to the community, this has been assessed in the Biodiversity Development Assessment Report to be of an acceptable level for a project of its scale. • It is not expected that these biodiversity impacts will result in wider impacts on the land use or activities of neighbouring properties to the AWRC. ***Summary: likely source of minor land use conflicts impacts.*** Further detail on biodiversity impacts is provided in the Biodiversity Development Assessment Report accompanying the EIS.

Conflict category	Relevant land uses	Potential compatibility / conflicts
Employment and housing	Rural residential / rural landscape areas Village / urban centre Low-medium density residential High density residential / urban centre Future development and land use	**AWRC and pipelines** • Construction of the project will result in the temporary removal of some productive agricultural land, which may impact on business activities and income. However, it is largely not expected to impact on overall business continuity – noting the small proportion of land impacted (see Property and Access row). The impact will also be temporary during construction. • In some cases (compound site C6 - treated water pipeline), land areas impacted are more significant. However, it is understood this land is currently used for non-intensive grazing and rural residential purposes and therefore while the land will be impacted, no substantial impact to the agricultural economy/business is anticipated. • The project will demonstrate a commitment to investment in Western Sydney's forecast growth by providing wastewater services to the South West Growth Area and Western Sydney Aerotropolis Growth Area by mid-2025. This may act as a catalyst for further investment in the area • Broader benefits associated with construction employment opportunities are considered in the Socio-economic and Land Use Impact Assessment ***Summary: potential source of positive land use opportunities (however it is difficult to determine with certainty due to the changing nature of surrounding future land use).***

4.1.2 Operational conflict risks

It is noted that the treated water, environmental flows and brine pipelines will be below ground during operation, and as such are anticipated to have limited impacts upon neighbouring land uses. This section therefore primarily focuses upon the AWRC. Some consideration is given however to pipeline impacts, including water quality and access for maintenance.

Please note this assessment does not take into consideration future land uses beyond current land use zone – with the exception of considerations associated with the Aerotropolis and Western Sydney Airport development. Current land uses have been considered where land use zones do not match existing land uses.

Table 4-2 provides an overview of the potential compatibility and conflicts associated with the AWRC and pipelines during operation.

Table 4-2 Potential operational conflicts

Conflict category	Relevant land uses	Potential compatibility / conflicts
Property and access	All neighbouring land uses	**AWRC** • The AWRC site would be acquired before the construction phase, and no additional property impacts are anticipated ***Summary: negligible land use conflicts.*** **Pipelines** • The majority of land subject to impacts during construction would be returned to existing land use once the project is operational • A total of 71 properties (31 treated water pipeline, 2 environmental flows pipeline, 35 brine pipeline) will require permanent easements to enable access for maintenance during operation. These easements are not expected to prevent existing land use, however, should Sydney Water require maintenance on the pipelines, there may be some temporary impacts. These impacts are anticipated to be direct, and no impact to surrounding land uses are anticipated. ***Summary: possible source of minor land use conflicts.***
Transport and traffic	Grazing agriculture Horticultural agriculture Rural residential / rural landscape areas Village / urban centre Low-medium density residential High density residential / urban centre Road infrastructure Public reserve and open space Future development and land use	**AWRC** • The operation of the AWRC is expected to result in additional daily traffic movements of up to 8 heavy vehicles per day and 15 light vehicles per day. This would have a minor impact on the road network • Operational traffic would be most noticeable on Clifton Avenue and Elizabeth Drive. There may be minor localised impacts to accesses for neighbouring properties when vehicles are close to the project site. However, it is expected to have a negligible impact on the surrounding roads as the low number of vehicles would be able to be absorbed by the network and conditions during operation would be similar to existing • No direct impacts are anticipated associated with parking or public/active transport provision. ***Summary: negligible land use conflicts.*** **Pipelines** • There is potential for road closures or sporadic additional traffic due to routine maintenance, inspections and repairs to pipelines. However, this is expected to be very short-term and minimal. ***Summary: possible source of minor land use conflicts.*** Further detail on transport impacts is provided in the Traffic and Transport Assessment accompanying the EIS.

Conflict category	Relevant land uses	Potential compatibility / conflicts
Water quality	Creeks, waterways and conservation areas Grazing agriculture Horticultural agriculture Rural residential / rural landscape areas Village / urban centre Low-medium density residential High density residential / urban centre Western Sydney Parklands Future development and land use	**AWRC** Water quality modelling undertaken as part of the project (see Chapter 7.18 of the EIS) shows that the environmental impacts on South Creek from wet weather releases around the AWRC are considered to be not significant and unlikely to affect long term ambient water quality and/or ecosystem health. This is predominantly a result of the assumed release conditions including: timing in wet weather, low discharge frequency, limited release duration and the assumed release conditions (flow volumes and quality of the recycled water). ***Summary: possible source of moderate land use conflicts.*** **Pipelines** • **Treated water pipeline and environmental flows pipeline:** Modelling undertaken for the Nepean River and Warragamba suggest that there will be predominantly negligible impacts of the project upon flow regime and habitat of the waterway, and no significant changes in water quality at the large river scale. In the vicinity of the Wallacia release area there may be some localized effects. However, these disappear quickly downstream. As such, no significant negative impacts to water quality, or use of the waterways for recreation are anticipated. • **Brine pipeline:** There are no significant impacts to water quality expected as a result of the Brine pipeline. The water will go to the Malabar WWTP for treatment and discharge via ocean outfall. ***Summary: possible source of minor land use conflicts.***
Noise	Creeks, waterways and conservation areas Grazing agriculture Horticultural agriculture Rural residential / rural landscape areas Village / urban centre Low-medium density residential High density residential / urban centre Western Sydney Parklands Future development and land use	**AWRC** • The operational noise assessment undertaken for the project indicated that exceedances in the surrounding areas of the AWRC can be mitigated using the application of reasonable noise mitigation measures • Some minor noise exceedances are also predicted during following periods: – During the night-time period when the project is operational (standard weather conditions) - noise predictions indicate minor exceedances during some activities for surrounding residential receivers in Badgerys Creek. – During the night-time period when the project is operational (during noise enhancing weather conditions) – noise predictions indicate minor exceedances during some activities for residents in Kemps Creek and along Mamre Road • Noise impacts can lead to sleep disturbance, irritation and stress. Increases in noise may lead to changes in people's

Conflict category	Relevant land uses	Potential compatibility / conflicts
		behaviours and day to day activities, having an impact on their health and wellbeing • Negligible noise levels are predicted associated with additional operational traffic traveling to the AWRC are predicted to be negligible • These noise impacts are not expected to impact on the ability for existing land uses to continue. ***Summary: possible source of minor land use conflicts.*** **Pipelines** • No operational noise impacts are anticipated associated with pipelines. ***Summary: negligible land use conflicts.*** Further detail on noise impacts is provided in the Noise and Vibration Impact Assessment accompanying the EIS. *NB:* While the noise assessment for the EIS does not cover impacts on animals, it is anticipated that impacts would be similar (or less) than those experienced by the nearest human sensitive receivers.
Air quality	Creeks, waterways and conservation areas Grazing agriculture Horticultural agriculture Rural residential / rural landscape areas Village / urban centre Low-medium density residential High density residential / urban centre Western Sydney Parklands Future development and land use	**AWRC and pipelines** • The project is not anticipated to create any significant odour or air quality emission impacts to neighbouring properties, or further afield. • Emissions from any key odour generating sources will be ducted to the proposed odour control facility, treated and exhausted via a stack. This arrangement is consistent with best practice for odour management at wastewater treatment plants. ***Summary: negligible land use conflicts.*** Further detail on air quality impacts is provided in the Air Quality Impact Assessment accompanying the EIS.
Health	Creeks, waterways and conservation areas Grazing agriculture Horticultural agriculture Rural residential / rural landscape areas Village / urban centre Low-medium density residential High density residential / urban centre Western Sydney Parklands Future development and land use	**AWRC and Pipelines** • No significant impacts to human health are expected as a result of the project during operation. The Human Health Impact Assessment for the project considered a range of potential health impacts, and found no significant human health impacts associated with soil contamination, safety and hazard risks, including use of chemicals, and traffic congestion on Elizabeth Drive, Cowpasture Road and Hume Highway. ***Summary: negligible land use conflicts.***

Conflict category	Relevant land uses	Potential compatibility / conflicts
Biosecurity risk	All neighbouring uses – particularly grazing agriculture, horticultural agriculture	**AWRC** • The project will involve the availability of open water within the AWRC site, which has the potential to attract bird life as well as other animals (e.g. rodents and insects) • Engagement with DPI Agriculture and neighbouring agricultural properties has suggested some concerns about the impact on agricultural activity, with concerns that this may encourage the spread of disease which could affect in particular neighbouring poultry farming operations • It is understood that poultry and other husbandry activities have a number of measures in place to prevent biosecurity risks. • Moreover, it is noted that there are a number of existing water bodies in the area surrounding the AWRC, including Kemps Creek. Noting these will be natural water bodies, and that the AWRC will incorporate designs to minimise attraction of bird life (see Avisure Wildlife Hazard Assessment), it is expected that other water bodies will provide greater attraction to wildlife than the site. • However, there remains a potential conflict between the AWRC and existing agricultural uses nearby. ***Summary: possible source of moderate land use conflicts.*** **Pipelines** No impacts are anticipated associated with the pipelines. ***Summary: negligible land use conflicts.***
Utilities	Grazing agriculture, Horticultural agriculture: Rural residential / rural landscape areas Village / urban centre Low-medium density residential High density residential / urban centre Future development and land use	**AWRC and pipelines** Once operational, the project will result in a significant improvement to wastewater utilities infrastructure for neighbouring properties and the wider area. This includes: • Supply of recycled water for non-drinking purposes and for agricultural use • An indirect benefit on open public spaces through the supply of recycled water for non-drinking purposes for irrigation of public open space such as playing fields and parks. • Provision of wastewater services for priority growth precincts to support critical infrastructure planning for the future. Current wastewater provision is primarily decentralised e.g. septic tanks in the western LUCRA study area and there is a lack of capacity in other Sydney Water plants. • It will respond to forecast growth in Western Sydney by providing wastewater services for the SWGA and WSAGA by mid-2025. ***Summary: source of positive land use opportunities***

Conflict category	Relevant land uses	Potential compatibility / conflicts
Visual and landscape	Creeks, waterways and conservation areas Grazing agriculture Horticultural agriculture Rural residential / rural landscape areas Village / urban centre Low-medium density residential High density residential / urban centre Future development and land use	**AWRC** • The project is expected to have ongoing impacts on landscape character and visual amenity due to the introduction of new infrastructure in the existing rural locality of Kemps Creek. This will be particularly noticeable for neighbouring properties and land users. • The AWRC would be a built structure in a relatively undeveloped setting at present with neighbour land being developed over time. • The degree of visual impacts is expected to change over time, as changes to the Western Sydney area occur. As the Western Sydney area develops (including implementation of the Aerotropolis plans), significant changes in the landscape and character of the area are anticipated. As such, in the long-term the visual and landscape impacts are expected to lessen, as more urban and commercial development appears. • Visual impacts are not considered likely to impact on the ability to continue existing land use activities ***Summary: likely source of moderate land use conflicts.*** **Pipelines** • The pipeline infrastructure would be located below the ground, and as such visual impacts will be minimal during operation. • However in some areas this would be more noticeable, particularly where vegetation removal has been required. • Visual impacts are not considered likely to impact on the ability to continue existing land use activities ***Summary: possible source of negligible land use conflicts.*** Further detail on landscape and visual impacts is provided in the Landscape Character and Visual Impact Assessment accompanying the EIS.
Biodiversity	Creeks, waterways and conservation areas Grazing agriculture Horticultural agriculture Rural residential / rural landscape areas Western Sydney Parklands Future development and land use	**AWRC and pipelines** • No additional biodiversity impacts are envisaged as a result of the project during operation. • Rehabilitation of disturbed areas and landscape planting around the AWRC will improve biodiversity outcomes during operation. ***Summary: negligible land use conflicts.***

Conflict category	Relevant land uses	Potential compatibility / conflicts
Employment and housing	Grazing agriculture, Horticultural agriculture: Rural residential / rural landscape areas Village / urban centre Low-medium density residential High density residential / urban centre Future development and land use	**AWRC and pipelines** • The project may bring potential benefits to neighbouring land uses and properties in the form of direct and indirect employment and development. • It will enable Western Sydney to cater for and respond to forecast growth by ensuring wastewater services to support the South West Growth Area and Western Sydney Aerotropolis Growth Area by mid-2025. • In the longer term, there are potential future employment and business opportunities associated with the potential re-use of recycled water from the project. There is particular support for this in the community, and this could support agricultural activities. However, this re-use does not form part of the project assessed under the EIS. ***Summary: source of positive land use opportunities***

4.1.3 Additional agricultural land use conflicts

Taking account of the SEARs request to further investigate conflicts associated with agricultural land uses surrounding the project, an additional review has been undertaken of the potential conflicts specific to agricultural land uses in the vicinity of the project. This has been informed a review of the Australian Farm Institute Research Report *Managing farm-related land use conflicts in NSW* (Australian Farm Institute, 2020), as well as an engagement with DPI Agriculture, and neighbouring agricultural properties as summarised in Section 3.5.

Many of the conflicts identified fall under the categories outlined above, particularly taking into account risks of biosecurity breaches, noise, odour and air quality impacts, and impacts to BSAL.

In addition to the impacts discussed above, impacts and concerns about land use conflicts specific to agricultural land uses include:

- Concern among agricultural neighbours with regard to **the change from an established rural landscape and lifestyle**, to more infrastructure focused urban development (particularly around the AWRC itself). This may in turn cause stress and anxiety, regarding the uncertainty of the future viability of farming in the area, loss of livelihood, and a feeling of being 'pushed out'. This is expected to be limited to those in the immediate vicinity of the project, including neighbouring farms who are concerned about what the project will mean for the future of their businesses. This conflict will be limited by the existing engagement occurring with neighbouring farms, and the assessment within the EIS
- While the project is not anticipated to result in significant impacts alone, it may result in perceived impacts, particularly in the context of cumulative development, noting as in Section 3.2, that the Western Sydney area is currently planned to undergo significant change and redevelopment. The surrounding areas to the project, within which the identified neighbours are located, are predominantly located within the Aerotropolis SEPP, and as such likely to experience significant urban development. Therefore, there is potential that the project will contribute to existing anxiety about growth and change to agricultural business. However, it could also be argued that this conflict is likely to occur with or without the project, and the project is not the primary driver of the conflict.

Overall, conflicts specific to agricultural users are expected to be minor, and somewhat limited through existing and ongoing engagement with properties.

4.2 Land use conflict risk rating

Table 4-3 and Table 4-4 apply the risk matrix introduced in Section 2.1.2 to the identified land use conflicts in Section 4 – without mitigation. It demonstrates several material conflicts (those scoring greater than 10, also marked in red), including:

Construction:

- Potential property and access impacts, and biodiversity impacts on habitats and vegetation as a result of all project elements
- Potential visual impacts upon neighbouring agricultural, rural and rural residential areas, as well as future development
- Positive impacts associated with employment in the local area.

Operation:

- Potential visual impacts upon neighbouring agricultural, rural and rural residential areas, as well as future development
- Potential risk of biosecurity and cross-contamination issues for neighbouring farms.

Table 4-3 Risk matrix for construction (unmitigated)

Identified potential conflict	Relevant neighbouring land uses	Probability	Consequence	Significance
Property and access				
AWRC	All neighbouring land uses	C – Possible	3 – Moderate	13
Treated water pipeline and environmental flows pipeline	Rural residential / rural landscape areas, Grazing agriculture, Village / urban centre	C - Possible	3 - Moderate	13
Brine pipeline	Road infrastructure, Rural residential, Grazing agriculture, Low-medium density residential, High density residential / urban centre	C - Possible	3 - Moderate	13
Traffic and transport				
AWRC	Grazing agriculture, Horticultural agriculture, Rural residential / rural landscape areas, Aerotropolis	B- Likely	4 – Minor	12
Treated water pipeline and environmental flows pipeline	Road infrastructure, Rural residential, Grazing agriculture, Village / urban centre, Public reserve and open space, Aerotropolis	D - Likely	3 - Moderate	17

Identified potential conflict	Relevant neighbouring land uses	Probability	Consequence	Significance
Brine pipeline	Road infrastructure, Rural residential, Grazing agriculture, Low-medium density residential, High density residential / urban centre, Public reserve and open space (including Western Sydney Parklands)	D - Likely	3 - Moderate	17
Water quality				
AWRC	Creeks, waterways and conservation areas, Grazing agriculture, Horticultural agriculture, Rural residential / rural landscape areas	C – Possible	4 – Minor	8
Treated water pipeline and environmental flows pipeline	Rural residential, Grazing agriculture, Village / urban centre, Creeks and waterways, Public reserve and open space, Aerotropolis	C - Possible	4 - Minor	8
Brine pipeline	Rural residential, Grazing agriculture, Low-medium density residential, High density residential / urban centre, Creeks and waterways, Public reserve and open space (including Western Sydney Parklands)	C - Possible	4 - Minor	8
Noise				
AWRC	Creeks, waterways and conservation areas, Grazing agriculture, Horticultural agriculture, Rural residential / rural landscape areas, Aerotropolis	C – Possible	4 – Minor	8
Treated water pipeline and environmental flows pipeline	Rural residential, Grazing agriculture, Village / urban centre, Creeks and waterways, Public reserve and open space, Aerotropolis	C - Possible	4 - Minor	8
Brine pipeline	Rural residential, Grazing agriculture, Low-medium density residential, High density residential / urban centre, Creeks and waterways, Public reserve and open space (including Western Sydney Parklands)	C - Possible	4 - Minor	8
Air quality				
AWRC	Creeks, waterways and conservation areas, Grazing agriculture, Horticultural agriculture, Rural residential / rural landscape areas, Aerotropolis	C – Possible	4 – Minor	8
Treated water pipeline and environmental flows pipeline	Rural residential, Grazing agriculture, Village / urban centre, Creeks and waterways, Public reserve and open space, Aerotropolis	C - Possible	4 - Minor	8

Identified potential conflict	Relevant neighbouring land uses	Probability	Consequence	Significance
Brine pipeline	Rural residential, Grazing agriculture, Low-medium density residential, High density residential / urban centre, Creeks and waterways, Public reserve and open space (including Western Sydney Parklands)	C - Possible	4 - Minor	8
Biosecurity				
AWRC	All land uses – particularly agricultural	E - Rare	5 - Negligible	1
Treated water pipeline and environmental flows pipeline	Rural residential, Village / urban centre, Aerotropolis	B- Likely	4 - Minor	12
Brine pipeline	All land uses – particularly agricultural	E - Rare	5 - Negligible	1
Utilities				
AWRC	Grazing agriculture, Horticultural agriculture, Rural residential / rural landscape areas, Aerotropolis	E - Rare	5 - Negligible	1
Treated water pipeline and environmental flows pipeline	Rural residential / rural landscape areas, Grazing agriculture, Village / urban centre	A – Almost certain	Positive	Positive
Brine pipeline	Road infrastructure, Rural residential, Grazing agriculture, Low-medium density residential, High density residential / urban centre, Creeks and waterways, Public reserve and open space (including Western Sydney Parklands)	E - Rare	5 - Negligible	1
Visual and landscape				
AWRC	Creeks, waterways and conservation areas, Grazing agriculture, Horticultural agriculture, Rural residential / rural landscape areas, Aerotropolis	B- Likely	3 - Moderate	17
Treated water pipeline and environmental flows pipeline	Rural residential, Creeks and waterways, Public reserve and open space	C - Possible	3 - Moderate	8
Brine pipeline	Rural residential, Creeks and waterways, Public reserve and open space (including Western Sydney Parklands)	C - Possible	3 - Moderate	8

Identified potential conflict	Relevant neighbouring land uses	Probability	Consequence	Significance
Biodiversity				
AWRC	Creeks, waterways and conservation areas, Grazing agriculture, Horticultural agriculture, Rural residential / rural landscape areas, Aerotropolis / WSA development	B- Likely	4 - Minor	12
Treated water pipeline and environmental flows pipeline	All agricultural uses, Rural residential	C - Possible	4 - Minor	8
Brine pipeline	Rural residential, Low-medium density residential, High density residential / urban centre	B- Likely	4 - Minor	12
Employment and housing				
AWRC	Rural residential / rural landscape areas, Aerotropolis / WSA development	A – Almost certain	Positive	Positive
Treated water pipeline and environmental flows pipeline	Rural residential / rural landscape areas, Grazing agriculture, Village / urban centre	A – Almost certain	Positive	Positive
Brine pipeline	Road infrastructure, Rural residential, Grazing agriculture, Low-medium density residential, High density residential / urban centre	A – Almost certain	Positive	Positive
Additional agricultural conflicts				
AWRC	All agricultural uses, Rural residential	C - Possible	4 - Minor	8
Treated water pipeline and environmental flows pipeline	All agricultural uses, Rural residential	C - Possible	4 - Minor	8
Brine pipeline	N/A	N/A	N/A	N/A

Table 4-4 Risk matrix for operation (unmitigated)

Identified potential conflict	Relevant neighbouring land uses	Probability	Consequence	Significance
Property and access				
AWRC	All neighbouring land uses	E - Rare	5 - Negligible	1
Treated water pipeline and environmental flows pipeline	Rural residential / rural landscape areas, Grazing agriculture, Village / urban centre	C - Possible	4 - Minor	8
Brine pipeline	Road infrastructure, Rural residential, Grazing agriculture, Low-medium density residential, High density residential / urban centre	C - Possible	4 - Minor	8
Traffic and transport				
AWRC	Grazing agriculture, Horticultural agriculture, Rural residential / rural landscape areas, Aerotropolis	D - Unlikely	5 - Negligible	2
Treated water pipeline and environmental flows pipeline	Road infrastructure, Rural residential, Grazing agriculture, Village / urban centre, Public reserve and open space, Aerotropolis	C - Possible	4 - Minor	4
Brine pipeline	Road infrastructure, Rural residential, Grazing agriculture, Low-medium density residential, High density residential / urban centre, Public reserve and open space (including Western Sydney Parklands)	C - Possible	4 - Minor	4
Water quality				
AWRC	Creeks, waterways and conservation areas, Grazing agriculture, Horticultural agriculture, Rural residential / rural landscape areas	C - Possible	4 - Minor	8
Treated water pipeline and environmental flows pipeline	Rural residential, Grazing agriculture, Village / urban centre, Creeks and waterways, Public reserve and open space, Aerotropolis	C- Possible	4 - Minor	8
Brine pipeline	Rural residential, Grazing agriculture, Low-medium density residential, High density residential / urban centre, Creeks and waterways, Public reserve and open space (including Western Sydney Parklands)	C- Possible	4 - Minor	8

Identified potential conflict	Relevant neighbouring land uses	Probability	Consequence	Significance
Noise				
AWRC	Creeks, waterways and conservation areas, Grazing agriculture, Horticultural agriculture, Rural residential / rural landscape areas, Aerotropolis	C- Possible	4 - Minor	8
Treated water pipeline and environmental flows pipeline	Rural residential, Grazing agriculture, Village / urban centre, Creeks and waterways, Public reserve and open space, Aerotropolis	E - Rare	5 - Negligible	1
Brine pipeline	Rural residential, Grazing agriculture, Low-medium density residential, High density residential / urban centre, Creeks and waterways, Public reserve and open space (including Western Sydney Parklands)	E - Rare	5 - Negligible	1
Air quality				
AWRC	Creeks, waterways and conservation areas, Grazing agriculture, Horticultural agriculture, Rural residential / rural landscape areas, Aerotropolis	E - Rare	5 - Negligible	1
Treated water pipeline and environmental flows pipeline	Rural residential, Grazing agriculture, Village / urban centre, Creeks and waterways, Public reserve and open space, Aerotropolis	E - Rare	5 - Negligible	1
Brine pipeline	Rural residential, Grazing agriculture, Low-medium density residential, High density residential / urban centre, Creeks and waterways, Public reserve and open space (including Western Sydney Parklands)	E - Rare	5 - Negligible	1
Human health				
AWRC	All neighbouring land uses	E - Rare	5 - Negligible	1
Treated water pipeline and environmental flows pipeline	Rural residential, Grazing agriculture, Village / urban centre, Aerotropolis	E - Rare	5 - Negligible	1
Brine pipeline	Rural residential, Grazing agriculture, Low-medium density residential, High density residential / urban centre	E - Rare	5 - Negligible	1
Biosecurity				
AWRC	All neighbouring land uses, particularly agricultural	C- Possible	3 - Moderate	13

Identified potential conflict	Relevant neighbouring land uses	Probability	Consequence	Significance
Treated water pipeline and environmental flows pipeline	All neighbouring uses – particularly Grazing agriculture, Horticultural agriculture	E - Rare	5 - Negligible	1
Brine pipeline	All neighbouring uses – particularly Grazing agriculture, Horticultural agriculture	E - Rare	5 - Negligible	1
Utilities				
AWRC	Grazing agriculture, Horticultural agriculture: Rural residential / rural landscape areas Aerotropolis	A – Almost certain	Positive	Positive
Treated water pipeline and environmental flows pipeline	Road infrastructure, Rural residential, Grazing agriculture, Village / urban centre, Creeks and waterways, Public reserve and open space, Aerotropolis	A – Almost certain	Positive	Positive
Brine pipeline	Road infrastructure, Rural residential, Grazing agriculture, Low-medium density residential, High density residential / urban centre, Creeks and waterways, Public reserve and open space (including Western Sydney Parklands)	C - Possible	5 - Negligible	Positive
Visual and landscape				
AWRC	Creeks, waterways and conservation areas, Grazing agriculture, Horticultural agriculture, Rural residential / rural landscape areas, Aerotropolis	B - Likely	3 - Moderate	17
Treated water pipeline and environmental flows pipeline	Rural residential, Creeks and waterways, Public reserve and open space	C - Possible	5 - Negligible	4
Brine pipeline	Rural residential, Creeks and waterways, Public reserve and open space (including Western Sydney Parklands)	C - Possible	5 - Negligible	4
Biodiversity				
AWRC	Creeks, waterways and conservation areas Grazing agriculture Horticultural agriculture Rural residential / rural landscape areas Aerotropolis / WSA development	E - Rare	5 - Negligible	1

Identified potential conflict	Relevant neighbouring land uses	Probability	Consequence	Significance
Treated water pipeline and environmental flows pipeline	Rural residential, Village / urban centre, Aerotropolis	E - Rare	5 - Negligible	1
Brine pipeline	Rural residential, Low-medium density residential, High density residential / urban centre	E - Rare	5 - Negligible	1
Employment and housing				
AWRC	Rural residential / rural landscape areas Aerotropolis / WSA development	A – Almost certain	Positive	Positive
Treated water pipeline and environmental flows pipeline	Rural residential, Village / urban centre, Aerotropolis	E - Rare	5 - Negligible	1
Brine pipeline	Road infrastructure, Rural residential, Grazing agriculture, Low-medium density residential, High density residential / urban centre	C - Possible	5 - Negligible	Positive
Additional agricultural conflicts				
AWRC	All agricultural uses Rural residential	C - Possible	4 - Minor	8
Treated water pipeline and environmental flows pipeline	All agricultural uses Rural residential	C - Possible	4 - Minor	8
Brine pipeline	N/A	N/A	N/A	N/A

5 Risk reduction controls and mitigation strategies

This section summarises the mitigated risk ranking and management for material impacts (i.e. those impacts that are going to be noticed and may have an adverse impact – scoring above 10 and highlighted red in Section 4).

It is noted that construction and operational impacts within the LUCRA relate to broader impacts associated with the Socio-economic and Land Use impact Assessment, as well as noise, air quality, visual, and traffic assessments. In such instances, the relevant technical assessments have analysed the potential impacts and identified relevant mitigation and management measures. These are summarised in detail in the relevant technical reports and are not repeated here.

In particular, it is noted that mitigation measures within the Socio-economic and Land Use Impact Assessment will be relevant to the LUCRA.

A series of additional mitigation measures are summarised in Table 5-1, that will help to address many of the conflicts further.

It is considered that as a result of these LUCRA-specific and other technical mitigation measures, all material impacts would be reduced. The majority to below material levels. Two more significant impacts would remain regarding landscape and visual impacts of the AWRC during construction, and traffic and transport impacts of the pipelines during construction. Both of these impacts are considered unavoidable noting the existing rural character (and therefore change associated with the project) and the interaction between the pipelines and the road network. Efforts will be made to further reduce any potential impacts as the project progresses.

Table 5-1: Mitigated risk ranking and management for material impacts

	Management strategy (method of control)	Description
Construction		
LUCRA1	Consultation with neighbouring agricultural properties (linked to SELU3 mitigation within the Socio-economic and Land Use Impact Assessment	Consultation with agricultural businesses in the LUCRA study area will be undertaken to mitigate potential impacts during construction, including access impacts (including inter-property and driveway access requirements), noise and visual impacts to livestock and potential air quality and biosecurity risks to livestock and crops. This will include the approach to phasing of construction to minimise impacts to agriculture (e.g. cattle movements).
Operation		
LUCRA2	Biosecurity concerns regarding birdlife attracted to the AWRC and neighbouring poultry farming during operation	Development of a bird control and biosecurity strategy (integrated into the operational Wildlife Management Plan) to implement and monitor measures to reduce risk of disease and bird/wildlife attraction. This will include a strategy for ongoing management, including a process to action accordingly any complaints received from neighbouring sites. This should integrate with any recommendations and mitigation measures included in the Wildlife Hazard Assessment (Avisure, 2020).

Table 5-2 summarises the residual impacts, post-mitigation for those conflicts that were identified as significant.

Table 5-2: Residual land use conflict risks

Identified potential conflict	Pre mitigation significance	Relevant mitigations	Post mitigation significance
Construction - AWRC			
Property and access	13	LUCRA1 Socio-economic and Land Use Impact Assessment mitigation measures	Possible, minor = 8
Transport and access	12	LUCRA1 Noise, air quality and traffic assessment mitigation measures	Likely, minimal = 7
Visual and landscape	17	LUCRA1 LVIA impact assessment mitigation measures	Likely, minor = 12
Biodiversity	12	LUCRA1 Biodiversity Impact Assessment mitigation measures	Likely, minimal = 7
Construction - pipelines			
Property and access	13	LUCRA1 Socio-economic and Land Use Impact Assessment mitigation measures	Possible, minor = 8
Transport and access	17	LUCRA1 Noise, air quality and traffic assessment mitigation measures	Likely, minor = 12
Biodiversity	12	LUCRA1 Biodiversity Impact Assessment mitigation measures	Likely, minimal = 7
Operational - all			
Biosecurity risk	13	LUCRA3	Unlikely, minor = 9
Visual and landscape	17	LUCRA3, LVIA impact assessment mitigation measures	Possible, minor = 8

6 Conclusion

This LUCRA identifies and assesses the potential for land use conflict to occur between neighbouring land uses and the project. It has developed in alignment with the *Land Use Conflict Risk Assessment Guide* (DPI, 2011).

Overall, this LUCRA has demonstrated that the project will not result in any conflicts that will prevent or stop neighbouring land uses, including agricultural industries from continuing to operate. There are anticipated to be some conflicts which may impacts on patterns of activity. A series of mitigation measures are introduced both within the LUCRA and wider technical studies for the EIS.

Post-mitigation, the majority of impacts are reduced to below material levels. Two more significant impacts would remain regarding:

- Landscape and visual impacts of the AWRC during construction and concern among neighbouring properties, particularly agricultural properties with regard to the change from an established rural landscape and lifestyle, to more infrastructure focused urban development (particularly around the facility itself)
- Potential for some temporary impacts to neighbouring transport and access, with localised congestion particularly around the pipeline construction and for those properties sharing access with the project.

Both of these impacts are considered unavoidable noting the existing rural character (and therefore change associated with the project) and the interaction between the pipelines and the road network. Efforts will be made to further reduce any potential impacts as the project progresses.

7 References

Arup and Aurecon. (2021). *Socio-economic and land use impact assessment.*
Australian Farm Institute. (2020). Managing farm-related land use conflict in NSW.
DPI. (2011). *Land Use Conflict Risk Assessment Guide.* NSW Government.
NSW Government. (2009). State Environmental Planning Policy (Western Sydney Parklands) 2009.
NSW Government. (2020). State Environmental Planning Policy (Western Sydney Aerotropolis).
NSW Government. (n.d.). Environmental Planning And Assessment Act 1979.
Penrith City Council. (2010). Local Environmental Plan.
Port Macquarie Hastings Council. (2017). *LUCRA for Regional Sports Fields.*
Western Sydney Parklands Trust. (2018). Western Sydney Parklands Plan of Management 2030.
Wollondilly Shire Council . (2011). Local Environmental Plan.

Annexe A: Agricultural analysis

In response to the project SEARs, further investigation has been undertaken to explore in particular the agricultural land uses within the LUCRA study area for the project.

It is noted that agricultural data has been obtained at the regional level for Sydney-South West region, which extends significantly beyond the impact assessment area for the project.

A.1 Agricultural activity

The Western Sydney area is a key contributor to agricultural activity and outputs within Sydney and NSW. Agricultural activity in Greater Sydney contributes approximately 6% to the total Gross Value output of NSW (2018-19), with Urban-Rural Sydney contributing approximately two thirds of this. The project is located within the Sydney – South West area, which contributed 31% of the gross value delivered in Urban-Rural Sydney, representing 1% of the NSW total gross value in 2018-19. This is shown in Table A-1.

Table A-1 Comparison of gross value of total agricultural output of Sydney South West

Region	Gross Value ($)	Sydney-South West contribution to total Gross Value (%)
Sydney **– South West**	$528,899,997	
Urban-Rural Sydney	$1,688,354,334	31%
Entire Greater Sydney	$2,378,731,541	22%
New South Wales	$40,135,201,921	1%

Source: ABS, VALUE OF AGRICULTURAL COMMODITIES PRODUCED, STATE AND SA4 REGION–New South Wales–2018-19 (75030DO001_201819)

The South West area is important for the production of livestock for consumption (namely poultry), livestock products (eggs) and vegetables in Greater Sydney. The primary commodities produced in the areas:

- Livestock – primarily poultry (50% of total Gross Value of commodities produced in the Sydney South-West region)
- Vegetables – lettuce, mushrooms, tomatoes and miscellaneous market garden vegetables (27%)
- Nurseries and cut flowers (12%)
- Livestock products – primarily chicken eggs (10%).

Table A-2 provides a summary of the different commodities and their gross production value within Greater Sydney and Sydney- South West. This shows that the South West area produces a particularly high proportion of livestock (poultry for consumption) - 38% of the Greater Sydney Gross Value for livestock produced, and 19% of livestock products such as eggs (in 2018-19). The South West area alone produces 24% of the Gross Total Value for vegetables produced in Greater Sydney. The South West area also provides for nurseries (outdoor and undercover) for the propagation and growth of plants, contributing to 10% of the Gross Total Value attributed to nurseries, cut flowers or cultivated turf in Greater Sydney.

Table A-2 Comparison of gross value of total agricultural output of Sydney South West

Agricultural commodity	Greater Sydney Gross Value ($) (% share of total gross value for region)	Sydney-South West Gross Value ($) (% share of total gross value for region)	Sydney-South West contribution to Greater Sydney Gross Value (%)
Livestock slaughtered and other disposals - Total	$198,486,557.39 (31%)	$ 75,875,697.04 (50%)	38%
Livestock products - Total	$ 80,742,336.62 (13%)	$ 15,122,081.42 (10%)	19%
Vegetables for human consumption - Total	$ 170,742,184.76 (27%)	$ 40,194,257.31 (27%)	24%
Nurseries, cut flowers or cultivated turf - Total	$ 175,557,513.49 (27%)	$ 18,087,536.19 (12%)	10%
Broadacre crops - Total	$ 13,209.59 (0%)	$ 1,578.69 (0%)	12%
Fruit and nuts (excluding grapes) - Total	$ 14,560,805.34 (2%)	$ 1,167,474.44 (1%)	8%
Hay - Total	$ 372,490.33 (0%)	$ 5,246.34 (0%)	1%

Source: ABS, VALUE OF AGRICULTURAL COMMODITIES PRODUCED, STATE AND SA4 REGION–New South Wales–2018-19 (75030DO001_201819)

According to the 2015-16 Agricultural Census, the South West area of Sydney produced 8.7 million dozen hen eggs (for human consumption) in that year, which represents 24% of what was produced in all of Greater Sydney. For poultry consumption, the South West area of Sydney is of even of greater importance with approximately 46% of all live poultry (chicken) produced in Greater Sydney produced in the South West area.

Table A-3 Poultry and egg production in Greater Sydney and Sydney-South West

	Livestock - Poultry and eggs - Hen egg production for human consumption - Total (dozens)	Livestock - Poultry and eggs - Live poultry - Meat chickens (no.)
Greater Sydney	35,911,134	6,501,041
Sydney - South West	8,716,099	2,993,242

Source: ABS, 71210DO010_201516 Agricultural Commodities, Australia–2015-16

A.2 Agricultural land

A.2.1 Existing land use

The ABS 2015-16 Agricultural Survey identifies the total area of land holdings used for agricultural activities and dedicated to production of different agricultural commodities, as shown in Table A-4.

Table A-4 Total area of land for production of different agricultural commodities.

Agricultural commodity	Area of holding - Total area (ha)	Vegetables for human consumption - Total area (ha) (% total area)	Nurseries, cut flowers or cultivated turf 0 Total area (ha) (% total area)	Broadacre crops - Total area (ha) (% total area)	Fruit and nuts - Total area (ha) (includes orchard fruit and nut trees, berries and grapes) (% total area)
NSW	**53,438,094**	**13,187 (0%)**	**3,801 (0%)**	**5,870,061 (11%)**	**67,399 (0.1%)**
Greater Sydney	**207,188**	**2,620 (1%)**	**2,016 (1%)**	**7,449 (4%)**	**656 (0.3%)**
Sydney – South West	**7,994**	**577 (7%)**	**59 (1%)**	**169 (2%)**	**7 (0.1%)**
Sydney – South West percentage of Greater Sydney	**4%**	**22%**	**3%**	**2%**	**1%**

Source: 71210DO010_201516 Agricultural Commodities, Australia–2015-16, Table 2: AGRICULTURAL COMMODITIES–New South Wales and Local Government Areas–2015-16

As summarised, some of the land within the LUCRA study area provides agricultural land uses and contribute to the agricultural economy set out. These include some parcels of land in the LUCRA study area that are used for intensive animal husbandry. A large proportion of land is being used for grazing (either native vegetation or modified pastures), or otherwise for rural residential and farm infrastructure. Figures A-1 to A-3 show the split of agricultural land uses across the LUCRA study area and wider socio-economic study area.

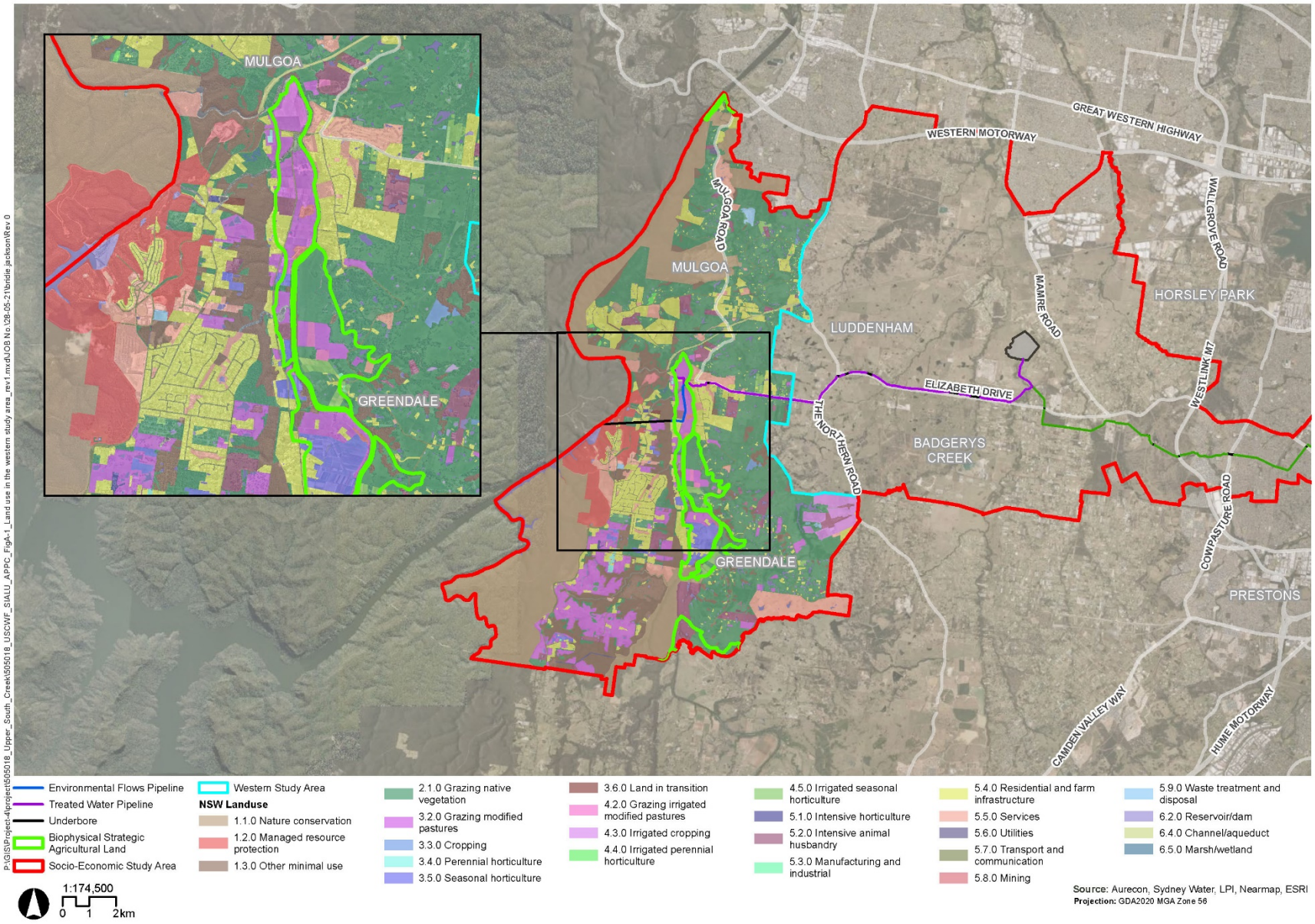


Figure A-1: Western study area land use

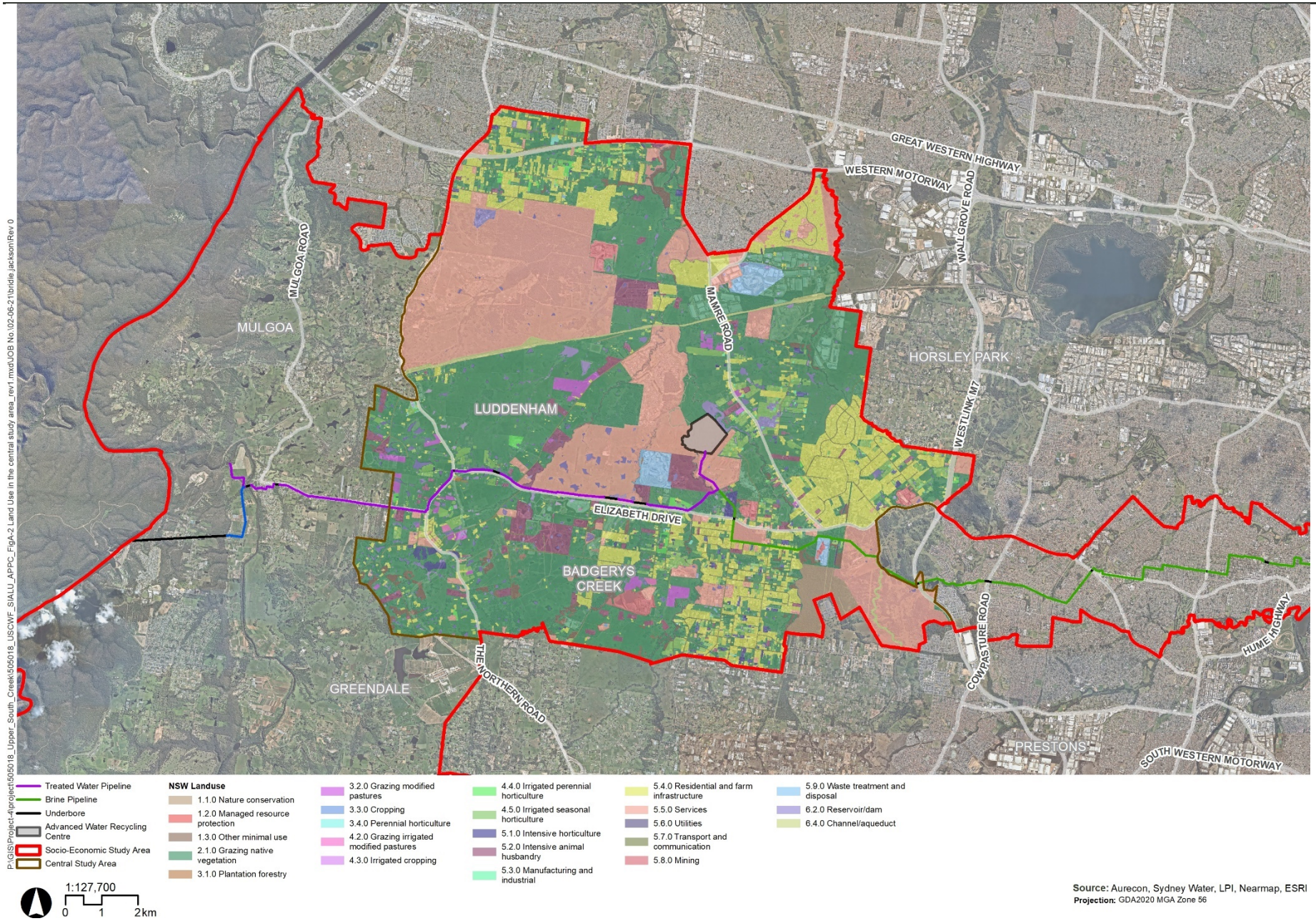


Figure A-2: Central study area land use

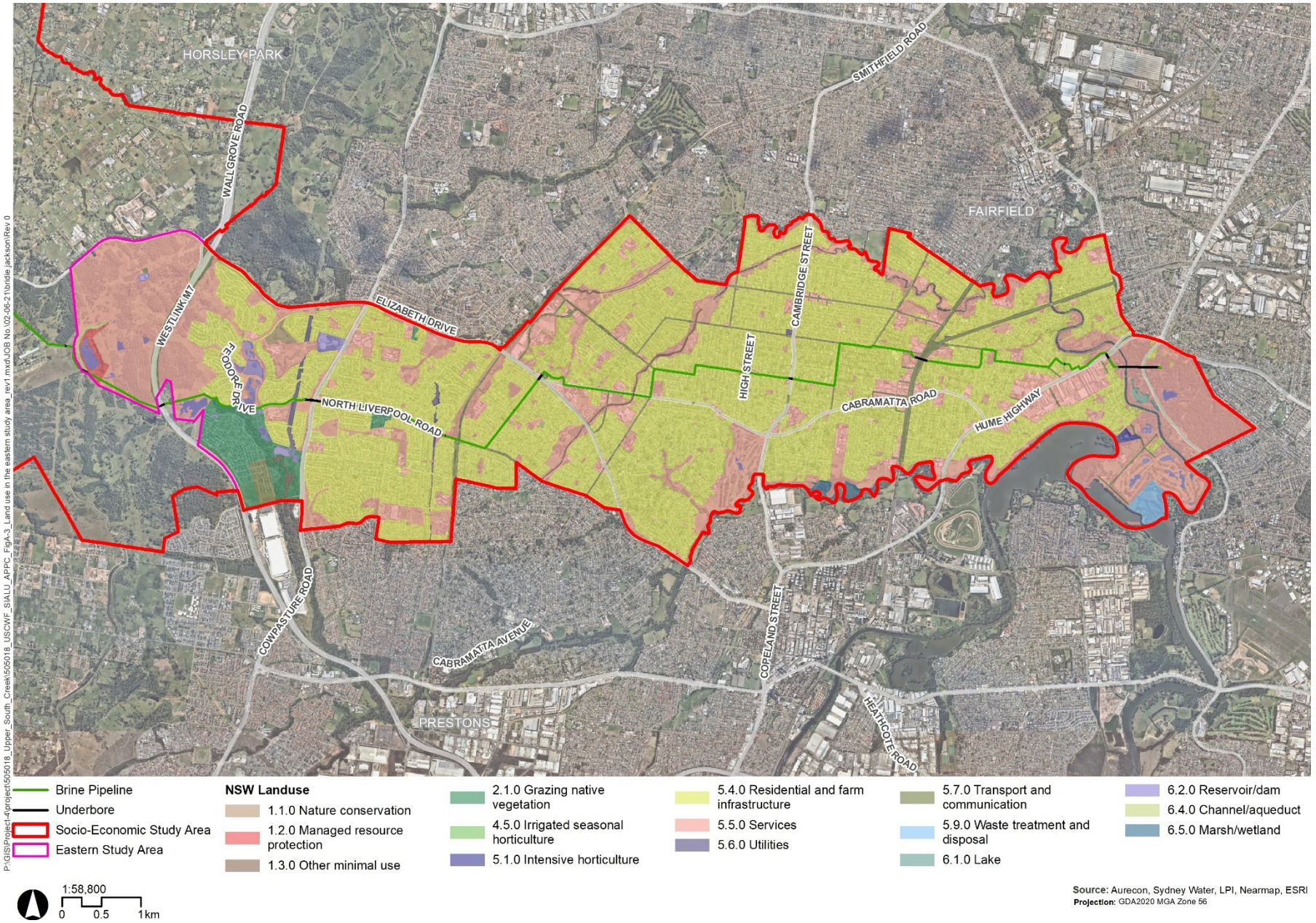


Figure A-3: Eastern study area land use

A.2.2 Strategic context and land use

The analysis in Section 3.3 demonstrates the significant role that the Sydney – South West area plays in the agricultural economy of Sydney and NSW. This is also reflected in strategic planning for Sydney and the South West.

The Metropolis of Three Cities identifies a Metropolitan Rural Area, rural and environmental zoned land in the Blue Mountains, Hawkesbury, The Hills, Penrith, Camden, Liverpool and Wollondilly LGAs. The AWRC and pipelines are located within the Penrith, Liverpool, and Wollondilly LGAs. The Metropolitan Rural Area is important for:

- retaining local jobs for local communities – in the industries of agricultural production and resource extraction
- supporting industries so that fresh produce is available locally, particularly for: poultry, eggs, cultivated turf and cut flowers
- its scenic landscape and environmental values.

The AWRC and some of the pipelines are located on rural land used for agricultural activity.

Table A-5 summarises the existing land use within the LUCRA study area which is associated with agricultural uses. This demonstrates the predominant location of agricultural land is around the AWRC, the environmental flows pipeline and the treated water pipeline (largely within the LUCRA central and western study areas). The LUCRA eastern study area contains only very limited agricultural land uses and no primary production.

Table A-5: Agricultural land use in LUCRA study area[2]

Zone	AWRC Ha	Brine pipeline Ha	Treated water and environmental flows pipelines Ha
Primary Production	0	0	12.44
Rural Production	79.58	10.39	35.07
Primary Production Small Lots	0	14.50	0
Rural village	0	0	3.15
Other land use	13.41	68.14	25.80
% agricultural	85%	27%	66%

A.2.3 Land use conflict controls

Agricultural land is undergoing change as urban development in Western Sydney intensifies. A *Metropolis of Three Cities* recognises that with growth in Greater Sydney and expansion of urban development that there can be land use conflict particularly when residential development is permitted in close proximity to agricultural, mining and extractive industries which can generate odour, noise and other pollutants.

[2] Note this is based on land use zoning within the LEPs for the respective LGAs crossed by the project, noting this largely mirrors existing land use.

Strategy 24.3 in the Plan recognises the importance of not dispersing urban activities in rural areas to manage land use conflict and reduce fragmentation of productive agricultural land.

However, some areas around Western Sydney are set to change. The Draft Aerotropolis Precinct Plan shows the site of the Facility, and surrounding land, is to be zoned 'Enterprise Zone' to support enterprise uses, including development for advanced manufacturing, logistics and research industries. The construction of the Western Sydney International (Nancy-Bird Walton) Airport is the catalyst for this change in land uses and future development.

Table A-5 shows that agricultural land zoning within the western and central LUCRA study area as per the *Wollondilly Local Environment Plan (LEP) 2011, Penrith LEP 2010* and *Liverpool LEP 2008* includes:

- RU1 – Primary Production
- RU2 – Rural Landscape
- RU4 – Primary Production Small Lots.

The Department of Primary Industries states that controls within LEPs can prevent the emergence of land use conflict in a local government area (DPI, n.d). Controls that are implemented include:

- Land use zones to allocate land in certain areas for certain purposes
- Land use tables which specify which land uses are permissible or prohibited in a zone
- Minimum Lot Size controls to limit subdivision of land, and
- Specific planning controls to specify how certain developments are to be done.

A review of desktop information and recent stakeholder and community consultation was undertaken to determine the type and extent of agricultural properties and land use within the LUCRA study area. The LUCRA study area is currently comprised of the following agricultural land uses (as at 12 October 2020[3]):

- Livestock farming including cattle and poultry farms
- Crop and plant growing, including tree farming and nurseries.

Penrith and Wollondilly Councils have prepared draft Strategies that provide strategic direction for planning and management of rural lands in their local government areas. Both Strategies identify the challenge to managing rural lands in the face of changes to the development and the rural landscape proposed, particularly due to expanding urban development and development catalysed by the new Western Sydney International Airport.

Both Strategies look to protect current productive agricultural land and to seek to protect visually sensitive landscapes and land with scenic value and cultural importance. The facility and land surrounding it will change for urban development.

Managing farm-related land use conflicts in NSW

Table A-6 summarises the outcomes of a literature review of the Managing Farm-related Land Use Conflicts in NSW Research Report (Australian Farm Institute, 2020) to inform an understanding of potential conflicts. This report was developed to assess and evaluate the impacts of land use conflict on primary producers in NSW and provide recommendations.

[3] Based on the nature of land use changes and growth within the LUCRA study area, the assessment has considered current land use at the time of the assessment. It is noted that development and strategic planning has resulted in future proposed changes to land use in the area.

Table A-6: Literature review summary

Topic	Summary
Impacts and concerns about land use conflict	• Economic impacts – costs incurred in submitting DAs; mediation and court expenses to resolve conflicts; loss of agricultural production from DA approval delays; loss of agricultural production from self-imposed buffer zones; installation of buffer vegetation screening • Economic concerns – risks of biosecurity breaches from poor neighbouring land management and trespass; uncertainties of future production limiting on-farm investments • Personal impacts – stress due to uncertainty of the future viability of farming and animosity with neighbours; living with uncertainty about the continuity of agriculture • Personal concerns – conflict stresses influencing succession decisions • Social impacts – established rural lifestyle replaced with urban setting • Social concerns – loss of/ sterilisation of agricultural production due to increased residential development • Legal impacts and concerns • Environmental impacts – soil health compromised due to prevention of organic fertiliser application.
Key issues raised by stakeholders relating to agricultural land use pressure in Greater Sydney:	Key issues raised by stakeholders relating to agricultural land use pressure in Greater Sydney: • Increased urbanisation = rise in nuisance complaints • Strategic planning fails to value agricultural land • Farmers feel 'squeezed out.' This has led to peri-urban landscapes in Greater Sydney to being increasingly fragmented as agriculture land uses are taken up by competing needs. Some farmers feel stranded in terms of access to transport and water and constrained from developing the business by expanding residential buffer zones

Annexe B: List of biosecurity guidance

Title	Location
Better site selection for meat poultry developments	www.dpi.nsw.gov.au/agriculture/livestock/poultry/development
Best Practice Management for Meat Chicken Production in NSW, Manual 1 & 2	www.dpi.nsw.gov.au/agriculture/livestock/poultry/development
Planning Guidelines for Intensive Agriculture	https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0008/194399/planning-guidelines-intensive-livestock-agricultural-development.pdf
Model Code of Practice for the Welfare of Animals - Poultry 4th Edition	http://www.publish.csiro.au/book/3451/
National Farm Biosecurity Manual Poultry Production	www.farmbiosecurity.com.au/wp-content/uploads/2013/01/National-Farm-Biosecurity-Manual-Poultry-Production.pdf
National Water Biosecurity Manual Poultry Production	www.farmbiosecurity.com.au/wp-content/uploads/2012/11/National-Water-Biosecurity-Manual-Poultry-Production.pdf
Salmonella Enteritidis Control Order	https://www.dpi.nsw.gov.au/animals-and-livestock/poultry-and-birds/health-disease/salmonella-enteritidis
Planning for Emergencies a guide for animal holding establishments	http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0005/209597/planning-for-emergencies-guide-for-animal-holding-establishments.pdf
Best practice guidelines for using poultry litter on pastures	www.dpi.nsw.gov.au/content/agriculture/pastures/pastures-and-rangelands/management/poultry-litter

Title	Location
National Environmental Management System for the Meat Chicken Industry - Version 2	**www.rirdc.gov.au/research-programs/animal-industries/chicken-meat**
Environmental Guidelines for the Australian Egg Industry	**https://www.aecl.org/assets/Uploads/Resources/Environmental-Guidelines-for-the-Australian-Egg-Industry.pdf**

Annexe C: DPI Agriculture consultation

Appendix B – Site walkover report

Upper South Creek Advanced Water Treatment Centre

Social Impact Assessment Supplemental Information

Prepared for Sydney Water
September 2021

EMM Sydney
Ground floor, 20 Chandos Street
St Leonards NSW 2065

T 02 9493 9500
E info@emmconsulting.com.au

www.emmconsulting.com.au

Upper South Creek Advanced Water Treatment Centre

Social Impact Assessment Supplemental Information

Report Number

J210004 RP#1

Client

Sydney Water

Date

3 September 2021

Version

v1 Final

Prepared by

Sam Ezzy

Communication and Engagement Consultant

3 September 2021

Prepared by

Ruth Baker

National Technical Leader, Urban & Regional Planning

3 September 2021

Approved by

Allan Young

National Technical Leader, Urban & Regional Planning

3 September 2021

Table of Contents

Figures

Plates

1 Introduction

1.1 Overview

This report provides supplemental information for the Social and Economic and Land Use Impact Assessment (SELUIA) undertaken for the Sydney Water Upper South Creek Advanced Water Recycling Centre (AWRC). The AWRC project ('the Project') is described in full in Chapter 5 of the EIS and in the SELUIA.

For the purposes of this supplemental information, the Project context is briefly reiterated as being for the proposed construction and operation of:

- the Advanced Water Recycling Centre (AWRC) at Kemps Creek;
- aa treated water pipeline that traverses west from the AWRC via Wallacia to the Nepean River;
- an environmental flows pipeline that splits from the treated water pipeline at Wallacia and traverses south to Warragamba; and
- a brine pipeline that traverses east from the AWRC through Cabramatta to Lansdowne Park where the pipeline will tie into the Malabar wastewater network.

The SELUIA has assessed the Project overall. However, during the course of the SELUIA, two areas were identified for particular attention based on:

- the baseline already gathered for the SELUIA;
- consultation with Fairfield, Penrith, Liverpool and Canterbury-Bankstown Councils specifically in relation to the potential for social impacts; and
- a site visit that determined, in conjunction with the information sources noted above, these areas should be assessed in greater depth.

This process highlighted two areas that required additional focus:

1. Wallacia (including Luddenham and Mulgoa) at the western end of the Project; and
2. Cabramatta, centred around Cabravale Memorial Park, at the eastern end of the Project.

The reason for the additional focus was that both areas, for different reasons, are more vulnerable to impacts, have less resilience to change and are already under other pressures. The Wallacia area is quiet and rural with fewer roads and social services. Cabramatta, as a centralised urban district, is under enormous space and resource pressure.

This report provides a brief overview of the key characteristics and values of each area and then a more in-depth consideration of the issues associated with the construction of the Project. The report also includes recommended mitigation measures to manage or reduce impacts on the community.

1.2 Project Description

1.2.1 Luddenham and Wallacia

The specific elements of the Project that intersect with these two areas are the construction of pipelines. The figure below, taken from the EIS, shows the alignment of the treated water pipeline in relation to Luddenham. It follows the old Northern Road, curving south to Luddenham before turning to follow Park Road towards Wallacia. Refer to Plate 1.1.

Plate 1.1 Pipeline alignment in relation to Luddenham.

. Source: USC EIS

The pipeline alignment along the old Northern Road will avoid the road itself but would still require traffic management and contraflows where the road is affected. Along Park Road, the alignment, due to space restrictions, will be constructed in the road.

From here, the pipeline continues along Park Road towards Wallacia. Along Park Road, there are two possible construction work areas, identified as C6, as shown in the figure from the EIS below. Refer to Plate 1.2.

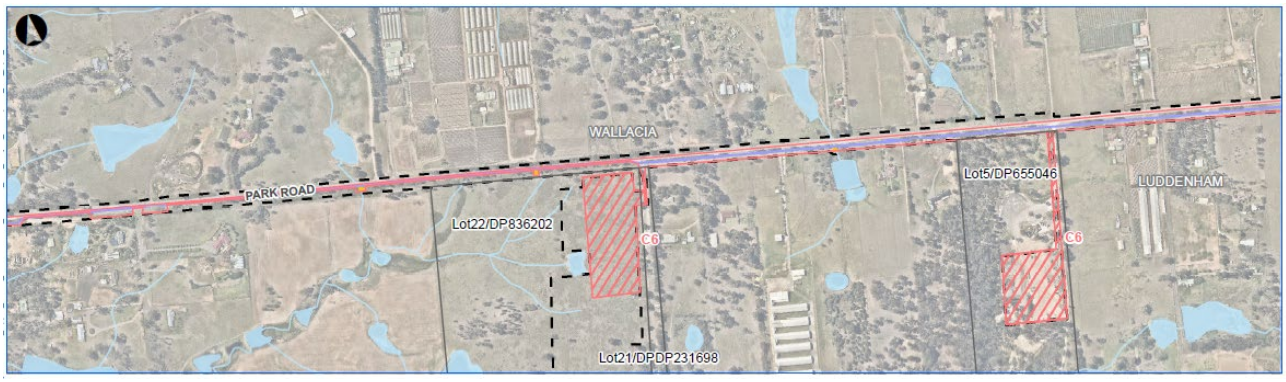


Plate 1.2 Pipeline alignment along Park Road, showing construction work areas C6.

. Source: USC EIS

Based on information from Sydney Water, the construction of the treated water pipeline can be completed at a minimum of 24 m per day. Considering the distance from the old Northern Road to the north, along Park Road to Wallacia, is 5.5km which would take approximately 230 working days to complete. Assuming a 48-week working year (allowing for public holidays and down time), there are 240 working days in a year. This year long construction period for the treated water pipeline from north of Luddenham to Wallacia is based on several factors:

- It assumes that the crews only construct 24m per day. This is the minimum that a construction crew can achieve;
- It assumes that only one crew is operating; and
- It assumes there is no night work.

The pipeline enters Wallacia along Park Road where Jerrys Creek will be underbored. The alignment then traverses the back streets of Wallacia by following Golfview Drive, Green Street, Driver Avenue, Eagle Street, taking a brief dog leg across Greendale Road and down Byron Avenue to Shelley Road and the Fowler Reserve. To facilitate those works, there is a proposed construction work area for storage of plant and equipment, identified above as C5.

Plate 1.3 Pipeline alignment through Wallacia. Source: USC EIS

In this area (from Park Road to Fowler Reserve) construction works could take 4-6 weeks. The trench construction would be approximately 2.5m wide and further space would be required for movement of plant and equipment and excavated material. The streets in this area are approximately 5m wide and so will experience a high level of inconvenience. Information from Sydney Water at this concept design stage indicates that construction personnel and pipe layers will try to keep a lane open for traffic but this would depend on the specific location and complexity of works. For example, where the pipe needs to be laid across turnings and intersections, this may require more room to manage the additional complexity.

In Fowler Reserve, the pipeline will underbore the Nepean River. Works at Fowler Reserve could take up to 6 months, including site establishment, the drilling and site rehabilitation. The drilling itself may take approximately 3 months of that time.

The treated water pipeline will then turn north, crossing the intersection of Silverdale Road and Bents Basin Road, as shown below.

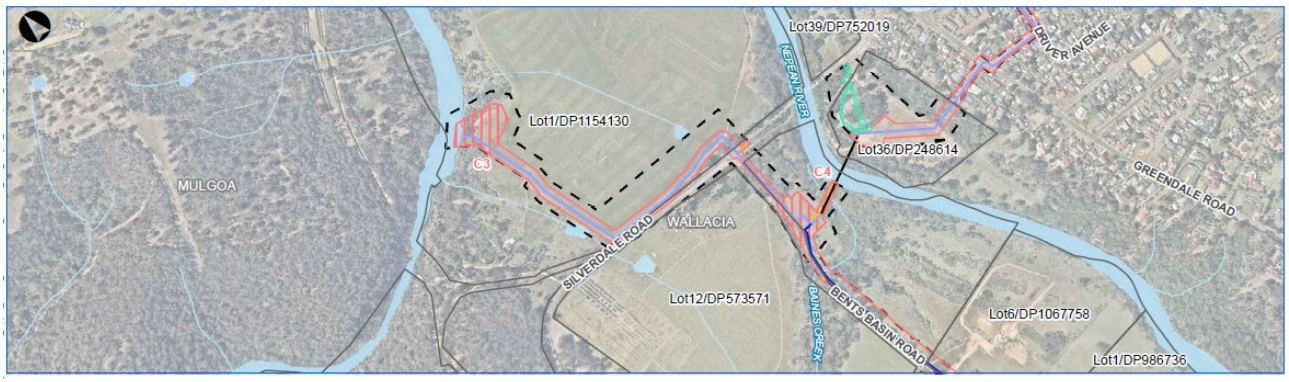


Plate 1.4 Pipeline alignment underboring the Nepean River.

. Source: USC EIS

The environmental flows pipeline will split from the treated water pipeline on the west side of the Nepean River and while the treated water pipeline goes north to a release point at the Nepean River, the environmental flows pipeline will follow Bents Basin Road south before an under-bore west to a release point at Warragamba. Refer to Plate 1.5

Plate 1.5 Environmental flows pipeline alignment going south along Bents Basin Road before turning west and under-boring to a release point at Warragamba

. Source: USC EIS

The under-bore to the release point at Warragamba will be facilitated by a construction work area and launch site, identified as C2 in Plate 1.5.

The pipelines do not traverse Mulgoa Road, however, Mulgoa Road has been identified as one of the possible haul roads during construction.

During operation, no activities would occur other than routine maintenance.

1.2.2 Cabramatta

The brine pipeline will approach Cabravale Memorial Park from the west, travel along John Street towards the east. It then will travel north along Gladstone Street before continuing east along Bartley Street towards the proposed Cabravale Memorial Park site compound. This creates an east-west running construction area that could obstruct access from Canley Vale in the north, to the CBD area of Cabramatta further south. However, it is noted that Cabramatta is set out in a grid pattern and so access from north to south can be achieved with careful planning.

The construction itself will comprise of open pit trenches along the northern side of the above-mentioned roads, and construction is anticipated to be completed at a rate of approximately 24 metres per day. As a general guide then, the distance from the St Johns Road/Bartley Street roundabout to Cabravale Memorial Park is 520 m. At a minimum construction rate of 24 m per day, this could take approximately 22 working days to construct. Allowing additional time for the complexity of constructing in a highly built-up area, this section of pipeline (and therefore the direct inconvenience to residents and road users in that area) would last between 4 and 6 weeks.

Cabravale Memorial Park has been identified as a temporary work construction compound. The temporary compound is required for to facilitate pipe installation by trenchless techniques underneath the railway lines. A drilling rig will be established within the impacted area, to drill under Railway Parade, under the railway line, under Broomfield Street and will emerge in Curtin Street.

Separately to the pipeline construction noted above, this usage in the park may take approximately 6 months and potentially more. This includes all activities, including site establishment, tunnelling and then restoration after construction. Part of this site would also be used for associated works and storage including plant and equipment storage.

The size of the area utilised would be approximately 6,000 m^2 or 0.006 ha. It is proposed to use north-east corner of Cabravale Memorial Park, which is the least utilised area of the busy park. The use of this north-east corner as a works compound appears to avoid any constraints on the community use of the oval. Refer to Plate 1.6.

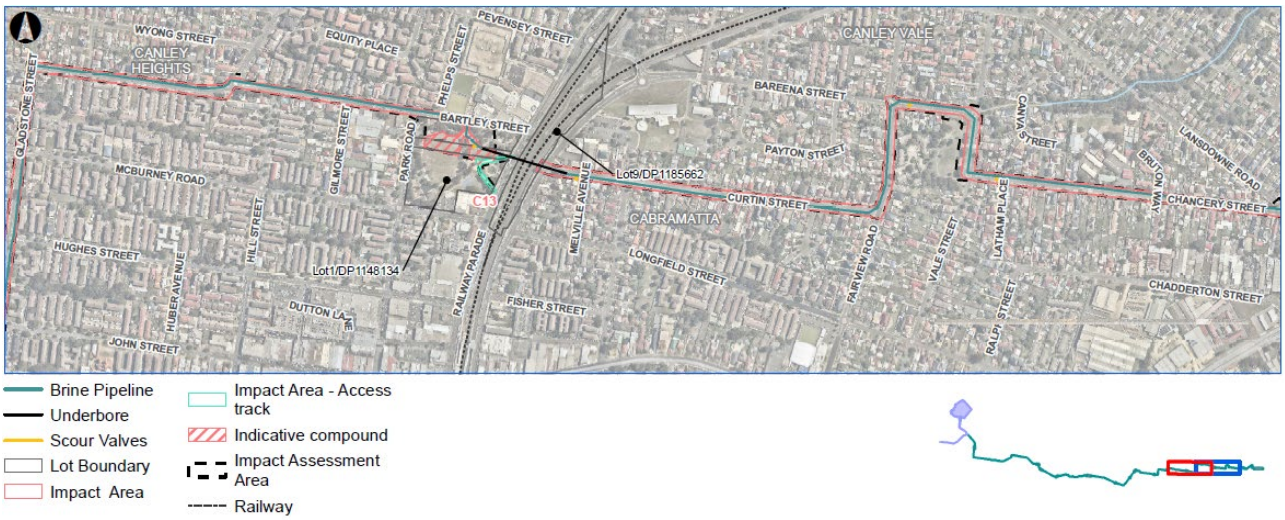


Plate 1.6 Brine pipeline alignment in Cabramatta.

Source: USC EIS

2 Community Context

2.1 Luddenham, Wallacia and Mulgoa

A site inspection and desktop assessment of Wallacia, Luddenham and Mulgoa indicates that the communities in these areas consider the quiet rural village setting to be a value and an attraction for residing in the region. Residents in these areas are organised with the resources to form groups to advocate for causes of importance to them.

Notably, with regards to the nearby Aerotropolis development, media articles have quoted community members as saying that they wish to "…ensure the village maintains its rural and historical roots, while ensuring it can keep up with the changes that will follow the Western Sydney Airport Aerotropolis and surrounding development."

Residents place a high level of value in maintaining their traditional values and quiet way of life, away from the more metropolitan areas of central Sydney. The area comprises of several historically significant churches and other buildings, which have been maintained by various organisations, in some circumstances since the late 1800s.

The rural areas are characterised by land uses such as agricultural lands, market gardens and livestock. Additionally, there are several agricultural businesses in the area, comprising plant equipment hire and maintenance yards, stud farms and free-range farms.

The specific context of each village is discussed further in the sections below.

2.1.1 Luddenham

The SELUIA provides detailed baseline data for the whole Project. The intent in this report is to provide additional data supported by on-ground observation.

Luddenham is located to the east of Wallacia, connected by Park Road, and generally comprises low density residential, rural and agricultural properties. There is a main street, which includes various small businesses and local community facilities, such as primary schools and day care facilities.

Luddenham has a population of 1,828 (2016 Census) and is noted as being a destination for residents of greater Sydney to visit to purchase local produce. Luddenham comprises agricultural businesses and the Luddenham Quarry, and is generally observed as having country town characteristics.

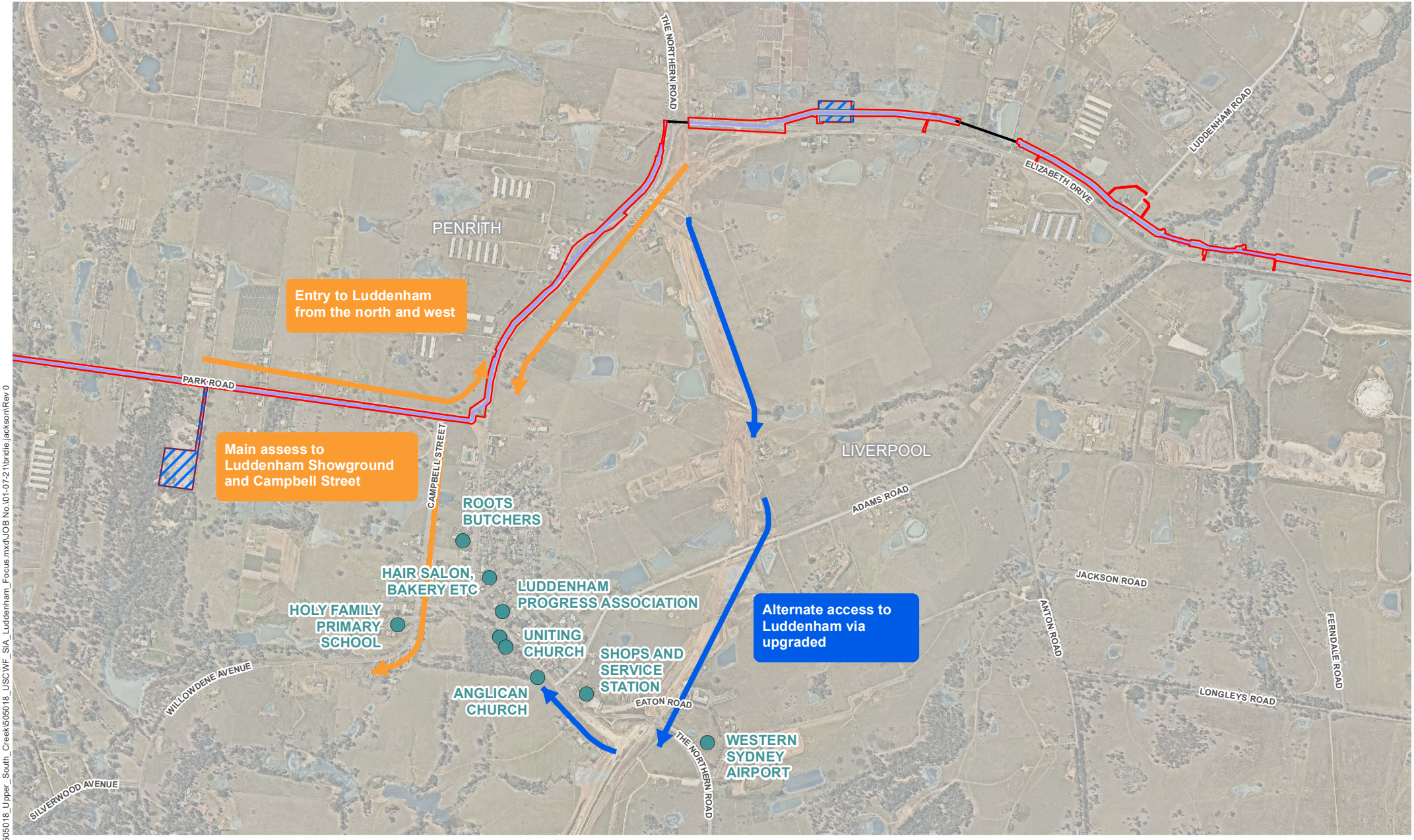


Figure 2.1 Overview of key features of the Luddenham area

Source: Aurecon, Sydney Water, LPI, Nearmap, ESRI
Projection: GDA2020 MGA Zone 56

i Construction projects

Luddenham has been impacted by previous and ongoing construction projects including the M12, the Northern Road upgrade and principally the construction of the Aerotropolis which lies immediately to Luddenham's southeast.

While this has represented traffic, noise and air quality effects to local residents and businesses, there have also been opportunities, with these projects utilising local businesses.

ii Local amenities and services

At the northern end of the village there is service station and café. At the southern end of the village there is another service station and truck stop with shops.

Plate 2.1 Facing south along the old Northern Road as it enters Luddenham

Local information suggests that the customer catchment for the butchers in Luddenham is minimally drawn from Luddenham itself and primarily is drawn from Wallacia, Glenmore Park, Penrith, Austral, Oran Park and other surrounding areas. This is potentially a similar situation for David's Stall, the fruit and vegetable store. Both shops draw their produce from local suppliers.

The normal consumer flow is from smaller locations to the larger towns. It is a recognisable achievement to establish "destination" shops which draw consumers from the larger areas to smaller villages.

Plate 2.2 Facing north along the old Northern Road where customers access David's Stall

Similarly, there are other goods and services that may rely on a broader catchment such as the Uniting and Anglican churches and the Catholic Primary School. Campbell Street accesses the Holy Family Primary School (student enrolment approximately 240) which is a private school and likely to have a catchment beyond Luddenham and Wallacia. The 2020 Annual Report of Holy Family Primary School notes that "Children travel from Warragamba, Silverdale, Wallacia, Mulgoa, Luddenham, Badgerys Creek, Rossmore and Bringelly" to attend the school.

Luddenham Showground is located directly next to the intersection of Park Road and the old Northern Road with access from Campbell Street. The Showground is home to the Luddenham Show every year in February or March (planned next for March 5th and 6th 2022), as well as various other events including markets every other Sunday, the Easter Festival over the Easter long weekend and the winter carnival in July. The Luddenham Show itself has been run by the Luddenham Agricultural, Horticultural and Industrial Society since 1891 and it is a well-known annual destination with a customer catchment drawn from all over Sydney.

Plate 2.3 Scenes from the Luddenham Show.

Source: https://luddenhamshow.com.au/gallery/

Park Road represents a locus of construction activity and there are many residents and businesses along this road. This includes many properties that are commercial businesses such as several cattle-grazing properties, the Nalla Pet Resort, the Elizabeth Stud Farm close to the Wallacia end of Park Road and the Zambi Wildlife Retreat. Zambi Wildlife Retreat is a 50-acre property along Park Road which is a retreat for a variety of animals including retired circus lions, pumas and tigers. It is open to the public three days a week (weekends and public holidays only) and access is by appointment only.

iii Access

The main access to Luddenham from the west is Park Road which provides access from Wallacia, Mulgoa, Warragamba (via Wallacia) and those approaching from Glenmore Park and south Penrith. The main access from the north is via the old Northern Road with provides access from the Penrith area and any visitors accessing the area from the M4.

Plate 2.4 Intersection at Park Road and The Northern Road, facing east

Other areas accessing Luddenham, such as Bringelly, Austral, Leppington and Narellan, approach the village from the south via the Northern Road.

Campbell Street, which adjoins Park Road, provides the main access for:

- the Luddenham Showground;
- Holy Family Primary school from Luddenham and Wallacia;
- Park Road (and therefore to both Luddenham and Wallacia) from residents and businesses along Campbell Street itself; and
- access to Park Road (and therefore to both Luddenham and Wallacia) from residents and businesses and further south where Campbell Street becomes Willowdene Avenue. Willowdene Avenue is a no-through road and so there is no alternate access for residents and businesses.

Plate 2.5 Intersection at Park Road and Campbell Street at the entry to the Luddenham Showground, facing west towards Wallacia

iv Community

The Luddenham Progress Association is a long-standing community organisation and is an active voice for Luddenham village. It has previously lobbied the local State member with respect to signage[1] during and after the construction of the new Northern Road. Instead of going through Luddenham, the new Northern Road bypasses the village and their work on signage has been focussed directing visitors into Luddenham. While there are benefits to the redirection of heavy traffic away from the village, the Progress Association acknowledged that the village could be impacted by loss of passing trade. Signage from the new Northern Road assists in directing visitors back into local services and attractions.

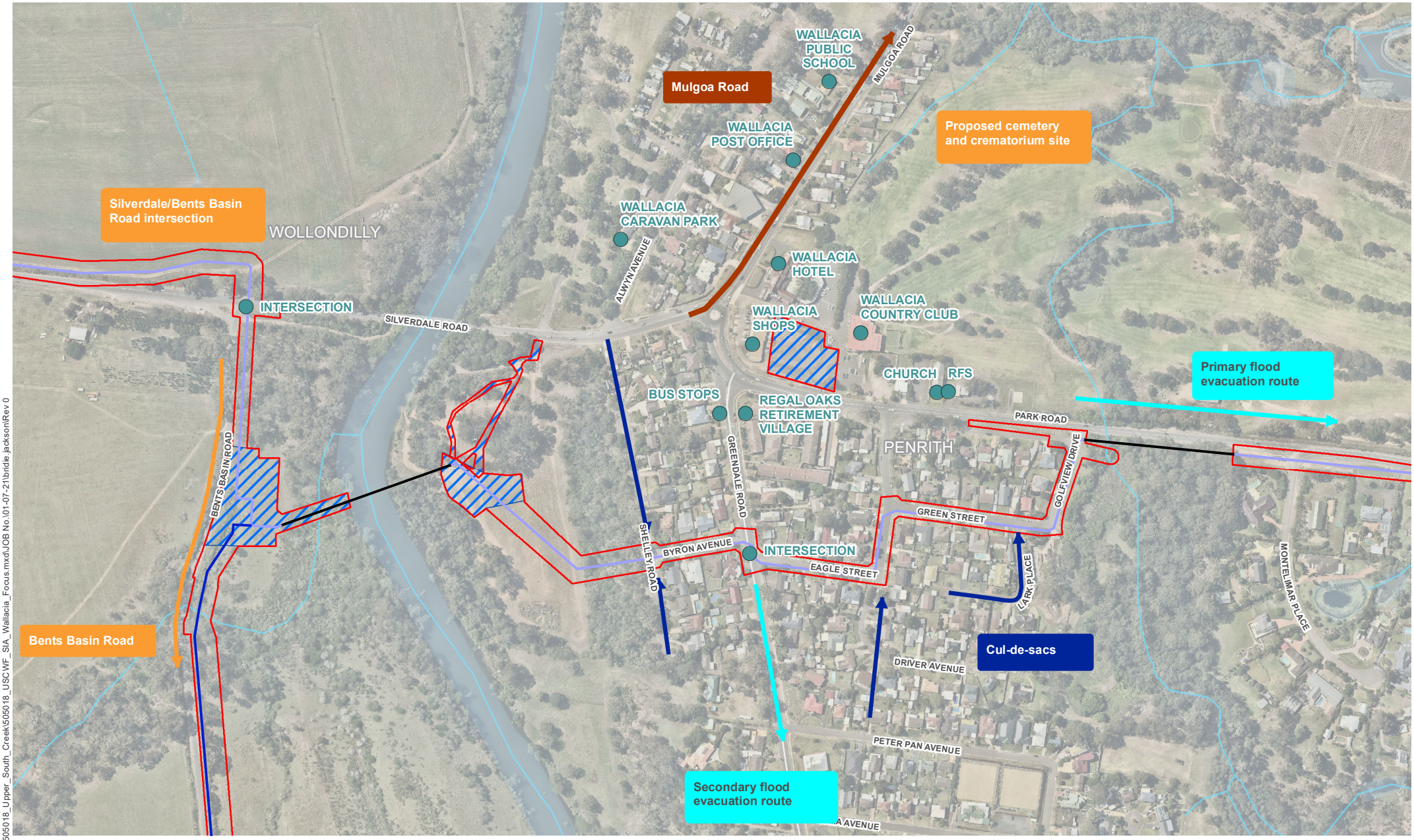
2.1.2 Wallacia

The village of Wallacia is located in the southern rural areas of the Penrith Local Government Area (LGA) and generally comprises low-density residential properties and agricultural land. There is a small main street, which comprises historically significant churches, a post office, public school, small businesses and licensed venues. Upon inspection of the area, it is noted that Wallacia is a destination village, likely to be visited by weekend 'tree changers' looking to escape the city.

Wallacia is nearby to the Nepean River, Warragamba Dam, and the Blue Mountains to the west, providing an attractive landscape surrounded by vegetation. Wallacia is noted as being a desirable wedding venue, with several churches, reception venues and accommodation nearby.

In the 2016 Wallacia had a population of 1,627 at a density of 2.2 people per hectare (2016 Census).

[1] Facebook post from the Luddenham Progress Association of 28 April 2021 at 20:10pm



P:\GIS\Project-4\project\505018_Upper_South_Creek\505018_USCWF_SIA_Wallacia_Focus.mxd\JOB No.\01-07-21\bridie.jackson\Rev 0

Figure 2.2 Overview of key features of the Wallacia area

Source: Aurecon, Sydney Water, LPI, Nearmap, ESRI
Projection: GDA2020 MGA Zone 56

i Construction and other projects

Wallacia has been less impacted by construction projects than Luddenham but has still been subject to an increase in road traffic. The main project that could affect Wallacia is the proposed Memorial Park which would see the current golf course converted into a crematorium and park with capacity for 88,000 burial plots. The project was determined by the Independent Planning Commission with 64 formal objections to the project lodged with the Department of Planning, Industry and Environment (DPIE). This included objections from the Wallacia Progress Association, Mulgoa Progress Association, Wallacia Public School and Wallacia Public School Parents and Citizens Association. The key issues raised were around the impact to landscape and amenity, and ongoing impacts to traffic in the area. The project was approved in May 2021.

ii Access

Wallacia is largely centred around the roundabout at the confluence of Park Road, Mulgoa Road and Silverdale Road. This is the focal point of the area through which all traffic is directed within the village, and those travelling to and from Warragamba, Luddenham, Mulgoa and further north to and from Glenmore Park and Penrith. Greendale Road also comes off the roundabout providing north-south access to Bringelly.

Plate 2.6 The main roundabout at the centre of Wallacia, facing north at the start of Mulgoa Road

Greendale Road has two bus stops (one for transport in each direction) which are located adjacent to the Regal Oaks Retirement Village. This southern area of Wallacia, through which the Project will traverse, has many no-through roads and cul-de-sacs including Shelley Road (adjacent to Fowler Reserve), Driver Avenue south of Park Road and Eagle Street, and Lark Place which runs off Green Street.

The streets through which the pipeline alignment runs are quiet residential streets with on-street parking. An example is shown in Plate 2.7below.

The main access points out of these residential streets are Eagle Street, the north end of Driver Avenue and Golfview Drive.

Plate 2.7 Byron Road along the pipeline alignment

Flood evacuation routes are a key feature of importance in this area and Park Road and Greendale Road represent flood evacuation routes. The NSW SES Hawkesbury-Nepean Valley Evacuation Arrangements note Park Road as the primary evacuation route from Wallacia. The secondary route exits Wallacia via Greendale Road before turning north and joining Park Road again 1.9km west of the old Northern Road intersection.

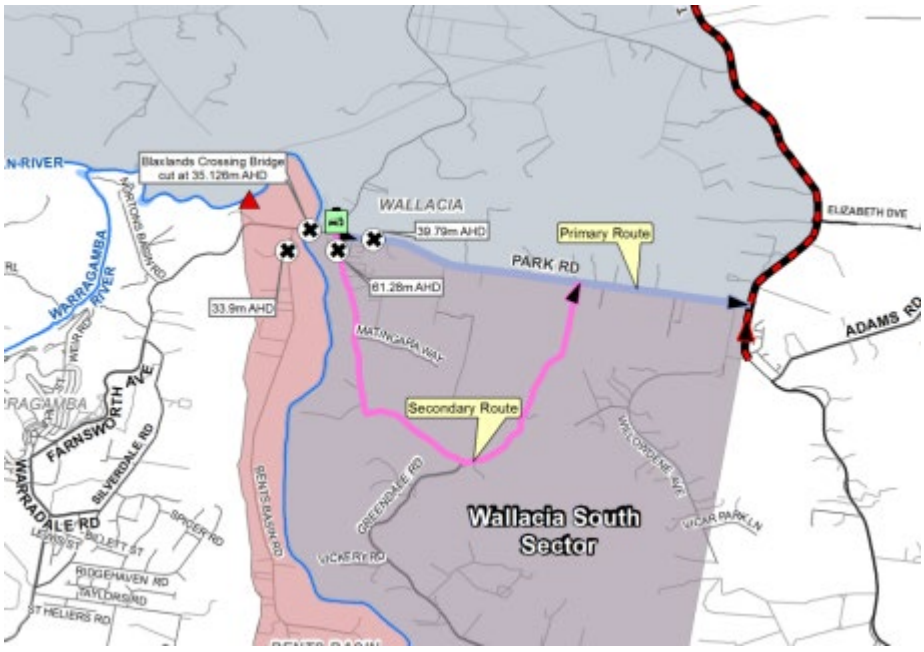


Plate 2.8 Primary and Secondary flood evacuation routes between Wallacia and Luddenham.

Source: Map 11 Hawkesbury-Nepean Valley: NSW SES Evacuation Arrangements Annex D

The environmental flows pipeline traverses south along Bents Basin Road. Bents Basin Road is a single lane road and in poor condition. It provides access to Bents Basin which is an extremely popular tourist spot. Bents Basin is a State Conservation Area with a campground and natural swimming hole with many bushwalks associated with it.

Plate 2.9 Bents Basin Road

iii Local amenities and services

Clustered around the main roundabout are also the Wallacia Hotel, the shops and, not far away at the start of Park Road, the Wallacia Country Club, Wallacia Christian Church and the Rural Fire Service. Not far on the other side, off Silverdale Road, is the Wallacia Caravan Park.

There is a proposed construction compound that sits between the Wallacia Hotel, a strong of shops and Wallacia Country Club. The Wallacia Hotel was established in 1930 and was renovated relatively recently and is a destination pub and hotel. The Bistro and pub are open 12-3pm and 5-9pm Monday to Thursday and all day on Friday, Saturday and Sunday. The pub includes outdoor seating area for 150 patrons. They also have 28 rooms which are hired out throughout the year.

Plate 2.10 Proposed Compound C5, facing north showing the back of the Wallacia Hotel, shops and Wallacia Country Club

The shops include a podiatrist, a takeaway and a real estate among other services. The Wallacia Country Club is closed on Monday and Tuesday but open the rest of the week from the morning through to 9pm-11.30pm variously.

Fowler Reserve, which lies on the western side of the Shelley Road cul-de-sac, is subject to some attention, apart from being a local amenity. A collaboration between Penrith City Council and Conservation Volunteers Australia and Western Sydney Airport is supporting the Reserve with its combination of Cumberland Plain Alluvial Woodland and Shale Sandstone Forest. This convergence, notes the Penrith Council website, creates an interesting mixture of trees and shrubs within the Reserve, and forms a vital wildlife corridor for a variety of animals to move through the area.[2] The partnership driven by Penrith Council is aimed at restoring the area and removing invasive weed species Balloon Vine and Lantana.

On the western side of the Nepean River, most land is active agricultural land, with hay grown as well as market gardens along Bents Basin Road properties. The Old Dairy accommodation also lies on Bents Basin Road, close to the southern edge of the environmental flows pipeline alignment.

2.1.3 Mulgoa

Moving north out of Wallacia, there are the village post office and Mulgoa Public School. Mulgoa Road then traverses further north towards Mulgoa village which is 3 km from Wallacia. Mulgoa Road itself, and Wallacia, are part of the Penrith Heritage Drive and connects various locations, including Luddenham, Wallacia and Mulgoa, in a loop from Penrith.

[2] https://www.penrithcity.nsw.gov.au/upcoming-events/restoring-wallacia-s-wildlife-wonderlands-at-fowler-reserve

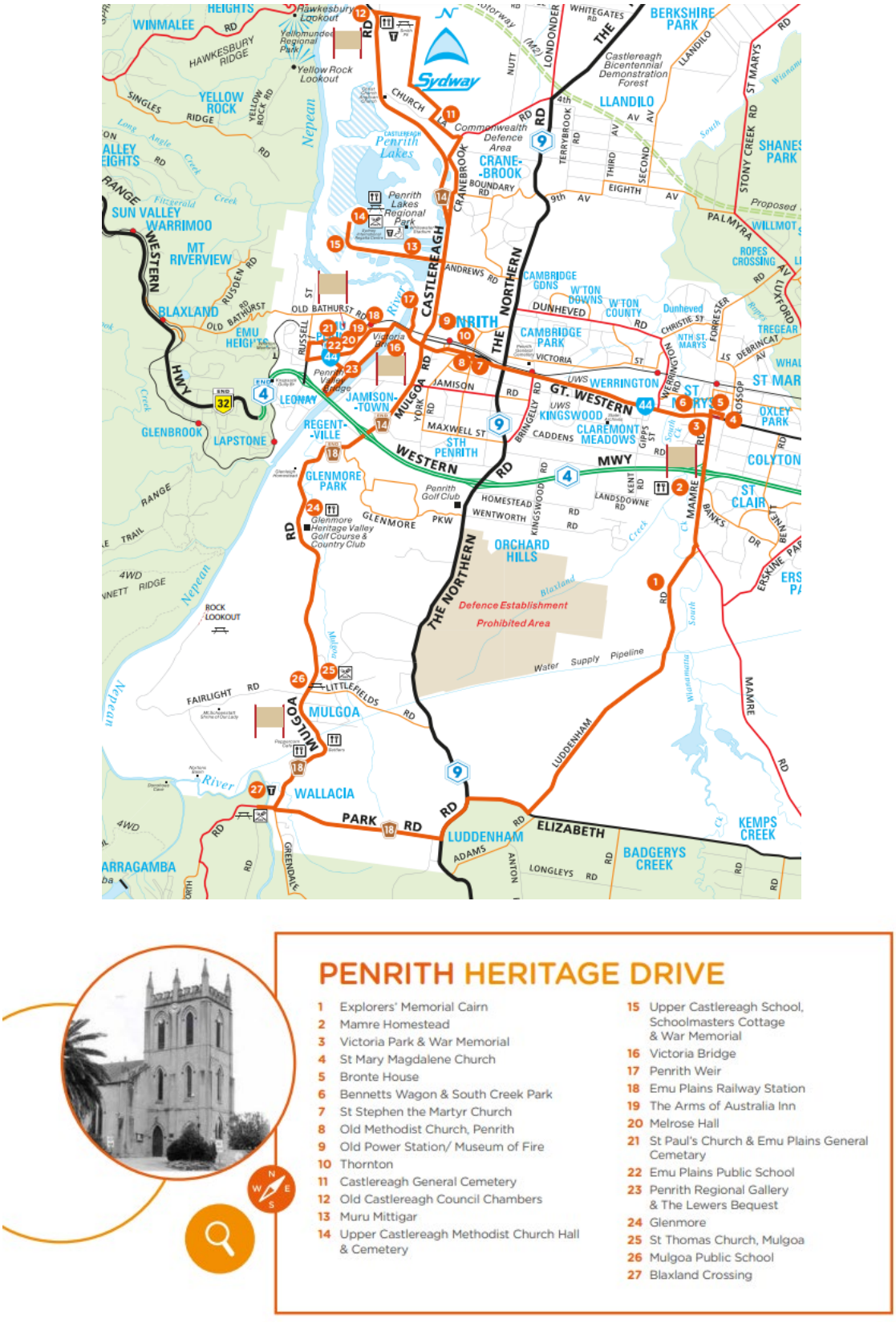


Plate 2.11 **Penrith Heritage Drive.** Error! Hyperlink reference not valid.

Source: https://www.visitpenrith.com.au/images/documents/Heritage-Drive-2015.pdf

Reflecting this tourist and amenity interest, there are several destination amenities along Mulgoa Road. These include equestrian centres and wedding reception locations.

Just south of Mulgoa village is a popular destination area with:

- Oasis Terrace (open 7am-3pm weekdays and 8am-3pm Sat and Sun);
- Settlers Mulgoa (open 7.30am-3.30pm every day but closed on Mondays);
- Edmund Rice Retreat and Conference Centre, for weddings, school retreats and conferences; and
- La Petite Maison Boutique and gift shop.

The two cafes and the shop are fronted directly onto Mulgoa Road and so are vulnerable to increases in heavy traffic. People cross Mulgoa Road between these locations. The picture below shows the road where people cross and there is no formal crossing place.

Plate 2.12 The main entrance of Settlers Mulgoa, facing north up Mulgoa Road. The entrance to Oasis Terrace lies on the other side of Mulgoa Road.

Source: Google Maps - Street View.

Just north of this cluster, is Mulgoa village itself which is similar in character to Wallacia. It is quiet and rural in nature with Mulgoa Road as the main road through the village. At points in Mulgoa there are traffic calming measures near the public school and playing fields. Fairlight Road which exits Mulgoa in the village centre is also the main access to The Rock Lookout and Nepean Narrows Lookout.

North of Mulgoa is the Fernhill Estate walking track and Nepean Christian School. Both of these destinations are accessed directly from Mulgoa Road with only a small turning bay at Nepean Christian School when accessing from the south.

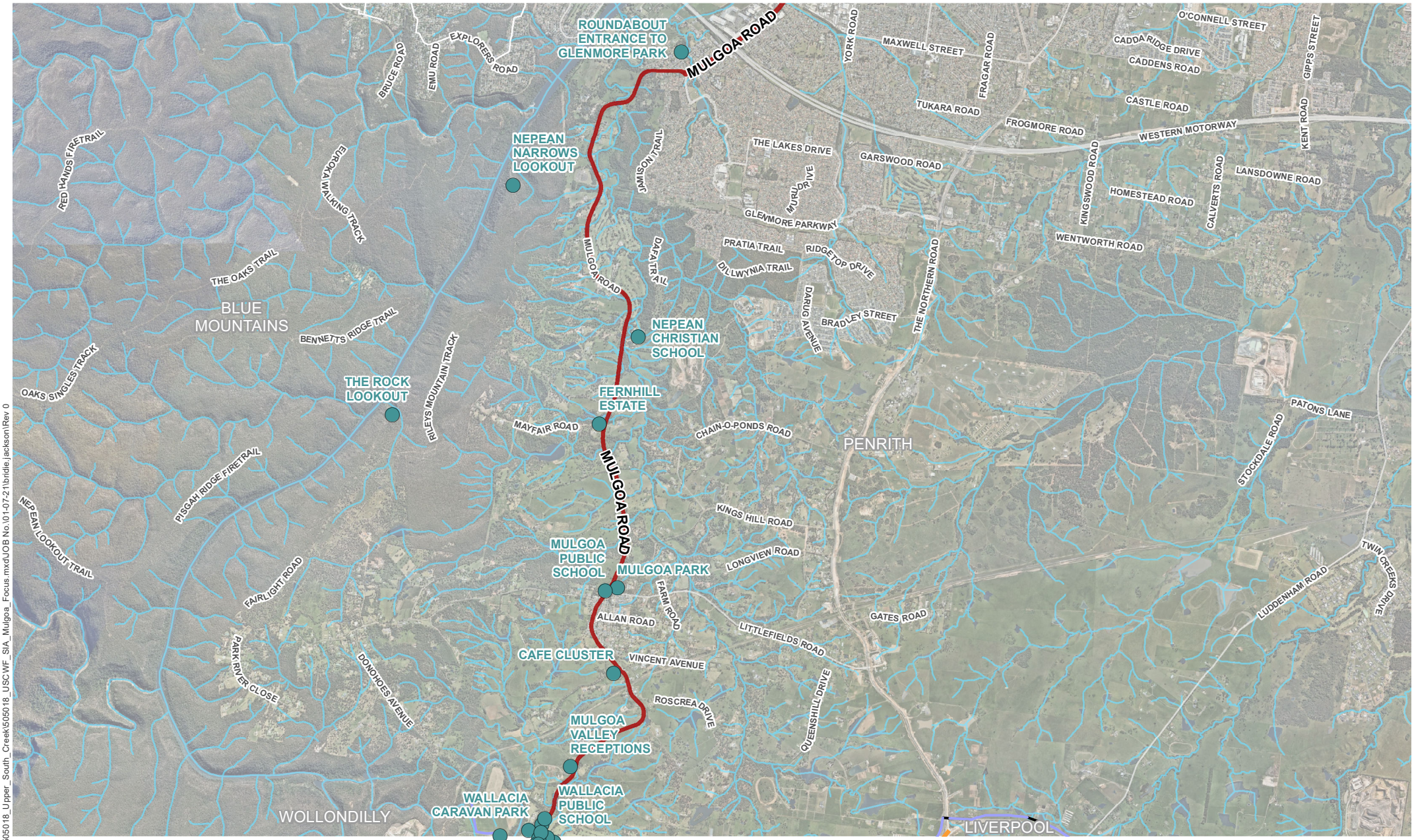


Figure 2.3 Key features along Mulgoa Road

Source: Aurecon, Sydney Water, LPI, Nearmap, ESRI
Projection: GDA2020 MGA Zone 56

P:\GIS\Project-4\project\505018_Upper_South_Creek\505018_USCWF_SIA_Mulgoa_Focus.mxd\JOB No.\01-07-21\bridie.jackson\Rev 0

2.2 Cabramatta town centre

2.2.1 Urban and cultural setting

Cabramatta is located in south-western Sydney, approximately 30 kilometres southwest of Sydney central business district, within the Fairfield LGA. Cabramatta is a thriving business district, comprising of various retail, hospitality, small businesses and amenities. Freedom Plaza forms the pedestrian mall between John Street and Arthur Street.

Cabramatta is a high-density area, with a combination of single residential dwellings and residential unit blocks making up the inhabited region of Cabramatta. Cabramatta is divided by a commuter and freight rail line and the local roads are well connected to the State road network providing ease of access and egress from the area.

Assessment of the layout of Cabramatta, indicates that the residential areas within the study area is made up of a grid format, which is accessible via more than one entry point, with the exception of some cul-de-sacs along St Johns Road, where there is only one access / egress point.

Cabravale Memorial Park is a located towards the north of Cabramatta and is the key green space in the area. The park includes basketball courts, a playground, an oval, walking paths, exercise equipment and picnic areas. Cabravale Memorial Park serves as a war memorial, which features a heritage listed bandstand, which was built in 1922 to honour fallen soldiers from the First World War. The park also features the Vietnam War Comradeship Memorial, which was built to commemorate the comradeship between Australian and Vietnamese soldiers during the Vietnam War.

Cabramatta has a population of 21,783 (2016 Census).

Cabramatta is considered to be a cultural centre for residents of a variety of geographic origins. A number of businesses within the Cabramatta CBD are run by persons of various cultural backgrounds; this includes a large number of hospitality venues and market stalls which provide a range of specialised fresh produce. On inspection of the area, vendors were observed setting up their shops as early as 6.30 am, in preparation for the day's trade.

The Cabramatta CBD is centred around Freedom Plaza, and features the Pai Lau Gateway as an ornamental feature symbolising harmony and multiculturalism within the Cabramatta area. The Pai Lau Gateway is especially significant to those who celebrate Lunar New Year, with festivities being centred in this area.

Cabramatta forms a cohesive multicultural community. There are more than 15 churches and temples in the area of various denominations, indicating that access to places of worship and places of spiritual significance are of great importance to residents of Cabramatta.

The Cabravale Memorial Park holds value for all people within the Cabramatta community. During inspection of the park, it was noted that the park is used by people of all ages for activities such as Tai Chi, play group, organised exercise groups and other recreational activities – facilitated by organised groups. People were observed using the park to access Cabramatta CBD and Cabramatta Train Station from the residential areas to the north and west of the park.

The park is heavily utilised by visitors and the local school as their playing fields. It also acts as a central locus of activity and attention which means it is integral to the identity the area and its community.

2.2.2 Residential properties

Cabramatta's residential areas are set out in a grid shape and so alternate accesses are readily available if access is selected streets is constrained. There are, however, many cul-de-sacs among the grid street pattern.

The properties along the pipeline alignment comprise generally detached residential dwellings and residential unit blocks. As can be seen in Plate 2.13, on street parking is a highly utilised feature of the area, including areas around Cabravale Park. This was confirmed during site inspection and during consultation with Fairfield City Council which identified that on street parking was as a “premium” and under enormous pressure.

Plate 2.13 View east along Bartley Street. Source: Google Maps.

The roundabout at the confluence of St Johns Street, Bartley Street and Sackville Street is a key traffic focus for local residents and those accessing the Cabramatta CBD area. A *change.org* petition had been started in 2018 to replace the roundabout with traffic lights because of the danger it posed at that time. The issue was subsequently discussed in Council proceedings in August and October 2018, with the August meeting notes stating that:

“The concerns are related to the conflicts between pedestrians and motorists at the intersection before and after school hours when there is relatively high number of pedestrians crossing the intersection. It is also advised that there are potential conflicts between westbound motorists approaching the roundabout from Bartley Street and southbound motorists on Sackville Street due to the existing lane configuration and line markings at the intersection. Crashes involving motorists exiting from the driveways adjacent to the roundabout with oncoming traffic were also observed.”[3]

The traffic data did not find that the level of service warranted the installation of lights, per the Transport for NSW guidelines, but that the existing splitter islands would be upgraded for safety concerns. This indicates that there is community concern around this intersection.

[3] http://bpweb.fairfieldcity.nsw.gov.au:8080/fccbps/public/2018/TRA_13082018_COM_AT.PDF

Plate 2.14 View of St Johns Road, Bartley Street and Sackville Street Roundabout

In this area of Cabramatta, it is also noted that there are many residential areas mixed in with the functional amenities and shops. For example, there are many low-rise apartment buildings along McBurney's Road which lies on the south side of Cabravale Park.

2.2.3 Amenities

i Places of worship

This area of Cabramatta has more than 15 places of worship of various denominations nearby to the Project alignment. This includes the Cabramatta Baptist Church at the corner of McBurney and Park Roads and the Sacred Heart Catholic Church which is situated on Park Road opposite Cabravale Memorial Park.

The movement of people to, and around, places of worship is a key consideration. The activities of many places of worship are not focused on Sundays and even those that are, can be open for play groups and meetings throughout the week. As a focus of family activity, parking is of importance, as well as external amenities. Visitors can travel between home and place of worship, but may also, as a group or as a family, access other venues. For example, many families attending their place of worship may time their service attendance to coincide with lunch at other locations. As such, movement around places of worship can be highly fluid.

ii Shops, cafes and other amenities

The Cabramatta CBD is observed as being a weekend destination, which is visited by residents of Greater Sydney seeking cultural immersion and experiences, including but not limited specialised hospitality venues.

Facilities surrounding the Project alignment also include the CBD itself to the south, the railway and station to the east and various businesses and amenity facilities. This includes the Australian Chinese Teo Chew Association on Park Road and the Community Centre Pop-Up Clinic on McBurney Road.

South of Cabravale Park and McBurney Road, lies the main CBD. Here there is a dense locus of commercial activity including shopping centres, supermarkets, cafes, shops and businesses. Both the CBD and Cabravale Park are bounded on their eastern side by the railway line, which does not stop (given the station overpass) but does inhibit east-west movement.

It is noted that while there are main thoroughfares around this area, there are also paths and alley ways that lead to destinations and key services. For example, there is a path off McBurney's Road leading to the Cabravale Senior Citizens Centre.

There is a focus of activity on the streets surrounding Cabravale Park (that is, McBurney Road along the south, Park Road along its western edge and Bartley Street along the northern side). The following community service venues are located directly adjacent to Cabravale Memorial Park:

- Cabramatta PCYC;
- Arthur West Memorial Hall;
- Alpha Omega Aged Care and Disability Services;
- Core Community Services;
- Cabramatta Community Hall;
- Cabramatta Community Services Centre;
- Cabramatta Library;
- Cabramatta Senior Citizens Centre; and
- Cabramatta Baby Health Centre.

iii Schools

The main entrance of the Sacred Heart Catholic Primary School is located on Gilmore Street but with a rear access onto Park Road, opposite Cabravale Memorial Park. This rear access is approximately 60 m from the safe crossing at the Catholic Church and so, while not observed, there may be children and parents crossing at informal areas closer to the Park Road and Bartley Street intersection. Upon inspection students were observed being dropped off at various locations on both sides of Bartley Street. 40 km school zones and an increase in traffic occurs at the start and end of school.

Plate 2.15 Facing west towards Sacred Heart Catholic School zone on Bartley Street, pedestrian crossing and school zone

iv Cabravale Park

The focus of the area is Cabravale Park and its' immediate surrounds, and this is where the focus of works for the Upper South Creek Project also occur. The physical working of the park reflects its centrality among the surrounding facilities. The emphasis of that centrality is amplified by the fact that Cabramatta is severely constrained in the availability of green spaces.

Plate 2.16 Cabravale Memorial Park and surrounds.

Source: Google Earth.

The movement to, through and around the park is linked to the entrances on the eastern side near the memorial, the southwest corner, accessing the play equipment and the west side opposite the Sacred Heart Catholic Church where a safe crossing can be seen above. There are smaller accesses around the park that link to the paths and gives a strong impression of location accessible to all, and from every direction.

Cabravale Memorial Park is an important place for residents of Cabramatta; it is a key green space used for various recreational activities, community services and is of historical significance to the people of Cabramatta and Greater Sydney, as it features a War Memorial and heritage listed band stand, which contains a time capsule. The park centres around several community service venues, who facilitate community events and services in the park.

There are events and activities throughout the year at the Memorial Park, particularly Anzac Day on which day hundreds gather, coming to Cabravale Memorial Park form all over Sydney. In this way, Cabravale Memorial Park is not just a locus of activity to Cabramatta residents, but to the broader Sydney community.

Plate 2.17 Location of site compound, Cabravale Memorial Park

Plate 2.18 Anzac Day at Cabravale Memorial Park.

Source: Daily Telegraph

Plate 2.19 Cabravale Memorial Park – residents using park for recreation activities

The Cabravale Diggers Club is located directly to the north of Cabravale Memorial Park and is accessible via Bartley Street and Railway Parade. The Diggers Club features lawn bowling greens, restaurants, function rooms, and gaming machines. The Cabravale Diggers Club patronage increases on weekends and evenings; it is noted that increased patronage and pedestrian access to the Cabravale War Memorial would be especially important during remembrance celebrations.

3 Impact Assessment

3.1 Introduction

As noted in Section 1.1, as a result of both consultation with surrounding Councils and examination of the findings of the SELUIA, it became clear that the two areas of Wallacia (with Luddenham and Mulgoa) and of Cabramatta, could be severely impacted by the proposed Project, and required particular examination.

A process of additional consultation and preliminary impact screening determined that the greatest impacts were likely to be associated with the construction of the water discharge pipelines. Specifically, during pipeline construction, road and other access may be restricted and amenity may be impacted by construction related noise and dust. In these areas, where local and tourist visits are a critical aspect of the economy, reduced amenity and access could reduce those visits which would reduce income to local businesses. This could, in turn, have potentially significant economic and social impacts for local residents. These respective impacts are examined in detail below, in relation to the Wallacia and Cabramatta areas, respectively.

3.2 Risk identification and ranking

It is a helpful part of the environmental impact assessment process to rank impacts according to their likelihood and potential severity in order to focus on the type of mitigation and management that would best ameliorate the effects.

The potential environmental risk from the impacts outlined in this section has been assessed in accordance with Australian/New Zealand Standard International Organisation for Standardisation 31000-2009 *Risk Management – Principles and Guidelines* (AS/NZS ISO 31000-2009) based on the implementation of management measures described in Section 4 of this report.

Two factors were considered in rating risk for each scenario: the potential consequences (ie the severity of the impact) and the likelihood that the impact will occur.

The criteria used to rate the potential consequences of impacts to the environment, individuals and society are provided in Table 3.1. The criteria used to rate the likelihood that the impact will occur are provided in Table 3.2.

Table 3.1 Qualitative measures of consequence

Level	Potential consequences to individuals	Potential consequences to the environment and society
1	Minor injury or short-term health effect (eg requiring first aid)	Limited environmental impacts to a small area of low significance
		Low level repairable damage to commonplace structures
		Short-term local social issues or disruptions
2	Minor injury or short-term health effects requiring restricted work	Minor short-term environmental impacts not affecting environmental systems
		Moderate damage to items of local cultural significance or minor damage to items of regional significance
		Minor medium-term social impacts on local population
3	Major injury or health effects (eg lost time injuries or permanent disabilities)	Medium-term environmental impacts affecting local environmental systems

Table 3.1 Qualitative measures of consequence

Level	Potential consequences to individuals	Potential consequences to the environment and society
	Minor injury or health effects to multiple people	Moderate damage to items of regional cultural significance
		Ongoing local social issues
4	Permanent total disability Major injuries or health effects to multiple people	Long-term environmental impacts with significant effects locally and some effects regionally
		Irreparable damage to items of regional cultural significance
		Widespread local social issues and moderate regional social issues
5	Fatality or multiple fatalities	Regional long-term environmental impacts on critical species, habitat or environmental systems
		Irreparable damage to items of national cultural significance
		Ongoing major regional social impacts

Table 3.2 Qualitative measures of likelihood

Level	Likelihood	Approximate chance of occurring during the life of the Project
A	Practically impossible	0.1%
B	Not likely to happen	10.0%
C	Possible or could happen	50.0%
D	Likely to happen at some point	90.0%
E	Almost certain to happen	99.9%

The risk rating is determined by comparing the consequences and likelihood ratings using the matrix in Table 3.3. Risk levels comprise:

- Level 1 (high), where risks are likely to be unacceptable and additional management measures, major redesign or relocation of Project components will be required;
- Level 2 (medium), where there will be some risk that can be managed with project-specific management measures, or cannot be further reduced but is in line with the societal risks associated with the incident type; and
- Level 3 (low), where risks are manageable and there is little risk.

Table 3.3 Risk rating

	Likelihood				
Consequence	**A**	**B**	**C**	**D**	**E**
5	Level 2 (medium)				Level 1 (high)
4					
3					
2					
1	Level 3 (low)				

The ratings identified for the impacts below are those in their un-mitigated state. Mitigation and management is provided in Chapter 4 which then demonstrates if the mitigation has ameliorated the potential effects.

It should be noted that if an impact is rated as "Low", this does not mean that no mitigation or management has been identified to ameliorate the effects. Nor does it mean that the burden of impact and inconvenience on the community is believed to be less. It is acknowledged that impacts can be felt differently by different people and impacts are very personally felt. The ratings are merely to provide a mechanism to design the most appropriate mitigation for the specific effects predicted.

3.3 Luddenham

3.3.1 Access to Luddenham from the north

As noted above, the treated water pipeline will approach Luddenham from the north along The Northern Road. It is understood that impacts to The Northern Road can be minimised by constructing more in the road verges than within the road itself. However, there will still be impacts to The Northern Road approach to Luddenham that require traffic management. This represents a minor medium-term social impact on local population which is almost certain to happen and therefore is rated as a **Medium** impact on the basis of the criteria above.

While the pipeline alignment does not extend into Luddenham itself, an affected approach from the north has the potential to impact the perception of those travelling to the location. If there is a perception that entry to Luddenham has become too inconvenient, it could deter visitors and consumers. This represents a minor medium-term social impact on local population which is likely to happen at some point and therefore is rated as a **Medium** impact.

Any approaches from the south via the new Northern Road will not be impacted. While approaches from the north will be impacted with traffic management measures, there will be the opportunity to proceed via the new Northern Road further and access Luddenham from the south. This additional inconvenience, however, could similarly deter visitors. This represents a minor medium-term social impact on local population which is possible / could happen and therefore is rated as a **Low** impact.

3.3.2 Direct and indirect impacts to north Luddenham

The treated water pipeline will cross Park Road at the Northern Road intersection and then traverse along the southern side of Park Road to Wallacia which lies approximately 4.6km further to the west and this northern end of Luddenham could be impacted directly in a variety of ways:

1. At the northern end of the village there is service station and café. Residents and users of these facilities could be impacted by construction noise and dust; and

2. Impacts to businesses if motorists and visitors are deterred from entering the village.

Point 1 represents a minor medium-term social impact on local population which is almost certain to happen and therefore is rated as a **Medium** impact.

Point 2 represents a minor medium-term social impact on local population which is possible / could happen and therefore is rated as a **Low** impact.

3.3.3 Connectivity and access from Wallacia

As can be seen from the Plates above, Park Road is a dual lane road that will become a single lane road with traffic management during construction. This will impact the two-way access and connectivity between Wallacia and Luddenham, between which Park Road is the main connecting road. This represents a minor medium-term social impact on local population which is likely to happen at some point and therefore is rated as a **Medium** impact.

For residents along Park Road, there will be effects from the construction including impacted access and the impacts to general connectivity to main roads to the east and west. For working properties involving animals, there may also a lower tolerance for noise and dust impacts. This represents a minor medium-term social impact on local population which is likely to happen at some point and therefore is rated as a **Medium** impact.

Given that the RFS is located on Park Road and Park Road represents the primary flood evacuation route, there is the potential for emergency services to be restricted in their movement, or evacuation points to be inhibited. This could result in minor injury or health effects to multiple people which could happen and therefore is rated as a **Medium** impact.

3.3.4 Cumulative effects and perceptions of isolation

Luddenham has been subject to the effects of construction projects in the long term already. The aerotropolis is currently being constructed and the new Northern Road has only recently been completed. The Northern Road upgrade has provided a bypass that takes heavy traffic away from the village. However, with the Upper South Creek project, there is the potential for Luddenham to temporarily experience the felt effect of being “an island” with construction of the Aerotropolis in the south and the treated water pipeline construction at the north along Elizabeth Drive and the Northern Road and affecting access west along Park Road. This represents a minor medium-term social impact on local population which is possible / could happen and therefore is rated as a **Low** impact.

3.4 Wallacia

3.4.1 Direct effects to the approach to Fowler Reserve

One of the key construction areas in Wallacia is the approach from Park Road to Fowler Reserve where a horizontal directional drilling technique will be undertaken to under-bore the Nepean River.

This is a positive design in that it avoids the centre of Wallacia and single roundabout around which all the heart of the village is situated. As an alignment along the back streets of the village however, there are still impacts to assess and manage.

This area is all quiet residential streets and so apart from the access to individual homes, there is vulnerability to noise and dust impacts. Given the extreme proximity of construction to residences, this could result in minor injury or health effects to multiple people which could happen and therefore is rated as a **Medium** impact.

In addition, where the alignment follows from the Eagle Street intersection with Greendale Road to the intersection with Byron Avenue, there could be additional negative effects just to the north at the Regal Oaks Retirement Village which lies just over 50m from the proposed works. There are also bus stops next to the Retirement Village that could be similarly impacted, particularly if a portion of Greendale Road is closed temporarily. This represents short-term local social issues / disruptions which is almost certain to happen and so is rated as a **Medium** impact.

Byron Road is the only access to Shelley Road which is a dead end at its southern end and a cul-de-sac at its northern end. Any closures or traffic changes will need to be carefully managed in this area to support access to homes. Furthermore, Lark Place is a cul-de-sac and adjoins Green Street. The southern end of Driver Avenue is also a cul-de-sac and so access is also potentially a factor for these tributary streets. This represents short-term local social issues / disruptions which is almost certain to happen and so is rated as a **Medium** impact.

3.4.2 Direct effects to Fowler Reserve

There will be amenity impacts to those residents closest to the Fowler Reserve HDD launch site. In the Noise Impact Assessment for this project, this area falls within the Noise Catchment Area (NCA) T8 and T7 and acknowledges that management measures will be required. These measures will be detailed in a Noise and Vibration Management Plan (NVMP) as part of the CEMP. This represents short-term local social issues / disruptions which is almost certain to happen and so is rated as a **Medium** impact.

Further, there will be impacts from the establishment of the launch site. Impacts to flora and fauna and heritage are covered in detail in the Biodiversity Development Assessment Report (BDAR), Cultural Heritage Assessment Report and Non-Aboriginal Heritage Assessment which have been prepared as part of this EIS. Unmitigated or unmanaged, this could represent medium-term environmental impacts affecting local environmental systems which is almost certain to happen and so is rated as a **Medium** impact.

3.4.3 Direct impacts from the construction work area (C5)

The proposed compound is in close proximity to:

- The Wallacia Hotel;
- The Wallacia Country Club; and
- The Wallacia shops and services.

There will be impacts to all these businesses and patrons from increased traffic, traffic noise and dust. This represents a minor medium-term social impact on local population which is almost certain to happen and therefore is rated as a **Medium** impact.

3.4.4 Indirect effects to areas west of the Nepean

On the west side of the Nepean River, the treated water pipeline traverses north to a release point at the Nepean River and the environmental flows pipeline traverses south along Bents Basin Road for approximately 1.5km before terminating at a compound for the HDD out to Warragamba.

There will be some impact as the treated water pipeline crosses Silverdale Road. Furthermore, Bents Basin Road is already in poor condition already and so may be vulnerable to heavy vehicles. This represents low-level repairable damage to commonplace structure that could happen and therefore is rated as a **Low** impact.

Bents Basin Road is not the main access to the Bents Basin tourist location but users will be driven to use Greendale Road as the main access point. This is only an issue if works on Bents Basin Road coincide with interruption to traffic flow along Greendale Road from the treated water pipeline construction, as previously mentioned. This represents a minor medium-term social impact on local population which is possible / could happen and therefore is rated as a **Low** impact.

It should also be noted that there are many working areas along Bents Basin Road that may be vulnerable to impact including The Old Dairy accommodation and several market gardens. This represents short-term local social issues or disruption that is likely to happen at some point and therefore is rated as a **Low** impact.

3.5 Indirect effects on Mulgoa Road

If Mulgoa Road is utilised as a haul road during construction, there could be a series of impacts that result:

- increased traffic along Mulgoa Road that impacts regular road users;
- impacts to patrons accessing the amenities along Mulgoa Road;
- traffic safety concerns around the café cluster south of Mulgoa where patrons routinely cross Mulgoa Road where there is no formal crossing lace;
- impacts to Nepean Christian School and the school in Mulgoa with increased traffic movement;
- impacts to users of the Penrith Heritage Drive; and
- impacts to the roundabout at the southern end of Penrith/entrance to Glenmore Park which is a key intersection.

All of these effects represent minor medium-term social impacts on local population which is likely to happen at some point and therefore is rated as a **Medium** impact.

3.6 Cabramatta town centre

3.6.1 Cabramatta Central Business District

Construction of the brine pipeline is not anticipated to result in significant impacts to residents accessing the CBD from the residential areas to the north of the pipeline. None the less, communication with businesses in the district is recommended to support them in understanding the works that are occurring and their associated timeframes.

The Cabramatta CBD is observed as being a weekend destination, which is visited by residents of Greater Sydney seeking cultural immersion and experiences, including but not limited specialised hospitality venues. Increased traffic has the potential to impact these amenities. This represents minor medium-term social impacts on local population which is almost certain to happen and therefore is rated as a **Medium** impact.

It should be noted that overall, this area of Cabramatta particularly is a densely packed city centre and so its ability to withstand construction impacts is markedly lower than less pressured areas.

3.6.2 Directly impacted properties on pipeline alignment

Directly impacted properties along the northern side of the road are likely to experience short-term impacts, including loss of access to driveways and on street parking. As noted, on-street parking is at a premium in this area and so loss of parking for the directly affected residents, could then, in turn, impact the surrounding areas which are also experiencing parking pressure.

Given the extreme proximity of construction to residences, this could result in minor injury or health effects to multiple people which could happen and therefore is rated as a **Medium** impact. In addition, there are predicted to be impacts to access to residences and parking. This represents short-term local issues / disruption which is likely to happen at some point and so is rated as a **Low** impact.

3.6.3 Indirectly affected residents and amenities

Cabramatta's residential areas are set out in a grid shape, which will in in most instances mean that if access to the entry to a street is restricted from one end during construction, diversions can be put in place divert vehicular and pedestrian traffic away from construction zones.

Residents who live in the streets parallel to the pipeline alignment may experience flow on effects from construction activities. This might include parking pressure as temporary loss of on-street parking in one area forces drivers onto neighbouring streets, as noted above. It would also include residents who reside in cul-de-sacs off of John Street, Gladstone Street and Bartley Street. Temporary restrictions to vehicular access into cul-de-sacs is expected. This represents short-term local issues / disruption which is likely to happen at some point and so is rated as a **Low** impact.

It is noted that Cabramatta has more than 15 places of worship of various denominations nearby to the Project alignment. Although these churches are not located directly within the Project footprint, pedestrian, vehicle and parking amenity could be impacted. While there will be no construction on a Sunday, many places of worship are active throughout the week. There are potential impacts on access, movement and ability to enjoy local amenities from:

- increase of traffic resulting in traffic noise, traffic safety issues and increased motorist waiting times; and
- traffic management measures and construction work areas that close off or restrict some areas; and

These effects represent minor medium-term social impacts on local population which is almost certain to happen and therefore is rated as a **Medium** impact.

The Catholic School and all the amenities and community services that surround Cabravale Park will be subject to impacts from increased traffic noise and traffic safety. This represents a minor medium-term social impact on local population which could or is likely to happen and therefore is rated as a **Medium** impact.

3.6.4 Construction effects at the St Johns/Bartley Street Roundabout

As noted above, there has already been apparent community concern regarding this roundabout and increased traffic, particularly heavy vehicles, could impact the safe use of the intersection. This represents minor medium-term local social issue / disruption which could happen at some point and so is rated as a **Low** impact.

3.6.5 Services surrounding Cabravale Memorial Park

The impacts to the park and surrounds from the construction compound and launch site would occur primarily in the top northeast corner without impinging on the oval or bandstand and its curtilage. There would be indirect impacts from noise and dust, and access to the park in that northeast corner. This represents medium-term environmental impacts affecting local environmental systems and minor damage to items of regional significance which is almost certain to happen and therefore is rated as a **High** impact.

These services may also experience pressure on their parking facilities as any loss of on-street parking pushes motorists to park wherever may be available. This represents minor medium-term social impacts which is likely to happen at some point and so is rated as a **Medium** impact.

3.7 Summary of impact ratings

The table below summarises the impacts identified in the previous sections. As previously noted, these are impacts in their un-mitigated state. On the basis of these predicted effects, Chapter 4 provides an outline of the recommended mitigation and management measures.

Table 3.4 Summary of impact ratings

Impact	Rating
Luddenham	
Impacts to The Northern Road from pipeline construction requiring traffic management measures	Medium
Visitors deterred from going to Luddenham because of inconvenient traffic management measures	Medium
Approaching from the north and using the southern entry to Luddenham via the new Northern Road a deterrent to visitors	Low
Dust and amenity impacts to businesses and services at the north end of Luddenham	Medium
Dust and noise effects of construction deterring visitors from entering/stopping at the services at the north end of Luddenham.	Low
Impacts to connectivity and access between Luddenham and Wallacia along Park Road	Medium
Impacts to residents along Park Road including access to their properties and impacts to businesses where there are animals and a potentially lower tolerance for impacts	Medium
Restriction of RFA or flood evacuation movement	Medium
Cumulative effects on the residents of Luddenham from multiple construction projects and feelings of isolation	Low
Wallacia	
Dust and noise effects on residents along the back streets of Wallacia in proximity to construction	Medium
Impacts to bus stops and amenity impacts to the retirement village	Medium
Impacts to no-through roads and cul-de-sacs in immediately surrounding streets during construction	Medium
Noise effects to residents during construction in Fowler Reserve	Medium
Impacts to the biodiversity and amenity value of Fowler Reserve	Medium
Impacts to businesses adjacent to Compound C5	Medium
Impacts to quality of Bents Basin Road	Low
Impacts to access for Bents Basin	Low

Table 3.4 Summary of impact ratings

Impact	Rating
Impacts to businesses along Bents Basin Road	Low
Mulgoa Road	
Amenity impacts and traffic safety hazards along Mulgoa Road	Medium
Cabramatta	
Impacts to access and use of local amenities in the Cabramatta CBD area from increased traffic	Medium
Impacts to residents along the pipeline alignment (dust and air)	Medium
Impacts to residents along the alignment (access and parking)	Low
Flow on effects regarding access and parking on streets and residents in surrounding areas	Low
Impacts on places of worship and other amenities due to increase in construction traffic and construction work areas	Medium
Impacts on traffic safety at the St Johns/Bartley Street roundabout	Low
Impacts to use of Cabravale Park	High
Flow on impacts to surrounding areas in relation to direct effects on Cabravale Park	Medium

4 Mitigation and management

This chapter sets out recommended mitigation measures to manage or ameliorate the effects identified in the previous chapter.

4.1 Luddenham

4.1.1 Luddenham (general)

- Consultation with the Luddenham Progress Association and local business owners;
- Increased safety signage and traffic monitoring at Luddenham Main Street (The Northern Road), during construction;
- Inclusion in the Construction Traffic Management Plan (CTMP) in the project Construction Environmental Management Plan (CEMP) of signage at key locations in the north to ensure the visitor experience is made as clear and easy as possible.

4.1.2 North end of Luddenham and Luddenham Showground

- Consultation with the service station, café and residents at the northern end of Luddenham;
- Consultation with the Luddenham Agricultural, Horticultural and Industrial Society and the Holy Family Primary school;
- Timing of works to avoid key events at the Luddenham Showground;
- Ongoing engagement with these groups to enable them to plan their activities and consultation with their stakeholders accordingly;
- Inclusion of specific measures in the CTMP to manage access dust and noise at the northern end of Luddenham, and to manage access and safety at the Park Road/Campbell Street intersection;
- Consultation with local SES, RFS, Ambulance and Police should be undertaken to ensure that access remains unimpeded at all times.
- Clear signage at the northern end of the village, at the old Northern Road, to assist customer comfort that Luddenham is still open for business. It would also manage motorist expectations and alleviate stress and avoid customers feeling deterred from visiting.

Construction along Park Road, if using the minimum possible construction process (no night work, only 1 construction crew and advancing 24 m/day), would take 1 year to complete. Given the working properties involving animals along Park Road, night work may not be a positive option to reduce construction time, unless consultation shows there to be areas where this would be appropriate. The use of 24 m as a guide to how much time construction may take in this area, is a minimum and therefore conservative. The main avenue that can be explored to minimise the construction time is the use of two construction crews as a minimum. This would potentially reduce the construction timeframe from 1 year to 6 months and possibly less.

4.1.3 Park Road

- Minimum of two construction crews for the Park Road construction section;
- Schedule planning in consultation with residents along Park Road and ensuring detailed engagement with Zambi Wildlife Retreat; and
- Consultation to inform traffic management measures along Park Road to ensure access to and from individual properties and connectivity between Wallacia and Luddenham.

4.2 Wallacia

4.2.1 Wallacia, Park Road-Fowler Reserve Street

- Detailed consultation with all residents directly affected along the main streets and consultation with residents along tributary streets.

4.2.2 Fowler Reserve

- Detailed works planning in this area should be conducted in consultation with:
  - Relevant members of Penrith Council, Conservation Volunteers Australia and Western Sydney Airport with respect to works in Fowler Reserve to ensure ongoing restoration works there are not affected;
  - Residents along Shelley Road to ensure the measures outlined in the NVMP take into account potential effects on those closest properties and to identify any more sensitive receivers (such as elderly residents) who may have a lower threshold for impact, and therefore may require additional measures to ameliorate effects.

4.2.3 Wallacia, Construction Compound C5

- Detailed construction planning occur in consultation with each of these businesses and with the Wallacia Progress Association;
- Compound design takes into account the proximity of local businesses by managing any effects that could impact off-site. This is particularly the case with dust which could impact the use of the outdoor seating area at the Wallacia Hotel, or people's enjoyment of the area as a quiet place to visit. Dust could also be a particular issue for parked patrons. The compound is in close proximity to the parking areas of all the businesses cited here.

4.2.4 Bents Basin Road

- Detailed and careful construction planning with regard to schedule that ensures that construction at Bents Basin Road does not coincide with works impacting Greendale Road;
- Timing works so as not to coincide with times around Public Holidays and school holidays;
- Consultation with residents and business owners along Bents Basin Road in order that the schedule, CTMP and NVMP can take into account local business needs, such as livestock movements, breeding times, harvesting times, and peak patron and tourist times.

- Consultation with local SES, RFS, Ambulance and Police should be undertaken to ensure that access remains unimpeded at all times.

4.3 Mulgoa

- Consultation occur prior to construction with businesses in order that they can alert their patrons and customers and plan accordingly to take account of increased traffic on Mulgoa Road. This should include, but not be limited to:
  - Oasis Terrace;
  - Settlers Mulgoa;
  - Edmund Rice Retreat and Conference Centre;
  - La Petite Maison Boutique and gift;
  - Mulgoa Wedding Receptions;
  - Fernhill Estate;
  - Nepean Christian School; and
  - Mulgoa Progress Association.
- The CTMP should be prepared to take into account the avoidance of school peak times;
- The CTMP should include safety measures for the cluster of cafes, shop and conference centre just south of Mulgoa.

4.4 Cabramatta

4.4.1 Cabramatta (general)

- Careful construction planning in consultation with Fairfield City Council in order to minimise the negative effects of construction on a densely populated area;
- Detailed consultation that includes in-person as well as social media and online resources, with translation services, with the community in areas that extend north of St Johns Road and Bartley Street;
- Careful planning of diversions and traffic management measures that take this consultation into account, that is planned during the detailed design phase;
- Preparation of the CTMP that takes all these measures into account and that also includes:
  - additional safety measures;
  - measures to ensure pedestrian egress;
  - careful timing of construction in this area to take account of peak times in an already highly urbanised setting;

- planning of traffic diversions in consultation with Council and other relevant bodies to avoid a cumulative impact of multiple road diversions creating additional pressure points in the road network; and

- clear consultation and complaints handling procedures to enable the community to be heard and responded to with their queries and concerns.

4.4.2 Cabramatta, residential

It is noted that residents will need to retain safe pedestrian access to and from their properties at all times during construction. As such:

- Early consultation with directly affected residents to alert them to the activities, understand their needs (particularly vulnerable residents) and input feedback into the CTMP;

- Engagement with residents along the pipeline alignment is necessary prior to and during construction, to provide awareness of the impacts associated with pipeline construction (such as noise, vibration and safety) to provide tailored mitigations as and when necessary;

- Consideration should be given to alternate options for car parking for residents, when construction directly impacts a property;

- An on-site safety officer should be in attendance during construction, to assist residents to safely access their properties around plant equipment and construction activity;

- Consideration should be given to the risk of potential loss of access to utilities in the event of an unforeseen failure.

4.4.3 Places of worship

- Consultation should be undertaken with representatives of the local places of worship, either in person, by phone or by email, depending on their proximity to the planned construction activities. This will allow them to alert their attendees and make plans accordingly to allow continued access and safety;

- The CEMP should take into account any activities of places of worship in close proximity to construction activities that could be affected by noise, for example, children's groups, seniors services and so on;

4.4.4 Holy Cross Catholic School

- Careful staging and construction management to avoid or limit works in school holidays;

- The CTMP should take into account school drop off and pick up times and limit heavy traffic movements during these times for safety reasons;

- The CEMP should also take into account the rhythms of the school year and limit activities that could be undertaken during NAPLAN and HSC times.

4.4.5 Intersection at Bartley and Sackville Streets

- The CTMP should take into account traffic safety measures that provide clear guidance to pedestrian users;

- The CTMP should include specific toolbox talks and awareness raising for safety issues in this area; and

- All approaches to the roundabout are narrow, consideration should be given to traffic control being implemented during peak construction access and egress times, to facilitate safe pedestrian and vehicular movements.

i Cabravale Park

- The investigation of restricted, or no, construction on Saturdays in Cabravale Memorial Park;
- Additional dust suppression measures to limit the potential for recreational users to be impacted by airborne dust;
- Avoidance of construction on or near Anzac Day;
- Implementing clear signage with information boards in order that park users are well informed;
- The CTMP should take into account the potential impacts to on street parking on Bartley Street and the potential to increase pressure on the parking facilities of the Diggers Club (which could in turn be an impact to their business functionality);
- Development of the detailed construction methodology design in consultation with surrounding users including:
    - PCYC;
    - The Diggers Club;
    - The Sacred Heart Catholic Church;
    - The Australian Chinese Teo Chew Association;
    - The Baptist Church; and
    - Schools utilising the oval.

4.4.6 Organisations surrounding Cabravale Park

- Detailed consultation should be undertaken with each service providers to understand how people utilising these services access these venues. This will, in turn, inform detailed construction planning and the CEMP, particularly with reference to groups that have a lower threshold, or higher vulnerability for impacts for whom additional mitigation needs to be planned; and
- Consideration needs to be given to maintaining safe access to and from these venues. This includes maintaining a suitable number of disabled car parking spaces, safe pedestrian access and safe access from public transport stations.

4.5 Conclusion

The mitigation recommended in this report seeks to provide a basis for the ongoing consultation, detailed design and construction methodology planning, and CEMP development, to allow the Project to occur in a way that has avoided significant impacts, and engages with the community for their ongoing health and wellbeing.

With the mitigation measures recommended throughout this report implemented, the key features of which are engagement and construction planning, the residual impacts can be managed appropriately.

The table below summarises the change in predicted impact on the basis of implementing mitigation measures. It is noted that all of the predicted impacts are lowered in their rating. It is also noted that some impacts are still identified as being Low-Medium or, in the case of Cabravale Park, a High rating. This is to acknowledge that in some areas, there are going to be a certain level of inconvenience and impacts that cannot be mitigated to a Low level. These impacts, in keeping a Low-Medium/Medium designation, allows them to remain key issues for further consultation and planning in the detailed design stage. This means that, even if all impacts cannot be brought to a negligible or low state (which is the preference and goal), that there is ongoing and open communication in order that all residents and stakeholders are engaged and aware and have the necessary information to ease concern.

Table 4.1 Summary of impact ratings

Impact	Rating (Un-mitigated)	Rating (Mitigated)
Luddenham		
Impacts to The Northern Road from pipeline construction requiring traffic management measures	Medium	Low
Visitors deterred from going to Luddenham because of inconvenient traffic management measures	Medium	Low
Approaching from the north and using the southern entry to Luddenham via the new Northern Road a deterrent to visitors	Low	Negligible-Low
Dust and amenity impacts to businesses and services at the north end of Luddenham	Medium	Low
Dust and noise effects of construction deterring visitors from entering/stopping at the services at the north end of Luddenham.	Low	Low
Impacts to connectivity and access between Luddenham and Wallacia along Park Road	Medium	Low
Impacts to residents along Park Road including access to their properties and impacts to businesses where there are animals and a potentially lower tolerance for impacts	Medium	Low-Medium
Restriction of RFA or flood evacuation movement	Medium	Low
Cumulative effects on the residents of Luddenham from multiple construction projects and feelings of isolation	Low	Negligible-Low
Wallacia		
Dust and noise effects on residents along the back streets of Wallacia in proximity to construction	Medium	Low-Medium
Impacts to bus stops and amenity impacts to the retirement village	Medium	Low
Impacts to no-through roads and cul-de-sacs in immediately surrounding streets during construction	Medium	Low-Medium
Noise effects to residents during construction in Fowler Reserve	Medium	Low-Medium
Impacts to the biodiversity and amenity value of Fowler Reserve	Medium	Low
Impacts to businesses adjacent to Compound C5	Medium	Low-Medium
Impacts to quality of Bents Basin Road	Low	Low
Impacts to access for Bents Basin	Low	Low

Table 4.1 Summary of impact ratings

Impact	Rating (Un-mitigated)	Rating (Mitigated)
Impacts to businesses along Bents Basin Road	Low	Low
Mulgoa Road		
Amenity impacts and traffic safety hazards along Mulgoa Road	Medium	Low-Medium
Cabramatta		
Impacts to access and use of local amenities in the Cabramatta CBD area from increased traffic	Medium	Low-Medium
Impacts to residents along the pipeline alignment (dust and air)	Medium	Low
Impacts to residents along the alignment (access and parking)	Low	Low
Flow on effects regarding access and parking on streets and residents in surrounding areas	Low	Low
Impacts on places of worship and other amenities due to increase in construction traffic and construction work areas	Medium	Low-Medium
Impacts on traffic safety at the St Johns/Bartley Street roundabout	Low	
Impacts to use of Cabravale Park	High	Medium
Flow on impacts to surrounding areas in relation to direct effects on Cabravale Park	Medium	Low-Medium

Appendix C – List of businesses in the local influence area

The impact assessment was informed by a site visit undertaken by the project team in February 2020 and desktop investigations undertaken in 2020 and 2021. Tables C-1 to C-3 provide a list of businesses in the impact assessment area in the SESA-western, SESA-central and SESA-eastern. Each table provides an indication of the types of impacts and features of the project that may impact these facilities. The tables are representative only and do not include all businesses within SESA. Please note that these tables provide a summary only, with impacts detailed and discussed further in the main body of the report.

Table C-1: Businesses in the local influence area (SESA-western)

Businesses	Feature of the project	Relationship with the project/proposed design impact
Agricultural properties	Pipeline and compound sites C4 and C5 (some underbore)	Severe some properties which may impact business movements – i.e. machinery, livestock movements, crop yield and farm infrastructure. Access issues for businesses that have the pipeline route across driveways.
Burgess Soil, Wallacia	Pipeline and C2 compound site	Access issues for business as pipeline route across driveway, with local influence area encroaching on the property. This business is also in close proximity to the C2 compound site
Wallacia Hotel, Wallacia	C5 compound site	Located within the local influence area of the C5 compound site, which also extends to car parking areas and the southern section of the hotel. Visual and noise impacts may be experienced by the hotel, including overnight guests.
Hair Envy, Wallacia	C5 compound site	Located within local influence area of the C5 compound site, which also extends to car parking areas behind the shops. Likely to be noise and potential parking impacts to this business.
Admire Beaute, Wallacia	C5 compound site	Located within local influence area of the C5 compound site, which also extends to car parking areas behind the shops. Likely to be noise and potential parking impacts to this business.
Elders Real Estate, Wallacia	C5 compound site	Located within local influence area of the C5 compound site, which also extends to car parking areas behind the shops. Likely to be noise and potential parking impacts to this business.
News agency, Wallacia	C5 compound site	Located within local influence area of the C5 compound site, which also extends to car parking areas behind the shops. Likely to be noise and potential parking impacts to this business.
Wallacia Takeaway, Wallacia	C5 compound site	Located within local influence area of the C5 compound site, which also extends to car parking areas behind the shops. Likely to be noise and potential parking impacts to this business.
Bottlemart Express, Wallacia	C5 compound site	Located within local influence area of the C5 compound site, which also extends to car parking areas behind the shops. Likely to be noise and potential parking impacts to this business.

Table C-2: Businesses in the local influence area (SESA-central)

Businesses	Feature	Relationship with the project/proposed design impact
Agricultural properties	Pipeline and compound sites	Severe some properties which may impact business movements – i.e. machinery, livestock movements, crop yield and farm infrastructure. Access issues for businesses that have the pipeline route across driveways etc.
Nalla Boarding Kennels, Luddenham	Pipeline route	Pipeline route would be located across the northern section of the property (however, no buildings are located in this area). Access issues for business as pipeline route which crosses over driveway access. Close proximity to the compound sites which may impact animals within the kennel particularly during noisy works.
West Sydney Sand & Soil, Kemps Creek	Pipeline route	Pipeline and local influence area located through the southern section of the property in an east west direction. Access issues for business as pipeline route which crosses over driveway access.
SUEZ Kemps Creek Resource Recovery Park, Kemps Creek	Pipeline route	Pipeline and local influence area located through the southern section of the property in an east west direction. Access issues for business as pipeline route which crosses over driveway access.
Kingsfield Stud, Badgerys Creek	Pipeline route	Pipeline and local influence area located through the southern section of the property in an east west direction. Access issues for business as pipeline route which crosses over driveway access.
CR & M Ash & Sons- Poultry Farm	Pipeline route	Pipeline and local influence area located through the western section of the property, however, doesn't appear to impact any areas of crop/livestock sheds. Access issues for business as pipeline route which crosses over driveway access. Potential noise and vibration impacts associated with trenching in this location which may impact livestock in the sheds.
Andreasens Green Wholesale Nurseries	Pipeline route	Pipeline would be located along Western Road, with the local influence area encroaching on the nursery. Likely to be impacts associated with construction plant and machinery and potential dust impacts to crops and plants. Potential impacts to access from Western Road which may impact business operators and freight.
Brandown Quarries	Pipeline route	Pipeline and local influence area located through the northern section of the property in an east west direction. Access issues for business as pipeline route which crosses over driveway access and internal road access.
Ezy Build	Pipeline route	Pipeline and local influence area located through the northern section of the property in an east west direction. Access issues for business as pipeline route which crosses over driveway access and internal road access.

Table C-3: Businesses in the local influence area (eastern study area)

Business	Feature of the project	Relationship with the project/proposed design impact
The Hills Specialist Centre	Pipeline route (underbore)	Located within the local influence area, with the pipeline route (underbore) located north of the property beneath Liverpool Road.
Bp Truckstop Bonnyrigg	Pipeline route (underbore)	Located within the local influence area, with the pipeline route (underbore) located south of the property beneath Liverpool Road.
McDonald's Bonnyrigg Heights	Pipeline route (underbore)	Located within the local influence area, with the pipeline route (underbore) located south of the property beneath Liverpool Road.
Peak Health Centre-Chiropractor, Green Valley	Pipeline route	The pipeline trench would be located on Liverpool Road. The business would be located within partially within the local influence area to the south. There are likely to be impacts associated with noise and air quality, as well potential access impacts if alternative traffic arrangements/lane closures are required.
Lina's Hair, Bonnyrigg	Pipeline route	The pipeline trench would be located on Montgomery Road. The business would be located within the local influence area to the east. There are likely to be impacts associated with noise and air quality, as well potential access impacts if alternative traffic arrangements/lane closures are required.
Metro Petrol Station, Bonnyrigg	Pipeline route	The pipeline trench would be located on Montgomery Road. The business would be located within the local influence area to the east. There are likely to be impacts associated with noise and air quality, as well potential access impacts if alternative traffic arrangements/lane closures are required.
Forever Lucky – Lottery shop, Bonnyrigg	Pipeline route	The pipeline trench would be located on Montgomery Road. The business would be located within the local influence area to the east. There are likely to be impacts associated with noise and air quality, as well potential access impacts if alternative traffic arrangements/lane closures are required.
Albert's Quality Auto Repairs, Bonnyrigg	Pipeline route	The pipeline trench would be located on Montgomery Road. The business would be located within the local influence area to the east. There are likely to be impacts associated with noise and air quality, as well potential access impacts if alternative traffic arrangements/lane closures are required.
Aussie Health and Beauty Products, Bonnyrigg	Pipeline route	The pipeline trench would be located on Montgomery Road. The business would be located within the local influence area to the west. There are likely to be impacts associated with noise and air quality, as well potential access impacts if alternative traffic arrangements/lane closures are required.

Business	Feature of the project	Relationship with the project/proposed design impact
Bonnyrigg Produce and Garden Supplies	Pipeline route and partial underboring	The pipeline trench would be located on Montgomery Road. The business would be located within the local influence area to the east. There are likely to be impacts associated with noise and air quality, as well potential access impacts if alternative traffic arrangements/lane closures are required.
Liquor Stax, Bonnyrigg	Pipeline route	The pipeline underbore would be located on Montgomery Road and trenching into Hebblewhite Place would occur to the north of the business. The business would be located within the local influence area to the west (mainly carparking area). There are likely to be impacts associated with noise and air quality, as well potential access impacts if alternative traffic arrangements/lane closures are required.
Rigg Place Plaza, Bonnyrigg	Pipeline route	The pipeline trench would cross Cabramatta Road West from the unnamed park and continue east on Cabramatta Road West. The trenching works would impact access to Riggs Place, with the local influence area encroaching on Rigg Place Plaza.
The Cake Merchant, Bonnyrigg	Pipeline route	The pipeline trench would be located on Cabramatta Road West outside of the business. The business would be located within the local influence area to the south and is likely to be impacted by visual, noise and air quality impacts. Access impacts would occur as the trenching works would be located across a portion of Riggs Place.
Choi Fook Events Centre, Bonnyrigg	Pipeline route	The pipeline trench would be located on Cabramatta Road West outside of the business. The business would be located within the local influence area to the south and is likely to be impacted by visual, noise and air quality impacts. Noise impacts are expected to impact the centre particularly during events/functions. Access impacts would occur as the trenching works would be located across the driveway access to the facility.
Moose Man Kebabs, Bonnyrigg	Pipeline route	The pipeline trench would be located on Cabramatta Road West outside of the business. The business would be located within the local influence area to the north and is likely to be impacted by visual, noise and air quality impacts. Access impacts may occur as a result of alternate traffic arrangements required on Cabramatta Road West.
MD Thai, Auto Mechanical, Bonnyrigg	Pipeline route	The pipeline trench would be located on Cabramatta Road West outside of the business. The business would be located within the local influence area to the north and is likely to be impacted by visual, noise and air quality impacts. Access impacts may occur as a result of alternate traffic arrangements required on Cabramatta Road West.

Business	Feature of the project	Relationship with the project/proposed design impact
Rose's Alterations, Bonnyrigg	Pipeline route	The pipeline trench would be located on Cabramatta Road West outside of the business. The business would be located within the local influence area to the north and is likely to be impacted by visual, noise and air quality impacts. Access impacts may occur as a result of alternate traffic arrangements required on Cabramatta Road West.
Mt Pritchard Auto Electrical, Mount Pritchard	Pipeline route	The pipeline trench would be located on Cabramatta Road West outside of the business. The business would be located within the local influence area to the south and is likely to be impacted by visual, noise and air quality impacts. Access impacts would occur as the trenching works would be located across the driveway access from Cabramatta Road West. An alternate access may be available via Meadows Road.
Mem's Tyre and Suspension Centre, Mount Pritchard	Pipeline route	The pipeline trench would be located on Cabramatta Road West outside of the business. The business would be located within the local influence area to the south and is likely to be impacted by visual, noise and air quality impacts. Access impacts would occur as the trenching works would be located across the driveway access from Cabramatta Road West. An alternate access may be available via Meadows Road.
Infinity Medical Centre, Cabramatta West	Pipeline route	The pipeline trench would be located on Cabramatta Road West and Meadows Road outside of the business. The business would be located within the local influence area to the west. The business is likely to be impacted by visual, noise and air quality impacts. Access impacts may occur as a result of alternate traffic arrangements required at the intersection of Cabramatta Road West and Meadows Road.
TAC Automotive, Cabramatta West	Pipeline route	The pipeline trench would be located on Meadows Road. The business would be located within the local influence area to the west. There are likely to be impacts associated with noise and air quality, as well potential access impacts if alternative traffic arrangements/lane closures are required.
Golden Smile Denture Clinic, Cabramatta West	Pipeline route	The pipeline trench would be located on Meadows Road outside of the business. The business would be located within the local influence area to the east. There are likely to be impacts associated with noise and air quality, as well potential access impacts as the trench crosses over the driveway access to the business.
Moonie Bridal – Wedding store	Pipeline route	The pipeline trench would be located on Edensor Road outside of the business. The business would be located within the local influence area to the south and is likely to be impacted by visual, noise and air quality impacts. Access impacts would occur as the trenching works would be located across the driveway access.

Business	Feature of the project	Relationship with the project/proposed design impact
Inspirations Paint, Cabramatta West	Pipeline route	The pipeline trench would be located on John Street outside of the business. The business would be located within the local influence area to the north and is likely to be impacted by visual, noise and air quality impacts. Access impacts may occur as a result of alternate traffic arrangements required on John Street and potentially High Street.
Bamboo Printing, Cabramatta West	Pipeline route	The pipeline trench would be located on John Street outside of the business. The business would be located within the local influence area to the north and is likely to be impacted by visual, noise and air quality impacts. Access impacts may occur as a result of alternate traffic arrangements required on John Street
Home Timber & Hardware, Cabramatta West	Pipeline route	The pipeline trench would be located on John Street outside of the business. The business would be located within the local influence area to the north and is likely to be impacted by visual, noise and air quality impacts. Access impacts may occur as a result of alternate traffic arrangements required on John Street
John Street Mechanical Repairs, Cabramatta West	Pipeline route	The pipeline trench would be located on John Street outside of the business. The business would be located within the local influence area to the north and is likely to be impacted by visual, noise and air quality impacts. Access impacts may occur as a result of alternate traffic arrangements required on John Street and potentially Satara Avenue.
Speedway Cabramatta, Cabramatta	Pipeline route	The pipeline trench would be located on John Street outside of the business. The business would be located within the local influence area to the north and is likely to be impacted by visual, noise and air quality impacts. Access impacts may occur as a result of alternate traffic arrangements required on John Street and potentially Satara Avenue.
Coles Express, Cabramatta	Pipeline route and some underboring	The pipeline trench would be located on John Street outside of the business. The business would be located within the local influence area to the south and is likely to be impacted by visual, noise and air quality impacts associated with the trenching works in this area. Access impacts may occur as a result of alternate traffic arrangements required on John Street, however underboring would occur at the intersection with John Street which may mitigate some impacts. .
Photogenic Studio – Photography studio, Cabramatta	Pipeline route	The pipeline trench would be located on John Street outside of the business. The business would be located within the local influence area to the north and is likely to be impacted by visual, noise and air quality impacts. Access impacts may occur as a result of alternate traffic arrangements required on John Street.

Business	Feature of the project	Relationship with the project/proposed design impact
Caltex Cabramatta, Cabramatta	Pipeline route	The pipeline trench would be located on John Street outside of the business. The business would be located within the local influence area to the south and is likely to be impacted by visual, noise and air quality impacts. Access impacts may occur as a result of alternate traffic arrangements required on John Street and Gladstone Street.
Angkor Grocery, Canley Heights	Pipeline route	The pipeline trench would be located on St John's Road directly outside of the business. The business would be located within the local influence area to the north and is likely to be impacted by visual, noise and air quality impacts. Access impacts may occur as a result of alternate traffic arrangements required.
Jimmy - Sydney Local Tutoring, Canley Vale	Pipeline route	The pipeline trench would be located on Bartley Street directly outside of the tutoring facility. The business would be located within the local influence area to the north and is likely to be impacted by visual, noise and air quality impacts. Access impacts may occur as a result of alternate traffic arrangements required.
Fire Trailers and Custom-made trailers – Trailer supply store, Canley Vale	Pipeline route and some underboring	The pipeline trench would be located on Curtin Street. Some underboring would be required to the west beneath the rail corridor. The businesses would be located within the local influence area to the north and is likely to be impacted by visual and air quality impacts. Although this business is located next to the rail corridor, it would still be subject to noise impacts. Access impacts may occur as a result of alternate traffic arrangements required.
BT Constructions - Home Builder in Canley Vale, Canley Vale	Pipeline route	The pipeline trench would be located on Chancery Street. The business would be located within the local influence area to the south and is likely to be impacted by visual, noise and air quality impacts. Access impacts may occur as a result of alternate traffic arrangements required.
Shell Coles Vales Point	Pipeline route	The pipeline trench would be located on Willowbank Crescent. The service station is located within the local influence area in the northern part of the property. There may be some noise impacts to this property as a result of construction.
Super Start Batteries, Lansvale	Pipeline route	The pipeline trench would be located on the Hume Highway, with the local influence area encroaching on the front part of the property. Access impacts may occur as a result of alternate traffic arrangements required.
Institch Design and Upholstery Sydney - Custom Made Commercial Furniture, Lansvale	Pipeline route	The pipeline trench would be located on the Hume Highway, with the local influence area encroaching on the front part of the property. Access impacts may occur as a result of alternate traffic arrangements required.

Business	Feature of the project	Relationship with the project/proposed design impact
JJ Auto Parts, Lansvale	Pipeline route	The pipeline trench would be located on the Hume Highway, with the local influence area encroaching on the front part of the property. Access impacts may occur as a result of alternate traffic arrangements required.
Blue Haven Pools and Spas, Lansvale	Pipeline route	The pipeline trench would be located on the Hume Highway, with the local influence area encroaching on the front part of the property. Access impacts may occur as a result of alternate traffic arrangements required.
7-Eleven Lansvale South, Lansvale	Pipeline route (with some underboring) and compound sites	The pipeline would be located beneath the Hume Highway (underboring), with the local influence area encroaching on the north eastern part of the property. Some noise impacts may occur as a result of trenching works within the reserve near the service station.