Upper South Creek Advanced Water Recycling Centre

Sydney WATER

Amendment Report

March 2022

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1 Executive Summary

Sydney Water is proposing to build and operate a project to provide wastewater services to support and enable the population growth and economic development of the Western Sydney Aerotropolis Growth Area (WSAGA or Aerotropolis), South West Growth Area (SWGA) and the new Western Sydney International Airport.

The project is critical State significant infrastructure (CSSI) and Sydney Water has prepared an Environmental Impact Statement (EIS) which was on public exhibition from 21 October to 17 November 2021.

This Amendment Report has been developed to assess seven minor amendments to the project as exhibited in the EIS. The amendments have arisen through Sydney Water's stakeholder consultation and ongoing project design.

The proposed amendments include minor realignments of the treated water pipeline and the brine pipeline and a change to the AWRC site boundary. These are shown in Table 1-1 below with an explanation about why the amendments are needed and potential impacts. All impacts only apply to the construction phase. Where additional impacts occur, they are minor and do not change the significance of impacts assessed in the EIS. None of these amendments directly impact any additional landowners beyond those already impacted by the project described in the EIS.

Table 1-1 Summary of impacts of the amended project

Project amendment	Why amendments are needed	Changes to potential impacts in the EIS
Treated water pipeline alignment at the intersection of The Northern Road and Elizabeth Drive (The Northern Road realignment	Responds to consultation with Transport for NSW (TfNSW) about accommodating the new The Northern Road and Elizabeth Drive alignments. TfNSW suggested using the cul-de-sac off the new Elizabeth Drive corridor. Responds to consultation with a landowner who requested an amendment to the alignment. The use of the cul-de-sac means that only one crossing of a major TfNSW road is required.	• No change in impacts for waterways, flood, surface water, groundwater, soils and contamination, air quality, human health and hazards, sustainability and resource management and adjacent infrastructure. • Minor increase in direct impacts to biodiversity values. No change in impact significance. Negligible increase to indirect and residual impacts. • Minor increase in impacts to Aboriginal heritage resulting from an increase in impact area however no change in the impact significance. • Minor increase in temporary noise impacts to existing receivers closer to the alignment off Elizabeth Drive. • Minor changes to visual impacts to existing receivers closer to the alignment off Elizabeth Drive but no change in impact significance. • Reduced impacts to adjacent infrastructure with the alignment avoiding impacts to the road pavement of The Northern Road and adjacent landscaping.

Project amendment	Why amendments are needed	Changes to potential impacts in the EIS
Treated water and brine pipeline alignments at the crossing of the M12 Motorway south of the Advanced Water Recycling Centre (AWRC) (M12 Motorway crossing)	Responds to consultation with M12 Motorway team. Avoids M12 Motorway detention basin. Minimises potential impacts to M12 Motorway abutments from Sydney Water's tunnelling activities.	• No change in impacts for waterways, flood, surface water, groundwater, soils and contamination, non-Aboriginal heritage, air quality, noise, visual, human health and hazards, socio economic, sustainability and resource management and adjacent infrastructure. • Minor increase in direct impacts to biodiversity values. Negligible increase to indirect and residual impacts. • Minor increase in impacts to Aboriginal heritage resulting from an increase in impact area however no change in the impact significance. • Minimisation of impacts on future adjacent infrastructure including the M12 Motorway detention basins.
Brine pipeline alignment at the crossing of Kemps Creek (Kemps Creek realignment)	Minimises vegetation removal. Responds to landowner concerns on development potential and avoids this property (Lot 11 DP1146142). Responds to Liverpool Council request to consider the use of the existing pipeline corridor.	• No change in impacts for flood, groundwater, soils and contamination, non-Aboriginal heritage, air quality, noise, human health and hazards, sustainability and resource management and adjacent infrastructure. • Reduced geomorphic impacts to Kemps Creek, and direct and indirect aquatic ecology impacts resulting from reduced potential for erosion and sedimentation of the waterway. • Reduction in direct impacts to biodiversity values. Negligible increase to indirect and residual impacts.

Project amendment	Why amendments are needed	Changes to potential impacts in the EIS
		• Reduced surface water impacts resulting from reduced potential for erosion and sediments entering the waterway. • No change to flooding impacts from those identified in the EIS. • Reduction in potential for presence of subsurface artefacts and therefore reduction in risk to Aboriginal heritage. • Reduced landscape character and visual impacts because of minimised vegetation removal
Treated water and brine pipeline alignments along South Creek (South Creek realignment)	Allows for sufficient clearance from South Creek for future pipelines in this area.	• No change in impacts for waterways, flood, groundwater, soils and contaminations, non-Aboriginal heritage, Aboriginal heritage, air quality, noise, human health and hazards, socio economic, sustainability and resource management and adjacent infrastructure. • Reduction in direct impacts to biodiversity values. Negligible increase to indirect and residual impacts. • No change to flooding impacts from those identified in the EIS. • No change to Aboriginal heritage impacts from those identified in the EIS.

Project amendment	Why amendments are needed	Changes to potential impacts in the EIS
Brine pipeline alignment through the Western Sydney Parklands (Western Sydney Parklands realignment)	Responds to consultation with Western Sydney Parklands. Avoids impacts associated with digging up the newly paved road and landscaping. Avoids impacts to the fence located next to the Wylde mountain bike track and Sydney International Shooting Centre.	• No change in impacts for waterways, flood, surface water, groundwater, soils and contamination, non-Aboriginal heritage, Aboriginal heritage, air quality, noise, human health and hazards, socio economic, sustainability and resource management and adjacent infrastructure • Reduction in direct impacts to biodiversity values. Negligible increase to indirect and residual impacts. • No change to Aboriginal heritage impacts from those identified in the EIS. • Minimisation of impacts on adjacent infrastructure.
Brine pipeline alignment at Cabramatta (Bartley Street realignment)	Responds to consultation with Fairfield City Council who raised concerns over the use of Cabravale Memorial Park.	• No change in impacts for waterways, terrestrial biodiversity flood, surface water, groundwater, soils and contamination, Aboriginal heritage, air quality, human health and hazards, sustainability and resource management and adjacent infrastructure. • Avoided and minimised impacts to non-Aboriginal heritage associated with the bandstand in Cabravale Memorial Park. • Avoidance of direct impacts to biodiversity values. Negligible increase to indirect and residual impacts. • Reduced noise and air quality impacts to existing receivers off Bartley Street and Curtin Street.

Project amendment	Why amendments are needed	Changes to potential impacts in the EIS
		• Minor increase in temporary noise and vibration and air quality impacts to existing receivers (Cabravale Diggers Club) off Bartley Street. • Minor increase in temporary noise and vibration and air quality impacts for new receivers off Cumberland Street. • Increase in impacts to residential receivers that may now be affected by night-time noise levels associated with drilling within the tunnelling compound. • Reduced impacts to landscape character and visual associated with Cabravale Memorial Park no longer being used as a construction compound. • No changes to potential traffic and transport impacts however the impacts relate to different local roads. Minor increase in significance of impact relating to the full closure of sections of roads. • Temporary impacts to parking during construction parking associated with the road closure of Bartley Street and the use of Cabravale Leisure Centre carpark. • Some socio-economic impacts related to amenity for residents, businesses and places of worship on the east side of the railway. Overall, however, beneficial impacts from avoiding use of Cabravale Memorial Park. • Potential impacts to below ground services.

Project amendment	Why amendments are needed	Changes to potential impacts in the EIS
AWRC site boundary amendment (AWRC site boundary change)	Responds to consultation with University of Sydney who raised concerns over long term east-west access between its Fleurs East and Fleurs West sites.	• No change in impacts for waterways, flood, groundwater, soils and contaminations, non-Aboriginal heritage, air quality, noise, human health and hazards, socio economic, sustainability and resource management and adjacent infrastructure. • Minor reduction in impacts to biodiversity. • Minor reduction in impacts to Aboriginal heritage.

The impacts can be managed with minor changes to five existing management measures in the EIS. The amendments have also triggered removal of one management measure about managing heritage impacts at Cabravale Memorial Park given this park will no longer be impacted, and the addition of one new measure to consult with the Cabravale Diggers Club. The changes to impacts on ecological communities, flora and fauna also reduce the project's biodiversity offset requirements.

In addition, several management measures relating to bushfire risk have been amended to be consistent with Sydney Water and Rural Fire Service (RFS) policy.

While some of the amendments outlined in this report are a response to consultation with various stakeholders, and have been formally raised in submissions to the EIS, this report is not a formal response to submissions and does not include responses to submissions generally. A Submissions Report is being prepared by Sydney Water and will be submitted separately to the Department of Planning and Environment (DPE).

2 Introduction

This chapter provides an overview of the Upper South Creek Advanced Water Recycling Centre project as described in the Environmental Impact Statement (EIS). It also provides an overview of the proposed amendments to the project.

2.1 The project

Western Sydney is growing and wastewater services are needed by 2025 to enable population growth and economic development of the Western Sydney Aerotropolis Growth Area (WSAGA or Aerotropolis), South West Growth Area (SWGA) and the new Western Sydney International Airport. Sydney Water's wastewater servicing area for this catchment is known as the Upper South Creek Servicing Area. It includes already established suburbs such as Oran Park and Leppington, and the new precincts of Bradfield and the Northern Gateway.

Sydney Water is proposing to build and operate a project to provide wastewater services to this area. The project will comprise:

- a new Advanced Water Recycling Centre (AWRC) to collect wastewater from businesses and homes and treat it, producing high-quality treated water, renewable energy and biosolids for beneficial reuse
- a new green space area around the AWRC, adjacent to South Creek and Kemps Creek, to support the ongoing development of a green spine through Western Sydney
- new infrastructure from the AWRC to South Creek, to release excess treated water during significant wet weather events, estimated to occur about 3 – 14 days each year
- a new treated water pipeline from the AWRC to Nepean River at Wallacia Weir, to release high-quality treated water to the river during normal weather conditions
- a new environmental flows pipeline from Wallacia to the Warragamba River, to release high-quality treated water to the river just below the Warragamba Dam
- a new brine pipeline from the AWRC connecting into Sydney Water's existing wastewater system to transport brine to the Malabar Wastewater Treatment Plant
- a range of ancillary infrastructure.

Figure 2-1 shows the project elements, including the amendments described in this report.

The AWRC will likely be delivered in several stages as a response to growth in the Upper South Creek Servicing Area. Stage 1 of the project includes:

- building and operating the AWRC to treat an average dry weather flow of up to 50 million litres per day (megalitres per day or ML/day)
- building all pipelines to cater for up to 100 ML/day flow at the AWRC (but only operating them to transport and release volumes produced by the Stage 1).

Future stages will only require an expansion of the AWRC and current growth projections suggest the ultimate capacity of the AWRC could be up to 100 ML/day. Sydney Water is seeking approval to build and operate Stage 1 and approval for the overall concept of the AWRC operating at up to 100 ML/day as part of the staged approval.

2.2 Approval process to date

Sydney Water has undertaken the following steps as part of the approval process for the project:

- Preparation of a scoping report and submission to the Department of Planning Industry and Environment (now the Department of Planning and Environment (DPE)).
- Development of a reference design including early stakeholder engagement to refine the concept and scope.
- Ongoing community and stakeholder engagement.
- Preparation and submission of an EIS for the project which was on public exhibition from 21 October to 17 November 2021.

The EIS addressed DPE's Secretary's Environmental Assessment Requirements (SEARs). The SEARs were first issued in August 2020 and re-issued in January 2021 to include assessment requirements for Matters of National Environmental Significance (MNES) and approval requirements under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). DPE has also requested Sydney Water submit a Submissions Report, which Sydney Water is currently preparing.

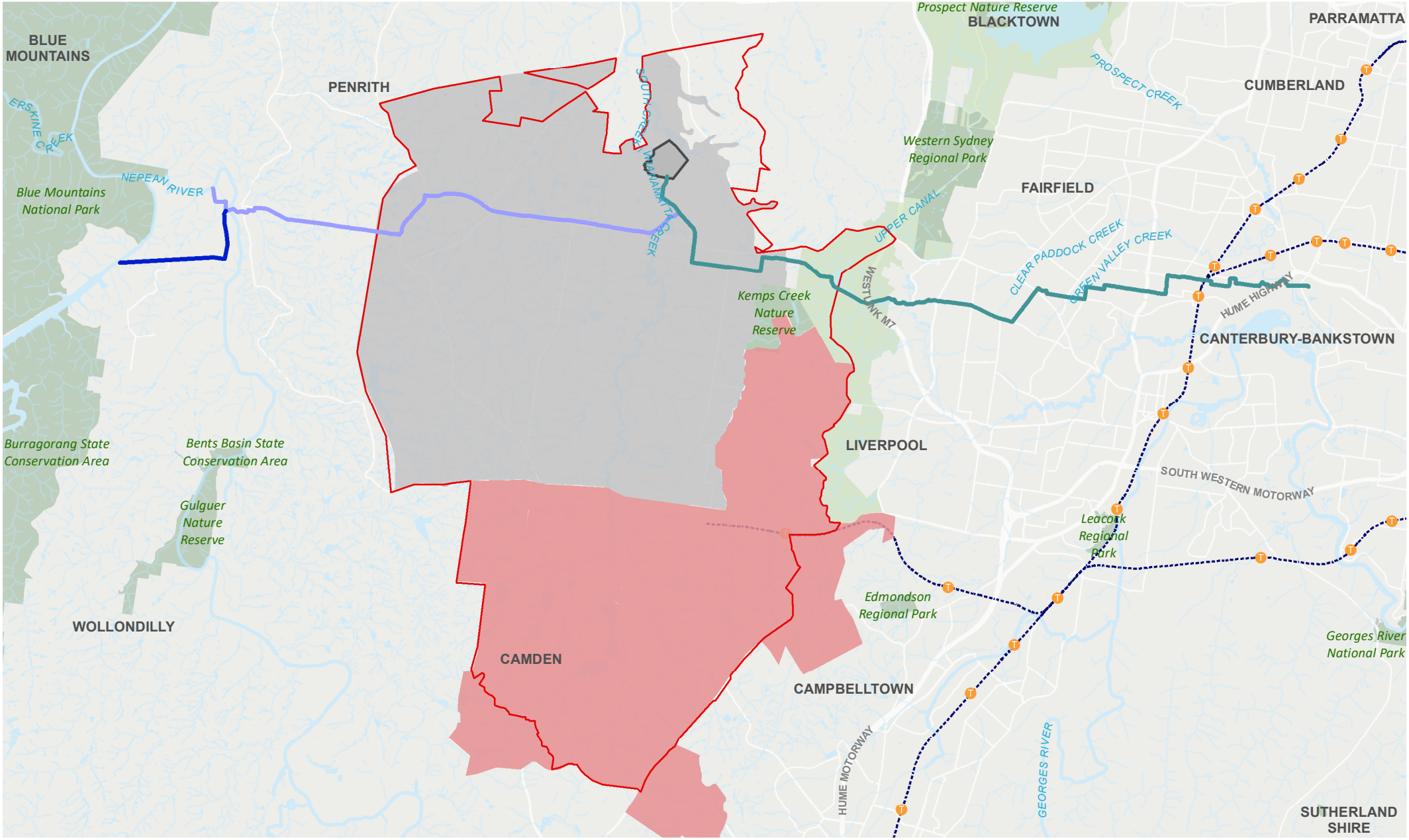


Figure 2-1 Project and servicing area

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

2.3 Ongoing approval process

Some of the amendments outlined in this report are a response to consultation with various stakeholders during EIS preparation, and which they have formally raised in their submissions to the EIS. This report is not a formal response to submissions and does not include responses to submissions generally. Sydney Water is preparing a Submissions Report to respond to matters raised in submissions received during public exhibition. Project amendments can be included in a Submissions Report or submitted separately. Sydney Water has kept these documents separate as DPE has indicated the Amendment Report will be placed on public exhibition. The Submissions Report and this Amendment Report are both public documents and inform DPE's assessment of the application as a whole. Figure 2-2 shows the key steps in the approval process for the project.

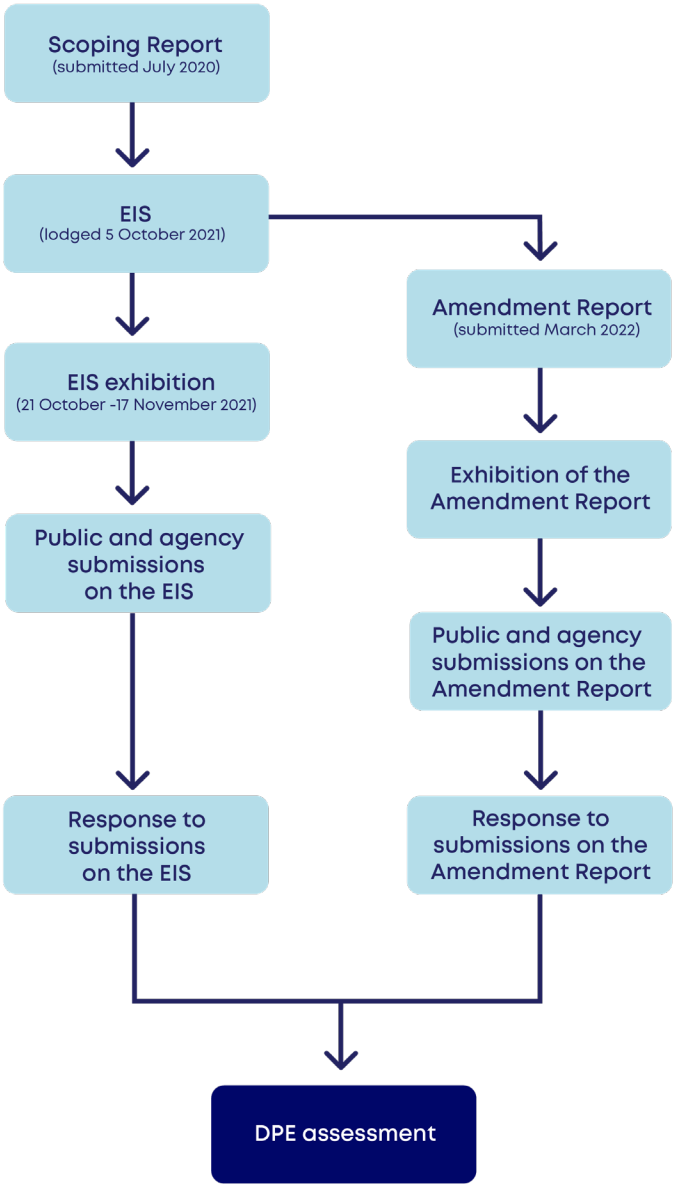


Figure 2-2 Project approval process

2.4 Need for this Amendment Report

In response to stakeholder consultation and further design development as the approvals process has progressed, Sydney Water proposes several amendments to the project presented in the EIS. These amendments are changes to alignment of the treated water and brine pipelines in six locations, and a change to the boundary of the AWRC site.

Under clause 179(2) of the Environmental Planning and Assessment (EP&A) Regulation 2021, an application for approval for State significant infrastructure (SSI) may be amended or varied with the approval of the Planning Secretary, before the application is determined.

This report presents the proposed amendments to the project and assesses their impacts. In accordance with clause 179(4) of the EP&A Regulation, Sydney Water has prepared this Amendment Report having regard to the State Significant Infrastructure Guidelines, particularly Chapter 8 of the State Significant Infrastructure Guidelines and Appendix D of that guideline - Preparing an Amendment Report (DPIE, 2021a).

2.5 Connection with the Environmental Impact Statement

This report is designed to be a stand-alone report which draws relevant information from the EIS. It focuses on content relevant to the proposed project amendments. Where applicable and required by the State Significant Infrastructure Guidelines (DPIE, 2021a), information from the EIS is replicated in this report and amended if needed. The key sections of the EIS amended by this report are:

- Chapter 2 - strategic context. Chapter 3 of this report discusses changes to the strategic context since the exhibition of the EIS and how the project aligns with these.
- Chapter 4 - project description. Chapter 4 of this report describes the proposed amendments and Appendix A includes an amended project description.
- Chapter 5 - statutory context. Chapter 5 of this report considers whether the project's statutory context has changed as a result of the proposed amendments.
- Chapter 6 – stakeholder and community engagement. Chapter 6 of this report outlines consultation specific to the proposed amendments.
- Chapters 8-13 - assessment of impacts. Chapter 7 of this report describes the potential impacts of the proposed amendments and changes in impacts (if any) to those presented in the EIS.
- Chapter 15 – project synthesis. Chapter 8 of this report identifies any changes to the management measures described in the EIS required to effectively manage the proposed amendments and Chapter 9 includes a justification of the amended project.

2.6 Overview of the proposed amendments

The proposed amendments are minor realignments of the treated water pipeline and brine pipeline, in six locations and a change to the AWRC site boundary. These changes are a result of stakeholder engagement and further development of project design. None of these amendments directly impact any additional landowners beyond those already impacted by the project described in the EIS. The changes relate only to Stage 1 of the project, and aside from the AWRC site boundary change, no changes are proposed to the overall concept. No changes are proposed to the environmental flows pipeline.

Table 2-1 summarises the proposed amendments, with more detail included in Chapter 4.

Table 2-1 Summary of proposed amendments

Project element	Summary of project in EIS	Summary of amendments to project
Treated water pipeline – The Northern Road crossing Figure 4-1 shows this amendment	• Alignment located along the northern side of the Elizabeth Drive corridor, crosses Elizabeth Drive and The Northern Road then continues south towards Park Road. • Two trenchless sections: Elizabeth Drive and The Northern Road. • Construction access from existing access road off The Northern Road.	• Alignment follows the northern side of Elizabeth Drive cul-de-sac before crossing The Northern Road and continues south towards Park Road. The pipeline does not cross under Elizabeth Drive. • One trenchless section: Under The Northern Road. • Impact area extended to include area to the west of The Northern Road.
Treated water and brine pipeline - M12 Motorway crossing Figure 4-2 shows this amendment	• Alignment located south from the AWRC under the M12 Motorway then continues south generally following South Creek. • One trenchless section: From the AWRC under the M12 Motorway.	• Alignment moved so pipelines connect with the AWRC slightly to the east. • Trenchless section will be replaced by installing pipes through concrete casing pipes located under the M12 Motorway abutments.
Brine pipeline - Kemps Creek realignment Figure 4-3 shows this amendment	• From the end of Cross Street, alignment continues north east across bushland then along the northern boundary of Brandown Quarry. • Crosses Kemps Creek and a tributary of Kemps Creek near Cross Street.	• Alignment follows corridor where Sydney Water has recently installed another pipeline. • Crosses Kemps Creek and the tributary slightly upstream of crossing locations shown in the EIS.
Treated water and brine pipeline - South Creek realignment Figure 4-4 shows this amendment	• Alignment located south of the AWRC within an access road that runs close to South Creek.	• Alignment moved slightly to the north east outside the access road and further from South Creek.

Project element	Summary of project in EIS	Summary of amendments to project
Brine pipeline - Western Sydney Parklands realignment. Figure 4-5 shows this amendment.	• Alignment follows Range Road then an unpaved access track through Western Sydney Parklands towards the Upper Canal.	• Alignment moved slightly south away from the new paved road and fence that borders the Wylde mountain bike track and Sydney International Shooting Centre.
Brine pipeline - Bartley Street realignment. Figure 4-6 shows this amendment.	• Alignment follows Bartley Street within the road corridor, crosses Cabravale Memorial Park, is tunnelled underneath the railway line and continues along Curtin Street. • One trenchless section: From Cabravale Memorial Park under railway line and exiting in Curtin Street. • Cabravale Memorial Park to be used as a construction compound and tunnelling launch site. • Construction access off Railway Parade.	• Alignment continues to the end of Bartley Street at the junction of Railway Parade, crosses under the railway line, and continues to Cabravale Leisure Centre car park. • Alignment continues along Cumberland Street to the junction of Curtin Street then continues east along Curtin Street. • One trenchless section: From the Cabravale Leisure Centre car park, under the railway line to Bartley Street slightly north of the previous location. • Cabravale Leisure Centre car park will replace Cabravale Memorial Park as a construction compound. • Construction access to the Cabravale Leisure Centre compound will be via Cumberland and Curtin Streets.

Project element	Summary of project in EIS	Summary of amendments to project
AWRC site boundary change – Figure 4-7 shows this amendment.	• Figure 4-16 of the EIS shows the AWRC site boundary.	• The land no longer part of the AWRC site includes: – part of Lot 21/DP258414 which is currently in private ownership and in the future may become a public road – part of Lot 104, DP 1271336 which forms part of the M12 Motorway corridor. • The construction footprint for the AWRC site is slightly smaller without the portion which forms part of the M12 Motorway corridor. The construction area will still extend into Lot 21/DP258414 (to become Lot 212/DP 1272676) on the southern side to allow for construction laydown and storage. The release to South Creek is also on this land.

3 Strategic context

This chapter summarises the strategic context for the project as presented in Chapter 2 of the Environmental Impact Statement (EIS). The proposed amendments do not change how the project aligns to this strategic context.

3.1 Summary of strategic context in the EIS

3.1.1 Economic development

The Western Sydney City Deal captures and describes the support by the Commonwealth and NSW Governments and eight Western Sydney local councils, for the development of urban communities in Western Sydney. The Western Sydney City Deal is a planning, investment and delivery partnership which defines a series of development priorities and the projects which underpin them. It recognises how critical Western Sydney's development is for the economic development of the region, city, state and country. The delivery of wastewater services, as described in this project will directly support the City Deal's commitments to build 184,500 new houses and create 200,000 new jobs over the next 20 years.

Focusing broadly on infrastructure priorities, the NSW State Infrastructure Strategy (SIS) sets out the NSW Government's infrastructure priorities for the next 20 years. Its vision for the Western Parkland City is focused on creating jobs, a highly-skilled workforce and an innovation economy. Of particular note to this project, is that the SIS recognises the need to ensure flexible and adaptable wastewater systems, that are resilient to climate change and leverage developments in contemporary wastewater treatment for energy generation, nutrient removal and resource recovery. The project considered in the EIS will achieve those intended outcomes.

In addition, the SIS emphasises the importance of ensuring coordinated infrastructure development, where all infrastructure is developed in a managed way and aligns with user and consumer needs.

The Greater Sydney Region Plan and Western Sydney District Plan outline a vision for the Western Parkland City, which focuses on delivering outcomes by adopting a landscape-led approach. This vision seeks to create quality places for the community, keeping water resources in the catchment to support greening and reduce heat island effects and values Aboriginal and non-Aboriginal heritage. The Region and District Plans also recognise the imperative for the Western Parkland City to maximise productivity, liveability and sustainability for the region. In addition, the spine of South Creek is critical in providing new cool and green neighbourhoods and centres in a parkland setting, and the green space in non-operational areas of the AWRC site will contribute to this blue-green infrastructure along South Creek. There are also opportunities to use recycled water produced by the AWRC to contribute to cooling and greening in the Parkland City.

3.1.2 Supporting growth areas

The AWRC will be located in the Western Sydney Aerotropolis Growth Area (WSAGA) and will support proposed developments there and in the SWGA. Both the WSAGA and SWGA will be built around the new global gateway of Western Sydney International Airport and contribute to diverse housing types and a significant increase in jobs for Western Sydney. The project aligns with the key planning documents that support the development of the WSAGA, including the Western Sydney Aerotropolis Plan, Draft Precinct Plan and Phase 1 Development Control Plan.

The SWGA has been established longer than the WSAGA, and includes established suburbs such as Oran Park, Turner Road, Austral and Leppington North. DPE is now leading strategic planning for the remainder of the SWGA, before developing plans for rezoning. Sydney Water provides wastewater services to those established suburbs through connections to the existing water recycling plants in Liverpool and West Camden. The project is designed to redirect some of these connections to the AWRC and then service the future precincts.

3.1.3 Water resilience and environment protection

In 2001, the Hawkesbury-Nepean Statement of Joint Intent recorded the commitment of NSW Government, local councils and Sydney Water to protect the health of the Hawkesbury-Nepean river system, including Nepean and Warragamba Rivers and South Creek. In addition to a range of other matters, the commitment encouraged using treated wastewater to contribute to environmental flows, as this project proposes. In support of the commitment, the NSW Environment Protection Authority (EPA) developed a regulatory framework to reduce nutrient loads from wastewater treatment in the system, which is a key driver for inclusion of advanced wastewater treatment at the AWRC.

In 2017, the NSW Government developed the most recent Metropolitan Water Plan for Sydney to ensure that Sydney's long-term water needs will be met. The NSW Government is now developing the Greater Sydney Water Strategy (GSWS), and recently released a draft for public comment, which is closely focused on how to augment and increase Sydney's water supplies in the face of climate change and growing populations. Treated water produced by the AWRC can be used for a range of purposes to support these strategies for water resilience in Greater Sydney. This includes environmental flows, use in residences, business, industry, agriculture and irrigation of open space.

There are also a series of other plans, more specific to the protection of water resources and biodiversity, against which the project has been assessed as part of the EIS. These are outlined in sections 2.8 to 2.11 of the EIS and include plans such as the draft Cumberland Plain Conservation Plan and the Growth Centres strategic biodiversity assessment.

3.1.4 Sydney Water plans and policies

In support of these government policies and aspirations, Sydney Water developed the Western Sydney Regional Master Plan, with significant consultation across government. The Plan identified the opportunity to manage water and wastewater in Western Sydney in a more integrated way to deliver on the vision of a green and blue Western Parkland City. It also identified that increasing water recycling would deliver more economic value and enable opportunities for water reuse and for the circular economy. The project forms a part of delivering the Master Plan's flexible, adaptive, and high-value pathways for whole-of-community benefits.

In addition, Sydney Water's Environmental Policy outlines the commitment to protect, restore and enhance the natural environment, with commitments to:

- having no net impact from discharges to the air, water, or land
- maximising resource value and supporting a circular economy by responsibly managing energy, water and materials, and minimising waste creation
- managing the entire integrated water cycle in the catchment, including capturing, treating, distributing drinking water and collecting, treating and releasing wastewater
- protecting, restoring and enhancing natural and cultural heritage assets
- social responsibility by having at the forefront the wellbeing of the community to improve overall environmental performance.

This policy has informed design decisions for the project and Sydney Water's approach to managing impacts.

3.1.5 Changes to the strategic context

The proposed amendments are minor changes to the alignment of the treated water and brine pipelines and AWRC site boundary and do not change the project's overall contribution to key Commonwealth, NSW and local government strategies described above. The proposed amendments represent a minor improvement in how the project aligns with several strategies outlined in Chapter 2 of the EIS:

- Western Sydney Parklands (section 2.6.6 of the EIS). A minor change to the brine pipeline alignment along Range Road in consultation with Greater Sydney Parklands reduces the project's impact on new infrastructure recently built in Western Sydney Parklands.
- Growth Centres strategic biodiversity assessment (section 2.10.2 of the EIS). By relocating the brine pipeline into cleared areas around Kemps Creek, the proposed amendment reduces the amount of native vegetation to be removed in non-certified areas under this strategic biodiversity assessment. Chapter 7 describes the extent of reduced impact in more detail.
- Alignment with other major projects (section 2.13 of the EIS). The proposed amendment of the brine and treated water pipeline alignment at the M12 Motorway crossing has been identified to minimise impacts on the M12 Motorway project.

4 Proposed amendments

This chapter describes the proposed amendments to the project. The proposed amendments are changes to the treated water and brine pipeline alignments in six locations, and a change to the boundary of the Advanced Water Recycling Centre (AWRC) site. No changes are proposed to the overall project concept, or to the environmental flows pipeline.

4.1 Introduction

This chapter provides a detailed description of the proposed amendments. These amendments have resulted from ongoing detailed design, and amendments requested by some stakeholders during Environmental Impact Statement (EIS) preparation. Appendix A incorporates these amendments into a revised project description, to replace Chapter 4 of the EIS. Some of the amendments requested by stakeholders have been formally raised in their submissions on the EIS. However, this report is not a formal response to submissions and does not include responses to submissions generally. Other amendments suggested in submissions, but which Sydney Water cannot accommodate, will be addressed in the Submissions Report. Sydney Water is currently preparing the Submissions Report and will submit this separately to the Department of Planning and Environment (DPE).

4.2 The Northern Road realignment – treated water pipeline

4.2.1 Design proposed in the EIS

The area where alignment changes are proposed is in the Penrith City local government area (LGA) and is shown in Figure 4-17d of the EIS and in Figure 4-1 of this report. In this location, as described in the EIS, the treated water pipeline runs along the northern side of Elizabeth Drive, outside the current road verge, in an area that will be adjacent to Elizabeth Drive once it is widened. The treated water pipeline then crosses under Elizabeth Drive and under The Northern Road, and continues south along The Northern Road towards Park Road.

4.2.2 Design changes

Figure 4-1 shows the proposed realignment of the treated water pipeline around The Northern Road. Figure 4-17 in Appendix A provides an updated construction area of the entire project as part of the project description.

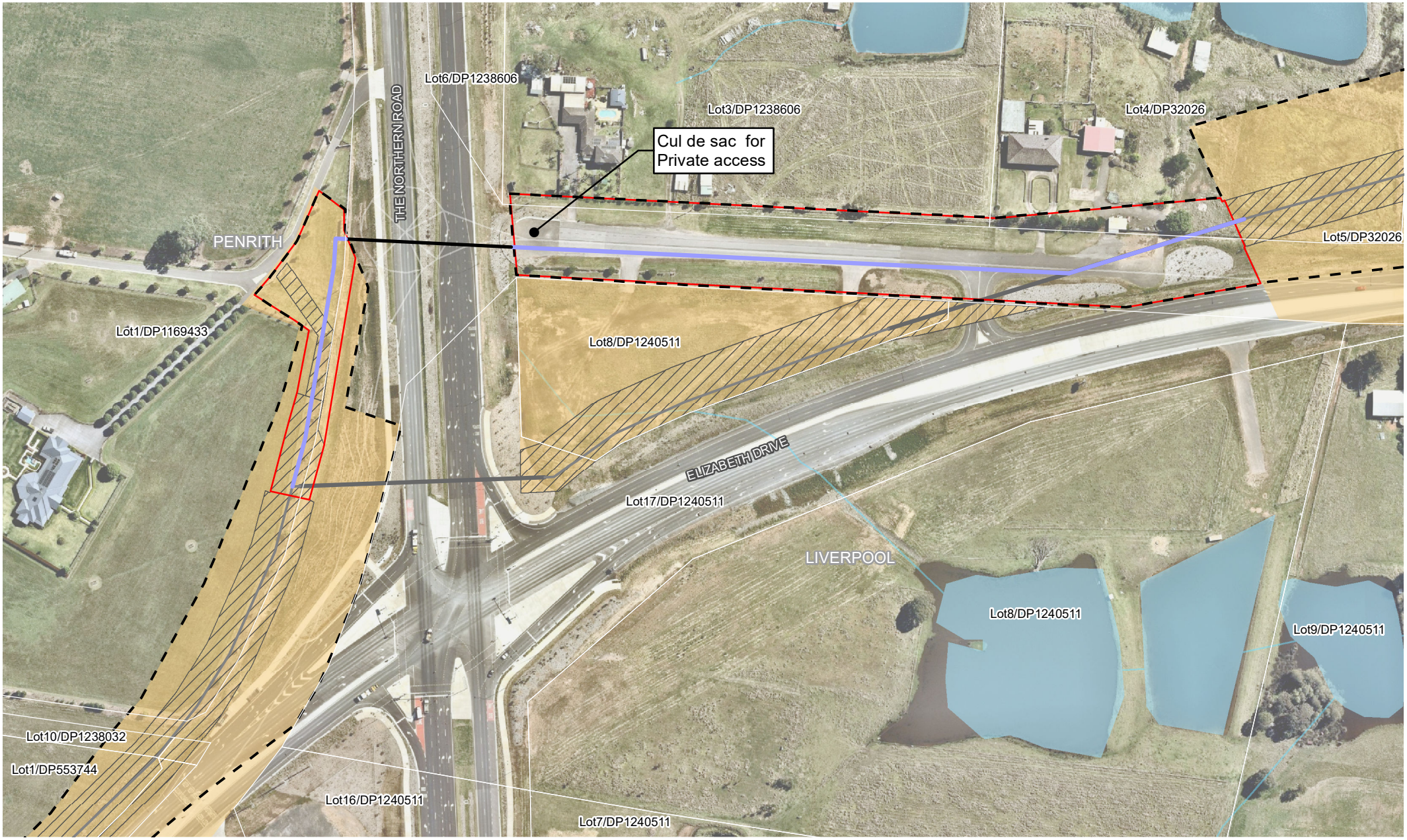
- This amendment responds to consultation with Transport for NSW (TfNSW) about accommodating the new The Northern Road and Elizabeth Drive alignments. It also responds to consultation with a landowner who requested an amendment to the alignment.

The amendment better aligns with recent TfNSW upgrades and designs for Elizabeth Drive and The Northern Road and uses the cul-de-sac access off Elizabeth Drive so that crossing of Elizabeth Drive is not required. The crossing under The Northern Road remains but is further north and further from the Elizabeth Drive intersection. From the western side of The Northern Road the pipeline then re-joins the alignment described in the EIS about 130 m south of the crossing under The Northern Road.

4.2.3 Construction changes

Figure 4-1 also shows changes to the construction footprint associated with the amendment. As described in Chapter 4 of the EIS, construction will occur within the impact area. The location of the impact area has changed to follow the pipeline realignment.

The proposed amendment does not require any changes to construction methodology described in Chapter 4 of the EIS, including construction techniques, construction schedule, construction hours and construction traffic and access.



EIS

- Impact assessment area in EIS
- Impact area in EIS
- Pipeline alignment in EIS
- Tunnelled alignment in EIS

Amendments

- Amended treated water pipeline alignment
- Amended tunnelled alignment
- Amended impact assessment area
- Amended impact area
- Waterbody

1:2,500

0 50 100 m

Figure 4-1 The Northern Road realignment

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

4.3 M12 Motorway crossing – treated water and brine pipeline

4.3.1 Design proposed in the EIS

The area where alignment changes are proposed is in the Penrith City LGA and is shown in Figure 4-17g of the EIS and in Figure 4-2 of this report. The treated water and brine pipelines run from the AWRC site under the proposed M12 Motorway then continue south in a shared corridor, generally following South Creek. A scour valve to South Creek is proposed just south of the AWRC site.

4.3.2 Design changes

Figure 4-2 shows the proposed realignment of the treated water and brine pipelines at the M12 Motorway crossing. Figure 4-17 in Appendix A provides an updated construction area of the entire project as part of the project description.

This amendment responds to consultation with M12 Motorway team about avoiding detention basins and abutments associated with the M12 Motorway.

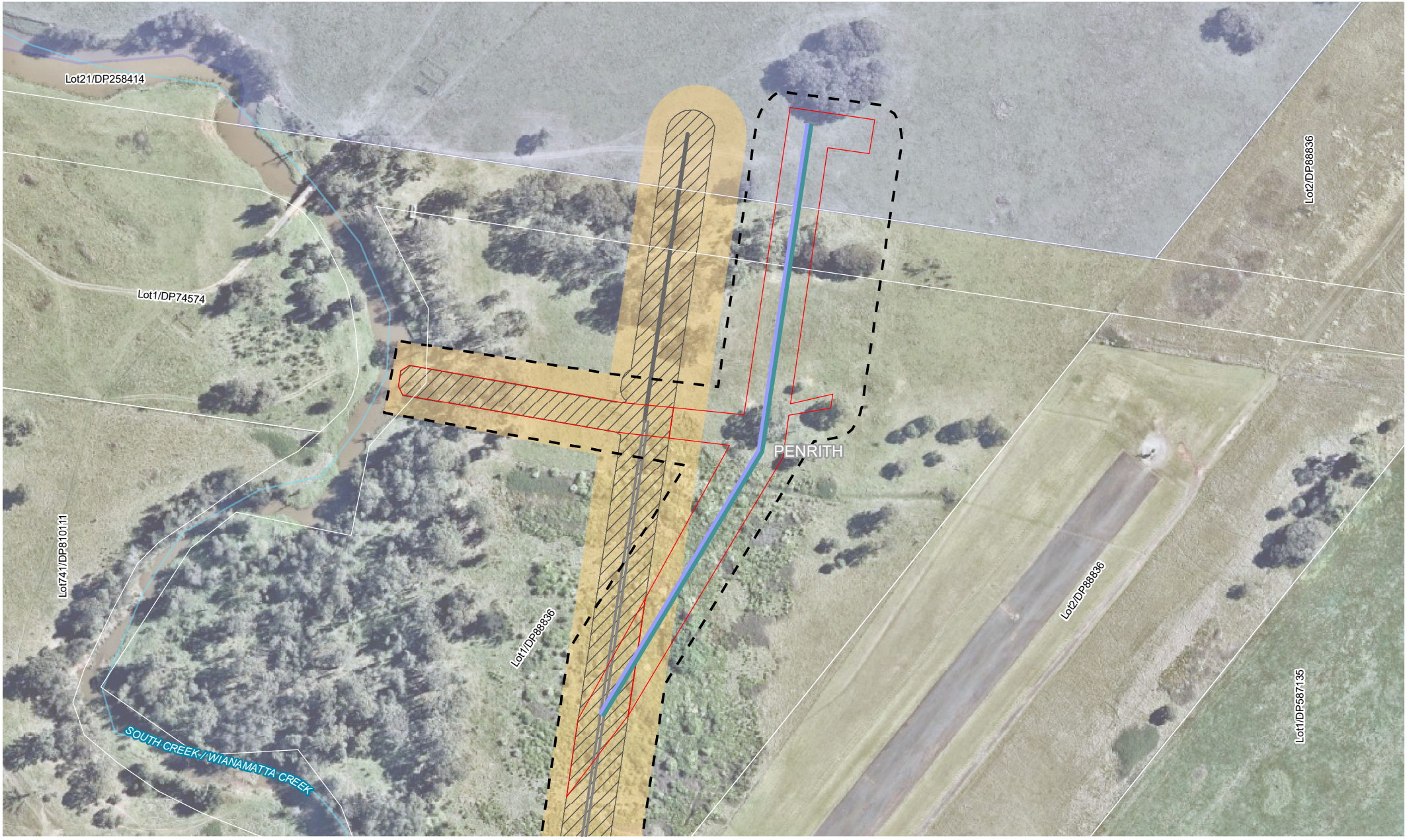
About 310 m of the treated water and brine pipelines will be moved about 50 m east of the location shown in the EIS, to avoid a proposed M12 Motorway detention basin. The pipelines will then run south in a shared corridor and re-join the alignment shown in the EIS just south of the AWRC. The scour valve discharging to South Creek will connect to the amended pipeline but the discharge location remains unchanged from that shown in the EIS.

4.3.3 Construction changes

Figure 4-2 also shows changes to the construction footprint associated with the amendment. As described in Chapter 4 of the EIS, construction will occur within the impact area. The location of the impact area has changed to follow the pipeline realignment.

Sydney Water will coordinate with TfNSW during detailed design to confirm the construction approach and methodology for laying pipelines under the M12 Motorway. This may include TfNSW installing concrete encasements for the brine and treated water pipelines as they are building the M12 Motorway and Sydney Water installing the pipelines through those encasements at a later date.

The proposed amendment does not require any other changes to construction methodology described in Chapter 4 of the EIS, including construction techniques, construction schedule, construction hours and construction traffic and access.



EIS

- Advanced Water Recycling Centre in EIS
- Impact assessment area in EIS
- Impact area in EIS
- Pipeline alignment in EIS
- Tunnelled alignment in EIS

Amendments

- Amended treated water pipeline alignment
- Amended brine pipeline
- Amended impact assessment area
- Amended impact area
- Watercourse

1:2,500

0 50 100 m

Figure 4-2 M12 Motorway crossing realignment

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

4.4 Kemps Creek realignment – brine pipeline

4.4.1 Design proposed in the EIS

The area where alignment changes are proposed is in the Liverpool City LGA and is shown in Figure 4-17h of the EIS and in Figure 4-3 of this report. The brine pipeline runs from the end of Cross Street and continues northeast across bushland then along the northern boundary of Brandown Quarry. The brine pipeline crosses Kemps Creek just east of Cross Street.

4.4.2 Design changes

Figure 4-3 shows the proposed realignment of the treated water pipeline around Kemps Creek. Figure 4-17 in Appendix A provides an updated construction area of the entire project as part of the project description.

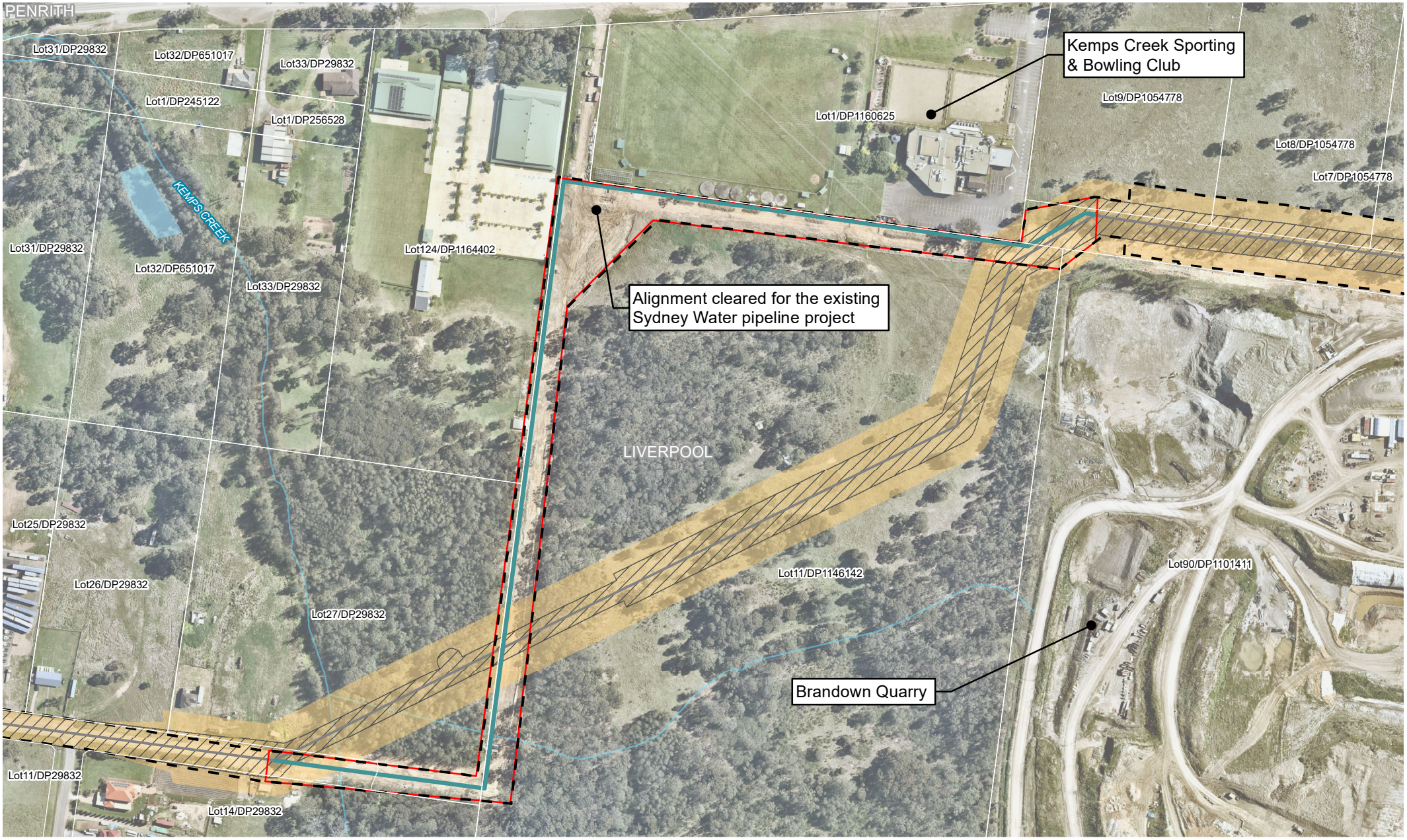
- This amendment responds to landowner concerns about development potential and avoids this property (Lot 11 DP1146142). It also responds to Liverpool Council's request to consider the use of the existing pipeline corridor to minimise impacts to vegetation in an area that has been identified as a future reserve.

The proposed amendment will use an existing Sydney Water pipeline corridor from the end of Cross Street to the northern boundary of Brandown Quarry. The proposed realignment will follow that pipeline corridor which crosses Kemps Creek, runs along the eastern and northern edges of Lot 11/DP 114614 and re-joins the alignment shown the EIS on the northern boundary of Brandown Quarry. Given that the other Sydney Water pipeline is already constructed, the area within which the proposed realignment will be located is already cleared. Locating the pipeline adjacent to another Sydney Water pipeline minimises the number of properties on which easements will be required. Sydney Water considers this is the best option for realigning this section of the pipeline. Options for an east-west pipeline further south are constrained by Kemps Creek Nature Reserve. Options further north are constrained by the proposed M12 Motorway, limited space in the road verge along Elizabeth Drive and numerous small lots with existing structures.

4.4.3 Construction changes

Figure 4-3 also shows changes to the construction footprint associated with the amendment. As described in Chapter 4 of the EIS, construction will occur within the impact area. The location of the impact area has changed to follow the pipeline realignment. The proposed amendment realigns the pipeline into an existing pipeline corridor, which minimises vegetation impacts. Construction of the pipeline across Kemps Creek will no longer require open trenching across the creek as described in the EIS. The brine pipeline will be installed through existing concrete casing pipes under Kemps Creek that have been built as part of the other Sydney Water pipeline project.

The proposed amendment does not require any other changes to construction methodology described in Chapter 4 of the EIS, including construction techniques, construction schedule, construction hours and construction traffic and access.



EIS

- Impact assessment area in EIS
- Impact area in EIS
- Pipeline alignment in EIS

Amendments

- Amended brine pipeline
- Amended impact assessment area
- Amended impact area
- Watercourse

1:3,500
0 50 100 m

Figure 4-3 Kemps Creek realignment

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

4.5 South Creek realignment – treated water and brine pipeline

4.5.1 Design proposed in the EIS

The area where alignment changes are proposed is in the Penrith City LGA and is shown in Figure 4-17g of the EIS and in Figure 4-4 of this report. The treated water and brine pipelines will run from the AWRC generally following South Creek. The pipelines are located in an access track that runs close to South Creek before continuing south towards Elizabeth Drive.

4.5.2 Design changes

Figure 4-4 shows the proposed realignment of the treated water and brine pipeline along part of South Creek. Figure 4-17 in Appendix A provides an updated construction area of the entire project as part of the project description.

This amendment has been initiated by Sydney Water as part of ongoing design for the project.

About 450 m of the treated water and brine pipelines will be realigned about 35 m to the north-east and set further back from South Creek. The proposed amendment provides sufficient clearance from South Creek for future Sydney Water pipelines to be built adjacent to South Creek.

4.5.3 Construction changes

Figure 4-4 shows changes to the construction footprint associated with the amendment. As described in Chapter 4 of the EIS, construction will occur within the impact area. The location of the impact area has changed to follow the pipeline realignment.

The proposed amendment does not require any changes to construction methodology described in Chapter 4 of the EIS, including construction techniques, construction schedule, construction hours and construction traffic and access.

EIS

- Impact assessment area in EIS
- Impact area in EIS
- Pipeline alignment in EIS

Amendments

- Amended treated water pipeline alignment
- Amended brine pipeline
- Amended impact assessment area
- Amended impact area
- Watercourse

1:2,500

0 50 100m

Figure 4-4 South Creek realignment

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

4.6 Western Sydney Parklands realignment – brine pipeline

4.6.1 Design proposed in the EIS

The area where alignment changes are proposed is in the Liverpool City LGA and is shown in Figure 4-17i of the EIS and in Figure 4-5 of this report. The brine pipeline follows Range Road then runs south in an unpaved access track through Western Sydney Parklands, along the boundary of the Wylde mountain bike track and the Sydney International Shooting Centre before continuing towards the Upper Canal.

4.6.2 Design changes

Figure 4-5 shows the proposed realignment of the brine pipeline through Western Sydney Parklands. Figure 4-17 in Appendix A provides an updated construction area of the entire project as part of the project description.

This amendment responds to consultation with Greater Sydney Parklands about minimising impacts on recently built assets in Western Sydney Parklands.

About 1.1 km of the brine pipeline would be moved about 10 m south to avoid a newly paved road in Western Sydney Parklands and an existing fence on the boundary of the Wylde mountain bike track and Sydney International Shooting Centre. The pipeline then re-joins the alignment described in the EIS near the Upper Canal.

4.6.3 Construction changes

Figure 4-5 shows changes to the construction footprint associated with the amendment. As described in Chapter 4 of the EIS, construction will occur within the impact area. The location of the impact area has changed to follow the pipeline realignment.

The proposed amendment does not require any changes to construction methodology described in Chapter 4 of the EIS, including construction techniques, construction schedule, construction hours and construction traffic and access.

EIS

- Impact assessment area in EIS
- Impact area in EIS
- Pipeline alignment in EIS
- Tunnelled alignment in EIS

Amendments

- Amended brine pipeline
- Amended impact assessment area
- Amended impact area
- Watercourse

1:4,000
0 50 100 m

Figure 4-5 Western Sydney Parklands realignment

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

4.7 Bartley Street realignment – brine pipeline

4.7.1 Design proposed in the EIS

The area where alignment changes are proposed is in the Fairfield City LGA and is shown in Figure 4-17l of the EIS and in Figure 4-6 of this report. At this location, the brine pipeline runs along the north side of Bartley Street, crossing Cabravale Memorial Park, then under Railway Parade and the T2, T3 and T5 railway lines. The pipeline then follows Curtin Street on the southern side of the road corridor.

Cabravale Memorial Park is proposed as a construction compound that will be used for drilling, earthworks and storage. Access to the compound is proposed from Railway Parade.

4.7.2 Design changes

Figure 4-6 shows the proposed realignment of the brine pipeline around Bartley Street in Cabramatta. Figure 4-17 in Appendix A provides an updated construction area of the entire project as part of the project description.

This amendment is a response to consultation with Fairfield City Council who raised concerns about the use of Cabravale Memorial Park.

The brine pipeline extends to the end of Bartley Street crossing under the T2, T3 and T5 railway lines from Railway Parade. The railway crossing is in a new position slightly north of the crossing shown in the EIS. The pipeline then continues through Cabravale Leisure Centre car park, runs along Cumberland Street and re-joins the alignment described in the EIS at the junction of Cumberland and Curtin Streets.

4.7.3 Construction changes

Figure 4-6 shows changes to the construction corridors associated with the amendment. As described in Chapter 4 of the EIS, construction will occur within the impact area. The location of the impact area has changed to follow the pipeline realignment. In addition, the location of construction compound C13 will change from Cabravale Memorial Park to Cabravale Leisure Centre. This means tunnelling under the T2, T3 and T5 railway lines will be from the east of the railway line rather than the west.

The general construction methodology as described in Chapter 4 of the EIS will remain unchanged. However, to assess the changes associated with the proposed amendment the construction methodology has been considered in more detail in the following locations:

- The construction compound (C13) at Cabravale Leisure Centre carpark will be used for the duration of the tunnelling works. It will also be used for the construction of the brine pipeline which will be constructed through the carpark by open trenching.
- The impact assessment area at Cabravale Leisure Centre shown in Figure 4-6 extends north of the impact area to allow flexibility for placement of the construction compound by Sydney Water's construction contractor in consultation with Cabravale Leisure Centre.

- Out of hours work may be required to accommodate drilling works associated with the T2, T3 and T5 railway line crossing.
- Temporary road closures will be required on Bartley Street and Cumberland Street. Alternative routes and access to Cabravale Leisure Centre to manage temporary road closures will be confirmed during detailed design and included in the site specific Construction Traffic Management Plan (SSCTMP).

Figure 4-6 Bartley Street realignment

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

4.8 AWRC site boundary change

4.8.1 Design proposed in the EIS

The AWRC site is in the Penrith LGA and is shown in Figure 4-1 of the EIS and Figure 4-7 of this report.

4.8.2 Design changes

Figure 4-7 shows the proposed change to the AWRC site's southern boundary to align with the land purchased by Sydney Water for the AWRC. The land no longer part of the AWRC site includes:

- part of Lot 21/DP 258414 (to become Lot 212/DP 1272676) which is currently in private ownership and in the future may become a public road. The release to South Creek is also on this land.
- part of Lot 104, DP 1271336 which forms part of the M12 Motorway corridor.

This amendment responds to consultation with the University of Sydney in land acquisition discussions, and concerns about ongoing access between the Fleurs East and Fleurs West sections of University of Sydney land.

Although the size of the AWRC site has reduced, including reductions in the green space area and operational area, this does not change any design aspects of the project.

At the time of writing, although Sydney Water has purchased the AWRC site, the publicly available mapping (SIX maps) does not yet reflect these changes. The publicly available mapping shows the AWRC site as part of a larger lot (Lot 21/DP 258414). This larger lot has become two lots – the AWRC site (Lot 211/DP 1272676) and the remaining land in private ownership (Lot 212/DP 1272676).

4.8.3 Construction changes

As shown in Figure 4-7, the construction footprint for the AWRC site is slightly smaller as it will remain within the revised AWRC site boundary. A construction footprint has also been added for the South Creek release infrastructure where it is outside the AWRC site. As described in Chapter 4 of the EIS, construction will occur within the impact area. The proposed amendment does not require any changes to construction methodology described in Chapter 4 of the EIS, including construction techniques, construction schedule, construction hours and construction traffic and access.

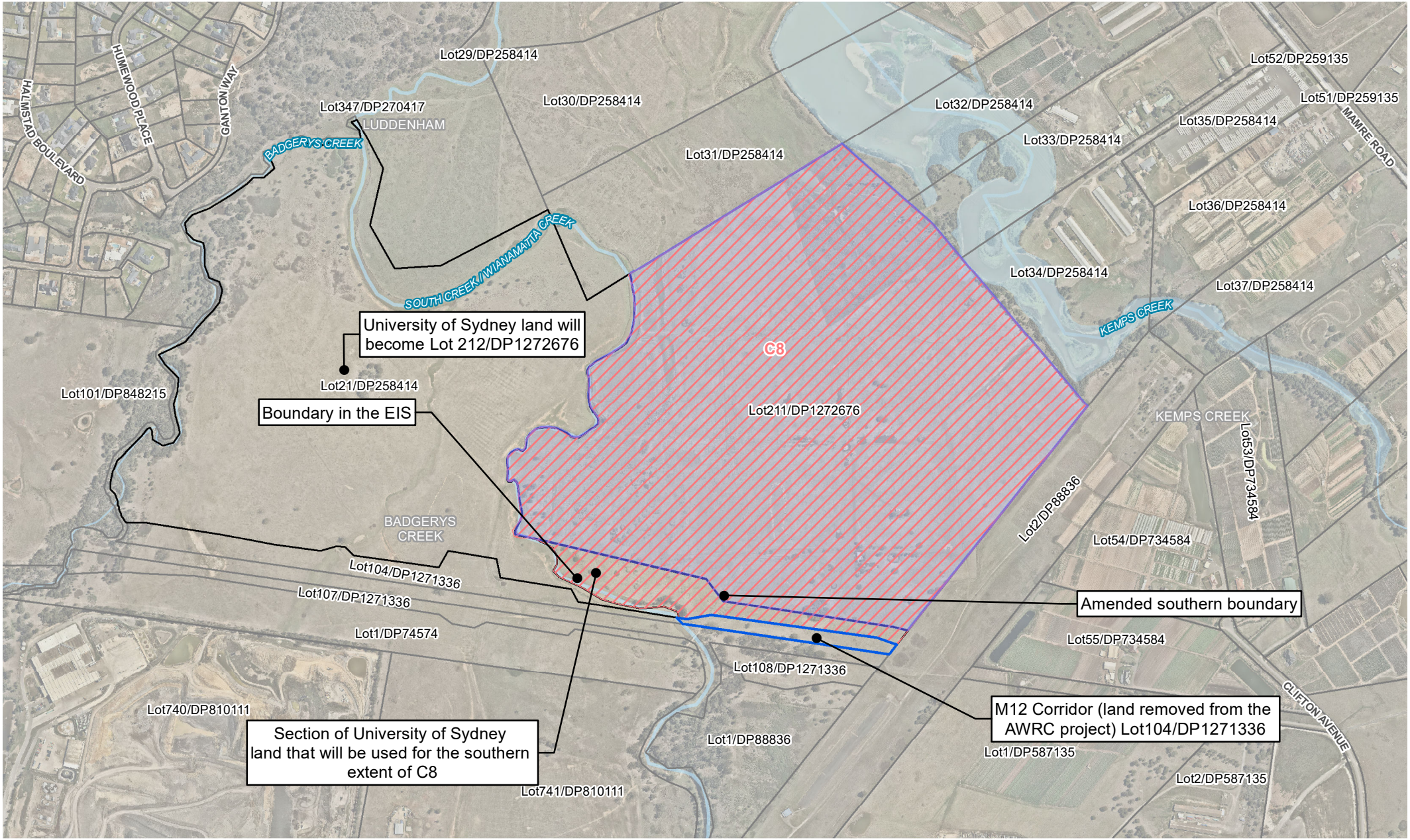


Figure 4-7 AWRC site boundary change

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

5 Statutory context

This chapter summarises the statutory context for the project. This includes State and Commonwealth approvals, zoning, permissibility and changes to the information presented in Chapter 5 of the EIS. The proposed amendments do not change the permissibility of the project or approvals required.

5.1 NSW statutory context

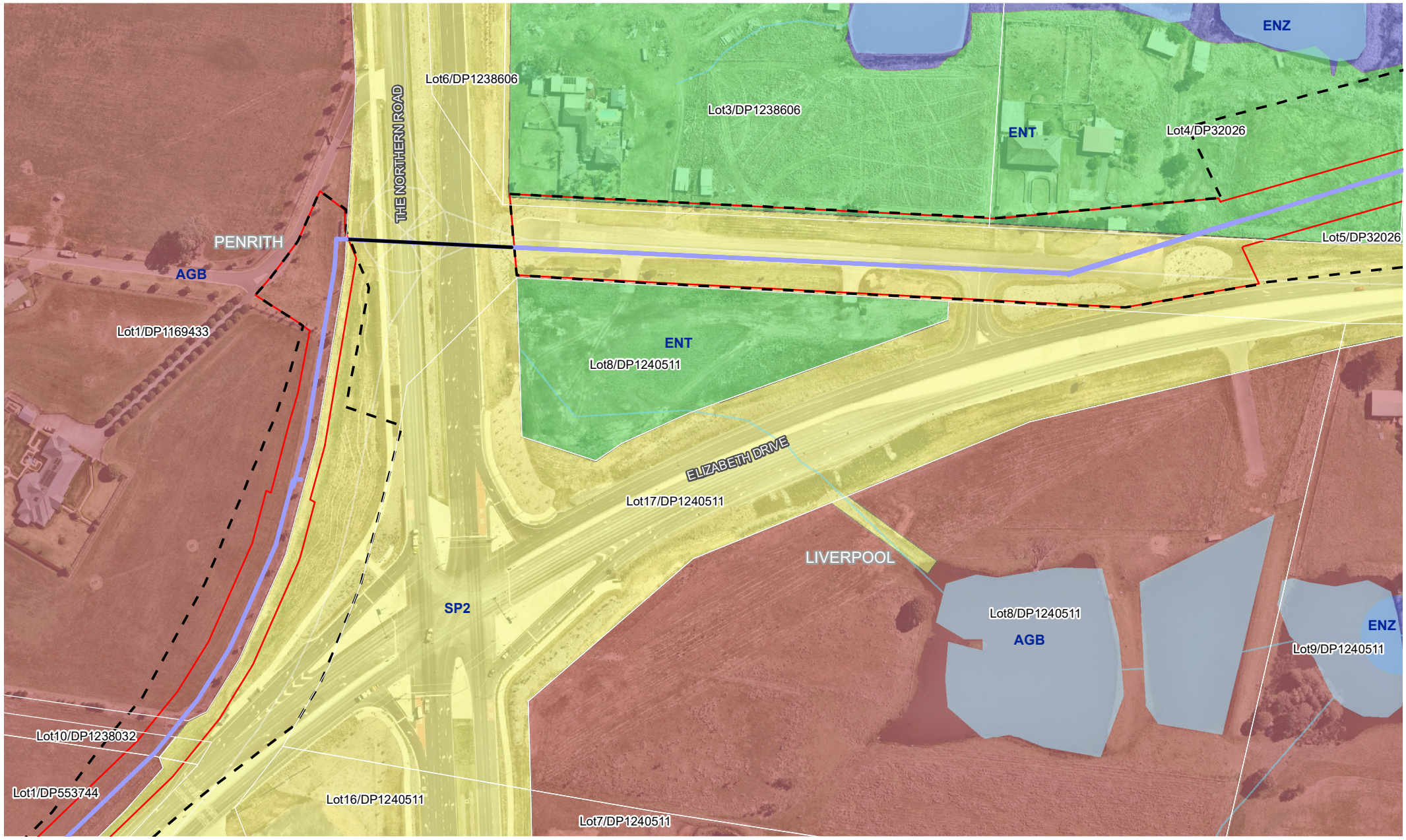
5.1.1 Zoning and permissibility

The treated water pipeline, environmental flows pipeline and brine pipeline are all classified as sewage reticulation systems and cross a range of land use zones. The environmental planning instruments that prescribe these land use zones are:

- Bankstown Local Environmental Plan 2015
- Fairfield Local Environmental Plan 2013
- Liverpool Local Environmental Plan 2008
- Penrith Local Environmental Plan 2010
- Wollondilly Local Environmental Plan 2011
- State Environmental Planning Policy (Western Sydney Aerotropolis) 2020
- State Environmental Planning Policy (Western Sydney Parklands) 2009.

Figure 5-1 to Figure 5-6 show the land use zoning around the proposed amendments. The AWRC site boundary change does not result in any changes to infrastructure locations. For this reason, a land use zoning map is not included for this location.

Under clause 106 of State Environmental Planning Policy (Infrastructure) 2007, sewage reticulation systems are permissible without consent on any land and the prescribed circumstances will be met because Sydney Water is a public authority. The project will not be in land reserved under the *National Parks and Wildlife Act 1974* so the limitations in clause 106(3D) are not relevant. Given sewage reticulation systems are permissible without consent, and the AWRC site boundary change does not change infrastructure locations, the proposed amendments do not result in any changes to the project's permissibility.



Amendments

- Amended treated water pipeline alignment
- Amended tunnelled alignment
- Amended impact assessment area
- Amended impact area

Land zoning

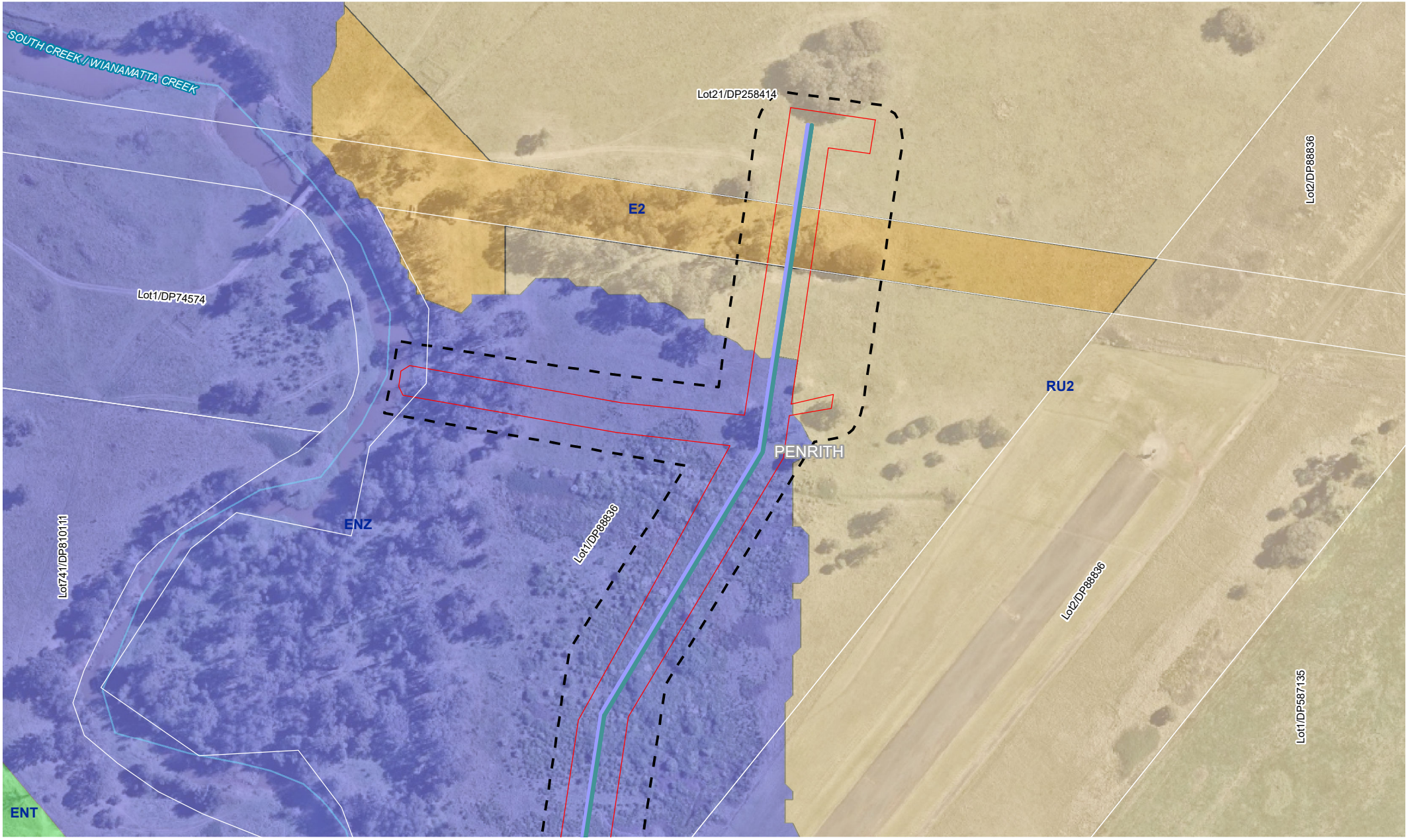
- AGB Agribusiness
- ENZ Environment and Recreation
- ENT Enterprise
- SP2 Infrastructure
- Waterbody

1:2,500

0 50 100m

Figure 5-1 The Northern Road realignment - Land zoning

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



Amendments

- Amended treated water pipeline alignment
- Amended brine pipeline
- Amended impact assessment area
- Amended impact area

Land zoning

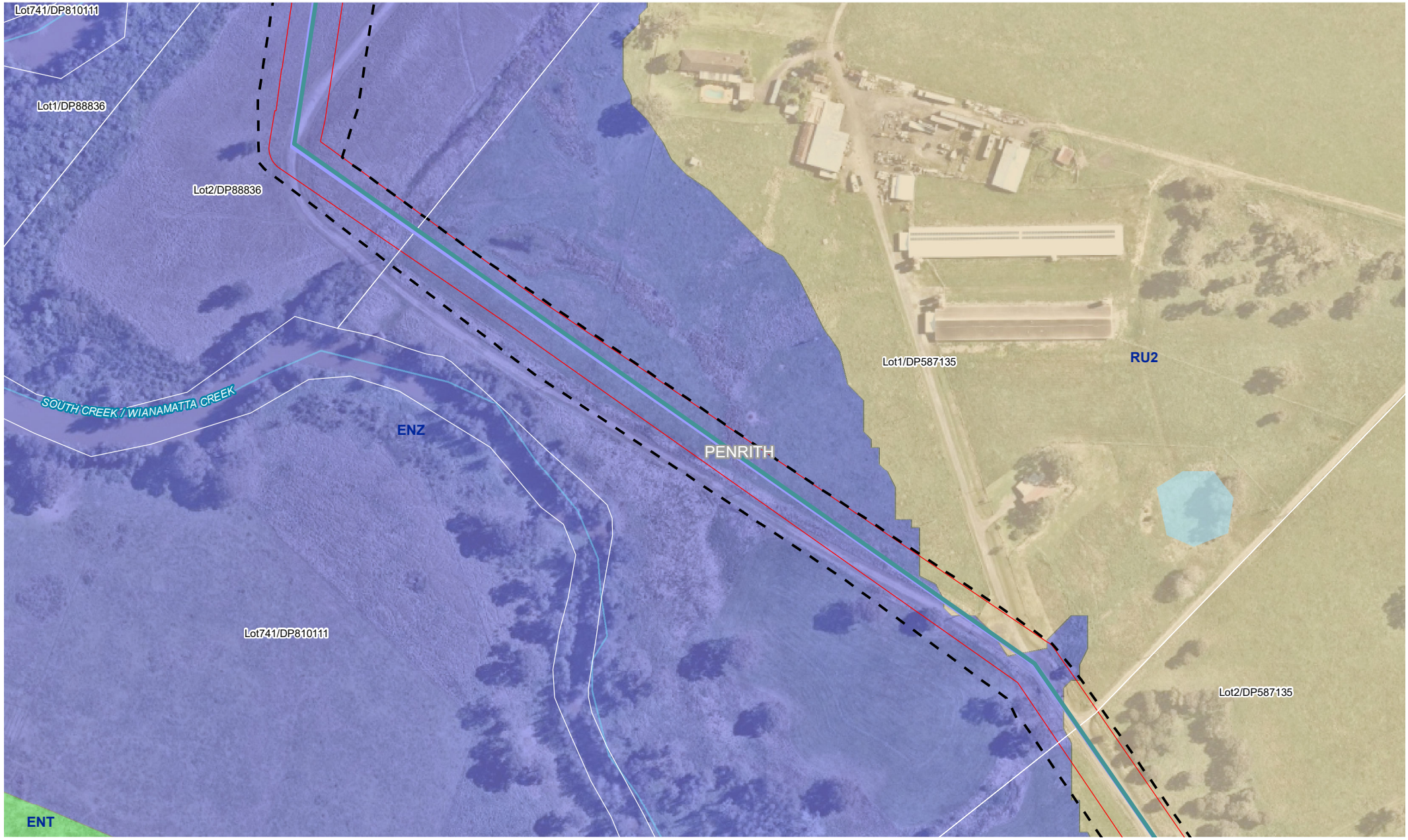
- ENZ Environment and Recreation
- ENT Enterprise
- E2 Environmental Conservation
- RU2 Rural Landscape
- Watercourse

1:2,500

0 50 100m

Figure 5-2 M12 Motorway crossing realignment - Land zoning

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



Amendments

- Amended treated water pipeline alignment
- Amended tunnelled alignment
- Amended impact assessment area
- Amended impact area

Land zoning

- ENZ Environment and Recreation
- ENT Enterprise
- RU2 Rural Landscape
- Watercourse

1:2,500

0 50 100m

Figure 5-3 South Creek realignment - Land zoning

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

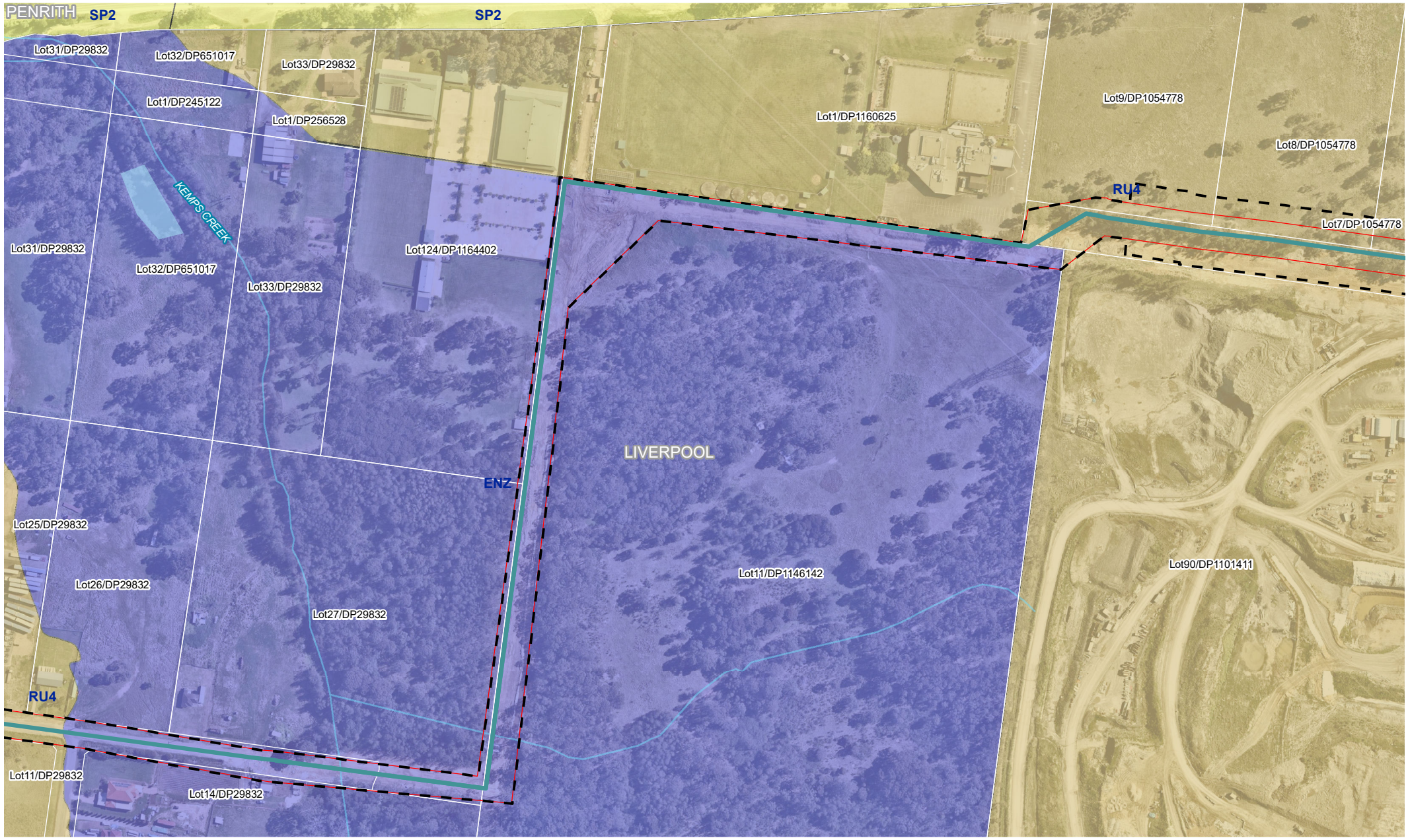


Figure 5-4 Kemps Creek realignment - Land zoning

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

Amendments

- Amended brine pipeline
- Amended impact assessment area
- Amended impact area
- Watercourse

Land zoning

- RU4 Primary Production Small Lots

1:4,000

0 50 100 m

Figure 5-5 Western Sydney Parklands realignment - Land zoning

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

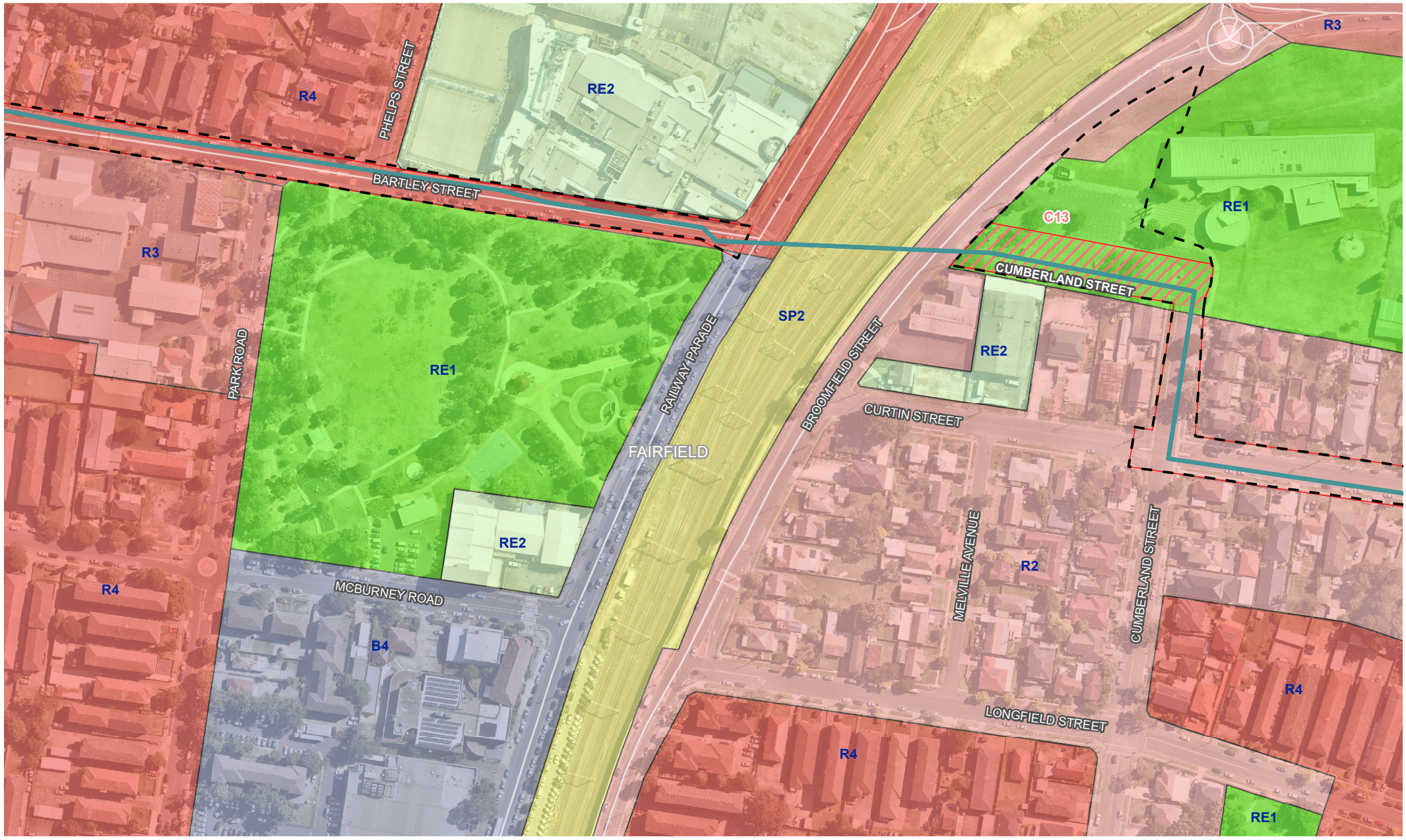


Figure 5-6 Bartley Street - Land Zoning

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

5.1.2 Approvals required

Under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act), the project is critical State significant infrastructure. Sydney Water prepared an EIS and is seeking approval for the project from the Minister for Planning and Public Spaces. This report amends the project for which Sydney Water is seeking approval.

The project was declared as Critical State significant infrastructure (CSSI) by the Minister for Planning and Public Spaces on 26 November 2021 by the Environmental Planning and Assessment Amendment (Upper South Creek Advanced Water Recycling Centre) Order 2021.

The project also needs approvals under a range of other NSW environmental legislation, which Sydney Water will apply for separately. These are summarised in Table 5-1 which is taken from Chapter 5 of the EIS. The proposed amendments do not change the approvals required for the project.

Table 5-1 Approvals required

Legislation	Approvals	Issued consistent with SSI approval	Other approvals in addition to SSI approval	Would be required if project not SSI
Protection of the Environment Operations Act 1997	Section 47 and 48 Environment Protection Licences. May trigger waste storage provisions in Schedule 1, clause 42.	✓		
Roads Act 1993	Section 138 consent	✓		
National Parks and Wildlife Act 1974	Section 90 Aboriginal heritage impact permit			✓
Fisheries Management Act 1994	Section 205 (marine vegetation impacts), 219 (blocking fish passage)			✓
Heritage Act 1977	Section 139 excavation permit Approval under Part 4 to impact item listed on State heritage register			✓
Water Management Act 2000	Section 56 water access licence		✓	

Legislation	Approvals	Issued consistent with SSI approval	Other approvals in addition to SSI approval	Would be required if project not SSI
Water Management Act 2000	Sections 89 (water use approval), 90 (water management work approval), 91 (aquifer interference once provisions commence)			✓

5.1.3 Other legislation and planning instruments

The proposed amendments do not change how the project aligns with the State environmental planning policies, local strategic planning statements and other NSW legislation as described in the EIS. However, section 5.3 describes changes proposed to some planning instruments in the Western Sydney Aerotropolis and how the project amendments align with these draft provisions. Section 5.3.2 describes changes that have been made to consolidate State environmental planning policies (SEPPs) since the EIS was on exhibition.

5.2 Commonwealth Approvals

Sydney Water referred the project to the Commonwealth Department of Agriculture, Water and the Environment (DAWE) for a decision about whether the project was likely to have a significant impact on any matters of national environmental significance under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

The Commonwealth Government has an agreement with the NSW Government that although the project needs approval from the Commonwealth Minister for the Environment, the assessment of the matters of national environmental significance can be incorporated into the NSW EIS process.

The proposed amendments do not change any Commonwealth approval requirements. However, they result in some minor changes in impact to several matters of national environmental significance, as outlined in sections 7.2 to 7.8 of this report. The level of predicted impact remains unchanged and, in some cases, is an improvement as described in Appendix B.

The proposed amendments do not have any additional impacts on airport safeguarding, Commonwealth land or native title.

5.3 Changes to statutory context since EIS exhibition

5.3.1 Aerotropolis planning documents

In October 2021 the 'Explanation of Intended Effect - Amendment to Environmental Planning Instruments in relation to the Western Sydney Aerotropolis' was released for public exhibition. This document includes proposed changes to State Environmental Planning Policy (Western Sydney Aerotropolis) 2020. It also includes proposed changes to State Environmental Planning Policy (Western Sydney Employment Area) 2009 and State Environmental Planning Policy (State and Regional Development) 2011 but these are not relevant to the project.

The changes proposed to State Environmental Planning Policy (Western Sydney Aerotropolis) 2020 include:

- realignment of some precinct boundaries
- removing Environment and Recreation zoning from some land south of Elizabeth Drive
- reduction in land identified as open space
- clarity around land acquisition for open space and stormwater infrastructure
- retaining previously permissible land uses in some areas
- changes to airport safeguarding provisions (related to existing subdivision applications and establishing a Building Restricted Area)
- various planning matters relating to flood prone land, vegetation clearing, heritage items, transport corridors, complying development and precinct planning.

As outlined in the EIS, this SEPP does not apply to the project given the provisions of section 5.22 of the EP&A Act. However, Table 5-4 of the EIS described how the project aligned with key provisions of the SEPP. If the SEPP is changed as proposed, Sydney Water considers that the project and its proposed amendments would continue to align with the key provisions of the SEPP.

DPE also released the draft Western Sydney Aerotropolis Development Control Plan – Phase 2 (Phase 2 DCP) for exhibition in October 2021. This document would supersede the Phase 1 DCP. The DCP applies to development applications under Part 4 of the EP&A Act and therefore does not apply to the project, which is assessed under Part 5 of the EP&A Act.

The Phase 2 DCP includes more detailed and refined objectives than the Phase 1 DCP, although the general themes are consistent across both documents. Appendix B of the EIS considered project alignment with the general performance outcomes in the Phase 1 DCP and that assessment remains relevant to the draft Phase 2 DCP.

Additional themes in the Phase 2 DCP include a greater focus on the importance of recognising Country. A separate draft guideline 'Recognise Country – Draft Guidelines for development in the Aerotropolis' has been released alongside the Phase 2 DCP. This document provides guidance on implementing statutory and non-statutory planning requirements relating to Aboriginal Cultural Design. Sydney Water will further consider this guideline during the detailed design phase,

particularly for the AWRC site. This has been included in a new management measure UD03. The amended management measures are provided in Chapter 8.

The draft 'Aviation Safeguarding Guidelines – Western Sydney Aerotropolis and surrounding areas' was also released with the draft Phase 2 DCP. The requirements in this document are generally consistent with the considerations in section 13.1 of the EIS.

5.3.2 Consolidated SEPPs

In December 2021, the Minister for Planning and Public Spaces released Minister's Planning Principles and an approach to consolidate SEPPs. The new Housing SEPP commenced on 26 November 2021 and the remaining consolidated SEPPs commenced on 1 March 2022. This consolidation of SEPPs is primarily an administrative change in format and numbering systems, while the policy provisions remain the same. The EIS referenced a range of SEPPs that are affected by this consolidation. Although the numbering and SEPP names have changed, there is no change in the project's alignment with the policy provisions. In addition, as outlined in section 5.3.1, SEPPs do not apply to the project because it is critical State significant infrastructure. The consolidated SEPPs were not uploaded to the NSW legislation website at the time of writing, so new SEPP numbers and clause names have not been included in this document.

6 Engagement

This chapter outlines the consultation and engagement that has occurred during Environmental Impact Statement (EIS) preparation, and additional consultation about impacts arising from these amendments.

6.1 Overview

Sydney Water completed extensive community and stakeholder consultation throughout the development of the EIS. This consultation aligned with the principles in DPE's 'Undertaking Engagement Guidelines for State Significant Projects' (DPIE, 2021b) through activities such as:

- early engagement that began two years prior to EIS submission
- using a variety of communication methods to effectively engage with the range of stakeholders, and pivoting to online engagement and information sessions during the COVID-19 pandemic
- engaging culturally and linguistically diverse communities in their native languages
- assisting community members to understand and respond to the EIS by creating an easy-to-read brochure.

Table 6-3 of the EIS outlines the issues that were raised by the community and stakeholders and how they have been addressed.

Most of the amendments assessed in this report have been identified as a result of the ongoing consultation process. This ongoing consultation continues to be aligned with DPE's guideline. As a result, Sydney Water's consultation on these amendments is proportionate to the minor nature of the changes and targets the stakeholders most likely to be affected, as outlined in more detail below.

Where Sydney Water has been able to accommodate the requests of the community and stakeholders, the design shown in the EIS has been amended and included in this report.

Sydney Water recognises that the amendments result in different effects on different stakeholders, including:

- directly affected - negative (pipeline is moving onto their land)
- directly affected – neutral (pipeline was on their land and amended alignment remains on their land but in different location)
- directly affected - beneficial (pipeline is moving off their land)
- indirectly affected – negative (pipeline is not on their land but is moving closer)
- indirectly affected – beneficial (pipeline is not on their land and is moving further away).

Sydney Water's engagement approach to the proposed amendments included:

- conversations with and/or notification letters to landowners whose properties are directly or indirectly affected by the change
- for neighbouring properties that will likely be impacted by construction work and/or compounds, either direct consultation or notification letters, depending on the level of impact expected
- notification letters sent to other key stakeholders such as local councils, businesses, schools, churches and Transport for NSW (TfNSW) who will likely be impacted by construction work and/or compounds.

This targeted approach was taken given the amendments are minor in scale, scope and geographic reach. The impacts are predicted to be localised, minor, and in many cases an improvement on the impacts assessed in the EIS. Accordingly, the consultation was focused on those who will be affected by the change.

This consultation approach allowed landowners already affected by the proposed project to understand the change. It also better informed landowners who may have not engaged with the project so far but will now be potentially affected by the amendments, and allowed them to ask questions and have their views considered.

6.2 Consultation undertaken and issues raised

This section summarises Sydney Water's consultation on each proposed amendment, including direct consultation and notification letters to stakeholders who may be indirectly impacted by the amendments. The content of the notification letters:

- informed stakeholders of the proposed alignment change
- explained the reason for the alignment change
- advised stakeholders how they can engage and provide feedback on the amendment. This includes direct engagement with Sydney Water and to DPE during public exhibition of the Amendment Report.

This section also summarises the outcomes of this consultation.

6.2.1 The Northern Road realignment – treated water pipeline

The Northern Road realignment has been identified as a result of consultation with TfNSW and residential properties on The Northern Road and Elizabeth Drive. Sydney Water consulted with property owner of 2450 The Northern Road in March 2021 and the property owner of 2311 Elizabeth Drive in September 2021, the first of which requested the change in the alignment shown in the EIS. Sydney Water also consulted with the landowner on the western side of the Northern Road.

The landowners supported The Northern Road realignment as the work will not be required within their properties, which was also the case with the original alignment. TfNSW also supported The Northern Road realignment as it better accommodates the new road alignments and minimises impacts on its infrastructure.

Sydney Water also sent notification letters to other surrounding landowners in December 2021 showing a map of the proposed realignment with email and phone details to contact Sydney Water with any questions or concerns. No responses have been received to date.

6.2.2 M12 Motorway crossing – treated water and brine pipeline

The two stakeholders affected by this amendment are TfNSW and University of Sydney. This amendment responds to consultation with M12 Motorway team and avoids a detention basin associated with the M12 Motorway.

Sydney Water has met with TfNSW several times across 2020 and 2021, as outlined in Chapter 6 of the EIS. Sydney Water continues to meet with the M12 Motorway team on a fortnightly basis in relation to design matters.

The University of Sydney is the other landowner affected by this amendment. Sydney Water consulted with University of Sydney property management representatives (including its Property Manager) in March 2020. The Property Manager also attended a community meeting in October 2021. Sydney Water has an ongoing channel of communication with the University of Sydney Property Manager including regular meetings. The latest meeting was in mid-February 2022.

In relation to the proposed amendment, University of Sydney was notified by letter in December 2021 with details of the proposed amendment and contact details for the Upper South Creek project team, in the event of any comments or questions. This was followed by a similar letter in February 2022, offering the opportunity to find out more. No response has been received to date.

6.2.3 Kemps Creek realignment – brine pipeline

The Kemps Creek realignment was identified through the EIS consultation process. The amendment was first raised by Liverpool City Council in its letter to DPE to inform the Secretary's Environmental Assessment Requirements. In this letter, Council asked for consideration of an alignment further to the north to minimise impacts to the future reserve at the eastern end of Cross Street.

Instead of crossing the property at 200 Cross Street, the alignment will now be located in areas previously cleared by another Sydney Water pipeline project and will skirt the boundaries of 200 Cross Street and the Science of the Soul Study Centre to the north. It will then skirt the southern boundary of the Kemps Creek Sporting and Bowling Club, which the original alignment also partially did.

Biodiversity and waterway impacts in this area have also been raised in several other submissions on the EIS and this amendment also addresses these concerns.

The landowners at Cross Street, Pratten Street, Science of the Soul Centre, and Kemps Creek Sporting Club were sent letters in December 2021 with maps and contact details for Sydney Water's project team. This was followed with similar letters in February 2022, offering the opportunity to find out more. No responses have been received to date.

Sydney Water also met with DPE (including its Biodiversity and Conservation Division, BCD) in February 2022 to discuss this realignment. Similar to issues raised in its submission on the EIS, DPE BCD raised concerns about:

- impacts on land mapped under Relevant Biodiversity Measure (RBM) 12 in the biodiversity certification for Sydney's Growth Centres (with a preference to avoid these areas)
- whether any additional vegetation clearing is proposed in RBM 12 areas and construction methodology across Kemps Creek
- ensuring appropriate rehabilitation when works are complete.

Sydney Water's Submissions Report will address the issues raised in DPE BCD's submission and section 7.4 provides further detail on impacts to areas mapped under RBM 12, native vegetation impacts, construction methodology and rehabilitation.

6.2.4 South Creek realignment – treated water and brine pipeline

The main properties affected by the realignment are 859-869 Mamre Road and 146B Clifton Avenue. Both of these properties were affected by the original alignment in the EIS and the alignment changed proposed is minor in this area.

Letters were sent to these two properties with maps and contact details in December 2021, and no responses have been received to date.

6.2.5 Western Sydney Parklands realignment – brine pipeline

The main landowner affected by this realignment is Greater Sydney Parklands. The Sydney International Shooting Centre (SISC) occupies land owned by Greater Sydney Parklands.

Sydney Water met with both these stakeholders during preparation of the EIS. This amendment was requested by Greater Sydney Parklands. Team members briefed SISC in July 2021. The amendment was last discussed with Greater Sydney Parklands in December 2021 which confirmed Greater Sydney Parklands' support for the amendment.

6.2.6 Bartley Street realignment – brine pipeline

The amendment in Cabramatta is a larger scale realignment and so stakeholders were grouped by:

- directly affected landowners with whom direct consultation was undertaken
- indirectly affected landowners who were notified and provided with information about where to seek further information and/or make a submission.

The details of both groups are outlined below.

Directly affected stakeholders

Fairfield City Council

The Bartley Street realignment has been identified in response to ongoing consultation with Fairfield City Council during the development of the reference design and EIS. Sydney Water met with Fairfield City Council in June, July, September and November 2021 to discuss the brine pipeline alignment through Cabravale Memorial Park, and potential impacts of alternative alignments including on the council-owned Cabravale Leisure Centre.Fairfield City Council's concerns were also included in its submission on the EIS dated 19 November 2021.

Fairfield City Council supports moving the brine pipeline out of Cabravale Memorial Park, changing the compound location to Cabravale Leisure Centre and finding an alternative crossing of the T2, T3 and T5 railway lines. Council raised concerns about traffic, noise and impacts to car-parking at Cabravale Leisure Centre. Detailed design and construction planning will involve further consultation and collaboration to manage these construction impacts.

Cabravale Diggers Club

The Bartley Street realignment has the potential to increase indirect construction impacts to the Diggers Club on the corner of Bartley Street and Railway Parade. This is due to the location of the tunnelling works moving from Cabravale Memorial Park further north onto Bartley Street adjacent to the Diggers Club.

Sydney Water met with the Cabravale Diggers Club in August 2021 to discuss the change in alignment at Bartley Street, and the potential changes in impacts during construction. Cabravale Diggers Club generally supported the proposed Bartley Street realignment. It raised concerns about maintenance of emergency access off Bartley Street. Sydney Water will maintain this access and incorporate this into the site-specific construction traffic management plan for this area (SSCTMP) during construction. This has been included as a new management measure TT06 and included in Chapter 8.

Indirectly affected stakeholders

Indirectly affected stakeholders include residences along Cumberland Street to the south of the Cabravale Leisure Centre and a series of churches, temples and community facilities which are bounded by Cumberland Street to their north, and Curtin Street to their south. These facilities would have been indirectly affected by the original alignment along Curtin Street. However, with the alignment change, they will experience some impacts at their northern boundary.

With the exception of Fairfield City Council with whom a meeting was held in November 2021, all affected stakeholders were sent letters with details on how to contact the project team to find out more and ask questions. This included a map of the area showing the original and new brine pipeline alignments in relation to Bartley Street, Cabravale Park, the railway line and Curtin Street. A copy of the eight-page EIS brochure was also attached. The letter contained details for obtaining interpretation in Arabic, Chinese, Greek, Italian, Korean and Vietnamese.

The letters were sent on 20 December 2021. This was followed by similar letters in February 2022, offering the opportunity to find out more. No responses have been received to date.

6.2.7 AWRC site boundary change

Sydney Water has been in ongoing discussions about the acquisition of part of Lot 21/DP 258414 (known as Fleurs East) with University of Sydney since mid-2020 and continues to have regular meetings with its Property Manager. University of Sydney expressed concern about the size of the proposed acquisition and its impact on its access and egress. As a result, Sydney Water has reduced the land acquisition to preserve University of Sydney's access along the southern boundary of the AWRC site between Fleurs East and Fleurs West (its land on the western side of South Creek). This land acquisition has progressed and the Sydney Water land will become Lot 211/DP 1272676 and the remaining University of Sydney land will become Lot 212/DP 1272676. Recent acquisitions by Transport for NSW (TfNSW) (DP1271336) have affected Lot 212/DP 1272676 and require clarification from NSW Land Registry Services about the final title information. This could not be confirmed at the time of writing this report and as noted in section 4.8, some of these changes are not yet reflected in public mapping systems (SIX maps).

6.3 Ongoing consultation prior to project determination

Sydney Water will continue to consult with affected stakeholders as the project moves into detailed design, to ensure that the landowners have has ample opportunity to see and understand the proposed amendments and to communicate with Sydney Water about any questions or concerns.

6.4 Future consultation

None of the amendments change the planned consultation during detailed design, construction or operation of the project. For clarity, consultation proposed in these future project phases is reproduced from the EIS below. Any new stakeholder impacted as a result of these amendments would be included in the plans outlined in the sections below.

6.4.1 Phase 4 - Detailed design and construction

As the project moves into Phase 4 – Detailed design and construction, Sydney Water will develop a community and stakeholder engagement plan (CSEP) that is specifically focused on the detailed design, pre-construction and construction activities.

The objectives of the CSEP during this phase are to:

- keep the community informed about the project including construction activities, program of works, and associated impacts
- ensure there are avenues for the community to provide feedback or to register complaints and impacts, and that the community is aware of these avenues
- provide a process to resolve complaints and issues raised.

The community and stakeholder engagement activities that will be outlined in the CSEP will include:

- ongoing consultation with landowners, stakeholders, local councils and other government agencies
- notifications of construction impacts to impacted communities
- regular project updates to nearby communities
- processes for community complaints and response management system
- a dedicated 1800 toll free number for enquiries
- a dedicated email address and website for the project
- resident notifications regarding:
  - start of construction
  - significant milestones
  - major detours, traffic disruptions and controls
  - after hours work (to be issued at least seven days before taking effect)
  - vehicle management signs to communicate traffic changes to road users and communicate traffic management plans.

The CSEP allows Sydney Water to ensure detailed construction methodologies and management are designed with input from those directly.

Sydney Water will implement this plan to ensure residents and businesses are aware of what activities are being undertaken, and when and then how they can continue to engage during the construction phase of the project.

Sydney Water will continue to proactively engage with landowners, stakeholders and councils to refine the CSEP.

6.4.2 Phase 5 - Operations

While all project components will operate 24/7, Sydney Water expects the requirement for ongoing community and stakeholder engagement during operations to be minimal. This is due to the pipelines being located below ground and the AWRC being mainly surrounded by agricultural land and commercial businesses, with only a limited number of large rural residential properties nearby.

As the project moves into its operational phase, Sydney Water will develop a new CSEP that will outline the scope of ongoing community and stakeholder engagement that is appropriate and required when construction is completed. At this stage, Sydney Water expects the operational CSEP will be focused on ongoing asset maintenance.

6.4.3 Complaints management

Any complaints relating to the project will be managed in line with Sydney Water's Complaints Management Policy, which is also added to supplier contracts and recorded (in SAP CRM and Consultation Manager) to meet Sydney Water’s Operating Licence requirement.

Sydney Water aims to resolve complaints at the first point of contact by providing a solution or negotiating an agreed course of action. Sydney Water will respond to complaints in a prompt, efficient and fair manner and make all reasonable efforts to resolve the complaint to the satisfaction of the person who raised it.

Where it is not possible to fully investigate and resolve a complaint immediately, Sydney Water will provide an initial response within:

- two working days, from a phone call or other verbal contact
- five working days, from an email or letter. Sydney Water will try to respond earlier by making direct contact with the person who made the complaint.

Sydney Water's initial response will be either to:

- offer an acceptable solution
- explain the intended course of action to resolve the complaint.

Sydney Water's Complaint Management Policy is available via the Sydney Water website and is in line with its Customer Contract.

6.4.4 Privacy policy

Sydney Water is committed to managing and protecting personal information in accordance with the requirements of the *Privacy and Personal Information Protection Act 1998 (PPIP Act), Health Records and Information Privacy Act 2002 (HRIP Act)* and the Privacy Amendment (Notifiable Data Breaches) Bill 2017 (NBD Scheme).

7 Impact assessment

This chapter assesses the potential environmental impacts of the amendments. This includes a summary of the assessment screening process, how additional impacts were assessed and any changes to management measures.

7.1 Approach to assessment

Figure 7-1 outlines the screening process Sydney Water followed to identify what type of assessment (if any) would be required for each proposed amendment.

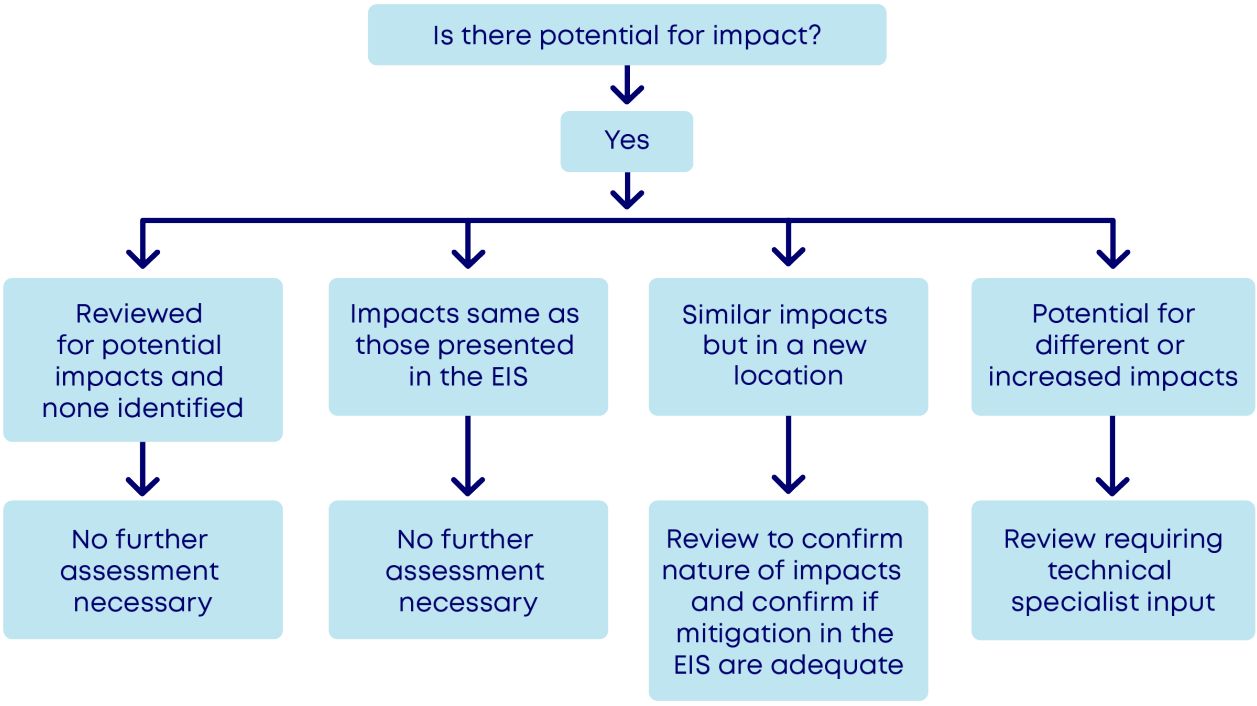


Figure 7-1 Amendment Report assessment screening process

Sections 7.2 to 7.7 assess the impacts of each proposed amendment and include the outcomes of the screening process and what level of assessment has been completed for each environmental matter. Based on the screening process, inputs from specialists were required in four technical areas for a variety of the proposed amendments. Reports from these specialists are provided in Appendix B (Biodiversity assessment), Appendix C (Aboriginal heritage technical note), Appendix D (Noise and vibration assessment) and Appendix E (Traffic and transport assessment).

Where changes to management measures in the Environmental Impact Statement (EIS) have been identified these are also included in sections 7.2 to 7.7.

7.2 The Northern Road realignment – treated water pipeline

7.2.1 Impact screening

Table 7-1 summarises the outcomes of the impact screening process for this amendment.

Table 7-1 The Northern Road realignment screening

Environmental matter	Potential for the amendment to cause impact
Waterways	No change to the impacts assessed in the EIS. No assessment needed.
Terrestrial biodiversity	Potential for biodiversity impacts different to those assessed in the EIS. A review is required by the technical specialists to confirm if there are additional impacts or changes to impacts.
Surface water	No change to the impacts assessed in the EIS. No assessment needed.
Flooding	No change to the impacts assessed in the EIS. No assessment needed.
Groundwater	No change to the impacts assessed in the EIS. No assessment needed.
Soils and contamination	No change to the impacts assessed in the EIS. No assessment needed.
Aboriginal heritage	Potential for Aboriginal heritage impacts different to those assessed in the EIS. A review is required by the technical specialists to confirm if there are additional impacts or changes to impacts.
Non-Aboriginal heritage	No change to the impacts assessed in the EIS. No assessment needed.
Air quality	No change to the impacts assessed in the EIS. No assessment needed.
Noise and vibration	Potential for noise and vibration impacts different to those assessed in the EIS. A review is required by the technical specialists to confirm if there are additional impacts or changes to impacts.
Landscape character and visual amenity	Potential for changes to the assessment presented in the EIS. The representative viewpoints in the EIS remain valid, however, existing receivers are closer to the amended alignment. A review of the assessment within the EIS is required to confirm if there are additional impacts or changes to impacts.
Traffic and transport	No change to the impacts assessed in the EIS. No assessment needed.
Human health and hazards	No change to the impacts assessed in the EIS. No assessment needed.
Socio-economic	Potential for changes to the assessment presented in the EIS. A review of the assessment within the EIS is required to confirm if there are additional impacts or changes to impacts.

Environmental matter	Potential for the amendment to cause impact
Sustainability and resource management	No change to the impacts assessed in the EIS. No assessment needed.
Adjacent infrastructure	Potential for changes to the assessment presented in the EIS. A review of the assessment within the EIS is required to confirm if there are additional impacts or changes to impacts.

7.2.2 Existing environment

The areas around The Northern Road and Elizabeth Drive are rural properties. The properties are generally cleared with scattered trees and dams. One property has a driveway that connects to The Northern Road, part of which is a tree lined avenue leading to the house.

Figure 4-1 shows the existing environment around The Northern Road realignment.

7.2.3 Construction impact assessment

Terrestrial biodiversity

The proposed The Northern Road realignment will result in minor changes to direct impacts on native vegetation, threatened flora and fauna species habitat and threatened ecological communities (TECs). These impacts are associated with the increase in impact area.

The Northern Road realignment has resulted in minor increases in direct impacts to native vegetation and threatened species habitat of:

- about 0.03 ha of 'Plant Community Type (PCT) 849 Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain' listed under the *Biodiversity Conservation Act 2016* (BC Act) and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- about 0.03 ha of suitable habitat for Southern Myotis which is listed as Vulnerable under the BC Act.

An assessment of the changes to biodiversity impacts is contained in Appendix B. This assessment concluded these impacts would be minor. The Northern Road realignment will result in a negligible change to the project's indirect impacts and residual impacts at this location. No management measures are required in addition to those included in the EIS. The biodiversity offset requirements for the project as presented in the EIS have been revised to account for this amendment and are included in section 8.2.

Figure 7-2 shows the amended areas of biodiversity impact for this realignment and Appendix B includes the specialist biodiversity assessment.

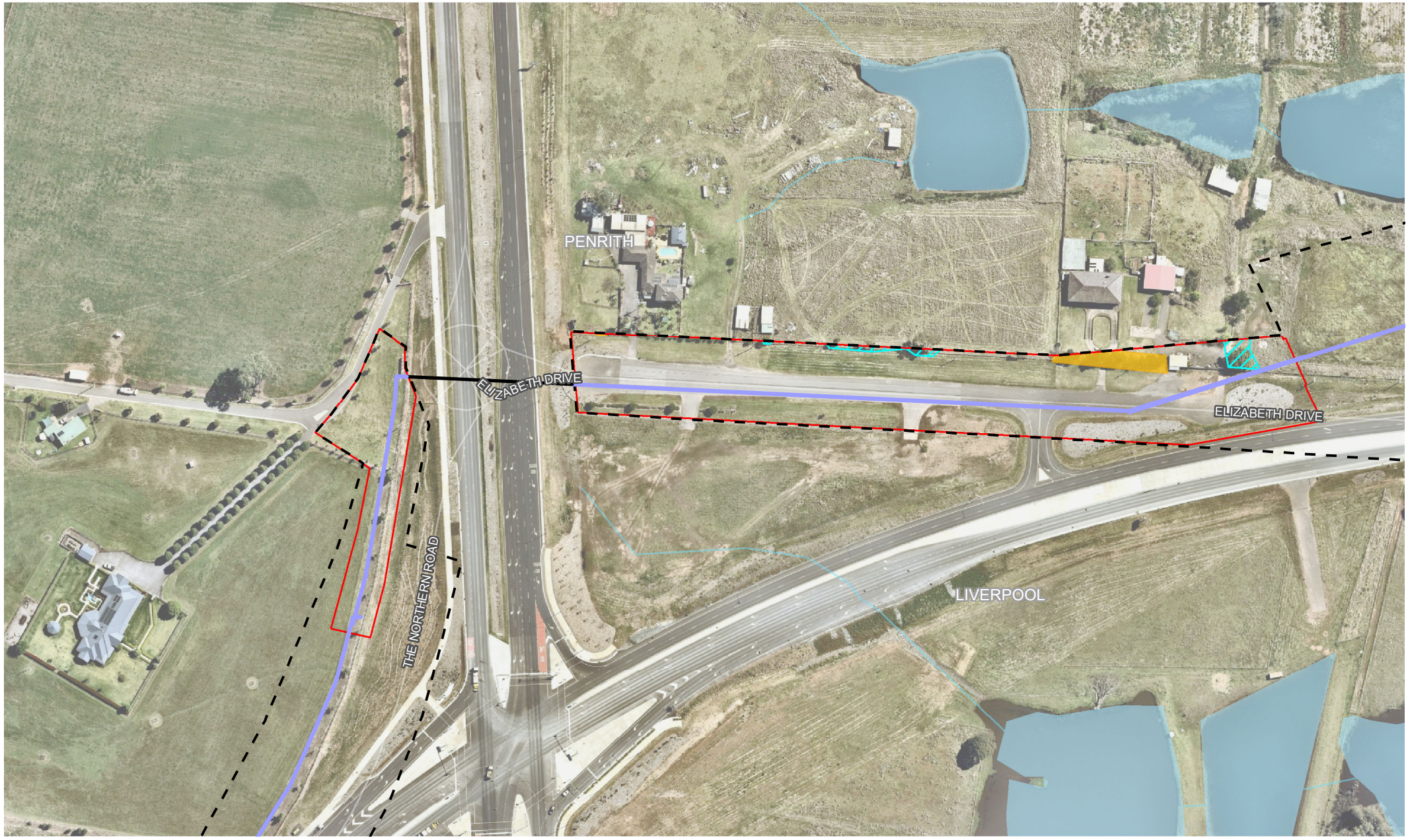


Figure 7-2 Biodiversity impacts from the Northern Road realignment

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

Aboriginal heritage

The proposed realignment will result in a minor increase in the area of a known Aboriginal site that is impacted, but the level of significance remains unchanged.

The impact area described in the EIS is partially located within AAS TNR ADF15, a site identified on the Aboriginal Heritage Information Management System (AHIMS) as an area known to contain Aboriginal artefacts. In the EIS, this site was assessed as having moderate significance and with a partial direct impact, represented a moderate level of impact significance.

To mitigate this level of impact, the EIS recommended in management measure AH03 that archaeological salvage be undertaken prior to construction.

The Northern Road realignment will increase the project's impact area in AAS TNR AFT15 by about 35 m x 5 m. This is an increase of about 12%, with the original EIS predicted to impact 0.16ha and this amendment increasing the predicted impact to 0.18ha This is shown on Figure 7-3.

This increase in impact to AAS TNR AFT15 does not change the significance of the impact described in the EIS. Therefore, despite the increase in physical area, the amendment does not result in an overall increased impact on Aboriginal heritage.

Management measure AH03 is adequate to manage potential impacts to Aboriginal heritage resulting from The Northern Road realignment. No changes to management measures are proposed. The technical specialist's input is provided in Appendix C.

Noise and vibration

The Northern Road realignment will result in changes to noise impacts to the nearest receivers. There are no predicted changes to ground-borne noise, traffic noise or vibration impacts.

Noise impacts to existing receivers are described in the construction noise impact assessment in section 11.2 of the EIS. The EIS predicted noise levels generated during project construction and compared them against Noise Management Levels (NMLs). Where predicted noise levels reach or exceed an NML, management measures would be implemented to minimise the impact.

Predicted noise levels and NMLs were developed in accordance with the Interim Noise Management Guideline (ICNG) (NSW EPA 2009). The NMLs used for the construction noise impact assessment are described in the EIS. The highly noise affected NML of 75dBA is the level at which there may be a strong community reaction to noise and is comparable to heavy traffic or a busy street.

The EIS identified that there would be noise impacts to nearby receivers due to the use of noisy equipment during construction. Receivers on the Elizabeth Drive cul-de-sac are located about 130 m and 60 m from the original alignment. The receiver located to the west of The Northern Road is located about 70 m from the underbore location shown in the EIS.

The technical specialist's input is provided in Appendix D.

Figure redacted for public exhibition due to sensitivity of image

Figure 7-3 Aboriginal heritage impacts from The Northern Road realignment

The proposed amendment would position construction works about 30-40 m from the receivers on the Elizabeth Drive cul-de-sac. For these receivers, construction noise levels are likely to be higher than predicted in the EIS, given the reduced distance to the works. In addition, they are more likely to experience noise levels above 75 dBA highly noise affected NML depending on the type of equipment used. It should be noted that pipeline construction is progressive and therefore noise impacts would be temporary and would reduce as the pipeline construction progresses. The construction period for this section of the pipeline would be about 6-8 weeks. This has not changed as a result of the realignment but gives an indication of the period of time for which the closest residents may experience construction noise impacts. As noted above, these properties would already have been affected, but the reduced distance to the works makes increased effects more likely.

An increase in construction noise levels is not expected for the receiver located to the west of The Northern Road as they will not be closer to construction as a result of The Northern Road realignment.

The change in ground-borne noise was also reviewed. Ground-borne noise is generated by vibration transmitted through the ground into a structure from tunnelling equipment or trenched construction. Ground-borne noise is not usually significant during the day as background noise levels mask its audibility. The Northern Road realignment is unlikely to result in changes to ground-borne noise impacts because out of hours work is not expected during construction at this location.

The realignment may result in changes to vibration levels because pipeline construction is closer to sensitive receivers. However, vibration impacts resulting in cosmetic damage during construction are unlikely. This is because receivers on the Elizabeth Drive cul-de-sac remain outside the minimum working distances identified in the EIS. The receiver located to the west of The Northern Road is also outside the minimum working distance and the vibration impacts described in the EIS remain unchanged.

The Northern Road realignment is unlikely to result in changes in construction traffic noise impacts for existing receivers. This is because there will be no change in construction traffic flows from those described in the EIS and noise from construction traffic will only occur within standard construction hours.

The management measures described in the EIS are adequate to manage potential changes to noise and vibration impacts to existing receivers resulting from The Northern Road realignment. No changes to management measures are proposed.

Landscape character and visual amenity

The Northern Road realignment will result in some minor changes to landscape character and visual impacts to receivers. In terms of landscape character, the impacts are reduced from those presented in the EIS. In terms of visual impacts from residential viewpoints, minor changes may occur where the alignment is closer to receivers, however the significance of the visual impacts is unchanged from the EIS.

The EIS describes potential impacts to landscape character by defining landscape character zones (LCZs) and their sensitivity to change. Landscape Character Zones are defined in the EIS as areas of landscape with unified characteristics that make them distinct from one another. The EIS describes 11 LCZs. The proposed Northern Road realignment is located within LCZ1 which is shown on Figure 11-11 in the EIS. LCZ1 extends across the treated water pipeline alignment from Mamre Road in the east to Nepean River in the west.

Section 11.3 of the EIS describes LCZ1 as rural residential with agricultural landuse. The sensitivity of LCZ1 is moderate because the landscape is heavily modified. Impacts to this LCZ are described as moderate because there will be removal of small areas of roadside vegetation and some disruption to amenity along the alignment throughout the LCZ.

The amendment is a minor change to the alignment described in the EIS and presents a minor change to landscape character impacts across LCZ1 overall. As a result of the recent upgrades to The Northern Road and Elizabeth Drive, the landscape has been modified further in the locality, reducing sensitivity to change and potentially reducing the landscape character and amenity impacts to nearby receivers on Elizabeth Drive and west of the Northern Road. As described in the EIS, moderate impacts to landscape character are temporary and will reduce as construction progresses. Overall, the proposed The Northern Road realignment means the impacts to landscape character in LCZ1 are reduced.

Section 11.3 of the EIS describes visual impacts of viewpoints from residential receivers along the pipeline alignment. Visual impacts to receivers range from high to high-moderate in some locations and are associated with loss of vegetation and visible construction activities within the viewpoint. Minor changes to visual impacts may occur where the proposed alignment is closer to receivers, however the significance of the visual impacts is unchanged from the significance of the impacts described in the EIS.

The management measures described in the EIS are adequate to manage visual impacts resulting from The Northern Road realignment. No changes to management measures are proposed.

Socio-economic

The Northern Road realignment may result in minor changes to the socio-economic impacts of the project. The change will result in the treated water pipeline being located within the Elizabeth Drive cul-de-sac adjacent to a residential property, which is closer to one residential property on the cul-de-sac's northern side.

This will impact the amenity of the area during construction with impacts relating to noise and vibration and traffic control which may disrupt the public users of the cul-de-sac. The EIS identifies these construction impacts and this amendment will bring those impacts closer to the residents of the Elizabeth Drive cul-de-sac.

This amendment was initiated based on consultation with adjacent residents and TfNSW. As outlined in Chapter 6, the residents and TfNSW support the proposed amendment. Consultation will continue during the delivery phase of the project as described in Chapter 6. All construction works will be temporary, will be managed in accordance with the Construction Environmental Management Plan (CEMP) and will not result in any permanent changes that will impact the residential properties adjacent to the cul-de-sac.

Overall, the severity in socio-economic impacts of The Northern Road realignment will not change from that outlined in Table 11-66 of the EIS.

The management measures described in the EIS are adequate to manage socio-economic impacts resulting from The Northern Road realignment. No changes to management measures are proposed.

Adjacent infrastructure

There is potential for The Northern Road realignment works to impact existing below ground services in the new impact areas of The Northern Road and the Elizabeth Drive cul-de-sac. Preliminary investigations have not identified the presence of any existing services in the proposed construction corridor. However, further intrusive investigations may be required during detailed design when a construction contractor has been engaged to confirm the presence of any existing services.

The Northern Road realignment is likely to reduce impacts on adjacent road infrastructure including The Northern Road and Elizabeth Drive. This amendment has been identified through consultation with TfNSW and adjacent landowners, with the treated water pipeline now avoiding impacts to the road pavement of The Northern Road and adjacent landscaping.

7.2.4 Operational impact assessment

During operation, the pipelines will be located underground. The Northern Road realignment will not result in changes to pipeline operation as described in the EIS. Accordingly, assessment of operational impacts is not needed.

7.3 M12 Motorway crossing realignment – treated water and brine pipeline

Sydney Water notes that after submission of the EIS for exhibition, a discrepancy in the project alignment, impact area and impact assessment area was identified at the M12 Motorway crossing location. These areas shown in Figure 4-17g of the EIS were slightly different to the areas assessed in the Biodiversity Development Assessment Report (BDAR) and the Aboriginal Cultural Heritage Assessment Report (ACHAR). This inconsistency occurred as a result of design changes that occurred during finalisation of those reports. This area is subject to a proposed amendment, and the assessments below include any changes resulting from that mapping inconsistency.

7.3.1 Impact screening

Table 7-2 summarises the outcomes of the impact screening process for this amendment.

Table 7-2 M12 Motorway crossing realignment screening

Environmental matter	Potential for the amendment to cause impact
Waterways	No change to the impacts assessed in the EIS. No assessment needed.
Terrestrial biodiversity	Potential for biodiversity impacts different to those assessed in the EIS. A review is required by the technical specialists to confirm if there are additional impacts or changes to impacts
Surface water	No change to the impacts assessed in the EIS. No assessment needed.
Flooding	No change to the impacts assessed in the EIS. No assessment needed.
Groundwater	No change to the impacts assessed in the EIS. No assessment needed.
Soils and contamination	No change to the impacts assessed in the EIS. No assessment needed.
Aboriginal heritage	Potential for Aboriginal heritage impacts different to those assessed in the EIS. A review is required by the technical specialists to confirm if there are additional impacts or changes to impacts
Non-Aboriginal heritage	No change to the impacts assessed in the EIS. No assessment needed.
Air quality	No change to the impacts assessed in the EIS. No assessment needed.
Noise and vibration	No change to the impacts assessed in the EIS. No assessment needed.
Landscape character and visual amenity	No change to the impacts assessed in the EIS. No assessment needed.
Traffic and transport	No change to the impacts assessed in the EIS. No assessment needed.
Human health and hazards	No change to the impacts assessed in the EIS. No assessment needed.
Socio-economic	No change to the impacts assessed in the EIS. No assessment needed.
Sustainability and resource management	No change to the impacts assessed in the EIS. No assessment needed.
Adjacent infrastructure	Potential for changes to the assessment presented in the EIS. A review of the assessment within the EIS is required to confirm if there are additional impacts or changes to impacts.

7.3.2 Existing environment

The M12 Motorway crossing realignment is where the treated water and brine pipelines leave the AWRC to the south. The existing environment mainly includes rural land uses, and vegetation and South Creek to the west.

Figure 4-2 shows the existing environment of the M12 Motorway crossing realignment.

7.3.3 Construction impact assessment

Terrestrial biodiversity

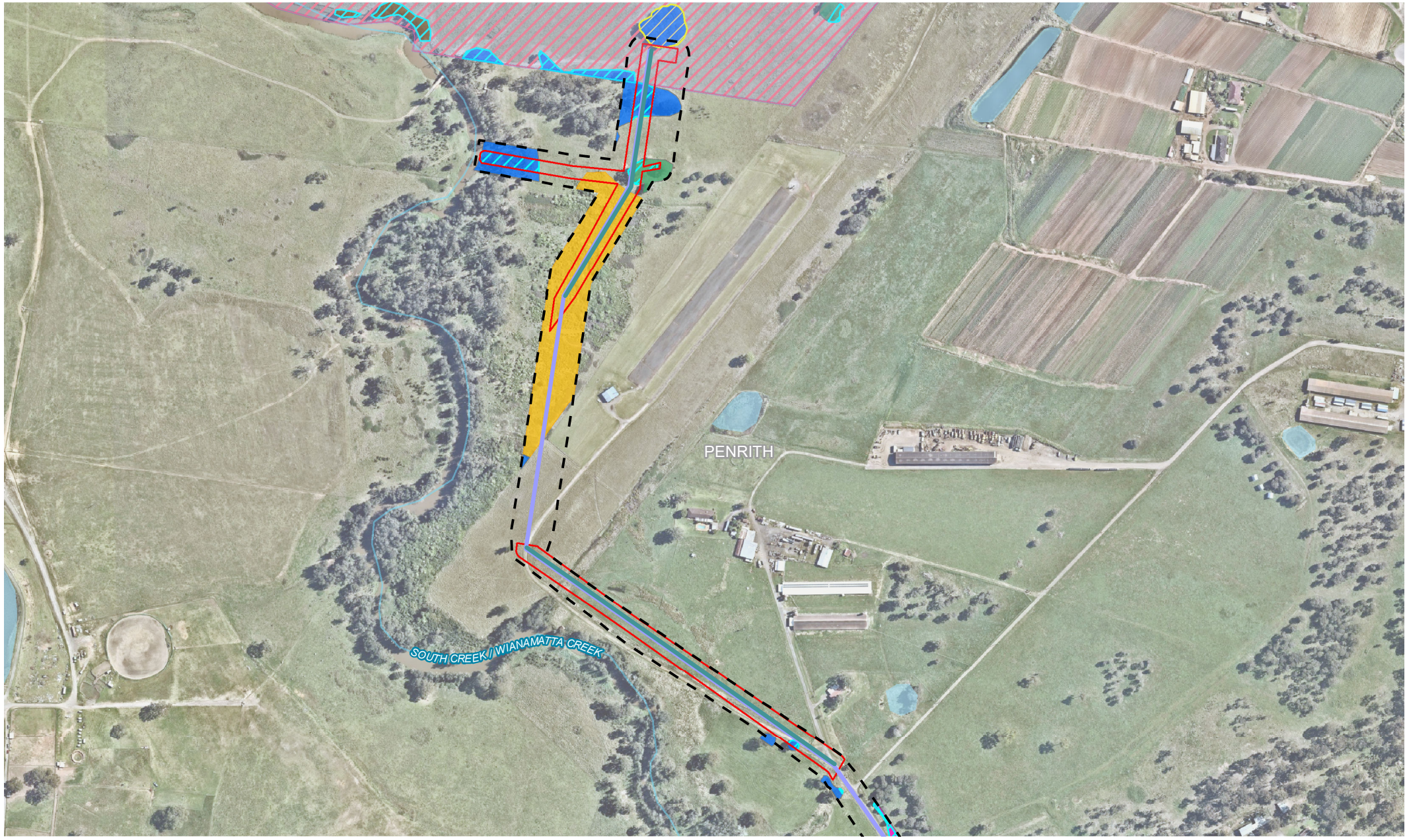
It should be noted that this area covers a portion of land that has been assessed and approved for the M12 Motorway. However, given the uncertainty of construction timelines and the possibility that Sydney Water may construct in that area before the M12 Motorway is developed, this area is included in the assessment.

The M12 Motorway crossing realignment will result in changes to direct impacts on native vegetation, threatened flora and fauna species habitat and TECs. These impacts are associated with the increase in impact area which results in minor increases in impacts to the biodiversity values presented in the EIS. Figure 7-4 shows the amended areas of biodiversity impact from the M12 Motorway crossing realignment.

The results include minor increases in impacts to native vegetation and threatened species habitat of:

- about 0.05 ha of PCT 835 Forest Red Gum – Rough barked Apple grassy woodland on alluvial flats of the Cumberland Plain which listed as an Endangered Ecological Community (EEC) under the BC Act
- about 0.01 ha of PCT839 Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain which is listed as a Critically Endangered Ecological Community (CEEC) under the BC Act
- about 0.06 ha of habitat for the Cumberland Plain Snail listed as Endangered under the BC Act
- about 0.07 ha of habitat for Southern Myotis listed as Vulnerable under the BC Act.

The M12 Motorway crossing realignment will result in a negligible change to the project's indirect impacts and residual impacts at this location.



Treated water pipeline
Brine pipeline
Trenchless alignment
Amended impact area
Amended impact assessment area

Indicative compound
Southern Myotis Habitat
Cumberland Plain Land Snail habitat

Vegetation communities

BC Act - TEC

Urban Native/Exotic
Cumberland Plain Woodland in the Sydney Basin Bioregion
River-flat Eucalypt Forest in the Sydney Basin Bioregion
Shale Gravel Transition Forest in the Sydney Basin Bioregion
Swamp Oak Floodplain Forest
Waterbody

1:6,000
0 50 100m

Figure 7-4 Biodiversity impacts from the M12 crossing realignment

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

No additional management measures are required to those provided in the EIS. The biodiversity offset requirements for the project as presented in the EIS have been revised to account for this amendment and are included in section 8.2

Aboriginal heritage

The changes in potentially impacted areas, as described above, could also result in an increased impact to the Aboriginal Heritage site known as Fleurs 1 Fleurs Radio Telescope. The increased project footprint within this site occurs in three areas:

- An increase in the east-west corridor of about 160 m by 15 m.
- An increase in the north-south corridor of about 10 m by 2 m primarily on the eastern side.
- An increase in a new area to the east of the corridor of about 5 m by 3 m.

An assessment of the potential impacts of these amendments found that they do not result in a change of significance of the impact, that the significance of the increased impact is consistent with the previous level of impact described in the EIS and the amendment does not result in an overall increased impact on Aboriginal heritage despite the increase in physical area.

To mitigate the impact identified in the EIS, the EIS recommended in measure AH03 that archaeological salvage be undertaken prior to construction. This includes the Fleurs 1 Fleurs Radio Telescope site.

Management measure AH03 is adequate to manage potential impacts to Aboriginal heritage resulting from M12 Motorway crossing realignment. No changes to management measures are proposed. The technical specialist's input is provided in Appendix C.

Adjacent infrastructure

The proposed M12 Motorway crossing realignment has been identified through consultation with Transport for NSW (TfNSW). The realignment will minimise impacts on future adjacent infrastructure including the M12 Motorway detention basins to the west of the pipeline alignment and south of the AWRC site.

7.3.4 Operational impact assessment

During operation, the pipelines will be located underground. The M12 Motorway crossing realignment will not result in changes to pipeline operation as described in the EIS. Accordingly, assessment of operational impacts is not needed.

7.4 Kemps Creek realignment

7.4.1 Impact screening

Table 7-3 summarises the outcomes of the impact screening process for this amendment.

Table 7-3 Kemps Creek crossing realignment screening

Environmental matter	Potential for the amendment to cause impact
Waterways	Potential for waterways impacts different to those assessed in the EIS. Given impacts to Kemps Creek may reduce, a review of the assessment within the EIS is required to confirm if there are additional impacts or changes to impacts.
Terrestrial biodiversity	Potential for biodiversity impacts different to those assessed in the EIS. A review is required by the technical specialists to confirm if there are additional impacts or changes to impacts
Surface water	Potential for changes to the assessment presented in the EIS. A review of the assessment within the EIS is required to confirm if there are additional impacts or changes to impacts.
Flooding	Potential for changes to the assessment presented in the EIS. A review of the assessment within the EIS is required to confirm if there are additional impacts or changes to impacts.
Groundwater	No change to the impacts assessed in the EIS. No assessment needed.
Soils and contamination	No change to the impacts assessed in the EIS. No assessment needed.
Aboriginal heritage	Potential for Aboriginal heritage impacts different to those assessed in the EIS. A review is required by the technical specialists to confirm if there are additional impacts or changes to impacts
Non-Aboriginal heritage	No change to the impacts assessed in the EIS. No assessment needed.
Air quality	No change to the impacts assessed in the EIS. No assessment needed.
Noise and vibration	No change to the impacts assessed in the EIS. No assessment needed.
Landscape character and visual amenity	Potential for changes to the assessment presented in the EIS. A review of the assessment within the EIS is required to confirm if there are additional impacts or changes to impacts.
Traffic and transport	No change to the impacts assessed in the EIS. No assessment needed.
Human health and hazards	No change to the impacts assessed in the EIS. No assessment needed.
Socio-economic	No change to the impacts assessed in the EIS. No assessment needed.

Environmental matter	Potential for the amendment to cause impact
Sustainability and resource management	No change to the impacts assessed in the EIS. No assessment needed.
Adjacent infrastructure	No change to the impacts assessed in the EIS. No assessment needed.

7.4.2 Existing environment

This area includes dense vegetation on the eastern side of Kemps Creek, and several commercial properties including Brandown Quarry to the east and the Kemps Creek Sporting and Bowling Club to the north. Vegetation along the proposed realignment within Lot 11/DP 114614 has been cleared for an existing Sydney Water pipeline.

Figure 4-3 shows the existing environment of Kemps Creek crossing realignment.

7.4.3 Construction impact assessment

Waterways

The proposed Kemps Creek crossing realignment will result in an improvement to waterway impacts as described in the EIS. This is due to the change in construction methodology.

Pipeline construction across Kemps Creek will no longer require open trenching across the creek as described in the EIS. The brine pipeline will be installed through existing concrete casing pipes under Kemps Creek that have been built as part of another Sydney Water pipeline project.

This means that impacts to geomorphic attributes, including bank and bed stability will be reduced. Direct impacts to aquatic habitat will be avoided as will the need for any flow diversions, which will then avoid impacts on connectivity and fish migration. Indirect impacts to aquatic ecology from erosion and sedimentation will also be reduced by avoiding in-stream works.

Potential impacts resulting from tunnelling under the creek bed such as drilling fluid entering waterways due to frac outs and increased surface groundwater connectivity that may disrupt waterway flow are also avoided as a result of the amendment.

Terrestrial biodiversity

The Kemps Creek realignment will result in changes to direct impacts on native vegetation, threatened flora and fauna species habitat and TECs as it will move from the partially vegetated alignment as shown in the EIS, to the area previously cleared for another Sydney Water pipeline project. Although the alignment is still located in an area mapped under Relevant Biodiversity Measure (RBM) 12 in the biodiversity certification for Sydney's Growth Centres, the realignment reduces the impacts on terrestrial biodiversity assessed in the EIS.

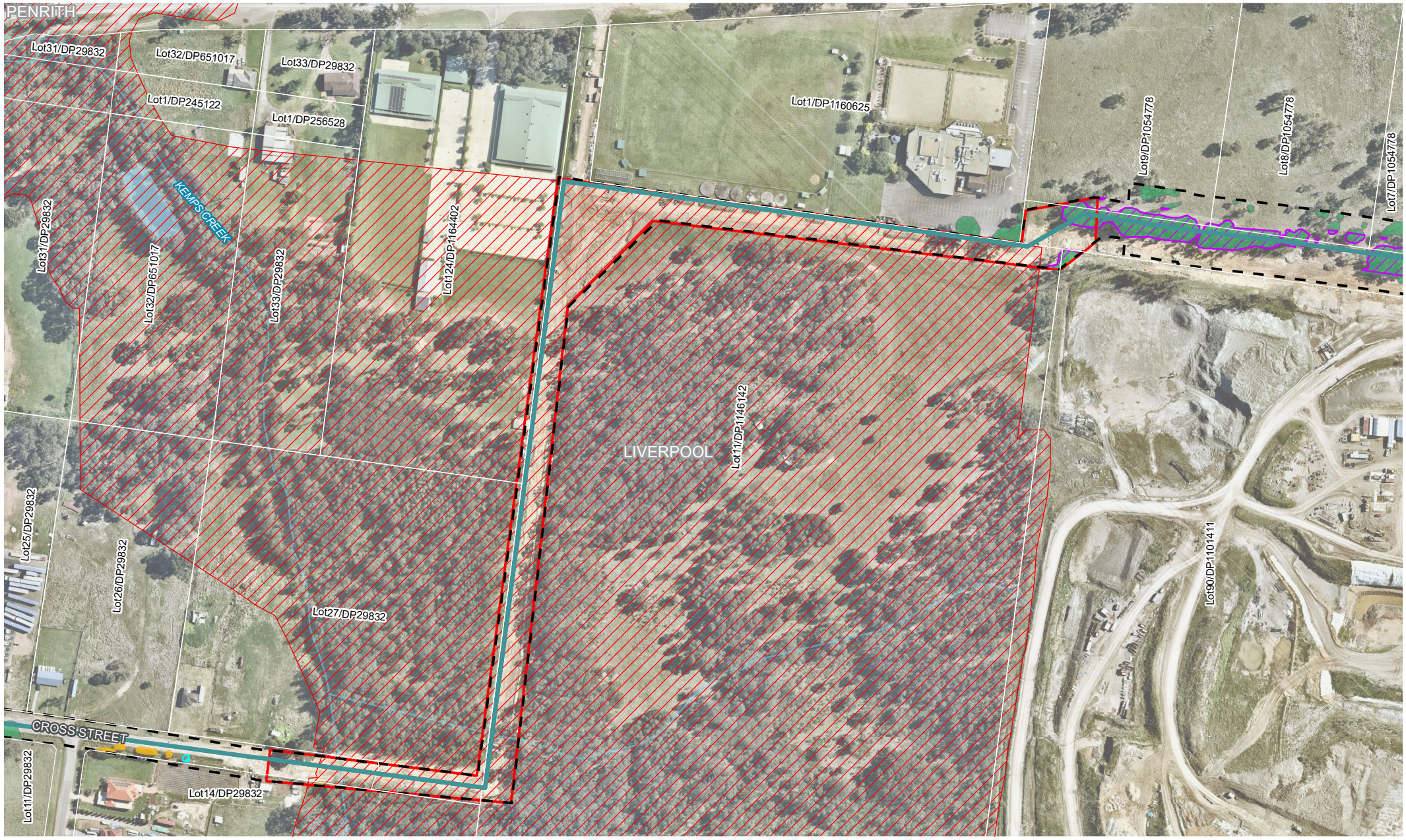
Figure 7-5 shows the amended areas of biodiversity impact from the Kemps Creek realignment, including the area where RBM 12 applies. Appendix B includes the specialist biodiversity assessment.

At the location of the Kemps Creek realignment, biodiversity impacts will reduce as outlined below:

- PCT 835 Forest Red Gum from 0.36 ha impacted to 0 ha.
- PCT 849 Grey Box - Forest Red Gum by 0.17 ha.
- Netted Bottle Brush from six individuals to zero.
- Suitable habitat for *Dillwynia tenuifolia* from 0.04 ha to 0 ha.
- Suitable habitat for Juniper-leaved Grevillea from 0.04 ha to 0 ha.
- Suitable habitat for *Marsdenia viridiflora subsp. Viridiflora* from 0.5 ha to 0 ha.
- Suitable habitat for Spiked Rice-flower from 0.60 ha to 0 ha.
- Suitable habitat for Matted Bush-pea from 0.04 ha to 0 ha.
- Suitable habitat for Cumberland Plain Snail from 0.68 ha to 0 ha.
- Suitable habitat for Southern Myotis from 0.38 ha to 0 ha.

The Kemps Creek realignment will result in a negligible change to the project's indirect impacts and residual impacts at this location.

No additional management measures are required to those provided in the EIS for the Kemps Creek realignment. In particular, management measure G05 in Table 15-3 of the EIS is relevant, which requires developing and implementing a Rehabilitation Management Plan with specific provisions for restoring areas of native vegetation. The biodiversity offset requirements for the project as presented in the EIS have been revised to account for this amendment and are included in section 8.2



- Amended brine pipeline
- Amended impact assessment area
- Amended impact area

- Pimela spicata habitat
- Southern Myotis Habitat

Land Certification

- Non-certified area - land subject to condition 12 of the Biodiversity Certification Order

Vegetation communities

BC Act - TEC

- Urban Native/Exotic
- Cumberland Plain Woodland in the Sydney Basin Bioregion
- River-flat Eucalypt Forest in the Sydney Basin Bioregion

- Watercourse
- Waterbody

1:3,500

0 50 100 m

Figure 7-5 Biodiversity impacts from the Kemps Creek realignment

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

Surface water

The proposed Kemps Creek realignment has potential to improve surface water impacts described in section 9.2 of the EIS.

The Kemps Creek realignment will reduce the potential surface water impacts to Kemps Creek because the brine pipeline will be constructed via pipe jacking through concrete casings constructed as part of another Sydney Water pipeline project. This will remove the need for open trenching Kemps Creek as proposed in the EIS and reduce the potential for in-channel erosion and sedimentation within the waterways.

The Kemps Creek realignment will be an improvement to surface water impacts described in the EIS. No changes to the management measures described in the EIS are required.

Flooding

The proposed Kemps Creek realignment is unlikely to result in changes to flooding impacts during construction. The predicted impacts remain the same, as described in section 9.3 of the EIS. The location of the crossing for the original alignment assessed within the EIS was not within the 1% AEP flood extent (indicated by mapping obtained from the SES website in November 2020) for Kemps Creek. The Kemps Creek realignment will move the crossing to a new location, slightly upstream. Because the new location is only a slight change from the original alignment there will be no change to flooding impacts described in the EIS.

Aboriginal heritage

The Kemps Creek realignment will move part of the pipeline into an area already cleared and disturbed by another Sydney Water pipeline project. The relocation to a previously disturbed area reduces the potential presence of artefacts and therefore reduces the potential risk to Aboriginal heritage. The proposed amendment in this location will reduce potential impacts to Aboriginal heritage.

No changes to the management measures described in the EIS are required.

Landscape character and visual amenity

The proposed Kemps Creek realignment will reduce impacts to landscape character and visual impacts to existing receivers from those assessed in the EIS.

The proposed Kemps Creek realignment is located within landscape character zone LCZ2 which is shown in Figure 11-12 in the EIS. The EIS describes LCZ2 as rural residential with large residential lots. The sensitivity of LCZ2 is high because it is mostly low density and rural residential in nature which makes it sensitive to change. While most of LCZ2 is characterised by rural residential lots, the Kemps Creek realignment is located within an area bounded by native vegetation. Because the amendment uses the existing cleared pipeline corridor which minimises further vegetation removal and avoids further modifying landscape character, impacts to landscape character are reduced.

Section 11.3 of the EIS describes visual impacts associated with representative viewpoints from residential receivers along the alignment. Close to the amendment, views towards Kemps Creek from Cross Street have high moderate visual impacts which are associated with loss of vegetation and visible construction activities within the viewpoint. Because the amendment uses an existing pipeline corridor the amendment will minimise vegetation loss and reduce visual impacts associated with further vegetation removal.

No changes to the management measures described in the EIS are required.

7.4.4 Operational impact assessment

During operation, the pipelines will be located underground. The Kemps Creek realignment will not result in changes to pipeline operation as described in the EIS. Accordingly, assessment of operational impacts is not needed.

7.5 South Creek realignment

7.5.1 Impact screening

Table 7-4 summarises the outcomes of the impact screening process for this amendment.

Table 7-4 South Creek realignment screening

Environmental matter	Potential for the amendment to cause impact
Waterways	No change to the impacts assessed in the EIS. No assessment needed.
Terrestrial biodiversity	Potential for biodiversity impacts different to those assessed in the EIS. A review is required by the technical specialists to confirm if there are additional impacts or changes to impacts
Surface water	Potential for changes to the assessment presented in the EIS. A review of the assessment within the EIS is required to confirm if there are additional impacts or changes to impacts.
Flooding	Potential for changes to the assessment presented in the EIS. A review of the assessment within the EIS is required to confirm if there are additional impacts or changes to impacts.
Groundwater	No change to the impacts assessed in the EIS. No assessment needed.
Soils and contamination	No change to the impacts assessed in the EIS. No assessment needed.
Aboriginal heritage	Potential for Aboriginal heritage impacts different to those assessed in the EIS. A review is required by the technical specialists to confirm if there are additional impacts or changes to impacts
Non-Aboriginal heritage	No change to the impacts assessed in the EIS. No assessment needed.
Air quality	No change to the impacts assessed in the EIS. No assessment needed.

Environmental matter	Potential for the amendment to cause impact
Noise and vibration	No change to the impacts assessed in the EIS. No assessment needed.
Landscape character and visual amenity	No change to the impacts assessed in the EIS. No assessment needed.
Traffic and transport	No change to the impacts assessed in the EIS. No assessment needed.
Human health and hazards	No change to the impacts assessed in the EIS. No assessment needed.
Socio-economic	No change to the impacts assessed in the EIS. No assessment needed.
Sustainability and resource management	No change to the impacts assessed in the EIS. No assessment needed.
Adjacent infrastructure	No change to the impacts assessed in the EIS. No assessment needed.

7.5.2 Existing environment

The South Creek realignment is where the treated water and brine pipelines run south from the AWRC. The realignment is located adjacent to South Creek with surrounding land uses including rural residential and commercial properties.

Figure 4-4 shows the existing environment of South Creek crossing realignment.

7.5.3 Construction impact assessment

Terrestrial biodiversity

The South Creek realignment will result in minor changes in direct impacts to native vegetation and threatened species habitat. These changes will reduce the impacts identified in the EIS, as shown shown on Figure 7-6. The positive effects include:

- avoiding about 0.07 hectares of PCT 835 Forest Red Gum – Rough-barked Apple grassy woodland (River-flat Eucalypt Forest) vegetation. This is a CEEC under the EPBC Act and an EEC under the BC Act
- avoiding about 0.07 ha of suitable habitat for the Cumberland Plain Snail which is listed as Endangered under the BC Act
- avoiding about 0.09 ha of suitable habitat for the Southern Myotis which is listed as Vulnerable under the BC Act.

The South Creek realignment will result in a negligible change to the project's indirect impacts and residual impacts at this location. No additional management measures are required to those provided in the EIS for the South Creek realignment. The biodiversity offset requirements for the project as presented in the EIS have been revised to account for the reduced impacts and are included in section 8.2.

Surface water

The proposed South Creek realignment is unlikely to significantly change surface water impacts described in section 9.2 of the EIS. As noted in the EIS, excavation and earthworks during construction along the pipeline alignment has the potential to cause localised erosion and increased sediment loads to local waterways.

Given the amendment means construction will be further away from South Creek, the impact may be reduced slightly. However, drainage is still towards South Creek and disturbed surfaces have potential to alter drainage paths with potential for increased sediment loads to enter the waterway.

No significant changes to surface water impacts are expected due to the South Creek realignment. No changes to the management measures described in the EIS are required.

Treated water pipeline
Brine pipeline
Trenchless alignment
Amended impact area

Amended impact assessment area
Southern Myotis Habitat
Cumberland Plain Land Snail habitat

Vegetation communities

BC Act - TEC

River-flat Eucalypt Forest in the Sydney Basin Bioregion

Shale Gravel Transition Forest in the Sydney Basin Bioregion
Waterbody

1:2,500
0 50 100m

Figure 7-6 Biodiversity impacts from the South Creek realignment

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

Flooding

The proposed South Creek realignment is not predicted to change flooding impacts described in section 9.3 of the EIS. Flood impacts described in the EIS include:

- construction works impacting the flood environment
- flooding creating hazardous conditions for construction work sites.

The alignment presented in the EIS is located within the 1% AEP (Annual Exceedance Probability) flood extent for South Creek. The proposed realignment is located about 25 m away from South Creek but still within the 1% AEP flood extent.

No changes to flooding impacts are expected due to the South Creek realignment. This is because the construction footprint remains within the 1% AEP flood extent and construction methodology remains as described in the EIS. No changes to the management measures described in the EIS are required.

Aboriginal heritage

As shown in Figure 10 of the Aboriginal Cultural Heritage Assessment Report (ACHAR) in the EIS, the closest Aboriginal heritage sites to the South Creek realignment are:

- Fleurs 1 Radio Telescope artefact site, about 400 m to the north
- Elizabeth Drive AFT 1 artefact site, about 200 m to the south.

The proposed South Creek realignment will be up to 25 m to the east of the alignment assessed in the EIS and further from South Creek. The ACHAR prepared for the EIS did not identify any sites or potential archaeological deposits in this area. Given the distance of the proposed realignment from the known Aboriginal sites, and the similar landscape to the alignment assessed in the ACHAR, no changes to Aboriginal heritage impacts are expected. Management measure AH02 includes an unexpected finds procedure for implementation during construction and this management measures remains adequate for the realignment.

7.5.4 Operational impact assessment

During operation, the pipelines will be located underground. The South Creek realignment will not result in changes to pipeline operation as described in the EIS. Accordingly, assessment of operational impacts is not needed.

7.6 Western Sydney Parklands realignment – brine pipeline

7.6.1 Impact screening

Table 7-5 summarises the outcomes of the impact screening process for this amendment.

Table 7-5 Western Sydney Parklands realignment screening

Environmental matter	Potential for the amendment to cause impact
Waterways	No change to the impacts assessed in the EIS. No assessment needed.
Terrestrial biodiversity	Potential for biodiversity impacts different to those assessed in the EIS. A review is required by the technical specialists to confirm if there are additional impacts or changes to impacts
Surface water	No change to the impacts assessed in the EIS. No assessment needed.
Flooding	No change to the impacts assessed in the EIS. No assessment needed.
Groundwater	No change to the impacts assessed in the EIS. No assessment needed.
Soils and contamination	No change to the impacts assessed in the EIS. No assessment needed.
Aboriginal heritage	Potential for Aboriginal heritage impacts different to those assessed in the EIS. A review is required by the technical specialists to confirm if there are additional impacts or changes to impacts
Non-Aboriginal heritage	No change to the impacts assessed in the EIS. No assessment needed.
Air quality	No change to the impacts assessed in the EIS. No assessment needed.
Noise and vibration	No change to the impacts assessed in the EIS. No assessment needed.
Landscape character and visual amenity	No change to the impacts assessed in the EIS. No assessment needed.
Traffic and transport	No change to the impacts assessed in the EIS. No assessment needed.
Human health and hazards	No change to the impacts assessed in the EIS. No assessment needed.
Socio-economic	No change to the impacts assessed in the EIS. No assessment needed.
Sustainability and resource management	No change to the impacts assessed in the EIS. No assessment needed.
Adjacent infrastructure	Potential for changes to the assessment presented in the EIS. A review of the assessment within the EIS is required to confirm if there are additional impacts or changes to impacts.

7.6.2 Existing environment

The proposed Western Sydney Parklands realignment is between Range Road and the WaterNSW Upper Canal. Surrounding land uses include the Sydney International Shooting Centre, and vegetation and public access tracks managed by Greater Sydney Parklands.

Figure 4-5 shows the existing environment of Western Sydney Parklands realignment.

7.6.3 Construction impact assessment

Terrestrial biodiversity

The Western Sydney Parklands realignment will reduce the impacts identified in the EIS. The review of the proposed realignment has resulted in the following changes in direct impacts to native vegetation and threatened species habitat:

- Decrease of about 0.28 ha of PCT 849 Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain listed under the BC Act and EPBC Act.
- Decrease in impact of 0.18 ha to suitable habitat for the Cumberland Plain Snail which is listed as Endangered under the BC Act.
- Decrease in impact of 0.22 ha to suitable habitat for Southern Myotis which is listed as Vulnerable under the BC Act.
- Decrease in impact of 0.01 ha to suitable habitat for the Spiked Rice-flower which is listed as Endangered under the BC Act and EPBC Act.

The Western Sydney Parklands realignment will result in a negligible change to the project's indirect impacts and residual impacts at this location. No additional management measures are required to those provided in the EIS for the Western Sydney Parklands realignment. The biodiversity offset requirements for the project as presented in the EIS have been revised to account for this amendment and are included in section 8.2.

Figure 7-7 shows the amended areas of biodiversity impact from the Western Sydney Parklands realignment.

Aboriginal heritage

The proposed Western Sydney Parklands realignment is not located in an area known to contain artefacts or identified as an area of PAD in the ACHAR completed for the EIS. There will be no change to Aboriginal heritage impacts as a result of the Western Sydney Parklands realignment.

Management measure AH02 includes an unexpected finds procedure for implementation during construction and this management remains adequate for the realignment.

Adjacent infrastructure

The proposed Western Sydney Parklands realignment has been identified through consultation with Greater Sydney Parklands. The realignment will minimise impacts on a sealed road recently built adjacent to the brine pipeline alignment.

7.6.4 Operational impact assessment

During operation, the pipelines will be located underground. The Western Sydney Parklands realignment will not result in changes to pipeline operation as described in the EIS. Accordingly, assessment of operational impacts is not needed.

Treated water pipeline
Brine pipeline
Trenchless alignment
Amended impact area

Amended impact assessment area
Southern Myotis Habitat
Cumberland Plain Land Snail habitat

Pimela spicata habitat

Vegetation communities

BC Act - TEC

Urban Native/Exotic

Cumberland Plain Woodland in the Sydney Basin Bioregion

Cumberland Plain Woodland in the Sydney Basin Bioregion

Waterbody

1:4,000
0 50 100 m

Figure 7-7 Biodiversity impacts from the Western Sydney Parklands re-alignment

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

7.7 Bartley Street realignment – brine pipeline

7.7.1 Impact screening

Table 7-6 summarises the outcomes of the impact screening process for this amendment.

Table 7-6 Bartley Street realignment screening

Environmental matter	Potential for the amendment to cause impact
Waterways	No change to the impacts assessed in the EIS. No assessment needed.
Terrestrial biodiversity	Potential for biodiversity impacts different to those assessed in the EIS. A review is required by the technical specialists to confirm if there are additional impacts or changes to impacts
Surface water	No change to the impacts assessed in the EIS. No assessment needed.
Flooding	No change to the impacts assessed in the EIS. No assessment needed.
Groundwater	No change to the impacts assessed in the EIS. No assessment needed.
Soils and contamination	No change to the impacts assessed in the EIS. No assessment needed.
Aboriginal heritage	No change to the impacts assessed in the EIS. No assessment needed.
Non-Aboriginal heritage	Potential for changes to the assessment presented in the EIS. A review of the assessment within the EIS is required to confirm if there are additional impacts or changes to impacts.
Air quality	Potential for changes to the assessment presented in the EIS. A review of the assessment within the EIS is required to confirm if there are additional impacts or changes to impacts.
Noise and vibration	Potential for noise and vibration impacts different to those assessed in the EIS. A review is required by the technical specialists to confirm if there are additional impacts or changes to impacts
Landscape character and visual amenity	Potential for changes to the assessment presented in the EIS. A review of the assessment within the EIS is required to confirm if there are additional impacts or changes to impacts.
Traffic and transport	Potential for traffic and transport impacts different to those assessed in the EIS. A review is required by the technical specialists to confirm if there are additional impacts or changes to impacts
Human health and hazards	No change to the impacts assessed in the EIS. No assessment needed.
Land-use and property	No change to the impacts assessed in the EIS. No assessment needed.

Environmental matter	Potential for the amendment to cause impact
Socio-economic	Potential for changes to the assessment presented in the EIS. A review of the assessment within the EIS is required to confirm if there are additional impacts or changes to impacts.
Sustainability and resource management	No change to the impacts assessed in the EIS. No assessment needed.
Adjacent infrastructure	No change to the impacts assessed in the EIS. No assessment needed.

7.7.2 Existing environment

The Bartley Street realignment is where the brine pipeline crosses the T2, T3 and T5 railway lines at Cabramatta, about 460 m north of Cabramatta Station. The crossing is proposed between the eastern end of Bartley Street to the car park of the Cabravale Leisure Centre.

The surrounding land use includes commercial and residential properties. The western end of the realignment includes Cabravale Memorial Park to the south and the Cabravale Diggers Club to the north. The eastern end of the realignment includes the Cabravale Leisure Centre, residential properties on Cumberland Street, and several places of worship.

Figure 4-6 shows the existing environment of the Bartley Street realignment.

7.7.3 Construction impact assessment

Terrestrial biodiversity

The Bartley Street realignment will reduce impacts identified in the EIS. The changes in direct impacts to native vegetation and threatened species habitat are:

- Decrease of about 0.01 ha of PCT 7249 Broad-leaved Ironbark – Grey Box - Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain.
- Decrease in impact of 0.01 ha to suitable habitat for the Cumberland Plain Snail which is listed as Endangered under the BC Act.

The Bartley Street realignment will result in a negligible change to the project's indirect impacts and residual impacts at this location. No additional management measures are required to those provided in the EIS for the Bartley Street realignment. The biodiversity offset requirements for the project as presented in the EIS have been revised to account for this reduction and are included in section 8.2.

Non-Aboriginal heritage

The proposed Bartley Street realignment will remove the potential impact on non-Aboriginal heritage items in this area assessed in section 10.2 of the EIS.

Table 10-15 in section 10.2.5 of the EIS identified a minor impact to the local heritage 'Bandstand in Cabravale Park' (item number I17) as listed under the Fairfield Local Environmental Plan (LEP) 2010. This impact was associated with the tunnelling launch pit in Cabravale Memorial Park which had the potential to impact the built heritage from vibration and vegetation removal.

The realignment will relocate the tunnelling and excavation construction activities from Cabravale Memorial Park into Bartley Street and the Cabravale Leisure Centre car park. The Bartley Street realignment will remove the potential for impact assessed in the EIS on the local heritage 'Bandstand in Cabravale Park' as listed under the Fairfield LEP. Accordingly, management measure NAH01 to mitigate impacts to the 'Bandstand in Cabravale Park' is no longer required. No other changes to management measures described in the EIS are proposed.

Air quality

Section 11.1 of the EIS describes the main potential air quality impact during construction as the generation of particulate matter in the form of dust. Dust emissions from construction works have the potential to cause nuisance impacts if not properly managed. Air quality impacts during construction will largely result from dust generated from land clearing, earthworks, material handling, and material transport required to construct the project pipelines. The removal of construction activity from Cabravale Memorial Park is likely to reduce predicted amenity impacts to recreational users of this park whose activities would be directly adjacent to the works.

In addition, the original construction plan was for the launch pit for the tunnelling construction under the T2, T3 and T5 railways lines to be in Cabravale Memorial Park. That launch pit location will be relocated to the carpark of the Cabravale Leisure Centre on Cumberland Street.

While impacts on recreational users of Cabravale Park during construction are not entirely removed, they will be reduced because of the greater distance to the pipeline construction works in Bartley Street, and the relocation of the main launch pit to the Cabravale Leisure Centre carpark.

However, the change in location of construction activities will affect other receivers, who would have also experienced impacts from the original alignment. These sensitive receivers are located on the eastern side of the T2, T3 and T5 railway lines where the tunnelling compound and brine pipeline realignment will be located. The receivers include the Cabravale Leisure Centre, Thai Christian Fellowship, The German-Austrian Society, the Kin Fu Ma Zu Association and Christian Temple, the Slavic Christian Church and residential properties along Cumberland Street.

They may experience the same air quality impacts identified in the EIS from excavation and emissions from machinery. These impacts may be greater given the location of the launch pit location on their northern side in the Cabravale Leisure Centre carpark. However, given the temporary and localised nature of dust generation and machinery use, the significance of these impacts on these receivers is expected to be low-moderate. Construction generated dust is an understood impact, which can be effectively managed through standard construction dust management measures.

The proposed Bartley Street realignment is unlikely to significantly change the air quality impacts during construction, as these impacts were identified for the original alignment.

With the change in alignment and construction locations, there is an improvement in predicted air quality impacts for some stakeholders, but an increase in impacts for others. No changes to the management measures described in the EIS are required.

Noise and vibration

The proposed Bartley Street realignment will result in changes to noise and vibration impacts during construction. Originally the pipeline alignment partially impacted Bartley Street, with a tunnelling launch pit in Cabravale Memorial Park and a tunnelling exit pit in Curtin Street.

Revising the pipeline alignment and relocating the tunnelling launch pit will reduce noise impacts to recreational users and businesses around Cabravale Memorial Park. However, some receivers in other areas may experience an increase in noise and vibration impacts.

Noise impacts associated with construction along the pipeline alignment and within the tunnelling launch pit at Cabravale Leisure Centre carpark are due to the use of noisy machinery close to sensitive receivers. Noise impacts affecting different receivers for the Bartley Street realignment are summarised in Table 7-7 and detailed in Appendix D.

Table 7-7 Summary of noise impacts for different receivers for the Bartley Street pipeline realignment

Potential impact	Impact to different receiver	Impact description
Noise impacts from pipeline construction	Increased noise impacts to Cabravale Diggers Club due to alignment extending along Bartley Street towards Railway Parade. Increased noise impacts to Cabravale Leisure Centre users due to alignment extending through the car park. Increased noise impacts to the Places of Worship (when in use) to the south of the Cabravale Leisure Centre car park Increased noise impacts to residential receivers on Cumberland Street between Cabravale Leisure Centre car park and Curtin Street.	New receivers are likely to experience construction noise levels above NMLs. Given new receivers are closer to pipeline construction they are more likely experience noise levels above the 75dBA NML highly noise affected criteria, dependent on the type of equipment used.
	Reduced noise impacts to residential receivers to the south of Curtin Street between Cumberland and Broomfield streets. Reduction in some noise impacts to Places of Worship (when in use) located along Curtin Street.	Receivers that are further away from pipeline construction are likely to experience a reduction in noise levels and less likely to experience noise levels above the 75dBA NML highly noise affected criteria.

Potential impact	Impact to different receiver	Impact description
Noise impacts 24hr tunnelling construction (dewatering only which will be the only night-time activity) in Cabravale Leisure Centre car park.	Increased noise impacts to Places of Worship and commercial premises when in use (nearest receiver 10 m away). Increased noise impacts to residential receivers along Cumberland Street (nearest receiver 123 m away) Reduced noise impacts to residential receivers near Curtin and Broomfield streets.	Predicted noise levels at Places of Worship and commercial receivers (when in use) are likely to meet the 70dBA NML during standard working hours and during the night-time. Predicted noise levels for residential receivers are likely to meet the 55dBA NML during standard working hours and exceed the 40dBA NML during the night-time. Predicted levels are below the 75dBA highly noise affected NML for all receivers.
Noise impacts from compound activities in Cabravale Leisure Centre car park.	Increased noise impacts to Places of Worship and commercial receivers when in use (nearest receiver 22 metres away). Increased noise impacts to residential receivers off Cumberland Street (nearest receiver 35 metres away). Reduced noise impacts to residential receivers near Curtin and Broomfield streets.	Predicted noise levels for Places of Worship and commercial receivers (when in use) are likely to meet the 75dBA NML highly noise affected criteria. Predicted noise levels for residential receivers are likely to be below the 75dBA NML highly noise affected criteria.

Overall, Table 7-7 shows that noise impacts will increase for receivers who are closer to pipeline construction and reduce for those receivers further away from pipeline construction as a result of the Bartley Street realignment. Some residential receivers may now experience noise impacts from dewatering construction activities that will occur in the tunnelling compound during the nighttime. As discussed in section 11.2 of the EIS, locations, timing and use of compound sites will continue to be refined and optimised during detailed design and construction planning. During these phases, opportunities to minimise noise impacts will be investigated.

Ground-borne noise impacts are not expected as a result of the Bartley Street realignment. This is because dewatering construction activities that will occur during the nighttime are not sufficient to propagate ground-borne noise.

There is potential for vibration impacts to affect different receivers. Vibration generating machinery for tunnelling and trenched construction within the tunnelling compound will be close to the Places of Worship located between Cabravale Leisure Centre carpark and Curtin Street. There is potential for cosmetic damage to structures where minimum working distances from these receivers are not maintained and so management measures identified in the EIS would be in place at these new locations.

New receivers on Bartley and Cumberland Streets are unlikely to experience vibration impacts because sufficient offset distances mean vibration impacts to buildings remain unlikely. The removal of pipeline construction from Curtin Street between Broomfield and Cumberland Street means potential vibration impacts to these receivers are reduced.

There may be some construction noise impacts on local roads due to potential road closure diversions. However, given predicted traffic flows are the same as those described in the EIS and most truck movements will be during standard construction hours, increased noise impacts from construction traffic are not expected as a result of the Bartley Street realignment.

Management measures as described in the EIS are adequate to manage noise and vibration impacts resulting from the amendment. No changes are proposed to management measures described in the EIS.

Landscape character and visual amenity

The proposed Bartley Street realignment will result in some changes to landscape character and visual impacts. LCZs are described in section 7.2 of this report. The proposed Bartley Street realignment is located within LCZ11.

In LCZ11 there are residential, commercial and recreational land uses such as shops, supermarkets, parks and reserves. The sensitivity of LCZ11 is high because construction will be close to existing receivers who may be sensitive to changes to their surrounds. Impacts to this LCZ are described as high and are due to pipelaying construction activities and active construction compounds (C11-C15), including a tunnelling compound in Cabravale Memorial Park (C13) which impacts amenity for the local community.

Moving the construction compound from Cabravale Memorial Park to Cabravale Leisure Centre carpark reduces impacts associated with loss of public space amenity in this LCZ. The types of landscape character impacts associated with pipeline construction are the same as described in the EIS but will impact new receivers in this LCZ. Alignment changes reduce impacts to receivers on Curtin Street and increase impacts to new receivers potentially sensitive to their surrounds including Cabravale Leisure Centre users, the Cabravale Diggers Club and receivers along Cumberland Street. As described in the EIS, impacts to landscape character are temporary. Overall, the impacts to landscape character in LCZ11 are reduced.

Section 11.3 of the EIS describes visual impacts associated with representative viewpoints from residential receivers along the alignment. High visual impacts during construction are associated with viewpoint VP27 which is a view across Cabravale Memorial Park. The high visual impact is associated with visible construction activities, loss of mature trees and impacts to views of the heritage bandstand within the viewpoint. The EIS also describes high visual impacts associated with visible construction activities and potential loss of mature trees within the surrounding streetscapes. The amended alignment means that construction activities will no longer be visible from viewpoint VP27 and other potential views across Cabravale Memorial Park. This means there will be a significant reduction in visual impacts from those described in the EIS. Pipeline construction will be more visible to the Cabravale Diggers Club along Bartley Street and new residential receivers along Cumberland Street, increasing some visual impacts to these receivers. However visual impacts to residential receivers on Curtin Street will be reduced where pipeline

construction will no longer occur. As described in the EIS, visual impacts associated with construction are temporary and will reduce as construction progresses.

Overall, the amendment will reduce landscape character and visual impacts to some existing receivers from those described in the EIS but may increase impacts to some new receivers along the alignment. The management measures described in the EIS are adequate to manage visual impacts.

No management measures are required beyond those identified in the EIS. Management measure LCV01 commits to screening to mitigate visual impacts associated with construction compounds in representative viewpoints. LCV01 has been changed to replace VP27 (C13) with Cabravale Leisure Centre to ensure screening is considered at the new compound location. Changes to LCV01 are included in Table 8-1.

Traffic and transport

Section 11.4 of the EIS describes the potential impacts of the project on traffic and transport. This includes light and heavy vehicle movements associated with the transportation of personnel, waste, equipment, machinery and materials to and from construction sites and compounds. Given the location of compound C13 in Cabravale Memorial Park, the EIS identified potential impacts to the local traffic network in this location, including on active transport, public transport and street parking.

The proposed Bartley Street realignment will result in changes to traffic and parking conditions during construction. However, significant impacts to the traffic network during construction are not anticipated. Temporary road closures of Bartley Street between Phelps Street and Railway Parade, and Cumberland Street north of Curtin Street will be required. Closures are likely to be required for about four weeks at each location.

Construction of the tunnelled pipeline section under the T2, T3 and T5 railway line will require a tunnelling launch pit in a compound in Cabravale Leisure Centre car park, resulting in temporary disruptions to its Curtin Street access. The access from Broomfield Street is unlikely to be impacted.

During temporary road closures, diversions will be established to minimise the impacts on the traffic network. The details of all traffic diversions will be outlined in the Site-Specific Construction Traffic Management Plans (SSCTMP).

Temporary impacts to parking during construction will include the temporary loss of about:

- 15 parking bays on the southern kerbside of Bartley Street (between Phelps Street to Railway Parade)
- 33 parking bays directly impacted on the southern extent of the Cabravale Leisure Centre carpark. The exact location and identification of impacted car spaces will be established during detailed design in consultation with Cabravale Leisure Centre.

The temporary loss of parking spaces will be managed by rotating work sites within the compound. The staging and timing of construction works will be determined during detailed design and the development of the SSCTMPs.

The number and type of construction related traffic movements assessed in the EIS remains unchanged. The distribution of construction traffic will have a slight change given that C13 has moved from Cabravale Memorial Park to the Cabravale Leisure Centre car park.

Table 7-8 summarises the changed construction traffic impacts from the Bartley Street realignment. The potential impacts and significance of impacts has not changed from the EIS, with the exception of road closures. The EIS assessed the need for partial road closures restricting traffic flow. These were predicted to have a low impact significance with an impact duration of 2-3 weeks at each location. With the proposed realignment, full road closure of some sections of roads, principally Bartley Street at the Cabravale Diggers Club, will be required. This is predicted to have a low-medium level of impact.

The types of impacts predicted are the same as those identified in the EIS, however, the areas and receivers being impacted has changed. Table 7-8 is in addition to the impacts outlined in Table 11-40 of the EIS.

Table 7-8 Bartley Street realignment traffic impacts

Potential impact	Additional areas of impact	Impact significance
Temporary disruption to bus stops and routes along the construction corridor.	Bartley Street west of Phelps Street.	Medium
Temporary removal of both on-street and off-street parking along the construction corridor.	On-street parking along Bartley Street and Cumberland Street. Off-street parking at Cabravale Leisure Centre.	Low
Temporary road closures restricting access and diverting traffic.	Bartley Street between Phelps Street and Railway Parade. Cumberland Street access to Cabravale Leisure Centre car park.	Low-Medium
Temporary disruption to footpaths.	Bartley Street and Cumberland Street.	Medium
Temporary impacts to dwelling and business access.	All dwellings and businesses adjacent to the construction corridor. This includes: • Residential and commercial access on Phelps Street. • Places of Worship: Shaolin Temple Australia, Thai Christian Fellowship, Kin Fu Ma Zu Temple and Slavic Church. • The German-Austrian Society.	Medium

A management measure TT06 has been added in Chapter 8 that requires consultation with the Cabravale Diggers Club and ensuring emergency access off Bartley Street for the Club is maintained.

Socio-economic

The proposed Bartley Street realignment will result in a change in socio-economic impacts in the area. The realignment will move the socio-economic impacts away from the Cabravale Memorial Park to the Cabravale Leisure Centre carpark and surrounding residents and commercial businesses. This change will benefit the public availability of green space because construction activities will no longer be required in Cabravale Memorial Park.

The Bartley Street realignment will require the temporary closure of Bartley Street between Phelps Street and Railway Parade. Cumberland Street adjacent to the Cabravale Leisure Centre car park will also be temporarily closed during construction. As noted above, the EIS assessed the need for partial road closures restricting traffic flow which were predicted to have a low impact significance. The realignment will require full closure of Bartley Street between the Cabravale Diggers Club and Railway Parade for which an additional management measure (TT06) has been included to protect emergency access.

The road closures will be for short sections of streets but they will be full closures, rather than the partial closures assessed in the EIS. This increases the impact significance from low to low-medium. This will impact the social amenity of the area. However, there are management measures, including diversions and maintenance of emergency access, that can mitigate the effects.

The balancing effect of avoiding impacts to Cabravale Memorial Park is seen as a significant positive impact.

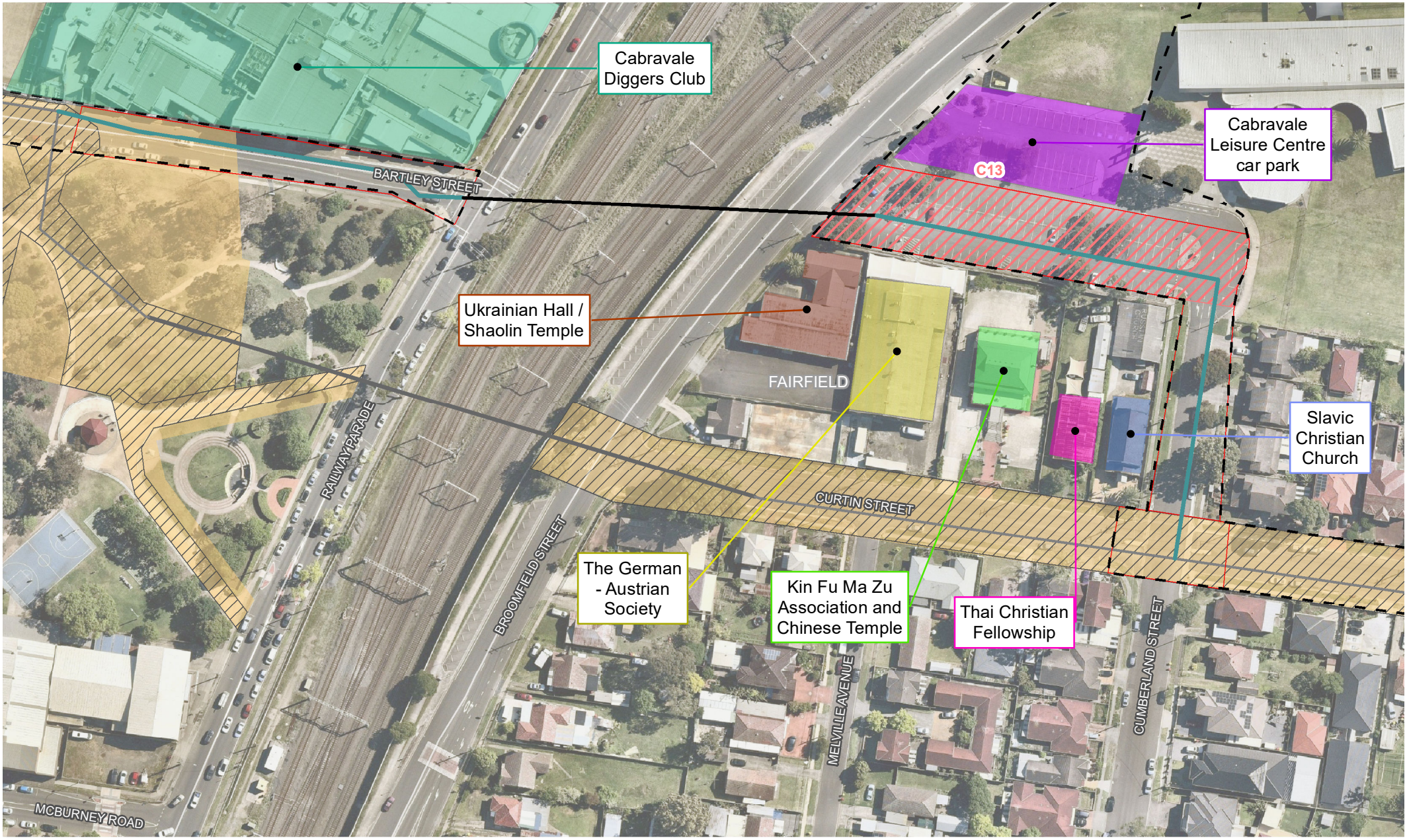
The realignment will have a minor impact on the accessibility of the Cabravale Leisure Centre car park during construction, although access will be maintained via Broomfield Street. Consultation will continue as planned throughout detailed design to ensure that construction planning takes stakeholder needs into consideration.

Properties along Curtin Street include the German Austrian Society, Thai Christian Fellowship, the Kin Fu Ma Zu Association and Chinese Temple and a Slavic Christian Church. These properties would have been indirectly impacted by the alignment along Curtin Street on their southern boundary. With the proposed realignment, the indirect impact would change to their north or east boundary, along Cumberland Street. The location of these properties in relation to the original alignment and the proposed realignment is shown on Figure 7-8.

The primary activity day for the Thai Christian Fellowship is Sunday when it is open between 9am and 5pm. The Slavic Christian Church has meetings on Fridays at 7.30 pm and Sundays at 9 am and 10.45 am. The German-Austrian Society is a restaurant which is open seven days per week (for breakfast, lunch and dinner most days). The opening times of the Kin Fu Ma Zu Association and Chinese Temple is unclear, but consultation is ongoing to ensure that opening times are considered in construction planning. This is also the case with the Shaolin Temple Foundation

which is housed in the same building as the Ukranian Association of Cabramatta on Broomfield Street.

Sydney Water will continue consulting with these stakeholders as the project progresses, including working with them to minimise impacts on their businesses.



EIS

- Impact assessment area in EIS
- Impact area in EIS
- Pipeline alignment in EIS
- Tunnelled alignment in EIS
- Indicative compound

Amendments

- Amended brine pipeline
- Amended tunnelled alignment
- Amended impact assessment area
- Amended impact area

1:1,500

0 25 50m

Figure 7-8 Community Stakeholders in relation to the Bartley Street realignment

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

Overall, the Bartley Street realignment will have a positive socio-economic impact, and the impacts and their significance outlined in Table 11-66 of the EIS will not change. Sydney Water has updated management measures SELU04 and SELU06 in the EIS to reflect that Cabravale Memorial Park will no longer be used during construction, and to include the local businesses and places of worship near the new launch pit location. These are outlined in Chapter 8 of this report.

Adjacent infrastructure

The proposed Bartley Street realignment works have the potential to impact existing below ground services in the new location areas of Bartley Street, Cumberland Street and the Cabravale Leisure Centre car park. Preliminary non-intrusive investigations have not identified the presence of any existing services in the proposed construction corridor. However, further intrusive investigations may be required during detailed design to confirm the presence of any existing services.

7.7.4 Operational impact assessment

During operation, the pipelines will be located underground. The pipeline realignment will not result in changes to how the pipeline operates. As such, additional operational impact assessment has not been completed.

7.8 AWRC site boundary change

7.8.1 Summary

The proposed AWRC site boundary change is discussed in section 4.8 of this report. There are no changes to the construction, operation or location of the AWRC. The amended site boundary will align with the land that has been purchased by Sydney Water for the AWRC. This reduces the size of the AWRC site by about 5.5 ha. These differences are screened via the process outlined in Figure 6-1 and the results are shown in Table 7-9.

Table 7-9 AWRC site boundary change screening

Environmental matter	Potential for the amendment to cause impact
Waterways	No change to the impacts assessed in the EIS. No assessment needed.
Terrestrial biodiversity	Potential for changes to the assessment presented in the EIS. A review of the assessment within the EIS is required to confirm if there are additional impacts or changes to impacts.
Surface water	No change to the impacts assessed in the EIS. No assessment needed.
Flooding	No change to the impacts assessed in the EIS. No assessment needed.
Groundwater	No change to the impacts assessed in the EIS. No assessment needed.
Soils and contamination	No change to the impacts assessed in the EIS. No assessment needed.

Environmental matter	Potential for the amendment to cause impact
Aboriginal heritage	Potential for changes to the assessment presented in the EIS. A review of the assessment within the EIS is required to confirm if there are additional impacts or changes to impacts.
Non-Aboriginal heritage	Potential for changes to the assessment presented in the EIS. A review of the assessment within the EIS is required to confirm if there are additional impacts or changes to impacts.
Air quality	No change to the impacts assessed in the EIS. No assessment needed.
Noise and vibration	No change to the impacts assessed in the EIS. No assessment needed.
Landscape character and visual amenity	No change to the impacts assessed in the EIS. No assessment needed.
Traffic and transport	No change to the impacts assessed in the EIS. No assessment needed.
Human health and hazards	No change to the impacts assessed in the EIS. No assessment needed.
Land-use and property	No change to the impacts assessed in the EIS. No assessment needed.
Socio-economic	No change to the impacts assessed in the EIS. No assessment needed.
Sustainability and resource management	No change to the impacts assessed in the EIS. No assessment needed.
Adjacent infrastructure	No change to the impacts assessed in the EIS. No assessment needed.

7.8.2 Existing environment

The boundary change is located in the area just to the north of the M12 Motorway crossing realignment, which is discussed in section 7.3. The existing environment mainly includes rural land uses, and vegetation and South Creek to the west. Since this area is currently undeveloped, it has areas of biodiversity and heritage interest as discussed below.

7.8.3 Construction impact assessment

The size of construction compound C8 will be reduced by about 1.3 ha to exclude the land set aside for the M12 Motorway project. This compound will still include:

- the land purchased by Sydney Water (Lot 211/DP 1272676) to allow construction of the AWRC
- land owned by University of Sydney (Lot 21/DP 258414 to become Lot 212/DP 1272676) to facilitate construction of the pipeline and release structure to South Creek.

The EIS assessed the whole AWRC site and construction compound C8 as part of the project's impact area. The amendment would reduce impact to areas mapped as PCT 835 Forest Red Gum in the 1.3 ha area by about 0.15 ha as shown in Figure 7-9. This also has the flow on effect of reducing impacts to the Cumberland Plain Snail and Southern Myotis (listed as as Endagnered and Vulnerable respectively under the BC Act) by the same amount.

As shown in Figure 7-10, the amendment would reduce by 1.3 ha the impacts on:

- non-Aboriginal heritage site Fleurs Radio Telescope Site (listed as item 832 under Penrith Local Environmental Plan 2014, item I5 under State Environmental Planning Policy (Western Sydney Aerotropolis), 2020, and Potential Archaeological Site 7 in the EIS)
- Aboriginal heritage site Fleurs 1 Fleurs Radiotelescope (AHIMS 45-5-0496).

Although this reduces heritage impacts predicted in the EIS, the reduced impact area is only a small proportion of the total area of these heritage sites that will be impacted by the project. Accordingly, the amendment does not change the overall scale of impact on these sites. It also does not require any change to management measures in the EIS.

In addition, although this amendment reduces terrestrial biodiversity and heritage impacts outlined in the EIS, the 1.3 ha area is now within the M12 Motorway corridor so is expected to be impacted by that project.

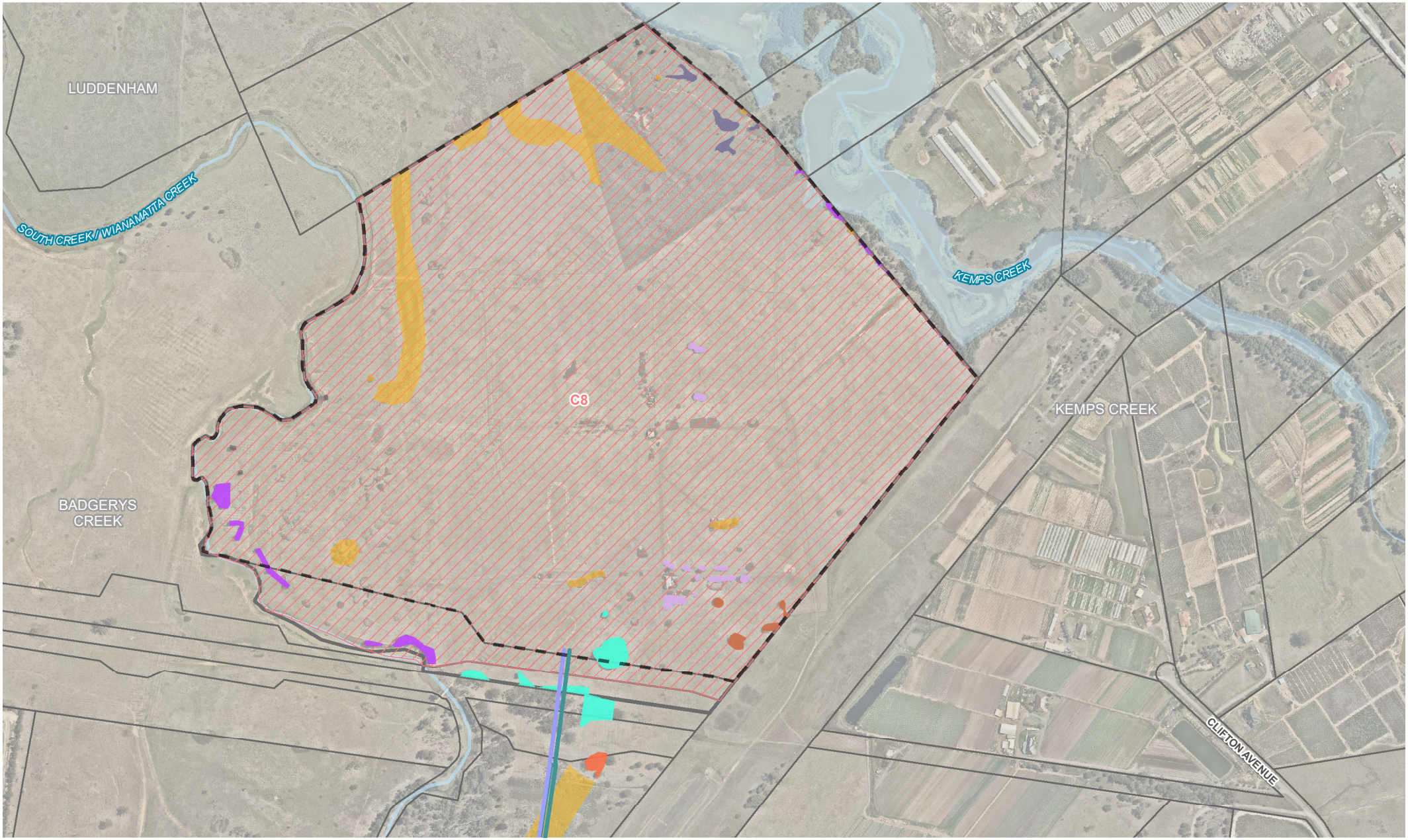


Figure 7-9 Biodiversity Impacts from the AWRC boundary amendment

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

Figure redacted for public exhibition due to sensitivity of image

Figure 7-10 Heritage impacts of AWRC site boundary change

7.8.4 Operation impact assessment

The proposed changes to the site boundary of the AWRC will not result in any changes to how the AWRC will operate. As such, additional operational impact assessment has not been completed.

7.9 Cumulative impacts

Cumulative impacts were assessed in each technical assessment of the EIS. Those assessments remain unchanged by the proposed amendments. This is because the realignments and the AWRC boundary change have minor impacts and therefore negligible change to the cumulative impacts.

8 Environmental management

This chapter summarises changes to Sydney Water's approach to environmental management during construction and operation of the project as a result of the amendments.

The seven amendments assessed in this report have been identified as a result of consultation with the community and stakeholders. Overall, they minimise the environmental impact of the project, and respond to key concerns raised during ongoing consultation. The amendments are relatively minor and do not require any changes to the overall environmental management approach in Chapter 14 of the EIS and only minor changes to management measures in the EIS. The amendments only apply to construction of the treated water and brine pipelines, with no changes proposed to the AWRC, environmental flows pipeline or overall operation of the project.

8.1 Construction environmental management

Changes are proposed to five environmental management measures outlined in section 15.4 of the EIS to address:

- change in biodiversity offset requirements as a result of changes to impacts on ecological communities, flora and fauna
- the inclusion of the Draft Recognise Country Guidelines
- Cabravale Memorial Park no longer being used for construction activities, which means content can be removed from several measures relating to heritage, visual and socio-economic impacts
- construction moving from Cabravale Memorial Park to Bartley Street, closer to the Cabravale Diggers Club
- Cabravale Leisure Centre being used as a construction compound, which means content is added to several management measures relating to visual and socio-economic impacts.

The amendments have also triggered removal of one management measure about managing heritage impacts at Cabravale Memorial Park given this park will no longer be impacted, and the addition of one new measure to consult with the Cabravale Diggers Club.

These are shown in Table 8-1, with content to be added in red and content to be removed in strike-through. To avoid duplication or confusion between this Amendment Report and the Submissions Report, Sydney Water will include these measures in a consolidated list of management measures in its Submissions Report.

All other management measures remain unchanged.

Table 8-1 Proposed revisions to management measures in the EIS

Reference	Impact	Management measure	Timing
UD01	Visual impact of AWRC site structures and parkland area	Prepare an Urban Design and Landscaping Plan for the AWRC site aligning with the themes and principles outlined in Table 4-4 *[in the EIS]* and consider the opportunities identified in Table 4-4 *[in the EIS]* as the urban design progresses. This plan will also: • address constraints associated with bushfire, flooding, and airport safeguarding • incorporate vegetation management that considers the principles of Guidelines for Vegetation Management Plans on Waterfront Land (~~NSW Office of Water,~~ DPI 2012) ~~and~~ the Western Sydney Aerotropolis Riparian Revegetation Strategy (once finalised) and the tree planting provisions of the Phase 2 Aerotropolis Development Control Plan (once finalised) • include architectural design to soften the industrial aesthetic. • consider integrating the heritage character of the site with the treatment and finishes of the new design. • consider the finalised version of the draft guideline 'Recognise Country – Draft Guidelines for development in the Aerotropolis' • incorporate inputs from relevant experts in architecture, landscape architecture, bushfire management, heritage, revegetation, ecology, wildlife hazard management and flooding.	Visual impact of AWRC site structures and parkland area
TB10	Residual impacts to biodiversity	Prepare a Biodiversity Offset Strategy in accordance with the NSW Biodiversity Offset Scheme to address the species and ecosystem credit requirements outlined in ~~section 9.1.10.~~ the 'Upper South Creek Advanced Water Recycling Centre project amendments: Biodiversity Assessment,' (Biosis, November 2021)	Prior to construction

Reference	Impact	Management measure	Timing
~~NAH01~~	~~Impacts to built heritage – Cabravale Memorial Park~~	~~Establish a 'heritage protection zone' around key features of the Cabravale Memorial Park. This will include:~~ • ~~no-go zones and fencing around the Bandstand, 170mm Minenwerfer and Vietnam War Comradeship memorial~~ • ~~where possible, using existing roads and access tracks. Where this is not possible and driving directly over grassed areas is required, applying surface material to the ground cover to spread loads and prevent destruction of these areas~~ • ~~remediating any damage to the landscape upon completion of the work.~~	~~Prior to construction~~
LCV01	Visual impact of construction areas	Consider opportunities to install temporary screens/ hoarding with finishes to minimise visibility of construction areas and to minimise noise impacts to surrounding sensitive receivers. As a minimum, install temporary screens at compounds C7 from viewpoint (VP) 12, C6 from VP13, C5 from VP17, C2 from VP18, C3 from VP20, C9 from VP23, C10 from VP25, C13 from ~~VP27~~ Cabravale Leisure Centre users, C14 from VP28, C15 from VP29.	Detailed design
TT06	Impacted access to the Cabravale Diggers Club	Consult with the Cabravale Diggers Club and ensure emergency access off Bartley Street for the Club is maintained and included in the SSCTMPs.	Prior to construction During construction
SELU04	Interruptions to social infrastructure	Consult and work with local councils during the construction period to minimise impacts to social infrastructure and local events, such as memorials and festivals etc. This includes timing construction activities to minimise impacts to events: • at Luddenham Showground • ~~at Cabravale Memorial Park~~ • on public holidays and school holidays.	Prior to construction During construction

Reference	Impact	Management measure	Timing
SELU06	Interruptions to social infrastructure	Investigate further ways to mitigate potential impacts associated with construction, in particular the location of construction compounds and additional construction areas at the following locations: • Fowler Reserve, Wallacia • Western Sydney Parklands, Kemps Creek and Cecil Hills • Cabravale ~~Memorial Park~~ Leisure Centre, and nearby businesses and places of worship including the Shaolin Temple Foundation/Ukranian Association of Cabramatta, the German-Austrian Club, the Kin Fu Ma Zu Association and Chinese Temple, the Thai Christian Fellowship and the Slavic Church • Lennox Reserve, Lansvale • Lansvale Reserve, Lansvale.	Detailed design

8.2 Additional change to management measures

Separate to the changes to management measures resulting from amendments, Sydney Water is proposing a change to bushfire-related management measures to align with Sydney Water and Rural Fire Service (RFS) policy. This consolidates two management measures to reflect the latest policy and adjusts the numbering of one, as shown in Table 8-2.

Table 8-2 Additional changes to management measures in the EIS

Reference	Impact	Management measure	Timing
HIA03	Construction bushfire hazard	~~No hot works will be undertaken if the Fire Danger Rating is very high or above.~~ Measures to manage bushfire hazard and risk during construction will be included as part of the CEMP, and will comply with the Rural Fire Service's exemptions and approvals for working during a Total Fire Ban.	During construction
~~HIA04~~	~~Construction bushfire hazard~~	~~All works in bushfire prone areas will be stopped and workers evacuated from the area during Fire Danger Rating of extreme or above.~~	~~During construction~~

Reference	Impact	Management measure	Timing
HIA05~~4~~	Impact to human health – AWRC site	Ensure adequate capacity in the AWRC stormwater system to contain water used for firefighting for testing prior to disposal, if required.	Detailed design During operation

8.3 Biodiversity offsets

Table 8-3 details the direct biodiversity impacts that will result from the project as amended.

Table 8-3 Amended direct impacts summary

PCT / Species	Listing status	Amended total direct impacts
Plant Community Type		
724 Broad-leaved Ironbark - Grey Box -Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion.	Shale Gravel Transition Forest in the Sydney Basin Bioregion (CEEC, EPBC Act and EEC, BC Act).	724_Intact: 0.40 ha 724_Thinned: 1.14 ha 724_Scattered trees: 0.04 ha **Total: 1.58 ha**
725 Broad-leaved Ironbark - Melaleuca decora shrubby open forest on clay soils of the Cumberland Plain, Sydney Basin Bioregion.	Not listed.	725_Scattered trees: 0.01 ha **Total: 0.01 ha**
781 Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion.	Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (EEC, BC Act).	781_Thinned: 0.02 ha **Total: 0.02 ha**
835 Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion.	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (EEC, BC Act).	835_Intact: 0.22 ha 835_Thinned: 2.85 ha 835_Scattered trees: 0.74 ha **Total: 3.82 ha**
849 Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion.	Cumberland Plain Woodland in the Sydney Basin Bioregion (CEEC, EPBC Act and BC Act).	849_Intact: 0.93 ha 849_Thinned: 2.40 ha 849_Scattered trees: 1.15 ha **Total: 4.48 ha**

PCT / Species	Listing status	Amended total direct impacts
1083 Red Bloodwood - scribbly gum heathy woodland on sandstone plateaux of the Sydney Basin Bioregion.	Not listed	1083_Thinned: 1.38 ha **Total: 1.38 ha**
1105 River Oak open forest of major streams, Sydney Basin Bioregion and South East Corner Bioregion.	Not listed	1105_Thinned: 0.40 ha **Total: 0.4 ha**
1181 Smooth-barked Apple - Red Bloodwood - Sydney Peppermint heathy open forest on slopes of dry sandstone gullies of western and southern Sydney, Sydney Basin Bioregion.	Not listed	1181_Intact: 0.07 ha **Total: 0.07 ha**
1800 Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter valley.	Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (EEC, EPBC Act and BC Act).	1800_Thinned: 0.70 ha 1800_Scattered trees: 0.22 ha **Total: 0.92 ha**
Threatened flora		
Downy Wattle *Acacia pubescens*	Vulnerable, EPBC Act and BC Act	0.16 ha
Marsdenia viridiflora subsp. *viridiflora*	Endangered population, BC Ac	0.04 ha
Spiked Rice-flower *Pimelea spicata*	Endangered, BC Act and EPBC Act	1.64 ha
Pultenaea parviflora	Vulnerable, EPBC Act and Endangered, BC Act	0.01 ha
Threatened fauna		
Large-eared Pied Bat *Chalinolobus dwyeri*	Vulnerable, EPBC Act and BC Act	3.48 ha
Cumberland Plain Snail *Meridolum corneoviren*	Endangered, BC Act	7.95 ha
Large Bent-winged Bat *Miniopterus orianae oceanensis*	Vulnerable, BC Act	1.56 ha
Southern Myotis *Myotis macropus*	Vulnerable, BC Act	6.88 ha

PCT / Species	Listing status	Amended total direct impacts
Dural Land Snail *Pommerhelix duralensis*	Endangered, EPBC Act and BC Act	1.47 ha

As a result of the project amendments outlined in this report and the revised direct biodiversity impact as shown in Table 8-3 the offsetting requirements of the project have been revised. The amendments will result in an overall reduction in offsetting requirements for ecosystems and species as detailed in Table 8-4 and Table 8-5.

Table 8-4 Terrestrial biodiversity offsets – ecosystem credits

Vegetation zone - condition	Credit requirement EIS	Credit requirement Amended project	Change
724: Broad-leaved Ironbark - Grey Box - Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion (Shale Gravel Transition Forest TEC)	40	40	-
725: Broad-leaved Ironbark - Melaleuca decora shrubby open forest on clay soils of the Cumberland Plain	1	1	-
781: Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion (Freshwater wetlands on coastal floodplains TEC)	0	0	-
835: Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion (River-flat Eucalypt Forest TEC)	162	135	-27
849: Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion (Cumberland Plain Woodland TEC)	117	110	-7
1083: Red Bloodwood - scribbly gum heathy woodland on sandstone plateaux of the Sydney Basin Bioregion	19	19	-

Vegetation zone - condition	Credit requirement EIS	Credit requirement Amended project	Change
1105: River Oak open forest of major streams, Sydney Basin Bioregion and South East Corner Bioregion	3	3	-
1181: Smooth-barked Apple - Red Bloodwood - Sydney Peppermint heathy open forest on slopes of dry sandstone gullies of western and southern Sydney, Sydney Basin Bioregion	1	1	-
1800: Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter valley (Swamp Oak Floodplain Forest TEC)	15	15	-

Table 8-5 Terrestrial biodiversity offsets – species credits

Scientific name	Common name	Credits required EIS	Credits required Amended project	Change
Threatened flora species				
Acacia pubescens	Downy Wattle	4	4	-
Callistemon linearifolius	Netted Bottle Brush	9	0	-9
Dillwynia tenuifolia	-	2	0	-2
Grevillea juniperina subsp. *juniperina*	Juniper-leaved Grevillea	2	0	-2
Marsdenia viridiflora subsp. *viridiflora* - Endangered population	-	19	3	-16
Pimelea spicata	Spiked Rice-flower	75	41	-34
Pultenaea parviflora	Sydney Bush-pea	1	1	-
Pultenaea pedunculata	Matted Bush-pea	2	0	-2

Scientific name	Common name	Credits required EIS	Credits required Amended project	Change
Threatened fauna species				
Chalinolobus dwyeri	Large-eared Pied Bat	137	137	-
Meridolum corneovirens	Cumberland Plain Land Snail	259	226	-33
Miniopterus orianae oceanensis	Large Bent-winged-bat	41	41	-
Myotis macropus	Southern Myotis	201	179	-22
Pommerhelix duralensis	Dural Land Snail	27	27	-

8.4 Operation environmental management

The seven amendments assessed in this report will not change how the project will operate. Accordingly, no changes to operational management measures are proposed. No changes are proposed to the implementation of Sydney Water's management systems outlined in section 14.2 and Table 14-1 of the EIS.

9 Justification of amended project

This chapter provides justification for the amendments which includes outcomes from the impact assessment and how they compare with the key outcomes in the EIS.

Chapter 14 of the EIS provided a justification for the project including project need, management of impacts and response to the strategic context. The following sections justify why the proposed amendments are needed and how they align with the overall project justification in the EIS.

9.1 Overview of project amendments

The proposed amendments are described in Chapter 4 and include changes to:

- treated water pipeline alignment at the intersection of The Northern Road and Elizabeth Drive (The Northern Road realignment)
- treated water and brine pipeline alignments at the crossing of the M12 Motorway south of the AWRC (M12 Motorway crossing)
- brine pipeline alignment at the crossing of Kemps Creek (Kemps Creek realignment)
- treated water and brine pipeline alignments along South Creek (South Creek realignment)
- brine pipeline alignment through the Western Sydney Parklands (Western Sydney Parklands realignment)
- brine pipeline alignment at Cabramatta (Bartley Street realignment)
- AWRC site boundary.

The amendments are minor localised changes to the project as described in the EIS and do not require significant changes to the project footprint or construction methodology. Appendix A includes an amended project description to replace Chapter 4 of the EIS, with some minor changes to reflect these proposed amendments, including:

- minor changes to Figures 4-10, 4-12 and 4-17 to show the amended pipeline alignments
- minor changes to the site boundary and area of construction of the AWRC, including in section 4.4.1
- changes to section 4.9 relating to the changed construction methodology of the brine pipeline crossing of Kemps Creek
- changes to section 4.10 relating to the changed location of compound C13.

With the exception of the figures, these changes are shown in red in Appendix A.

Need for the amended project

The amendments described in Chapter 4 of this report are a result of ongoing design development, responses to matters raised during community and stakeholder consultation and to submissions received during the exhibition of the EIS.

The overall need for the project is driven by:

- the opening of the Western Sydney International Airport by 2025, a key catalyst for development in the region
- government and private sector investment in the WSAGA and SWGA
- NSW, Commonwealth and Local Government investment in infrastructure, including new major road and rail assets, social infrastructure and utilities
- release of new land areas, particularly for additional housing
- support for the establishment of industrial, manufacturing, agribusiness, commercial and other businesses that will create a large number of high value jobs.

Being mostly rural, a large proportion of the Upper South Creek Servicing Area is currently serviced by on-site systems such as septic tanks. While these systems are suitable for rural properties with only small numbers of people, they are not suitable in urban environments to treat large wastewater volumes. They are limited by the range of materials they can treat, their high maintenance costs, the poor quality of the treated water produced and subsequent risk to human health in the event of a failure. As a result, reliance on septic tanks in the Upper South Creek Servicing Area is not an acceptable long-term option.

Some parts of the Upper South Creek Servicing Area are temporarily connected to Sydney Water's existing Liverpool and West Camden Water Recycling Plants. However, these plants are experiencing rapid growth in their own catchments and are therefore close to capacity themselves. The rapid growth in the area, the resultant increasing demand and the poor existing levels of service, support the clear need to provide an expanded wastewater servicing solution in the Upper South Creek Servicing Area.

The proposed amendments do not affect the project's ability to achieve these objectives.

The proposed amendments also do not change the project's overall contribution to key Commonwealth, NSW and local government strategies. The proposed amendments represent a minor improvement in how the project aligns with several strategies outlined in Chapter 2 of the EIS.

Summary of impacts for the amended project

Table 9-1 summarises the potential impacts of the proposed amendments compared to impacts described in the EIS.

The proposed amendments will not change the type or significance of impacts assessed in the EIS. The impact assessment in Chapter 7 has identified some minor increases in impacts and many reductions in impacts during construction. The impact increases can be managed by management measures in Chapter 15 of the EIS with some minor amendments. The amended management measures will be included in the full suite of management measures in Sydney Water's Submissions Report, submitted separately to the Amendment Report.

There are no ongoing operational impacts associated with the amendments.

Overall, the management measures in the EIS are adequate to manage impacts of the proposed amendments. Chapter 8 describes minor changes to five existing management measures in the EIS. The amendments also result in the removal of one management measure and the addition of one new measure.

Measures taken to avoid and minimise impacts means the amended project makes a small contribution to cumulative impacts and presents negligible change to the cumulative impacts described in the EIS.

Table 9-1 Summary of impacts for the amended project

Project amendment	Why amendments are needed	Changes to potential impacts in the EIS	Changes to EIS management measures
Treated water pipeline – The Northern Road crossing realignment. Figure 4-1 shows this amendment.	• Responds to consultation with TfNSW about accommodating the new The Northern Road and Elizabeth Drive alignments. TfNSW suggested using the cul-de-sac off the new Elizabeth Drive corridor. • Responds to consultation with a landowner who requested an amendment to the alignment. • The use of the cul-de-sac means that only one crossing of a major TfNSW road is required.	**Construction impacts** • No change in impacts for waterways, flood, surface water, groundwater, soils and contamination, air quality, human health and hazards, sustainability and resource management and adjacent infrastructure. • Minor increase in direct impacts to biodiversity values. No change in impact significance. Negligible increase to indirect and residual impacts. • Minor increase in impacts to Aboriginal heritage resulting from an increase in impact area however no change in the impact significance. • Minor increase in temporary noise impacts to existing receivers closer to the alignment off Elizabeth Drive. • Minor changes to visual impacts to existing receivers closer to the alignment off Elizabeth Drive but no change in impact significance. • Reduced impacts to adjacent infrastructure with the alignment avoiding impacts to the road pavement of The Northern Road and adjacent landscaping. **Operational impacts** • No ongoing operational impacts	• No additional measures or changes to existing measures proposed. • Management measures in EIS adequate to manage increase in impacts.

Project amendment	Why amendments are needed	Changes to potential impacts in the EIS	Changes to EIS management measures
Treated water and brine pipeline - M12 Motorway crossing realignment. Figure 4-2 shows this amendment.	• Responds to consultation with M12 Motorway team. • Avoids M12 Motorway detention basin. • Minimises potential impacts to M12 Motorway abutments from Sydney Water's tunnelling activities.	**Construction impacts** • No change in impacts for waterways, flood, surface water, groundwater, soils and contamination, non-Aboriginal heritage, air quality, noise, visual, human health and hazards, socio economic, sustainability and resource management and adjacent infrastructure. • Minor increase in direct impacts to biodiversity values. Negligible increase to indirect and residual impacts. • Minor increase in impacts to Aboriginal heritage resulting from an increase in impact area however no change in the impact significance. • Minimisation of impacts on future adjacent infrastructure including the M12 Motorway detention basins. **Operational impacts** • No operational impacts	• No additional measures or changes to existing measures proposed. • Management measures in EIS adequate to manage increase in impacts.
Brine pipeline - Kemps Creek realignment. Figure 4-3 shows this amendment.	• Minimises vegetation removal. • Responds to landowner concerns on development potential and avoids this property (Lot 11 DP1146142).	**Construction impacts** • No change in impacts for flood, groundwater, soils and contamination, non-Aboriginal heritage, air quality, noise, human health and hazards, sustainability and resource management and adjacent infrastructure. • Reduced geomorphic impacts to Kemps Creek, and direct and indirect aquatic ecology impacts resulting from reduced potential for erosion and sedimentation of the waterway.	• No additional measures or changes to existing measures proposed. • Management measures in EIS adequate to

Project amendment	Why amendments are needed	Changes to potential impacts in the EIS	Changes to EIS management measures
	• Responds to Liverpool Council request to consider the use of the existing pipeline corridor.	• Reduction in direct impacts to biodiversity values. Negligible increase to indirect and residual impacts. • Reduced surface water impacts resulting from reduced potential for erosion and sediments entering the waterway. • No change to flooding impacts from those identified in the EIS. • Reduction in potential for presence of subsurface artefacts and therefore reduction in risk to Aboriginal heritage. • Reduced landscape character and visual impacts because of minimised vegetation removal **Operational impacts** • No ongoing operational impacts	manage increase in impacts.
Treated water and brine pipeline - South Creek realignment. Figure 4-4 shows this amendment.	• Allows for sufficient clearance from South Creek for future pipelines in this area.	**Construction impacts** • No change in impacts for waterways, flood, groundwater, soils and contaminations, non-Aboriginal heritage, Aboriginal heritage, air quality, noise, human health and hazards, socio economic, sustainability and resource management and adjacent infrastructure. • Reduction in direct impacts to biodiversity values. Negligible increase to indirect and residual impacts. • No change to flooding impacts from those identified in the EIS. • No change to Aboriginal heritage impacts from those identified in the EIS.	• No additional measures or changes to existing measures proposed. • Management measures in EIS adequate to manage increase in impacts.

Project amendment	Why amendments are needed	Changes to potential impacts in the EIS	Changes to EIS management measures
		Operational impacts • No ongoing operational impacts.	
Brine pipeline - Western Sydney Parklands realignment. Figure 4-5 shows this amendment.	• Responds to consultation with Western Sydney Parklands. • Avoids impacts associated with digging up the newly paved road and landscaping. • Avoids impacts to the fence located next to the Wylde mountain bike track and Sydney International Shooting Centre.	**Construction impacts** • No change in impacts for waterways, flood, surface water, groundwater, soils and contamination, non-Aboriginal heritage, Aboriginal heritage, air quality, noise, human health and hazards, socio economic, sustainability and resource management and adjacent infrastructure • Reduction in direct impacts to biodiversity values. Negligible increase to indirect and residual impacts. • No change to Aboriginal heritage impacts from those identified in the EIS. • Minimisation of impacts on adjacent infrastructure. **Operational impacts** • No ongoing operational impacts	• No additional measures or changes to existing measures proposed. • Management measures in EIS adequate to manage increase in impacts.
Brine pipeline - Bartley Street realignment Figure 4-6 shows this amendment	• Response to consultation with Fairfield Council who raised concerns over the use of Cabravale Memorial Park.	**Construction impacts** • No change in impacts for waterways, terrestrial biodiversity flood, surface water, groundwater, soils and contamination, Aboriginal heritage, air quality, human health and hazards, sustainability and resource management and adjacent infrastructure. • Avoided and minimised impacts to non-Aboriginal heritage associated with the bandstand in Cabravale Memorial Park.	• Management measures NAH01, LCV01, SELU04 and SELU06 have been amended.

Project amendment	Why amendments are needed	Changes to potential impacts in the EIS	Changes to EIS management measures
		• Avoidance of direct impacts to biodiversity values. Negligible increase to indirect and residual impacts. • Reduced noise and air quality impacts to existing receivers off Bartley Street and Curtin Street. • Minor increase in temporary noise and vibration and air quality impacts to existing receivers (Cabravale Diggers Club) off Bartley Street. • Minor increase in temporary noise and vibration and air quality impacts for new receivers off Cumberland Street. • Increase in impacts to residential receivers that may now be affected by night-time noise levels associated with drilling within the tunnelling compound. • Reduced impacts to landscape character and visual associated with Cabravale Memorial Park no longer being used as a construction compound. • No changes to potential traffic and transport impacts however the impacts relate to different local roads. Minor increase in significance of impact relating to the full closure of sections of roads. • Temporary impacts to parking during construction parking associated with the road closure of Bartley Street and the use of Cabravale Leisure Centre carpark. • Some socio-economic impacts related to amenity for residents, businesses and places of worship on the east side of the railway.	• Management measure TT06 has been added. • Other management measures in EIS adequate to manage the predicted impacts.

Project amendment	Why amendments are needed	Changes to potential impacts in the EIS	Changes to EIS management measures
		Overall, however, beneficial impacts from avoiding use of Cabravale Memorial Park. • Potential impacts to below ground services. **Operational impacts** • No ongoing operational impacts	
AWRC site boundary change – Figure 4-7 shows this amendment	• Response to consultation with University of Sydney who raised concerns over long term east-west access between their Fleurs East and Fleurs West sites.	**Construction impacts** • No change in impacts for waterways, flood, groundwater, soils and contaminations, non-Aboriginal heritage, air quality, noise, human health and hazards, socio economic, sustainability and resource management and adjacent infrastructure. • Minor reduction in impacts to biodiversity. • Minor reduction in impacts to Aboriginal heritage. **Operational impacts** • No-ongoing operational impacts.	• No additional measures or changes to existing measures proposed

Ecologically Sustainable Development

Section 15.6.4 in the EIS describes the project's alignment with Ecologically Sustainable Development (ESD) principles:

- The precautionary principle.
- The principle of intergenerational equity.
- Conservation of biological diversity and ecological integrity.
- Improved valuation, pricing and incentive mechanisms.

The changes described in this report are minor and do not significantly change the strategic need or the impacts described in the EIS. Accordingly, there is no change to the project's alignment with ecologically sustainable development (ESD) principles as defined in clause 193 of the Environmental Planning and Assessment Regulation 2021.

Conclusion

The project as described in the EIS provides essential infrastructure and an opportunity to improve liveability, sustainability and the environment across the Western Parkland City. It also aligns with ESD principles. Through a rigorous options assessment process, the project has been identified as the best option to achieve project objectives. The EIS addressed the SEARs and comprehensively assessed the project's biophysical, social, economic and cumulative impacts. The assessment in the EIS has shown that the project's residual impacts are acceptable and can be effectively managed through implementing a range of management measures.

Design progress and stakeholder consultation has identified several opportunities to refine and improve the project which will result in a minor change to the environmental and community impacts assessed in the EIS. In some cases, the proposed amendments reduce environmental and community impacts. Where additional impacts occur they do not change the significance of impacts assessed in the EIS, and they only apply to the construction phase. The amendments can be managed with minor changes to five existing management measures in the EIS, the removal of one measure and the addition of one new measure. The amended project still aligns with ESD principles. The amended assessment has shown that the project's residual impacts are still acceptable and can be effectively managed through implementing a range of management measures.

10 References

These references are a continuation of the references provided in Chapter 17 of the EIS.

Aurecon Arup 2021m, Upper South Creek Advanced Water Recycling Centre Noise and Vibration Impact Assessment – Amendments report, prepared for Sydney Water

Aurecon Arup 2021n, Upper South Creek Advanced Water Recycling Centre Traffic and Transport Amendments Report – Bartley Street Realignment, prepared for Sydney Water

Biosis 2021a, Upper South Creek Advance Water Recycling Centre Project Amendments: Biodiversity Assessment, prepared for Sydney Water

Department of Planning, Industry and Environment (DPIE) 2021a, State significant infrastructure guidelines – preparing an amendment report – Appendix D to the state significant infrastructure guidelines

Department of Planning, Industry and Environment (DPIE) 2021b, Undertaking Engagement for State Significant Projects

Extent Heritage 2021, Upper South Creek Advanced Water Recycling Centre EIS, Statement of Heritage Impact, prepared for Sydney Water

Kelleher Nightingale Consulting 2021c, Upper South Creek Advanced Water Recycling Centre - Amendment Report Technical Note - Assessment of Impact on Aboriginal Cultural Heritage, prepared for Sydney Water

11 Glossary and abbreviations

11.1 Glossary

Term	Meaning
Aboriginal artefact	An item of Aboriginal heritage origin
Advanced treated water	Water that is treated to an advanced level, including microfiltration, ultrafiltration and reverse osmosis to filter out very fine particles. Also known as very high quality treated water
Brine	Concentrated solution of salt and other chemicals in water; a by-product of the reverse osmosis process.
Brine pipeline	A pipeline that is used to transport brine for disposal.
Catchment	The land area contributing to surface runoff and flow within rivers and creeks
Circular economy	A circular economy values resources by keeping products and materials in use as long as possible. In a water context, circular economy may include use of water, energy and materials to restore and regenerate the natural environment
Detention basin	Surface storage areas or facilities that provide flow control through controlling stormwater runoff.
Dewatering	The removal of groundwater or surface water by various solid-liquid separation processes.
Ecosystem	A community of organisms and their physical environment interacting together
Effluent	Partially treated wastewater that is passing through the different stages of treatment at the AWRC
Environmental flows (e-flows)	Water that is released from the dam to maintain downstream river health. The project proposes treated water from the AWRC can replace some of these drinking water environmental flows
Environmental flows (e-flows) pipeline	A pipeline that transports treated water from the AWRC to Warragamba River
Environmental planning instruments	Collective name for Local Environmental Plans (LEPs), State Environmental Planning Policies (SEPPs) and Regional Environmental Plans (REPs) under the *Environmental Planning and Assessment Act 1979* (NSW)

Term	Meaning
Fauna	Animals
Flood	A high stream flow which overtops the riverbank and inundates land that is usually dry
Flora	Plants
Flow (in waterways)	The flow of water in rivers and creeks. Water flowing in rivers or creeks comes from surface runoff and groundwater.
Habitat	The natural resource, physical and biotic factors that are present in an area that support the survival of plants and animals
Impact area	The area that will be impacted by the project
Impact assessment area	An area slightly larger than the impact area, within which Sydney Water is seeking flexibility to locate project infrastructure
Land use zones	Areas defined in environmental planning instruments that specify objectives and development controls for use of that land
Landscape character	The combined built and cultural aspects that make up an area and give it a sense of place
Operational area (AWRC)	The area on which facilities required for the operation of the AWRC are located
Project	The 'project' as referenced throughout this Amendment Report and the Environmental Impact Statement is the whole Upper South Creek Advanced Water Recycling Centre project, including the AWRC and associated pipelines
Reference design	Preliminary design to establish feasibility and design parameters, and to set the boundary conditions for approvals. During the tender and detailed design process, the contractor may change the design arrangement, as long as it is done within the approval footprint and conditions.
Releases ('treated water releases')	Treated water from the AWRC entering the waterway. The release point is location of the release.
Treated water or treated effluent	Water that is produced after treatment at wastewater treatment or water recycling plants
Treated water pipeline	A pipeline that transports treated water

Term	Meaning
Tunnelling	A method of building a pipeline by drilling an underground bore in which the pipe is installed. It is a method of construction that reduces environmental and community impacts
Upper South Creek Servicing Area	The wastewater catchment serviced by the Upper South Creek Advanced Water Recycling Centre. It includes most of the Western Sydney Aerotropolis Growth Area and South West Growth Area
Vista/viewpoint	Views observed from specific receptors
Wastewater	Water used in homes, schools, businesses and industries that goes down drains from sinks, baths, showers, laundries and toilets and other drains inside buildings. Sometimes known as sewage.
Wastewater catchment	A wastewater catchment is a geographical area of the wastewater network that drains into a single point within the wastewater network
Wastewater treatment plant	A facility where various processes are used to treat wastewater and remove pollutants
Water recycling plant	A facility where various processes are used to treat wastewater and remove pollutants and some or all of the treated water is reused
Water sensitive urban design	Measures to improve the ability of urban areas to capture, treat, and re-use stormwater before it enters waterways

11.2 Abbreviations

Abbreviation	Definition
ACHAR	Aboriginal Cultural Heritage Assessment Report
AEP	Annual exceedance probability
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
AQIA	Air Quality Impact Assessment
ARDEM	Archaeological Research Design and Excavation Methodology
ARR	Australian Rainfall and Runoff
ASC	Assessment of Site Contamination
AWRC	Advanced Water Recycling Centre
AWTP	Advanced Water Treatment Plant

Abbreviation	Definition
BAM	Biodiversity Assessment Method
BC	Biodiversity Conservation
BDAR	Biodiversity Development Assessment Report
CEEC	Critically Endangered Ecological Community
CEMP	Construction Environmental Management Plan
CMP	Conservation Management Plan
CNVS	Construction Noise and Vibration Strategy
CoA	Commonwealth of Australia
CSEP	Community and Stakeholder Engagement Plan
DAWE	Department of Agriculture Water and the Environment (Commonwealth)
DoS	Degree of saturation (a ratio of demand to capacity of the traffic network)
DPE	Department of Planning and Environment
DPIE	Department of Planning, Industry and Environment (now the Department of Planning and Environment)
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EP&A Regulation	Environmental Planning and Assessment Regulation 2021 (NSW)
EPA	Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
ESD	Ecologically Sustainable Development
GBN	Ground-borne noise
GSWS	Greater Sydney Water Strategy
ha	Hectare
HAA	Heritage Archaeological Assessment
HDD	Horizontal directional drilling
ICNG	Interim Construction Noise Guideline
LCVIA	Landscape Character and Visual Impact Assessment
LCZ	Landscape Character Zone
LGA	Local government area
LoS	Loss of Service (measure of the average delay experienced by vehicles)

Abbreviation	Definition
LUCRA	Land use conflict risk assessment
ML	Megalitre / million litres
ML/day	Million litres per day
NCA	Noise catchment area
NGRS	North Georges River Submain
NML	Noise Management Level
NSW	New South Wales
OOHW	Out of hours work
PAD	Potential archaeological deposit
PAS	Potential Archaeological Sites
PCB	Polychlorinated Biphenol
PCT	Plant Community Types
PNL	Predicted Noise Level
POEO	*Protection of the Environment Operations Act 1997* (NSW)
SCA	Sydney Catchment Authority
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environment Planning Policy
SESA	Socio-economic study area
SIA	Socio-economic Impact Assessment
SOC	State-owned corporation
SOHI	Statement of Heritage Impact
SSCTMP / CTMP	Site Specific Construction Traffic Management Plans / Construction Traffic Management Plans
SSD	State significant development
SSI	State significant infrastructure
SWSOOS	Southern and Western Suburbs Ocean Outfall Sewer (part of Malabar System)
TEC	Threatened ecological communities
TfNSW	Transport for New South Wales
USC	Upper South Creek
VEC	Vulnerable Ecological Community
WM Act	*Water Management Act 2000* (NSW)

Abbreviation	Definition
WRC	Water recycling centre (wastewater treatment with advanced recycled facility)
WRP	Water recycling plant (wastewater treatment with recycling facility)
WSAA	Water Services Association of Australia
WSAGA	Western Sydney Aerotropolis Growth Area. Also known as Aerotropolis or Western Sydney Aerotropolis
WSIA	Western Sydney Nancy Bird-Walton International Airport
WSPT	Western Sydney Parklands Trust (now Greater Sydney Parklands)
WSUD	Water-sensitive urban design
WWTP	Wastewater Treatment Plant

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