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M12 Motorway amendment report

Submissions report

Transport for NSW | December 2020

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Executive summary

Transport for New South Wales is seeking approval to construct and operate the M12 Motorway project (the project) to provide direct access between the Western Sydney International Airport (WSIA) at Badgerys Creek and Sydney's motorway network. The project is expected to be open to traffic prior to the opening of the WSIA.

The project would comprise a new dual-carriage way (about 16 kilometres in length) between the M7 Motorway at Cecil Hills and The Northern Road at Luddenham with three interchanges to connect to the existing road network and future WSIA. Work would include a motorway-to-motorway interchange at the M7 Motorway and a signalised intersection at The Northern Road. A grade separated interchange, including a dual-carriageway airport access road, would provide direct access from the M12 Motorway to the WSIA.

Approval for the project is being sought under Division 5.2 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) (EPBC Act).

Environmental impact assessment

An environmental impact statement (EIS) was prepared to address the Planning Secretary's Environmental Assessment Requirements (SEARs) issued for the project. The EIS was exhibited by the NSW Department of Planning, Industry and Environment (DPIE) for 33 days from 16 October 2019 to 18 November 2019.

The EIS was available to view and download from the Transport for NSW M12 Motorway online portal, NSW DPIE online portal and on publicly accessible computer terminals at Service NSW Centres. Hard copies were made available to the public at eleven locations. The complete EIS remains available on the DPIE website.

Consultation activities planned to support the display of the EIS included a series of community information sessions, 'pop-up' information stands, letterbox drops, local newspaper notices and advertisements, media releases and emails to contacts on the established distribution list, website updates, and Facebook updates to provide community members an opportunity to discuss the EIS directly with members of the project team. There were also numerous stakeholder briefings with State and Federal Members of Parliament (MPs), councillors and other key stakeholders.

A number of external engagement channels were also established to seek input from stakeholders and communities on the project, including a project email address, a toll-free project phone number and postal address. The project website also provided background information, maps, project updates and announcements, and information on how to provide feedback.

In accordance with section 5.17 of the EP&A Act, a submissions report was published in October 2020 to provide responses to the issues raised in the submissions received for the project during the EIS exhibition.

Amendment report

An amendment report was prepared in accordance with clause 192(3) of the Environmental Planning and Assessment Regulation 2000 (NSW) (EP&A Regulation) to amend the project following further design development since exhibition of the EIS.

The proposed amendments include design changes and construction updates. These provide functional improvements to the design and improved integration with surrounding major transport infrastructure projects and potential future development. They also respond to issues raised in community and stakeholder submissions, and in some instances, further reduce the potential impacts of the project as described in the EIS.

The amendment report was exhibited by DPIE for 14 days from 21 October 2020 to 4 November 2020. Newspaper advertisements were placed by DPIE notifying the public of the exhibition commencement. The amendment report was available to view and download via a link from the Transport for NSW M12

Motorway website, the M12 Motorway online portal, DPIE online portal and publicly accessible computer terminals at Service NSW Centres. The complete amendment report remains available on the DPIE website and the M12 Motorway online portal.

Consultation activities to support the exhibition of the amendment report included a virtual community information session, distribution of a community update newsletter and email alert, a media release, social media posts and release of an updated project web portal. Due to COVID-19 restrictions in place for government agencies at the time of the amendment report exhibition, no face to face community information sessions were held. Virtual meetings with key stakeholders were held and Transport for NSW attended a Cecil Hills resident meeting by invitation. The meeting occurred outside the exhibition period and was managed in accordance with strict COVID-19 guidelines.

Submissions report

In accordance with section 5.17 of the EP&A Act, this submissions report has been prepared to provide responses to the issues raised in the submissions received for the project during the exhibition of the amendment report.

A total of 41 submissions were received by DPIE from 41 submitters. The submitters comprised of:

- 17 individual community members
- Seven special interest groups or businesses
- 17 government authorities.

A summary of the main issues raised by submitters and Transport for NSW responses are provided below:

- The project design, particularly the Wallgrove Road realignment, the connection between the M12 Motorway and Elizabeth Drive, and the location and design of intersections and entry/exit ramps
    - The Wallgrove Road realignment has been refined since the preparation of the amendment report (refer to Section 5.2.1). Several route options were considered by Transport for NSW. The selection of the preferred refined alignment was based on a number of considerations including project delivery, land use, community impacts, road design, safety, traffic performance and impacts on the environment
    - Transport for NSW would deliver a connection between the M12 Motorway and Elizabeth Drive near the M7 Motorway
    - Transport for NSW will investigate a connection between the M12 Motorway and Elizabeth Drive at the entrance to the WSIA during detailed design.
- Socio-economic impacts associated with access to private properties, land fragmentation, impacts to local businesses and property value and compensation concerns
    - Environmental management measures have been included in Chapter 7 to manage access to private properties through consultation with landowners, to establish safe and appropriate alternate access arrangements in situations where current access routes would be impacted. Consultation with businesses would also be ongoing to manage potential impacts.
- Noise and vibration impacts, particularly in relation to future land uses, operational road traffic impacts and noise mitigation
    - The review and consideration of operational noise and vibration management measures would be based on the existing land use and the *Noise Mitigation Guideline* (Roads and Maritime 2015)
    - Section 5.4.1 presents an update on the proposed operational road traffic noise for the project. Transport for NSW is committed to review the operational road traffic noise mitigation measures, including quieter noise pavements, noise barriers, and at-property treatments as the detailed design progresses.

- Consultation, particularly the level of consultation carried out for the amendment report
    - Consultation activities for the amendment report are discussed in Section 1.3. Due to COVID-19 restrictions in place for government agencies at the time of exhibition, no face to face community information sessions were held. Virtual meetings with key stakeholders were held and Transport for NSW attended a Cecil Hills resident meeting by invitation. The meeting occurred outside the exhibition period and was managed in accordance with strict COVID-19 guidelines.

Clarifications

Further project design development following preparation of the amendment report and consultation with stakeholders has resulted in the refinement of:

- The Wallgrove Road realignment design
- The project operational and construction footprints
- The operational road traffic noise mitigation strategy.

These refinements would result in minor changes to biodiversity, traffic and transport and property impacts from those documented in the amendment report.

In addition, this report provides clarification on the traffic intersection performance results presented in the amendment report for the intersections of Elizabeth Drive / M7 ramps and Elizabeth Drive / Wallgrove Road.

Revised environmental management measures

The amendment report identified a range of environmental management measures proposed to avoid or reduce environmental impacts. After consideration of the issues raised in the public submissions during exhibition of the amendment report, and from proposed changes to the project, Transport for NSW has provided additions and revisions to the environmental management measures for the project where appropriate. A full list of the revised environmental management measures proposed for the project, from both this submissions report and the amendment report is provided in Chapter 7.

Next steps

The DPIE and the Commonwealth Department of Agriculture, Water and the Environment (DAWE) will consider the responses to submissions during its assessment of the project. The NSW Minister for Planning and Public Spaces and the Commonwealth Minister for Environment will then decide whether or not to approve the project and identify any conditions of approval that would apply.

Ongoing community and stakeholder consultation

Transport for NSW would continue to consult with community members, government agencies and other stakeholders during the detailed design and construction phase of the project in accordance with the Community Communication Strategy.

Consultation during construction would be carried out by Transport for NSW and the construction contractor and would include project updates on planned construction activities and the construction program. Consultation would seek to minimise potential impacts where possible and respond to enquiries and concerns in a timely manner.

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Figures

Glossary of terms and abbreviations

Term	Meaning
ACHAR	Aboriginal cultural heritage assessment report.
AEI	Areas of environmental interest.
AF	Ancillary facility.
Afflux	Afflux refers to the predicted changes, usually in flood levels, between two scenarios, pre-development conditions (without project) and post-development conditions (with project). Positive afflux indicates flood level increase under post-development conditions and negative afflux indicates flood level decrease under post-development conditions comparing to pre-development conditions.
AHIMS	Aboriginal Heritage Information Management System.
Airport access road	Part of the M12 Motorway connecting the Western Sydney International Airport interchange with the Western Sydney International Airport.
AMP	Asbestos management plan.
Ancillary facilities	A temporary facility for construction of the project including an office and amenities compound, construction compound, material crushing and screening plant, materials storage compound, maintenance workshop, testing laboratory and material stockpile area.
ASS	Acid sulfate soils.
Average annual daily traffic	The total volume of traffic passing a roadside observation point over a period of a year, divided by the number of days per year. It is calculated from mechanically obtained axle counts.
ARI	Average recurrence interval: The long term average number of years between the occurrence of a flood as big as, or larger than, the selected event. For example, floods with a discharge as great as, or greater than, the 20 year ARI flood event will occur on average once every 20 years. ARI is another way of expressing the likelihood of occurrence of a flood event.
Auxiliary lane	Additional length of lane on a motorway added to maintain traffic flow, such as at an entry or exit ramp, acceleration or deceleration lane.
BAR	Biodiversity assessment report.
Batter	A receding slope of a wall, structure, or earthwork.
BC Act	*Biodiversity Conservation Act 2016* (NSW).
BDAR	Biodiversity Development Assessment Report.

Term	Meaning
BH	Borehole.
Bilateral agreement	The bilateral agreement made under Section 45 of the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) relating to environmental assessment.
BOS	Biodiversity Offset Strategy.
CAQMP	Construction air quality management plan.
CASA	Civil Aviation Safety Authority.
CCHMP	Construction cultural heritage management plan.
CEMP	Construction environment management plan.
CFFMP	Construction flora and fauna management plan.
CHMP	Construction heritage management plan.
CLMP	Contaminated land management plan.
CNVG	Construction Noise and Vibration Guideline.
CNVMP	Construction noise and vibration management plan.
Code	Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (2010).
Construction footprint	The construction footprint is the area required to build the project. This includes the area required for temporary work such as sedimentation basins, drainage lines, access roads, construction ancillary facilities.
CPCP	Cumberland Plain Conservation Plan.
CPTED	Crime Prevention Through Environmental Design.
CSIRO	The Commonwealth Scientific and Industrial Research Organisation.
CSSI	Critical state significant infrastructure.
CSWMP	Construction soil and water management plan.
CTTMP	Construction transport and traffic management plan.
CWRMP	Construction waste and resource management plan.

Term	Meaning
DAWE	Department of Agriculture, Water and the Environment (formerly Department of Environment and Energy (DoEE)).
DECCW	Department of Environment, Climate Change and Water (now Department of Planning, Industry and Environment (DPIE)).
DoEE	Department of the Environment and Energy (now Department of Agriculture, Water and the Environment (DAWE)).
DITRDC	Department of Infrastructure, Transport, Regional Development and Communications (formerly Department of Infrastructure, Transport, Cities and Regional Development).
DP	Deposited plan.
DPI	Department of Primary Industries.
DPIE	Department of Planning, Industry and Environment (formerly Department of Planning (DPE)).
EEC	Endangered ecological community.
EESG	Environment, Energy and Science Group of the Department of Planning, Industry and Environment (formerly NSW Office of Environment and Heritage).
EIS	Environmental impact statement.
EIS Submissions Report	M12 Motorway EIS Submissions Report available on the DPIE website here: ***https://www.planningportal.nsw.gov.au/major-projects/project/10226***
EPA	NSW Environmental Protection Authority.
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW).
EP&A Regulation	Environmental Planning and Assessment Regulation 2000 (NSW).
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth).
EPL	Environment protection licence.
ESCP	Erosion and sediment control plan.
Exclusion zones	Exclusion zones are areas of environmental importance (eg threatened vegetation or heritage items) that need to be protected. Exclusion zones are shown in figures throughout this submissions report where relevant. These exclusion zones are defined as no-go areas and are to be protected for the duration of construction in that particular footprint area.
FBA	Framework for Biodiversity Assessment.

Term	Meaning
FM Act	*Fisheries Management Act 1994* (NSW).
GHG	Greenhouse gas.
Grade separated interchange	An interchange that is separated vertically (at different heights) involving bridges, underpasses and/or overpasses.
GSC	Greater Sydney Commission.
HBT	Hollow-bearing tree.
HCP	Habitat compensation plan.
Heritage Act	*Heritage Act 1977* (NSW).
Heritage NSW	Heritage NSW (formerly Office of Environment and Heritage (OEH)).
ICNG	Interim Construction Noise Guideline.
KTP	Key threatening process.
kV	Kilovolt, a measure of electric current equal to 1,000 volts.
LCVIA	Landscape character and visual impact assessment.
LEP	Local Environmental Plan.
LGA	Local government area.
LoS	Level of Service.
LUIIP	Land Use and Infrastructure Implementation Plan.
M7 Motorway	The M7 Motorway is a major connecting road on Sydney's orbital motorway network. It runs for 40 kilometres and links the M4 Motorway and the M2 Motorway.
M12 Motorway	The proposed M12 Motorway which is the subject of this document (also known as 'the project').
MNES	Matters of National Environmental Significance.
MP	Member of Parliament.
NASF	National Airports Safeguarding Framework.
NCA	Noise Catchment Area.

Term	Meaning
NCG	Noise Criteria Guideline.
NEPM	National Environment Protection (Assessment of Site Contamination) Measure (NEPM) Guidelines (NSW EPA 2013).
NIA	Noise impact assessment.
NMG	Noise Mitigation Guideline (RMS 2015).
NSW	New South Wales.
OEH	Office of Environment and Heritage (now Environment, Energy and Science Group (EESG) within the Department of Planning, Industry and Environment / Heritage NSW within the Department of Premier and Cabinet).
ONVR	Operation noise and vibration review.
Operational footprint	Generally includes the M12 Motorway and additional areas required for operation and maintenance of the project.
PACHCI	Procedure for Aboriginal cultural heritage consultation and investigation (Roads and Maritime, 2011).
PAD	Potential archaeological deposit.
PCT	Plant community type.
POEO Act	*Protection of the Environment Operations Act 1997.*
PPV	Peak particle velocity.
Relics	The *Heritage Act 1977* (NSW) defines relic as any deposit, artefact, object or material evidence that: (a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and (b) is of State or local heritage significance.
Revised environmental management measure	Environmental management measures that have been revised since the preparation of the amendment report. These are the measures with underlined or struck out text in Table 7-1.
RNP	Road Noise Policy.
Roads and Maritime	Roads and Maritime Services, now known as Transport for NSW.
SEARs	Secretary's environmental assessment requirements.

Term	Meaning
Sensitive road users	Pedestrians and cyclists.
SEPP	State environmental planning policy.
SHI	State Heritage Inventory.
SHR	State Heritage Register.
SoHI	Statement of heritage impact.
SSI	State significant infrastructure.
Study area	The term study area is used to describe the locations investigated as part of the EIS and amendment report. The study area varies based on the specific areas of interest targeted for each environmental issue (eg ecology, heritage, noise, visual amenity etc). The study area relevant to particular environmental issues is shown on figures, where relevant throughout the EIS, amendment report and submission reports.
SWMP	Soil and water management plan.
TECs	Threatened ecological communities.
The project	The proposed M12 Motorway.
The EP&A Regulation	Environmental Planning and Assessment Regulation 2000.
TfNSW	Transport for New South Wales.
TSC Act	Threatened Species Conservation Act 1995 (NSW) (repealed) but relevant for this assessment due to being saved under the BC Transitional arrangements.
UDLP	Urban design and landscape plan.
WSA Co	Western Sydney Airport Corporation.
Western Sydney Aerotropolis	As defined in the Western Sydney Aerotropolis Stage 1 Plan, the Aerotropolis surrounds the Western Sydney International Airport site at Badgerys Creek and will comprise industrial, commercial and residential development.
WSAP	Western Sydney Aerotropolis Plan.
WSIA	Western Sydney International Airport.
WSPP	Western Sydney Planning Partnership.
WSPT	Western Sydney Parklands Trust.

1. Introduction and background

1.1 Background

Transport for New South Wales proposes to build the M12 Motorway between the M7 Motorway at Cecil Hills and The Northern Road at Luddenham (the project), over a distance of about 16 kilometres.

The project would provide the main access from the Western Sydney International Airport (WSIA) at Badgerys Creek to Sydney's motorway network and is expected to be opened to traffic before the opening of the WSIA. The timing of opening of the M12 Motorway is subject to planning approval and the completion of detailed design. However, the project is expected to open prior to the airport opening in 2026. Figure 1-1 shows the amended project as described in the M12 Motorway amendment report (October, 2020) (amendment report) in its regional context.

An environmental impact statement (EIS) was prepared to assess the potential impacts of the project and recommend management measures to appropriately address those impacts. The EIS was exhibited by the NSW Department of Planning, Industry and Environment (DPIE) in accordance with the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act) for 33 days from 16 October 2019 to 18 November 2019 to give the community and stakeholders the opportunity to provide comment. During the exhibition of the EIS, 50 submissions were received. These submissions are detailed in the M12 Motorway EIS Submissions Report (EIS submissions report) (available on the DPIE website here: ***https://www.planningportal.nsw.gov.au/major-projects/project/10226***), which describes the issues raised during exhibition and provides responses to those issues.

Transport for NSW proposed to amend the project following further design development since the exhibition of the EIS. An amendment application was submitted to DPIE on 20 May 2020. In accordance with clause 192(2) of the EP&A Regulation, the Secretary of DPIE gave approval to amend the project on 28 May 2020. The proposed changes include design changes and construction updates. These provide functional improvements to the design and improved integration with surrounding major transport infrastructure projects and potential future development. They also respond to issues raised in community and stakeholder submissions, and, in some instances, further reduce the potential impacts of the project as described in the EIS. The amendment report details the proposed design and construction changes to the project and assesses the associated environmental impact (available on the DPIE website here: ***https://www.planningportal.nsw.gov.au/major-projects/project/10226***). The amendment report was exhibited for 14 days between 21 October and 4 November 2020. Further details on the exhibition are discussed in Section 1.3.

1.2 The project as described in the amendment report

The key features of the amended project are listed below and shown in Figure 1-2:

- A new dual-carriageway motorway between the M7 Motorway and The Northern Road with two lanes in each direction with a central median allowing future expansion to six lanes
- Motorway access via three interchanges/intersections:
  - A motorway-to-motorway interchange at the M7 Motorway and associated works (extending about four kilometres within the existing M7 Motorway corridor) with the following options:
    - Option 1 – without connection between the M12 Motorway and Elizabeth Drive
    - Option 2 – with connection between the M12 Motorway and Elizabeth Drive

    The amendment report noted that the decision on which option would be built is dependent on funding being available to include the Elizabeth Drive connection. Transport for NSW has now secured funding for Option 2 which would the preferred option for the project

  - A grade-separated interchange referred to as the WSIA interchange, including a dual-carriageway four-lane airport access road (two lanes in each direction for about 1.5 kilometres) connecting with the WSIA Main Access Road
  - A signalised intersection at The Northern Road with provision for grade separation in the future
- Bridge structures across Ropes Creek, Kemps Creek, South Creek, Badgerys Creek and Cosgroves Creek
- A bridge structure across the M12 Motorway into the Western Sydney Parklands to maintain access to utilities, including the existing water tower and mobile telephone/other service towers on the ridgeline in the vicinity of Cecil Hills, to the west of the M7 Motorway
- Bridge structures at interchanges and at Clifton Avenue, Elizabeth Drive, Luddenham Road and other local roads to maintain local access and connectivity
- Inclusion of active transport (pedestrian and cyclist) facilities through provision of pedestrian bridges and an off-road shared user path, including connections to existing and future shared user path networks
- Modifications to the local road network, as required, to facilitate connections across and around the M12 Motorway including:
  - Realignment of Elizabeth Drive at the WSIA, with Elizabeth Drive overpassing the airport access road and rail infrastructure
  - Two new signalised intersections from Elizabeth Drive into the WSIA, with provisions for future connection to potential developments to the north
  - Widening of Elizabeth Drive under the M7 Motorway and approaches
  - Realignment of Clifton Avenue over the M12 Motorway, with associated adjustments to nearby property access
  - Relocation of Salisbury Avenue cul-de-sac, on the southern side of the M12 Motorway
  - Realignment of Wallgrove Road to connect to Cecil Road, including a connection between Elizabeth Drive and Wallgrove Road via Cecil Road with a signalised intersection with Elizabeth Drive
- Adjustment, protection or relocation of existing utilities
- Ancillary facilities to support motorway operations, smart motorways operation in the future and the existing M7 Motorway operation, including gantries, electronic signage and ramp metering
- Other roadside furniture including safety barriers, signage and street lighting
- Adjustments of waterways, where required, including Kemps Creek, South Creek and Badgerys Creek
- Permanent water quality management measures including swales and basins
- Establishment and use of temporary ancillary facilities, temporary construction sedimentation basins, access tracks and haul roads during construction
- Permanent and temporary property adjustments and property access refinements as required.

A more detailed description of the M12 Motorway is found in the EIS (October, 2019) and the amendment report (October, 2020) prepared by Transport for NSW for the project.

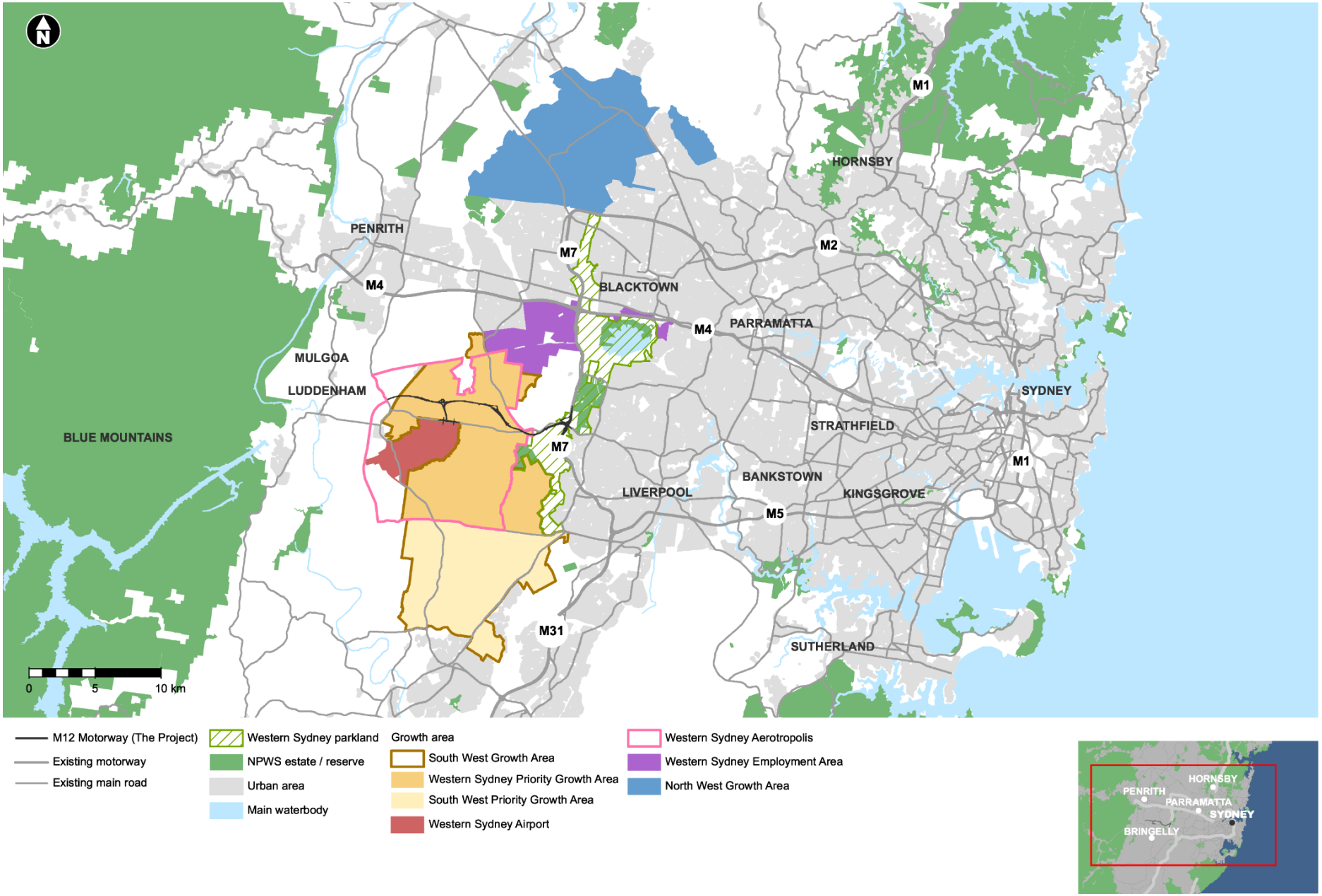


Figure 1-1 Project regional context

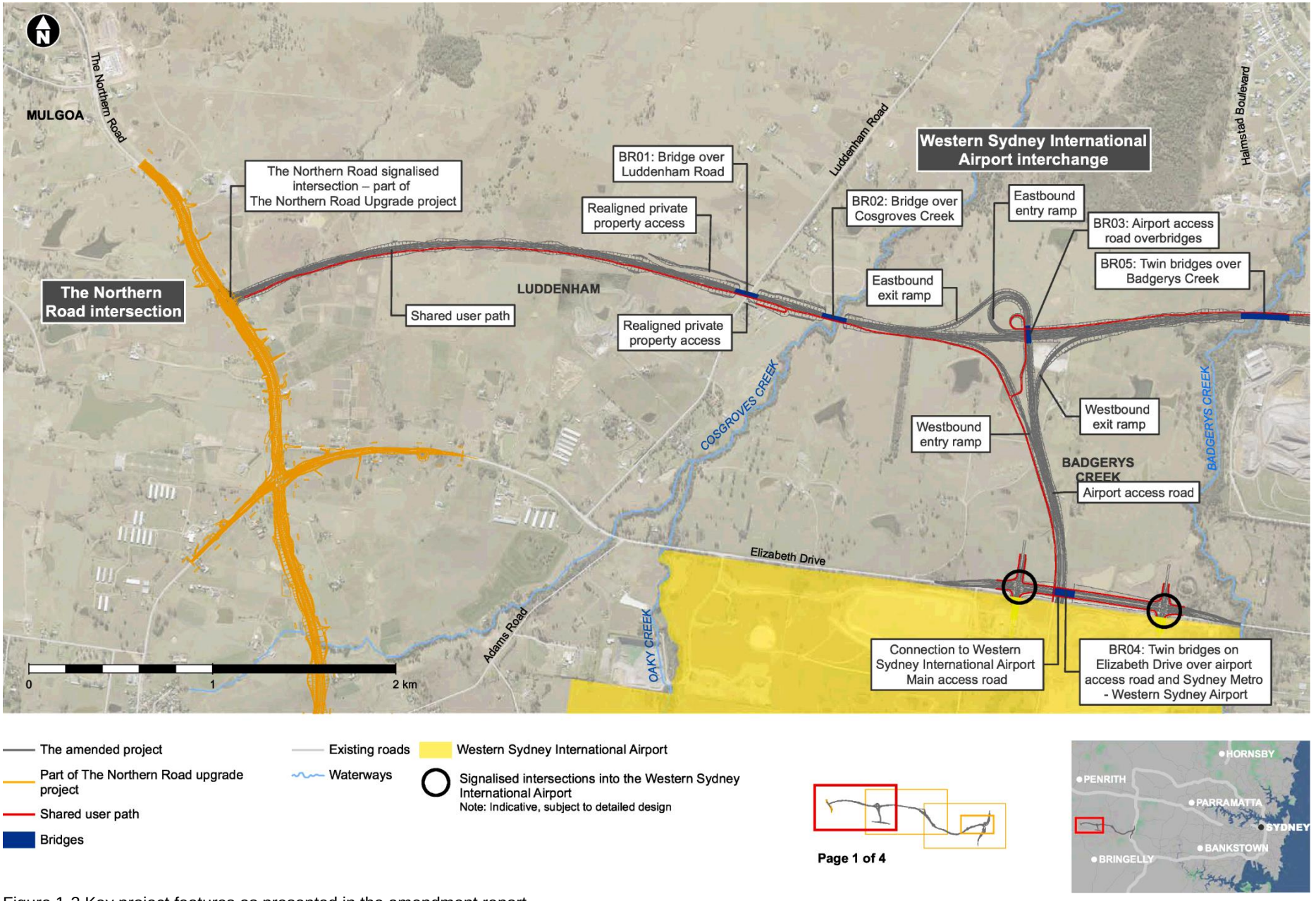


Figure 1-2 Key project features as presented in the amendment report

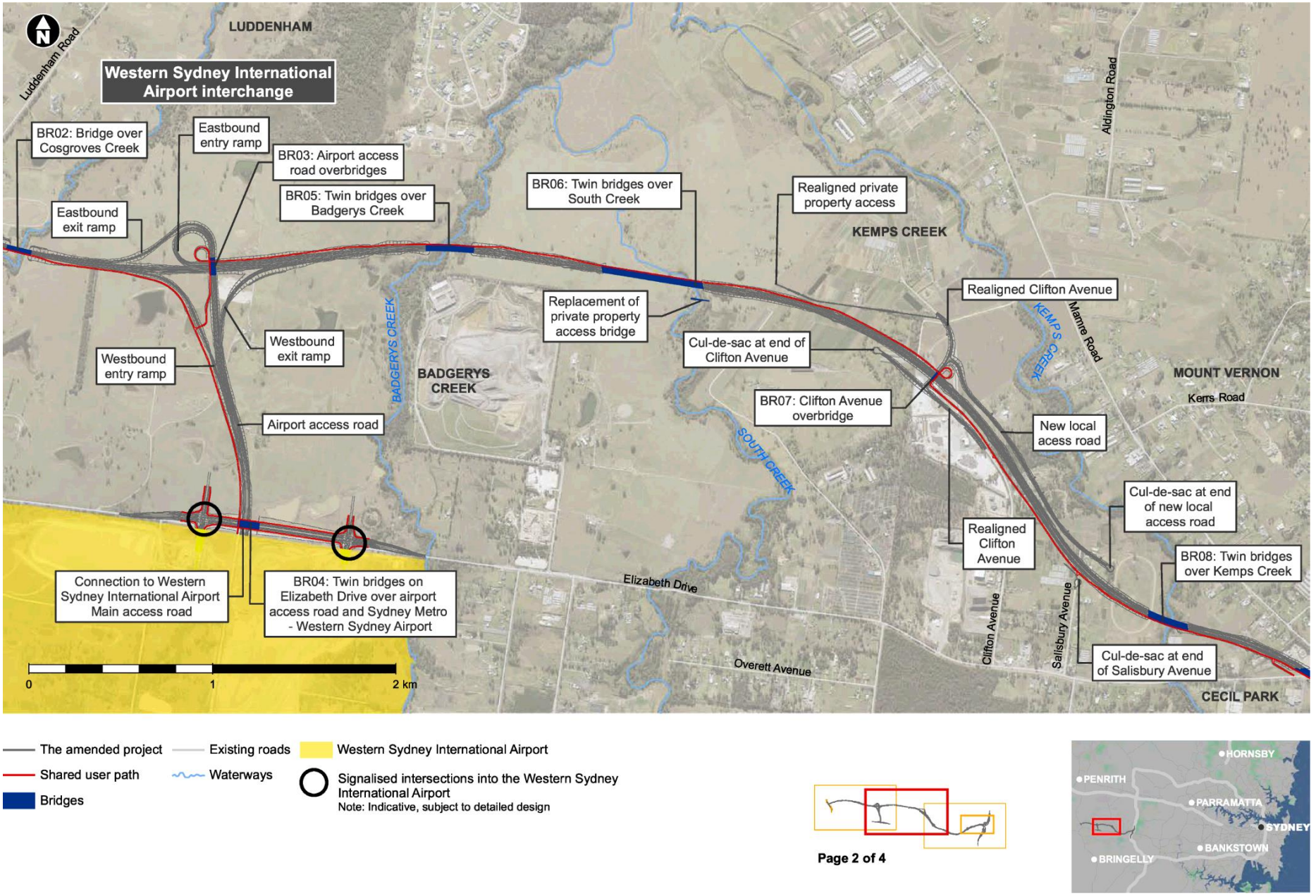


Figure 1-2 Key project features as presented in the amendment report

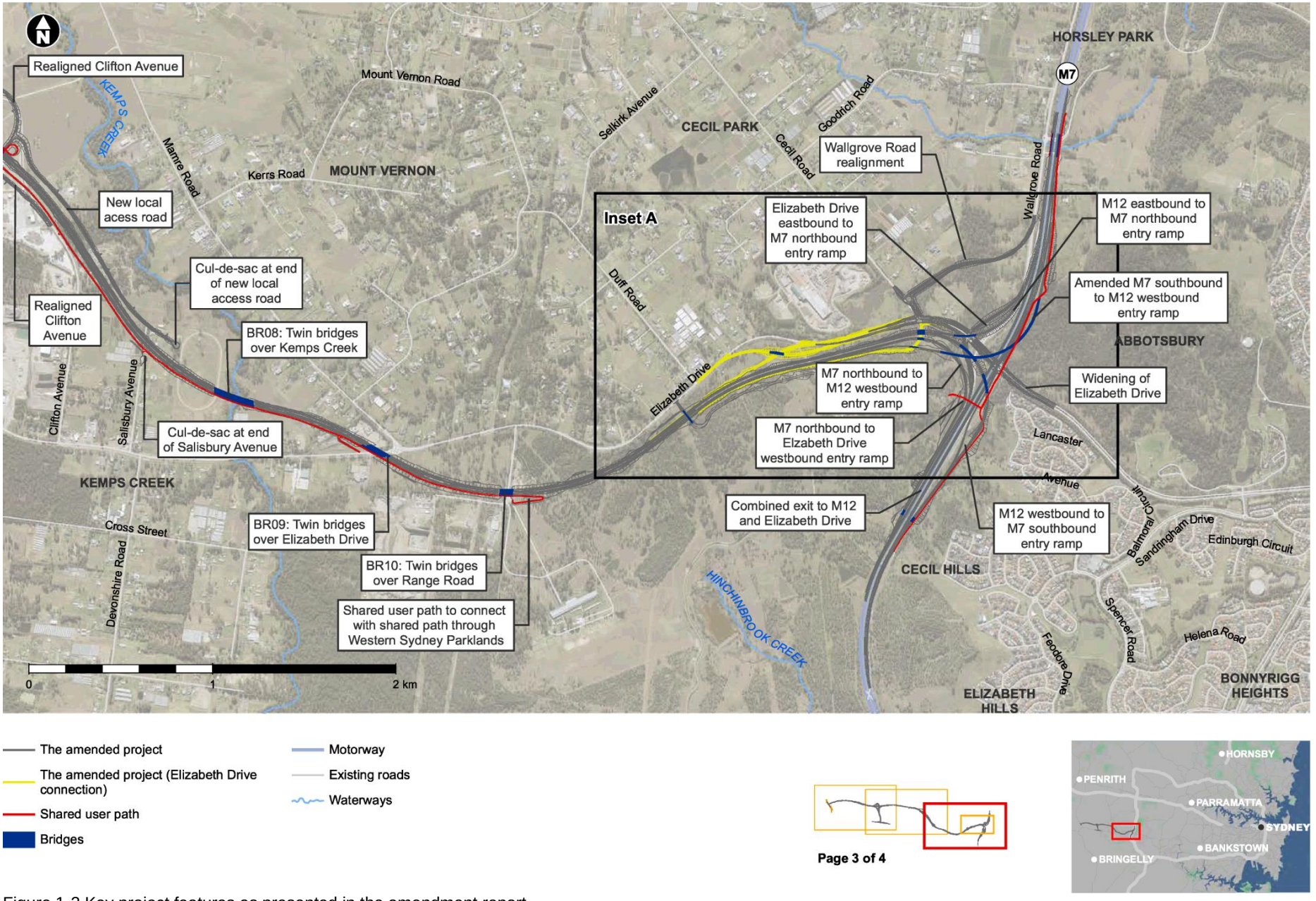


Figure 1-2 Key project features as presented in the amendment report

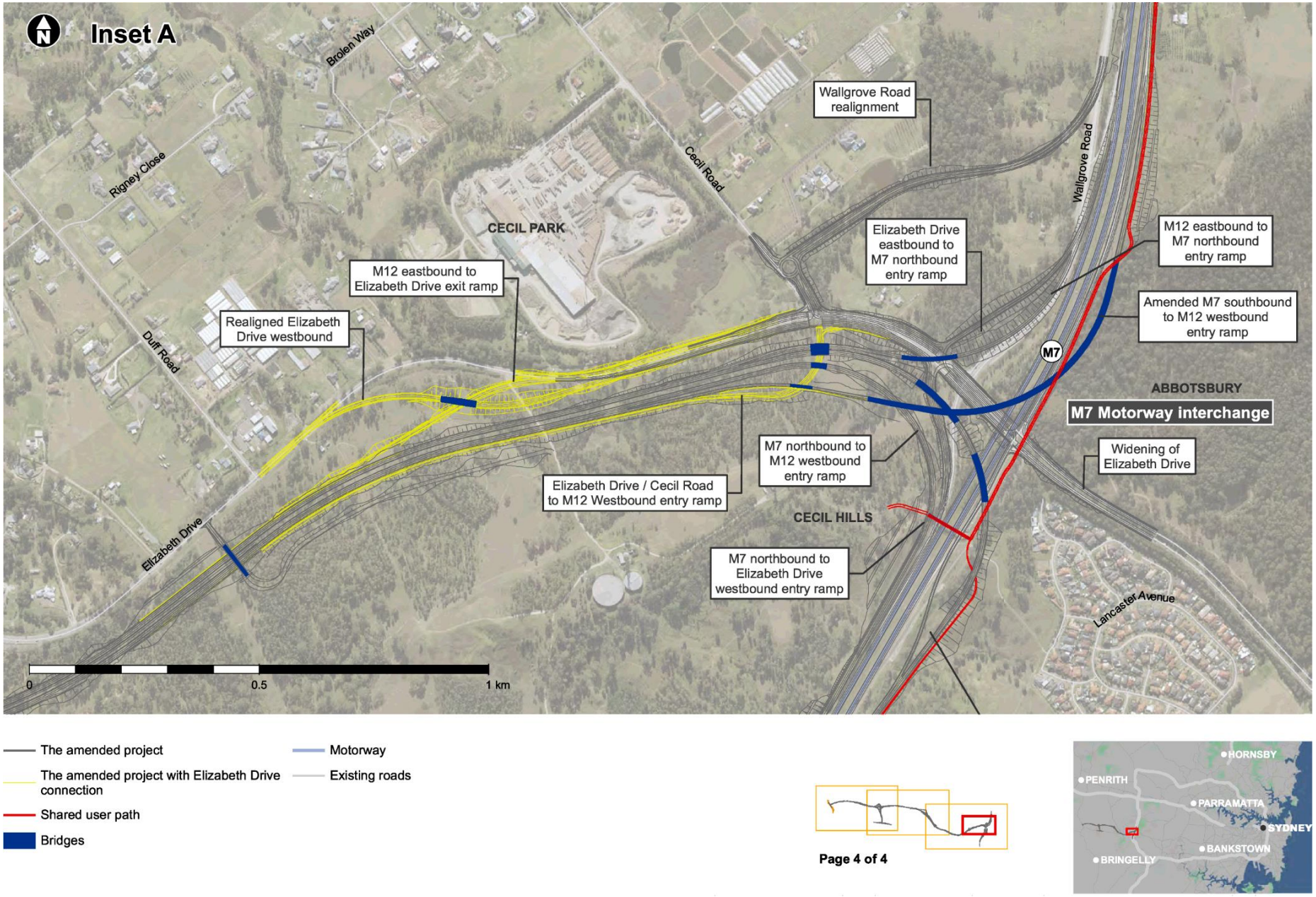


Figure 1-2 Key project features as presented in the amendment report

1.3 Amendment report exhibition

Transport for NSW prepared an amendment report to assess the potential environmental impacts of the proposed changes from the project as presented in the EIS.

The amendment report was exhibited by DPIE for 14 days from 21 October 2020 to 4 November 2020 to give the community and stakeholders the opportunity to provide comment on the proposed amendments to the project. During this period, any person (including a government authority) was able to make a written submission to the Secretary.

The exhibition was advertised on the official Transport for NSW Facebook page "NSW Roads", in a community update distributed via a letterbox drop as well as in the following newspapers:

- The Australian
- The Sydney Morning Herald
- The Daily Telegraph
- Penrith Western Weekender
- Liverpool City Champion
- Fairfield City Champion.

Electronic copies of the EIS were available via:

- The project's web portal at: ***https://v2.communityanalytics.com.au/rms/m12/amendment-report***
- DPIE's website at: ***https://www.planningportal.nsw.gov.au/major-projects/project/10226***
- Service NSW Centres.

Consultation activities carried out during the exhibition period included:

- Media releases
- Community update newsletter announcing the amendment report exhibition were distributed to around 6000 households and businesses along the project corridor. The community update newsletter can be accessed at: ***https://www.rms.nsw.gov.au/projects/01documents/m12-motorway/m12-motorway-community-update-2020-10.pdf***
- Email notifications were sent out to approximately 500 people who had signed up for project email updates
- Project phone number and email inbox
- Project website and web portal
- Social media posts on the official Transport for NSW Facebook page "NSW Roads" between 21 and 27 October and between the 29 October and 4 November 2020
- Interactive community Facebook Live event on 28 October 2020.

Hard copies of the amendment report were not required to be exhibited because of the Environmental Planning and Assessment Amendment (Public Exhibition) Regulation 2020.

Due to COVID-19 restrictions in place for government agencies at the time of exhibition, no face to face community information sessions were held. Virtual meetings with key stakeholders were held and Transport for NSW attended a Cecil Hills resident meeting by invitation. The meeting occurred outside the exhibition period and was managed in accordance with strict COVID-19 guidelines.

Once the exhibition period ended, the Secretary provided copies of submissions received to Transport for NSW. A total of 41 submissions were received by DPIE from 41 submitters in response to the amendment report. This is discussed further in **Chapter 2**.

The Secretary's delegate requested on 13 November 2020 that Transport for NSW provide responses to issues raised in the submissions.

1.4 Purpose of the document

This report identifies the submitters and issues raised during exhibition of the amendment report (**Chapter 2**). It includes a response to those issues raised (**Chapter 3** and **Chapter 4**), clarifications and minor updates to the project that have been identified since the preparation of the amendment report (**Chapter 5**), and an assessment of impacts on the minor updates made (**Chapter 6**). This submissions report also provides the revised environmental management measures for the project (**Chapter 7**).

2. Submissions received

2.1 Submitters

Transport for NSW received 41 submissions during exhibition of the amendment report by 41 submitters. The 41 submitters were comprised of:

- 17 individual community members
- Seven special interest groups or businesses
- 17 government authorities.

2.2 Overview of issues raised

Each submission has been examined individually to understand the issues being raised. The issues raised in each submission have been extracted and collated, and corresponding responses to the issues have been provided.

Where similar issues have been raised in different submissions, only one response has been provided. The issues raised and Transport for NSW responses to these issues form the basis of **Chapter 3** and **Chapter 4**.

Of the 41 submissions received, 29 per cent were in objection to the project and 34 per cent were in support of the project. The majority of submitters (37 per cent) did not offer a position.

2.2.1 Community and organisations

Chapter 3 documents the submissions received from community and organisations. A summary of the main issues raised include:

- The project design, particularly the Wallgrove Road realignment, the connection between the M12 Motorway and Elizabeth Drive, and the location and design of intersections and entry/exit ramps
- Socio-economic impacts associated with access to private properties, land fragmentation, impacts to local businesses and property value and compensation concerns
- Noise and vibration impacts, particularly in relation to future land uses, operational road traffic impacts and noise mitigation
- Consultation, particularly the level of consultation carried out for the amendment report.

A more detailed breakdown of the issues raised by the community and organisations is shown in Figure 2-1.

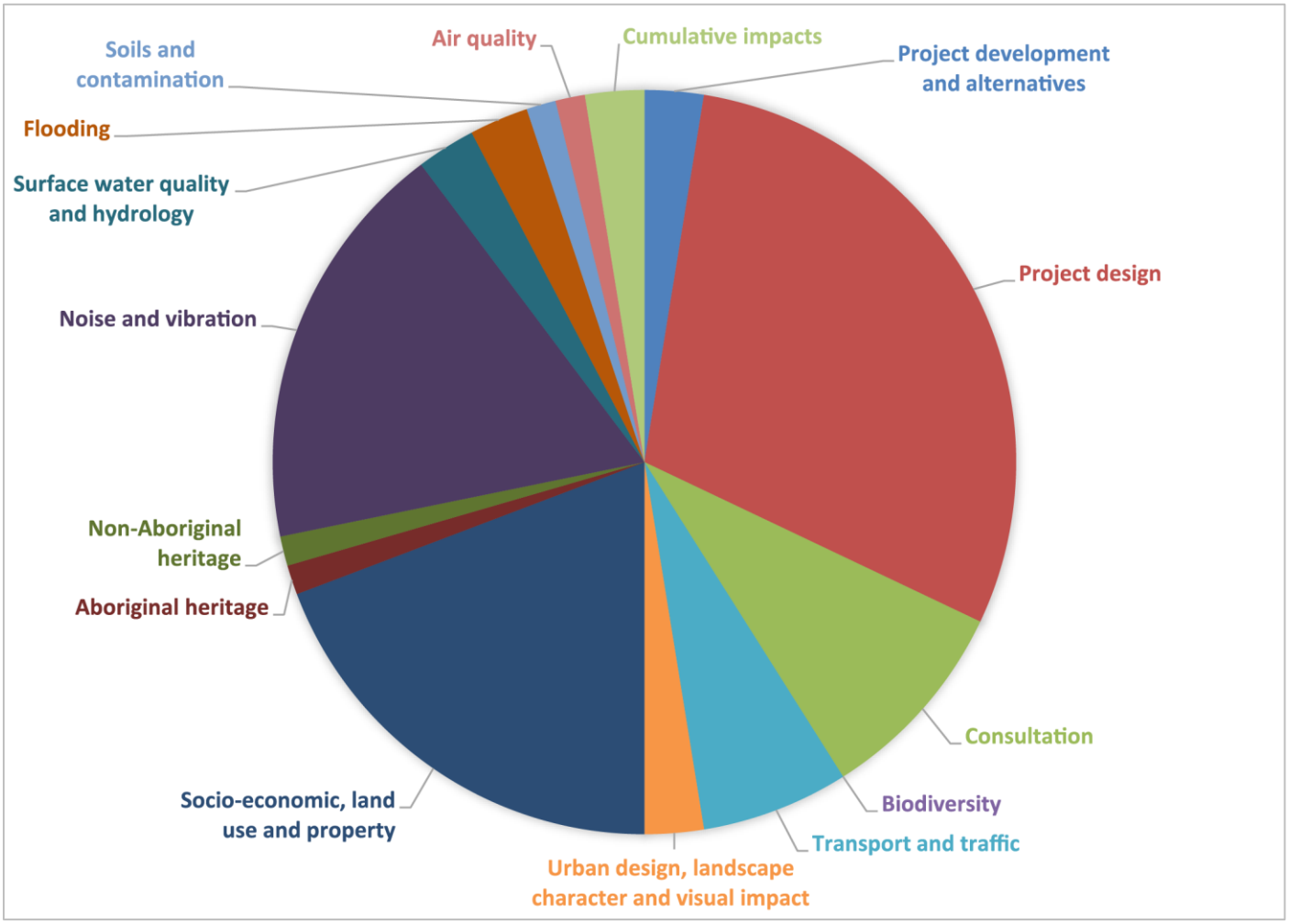


Figure 2-1 Issues raised by community and organisations

2.2.2 Government authorities

Chapter 4 documents the submissions received from government authorities. A summary of the main issues raised include:

- Biodiversity impacts, particularly clearing of native vegetation, removal of threatened flora and fauna habitat
- Project design concerns regarding connectivity to the Western Sydney Aerotropolis, Elizabeth Drive and the proposed shared user paths
- Flooding impacts, particularly regarding cumulative impacts and impact to private property.

Figure 2-2 shows a more detailed breakdown of the issues raised by government authorities.

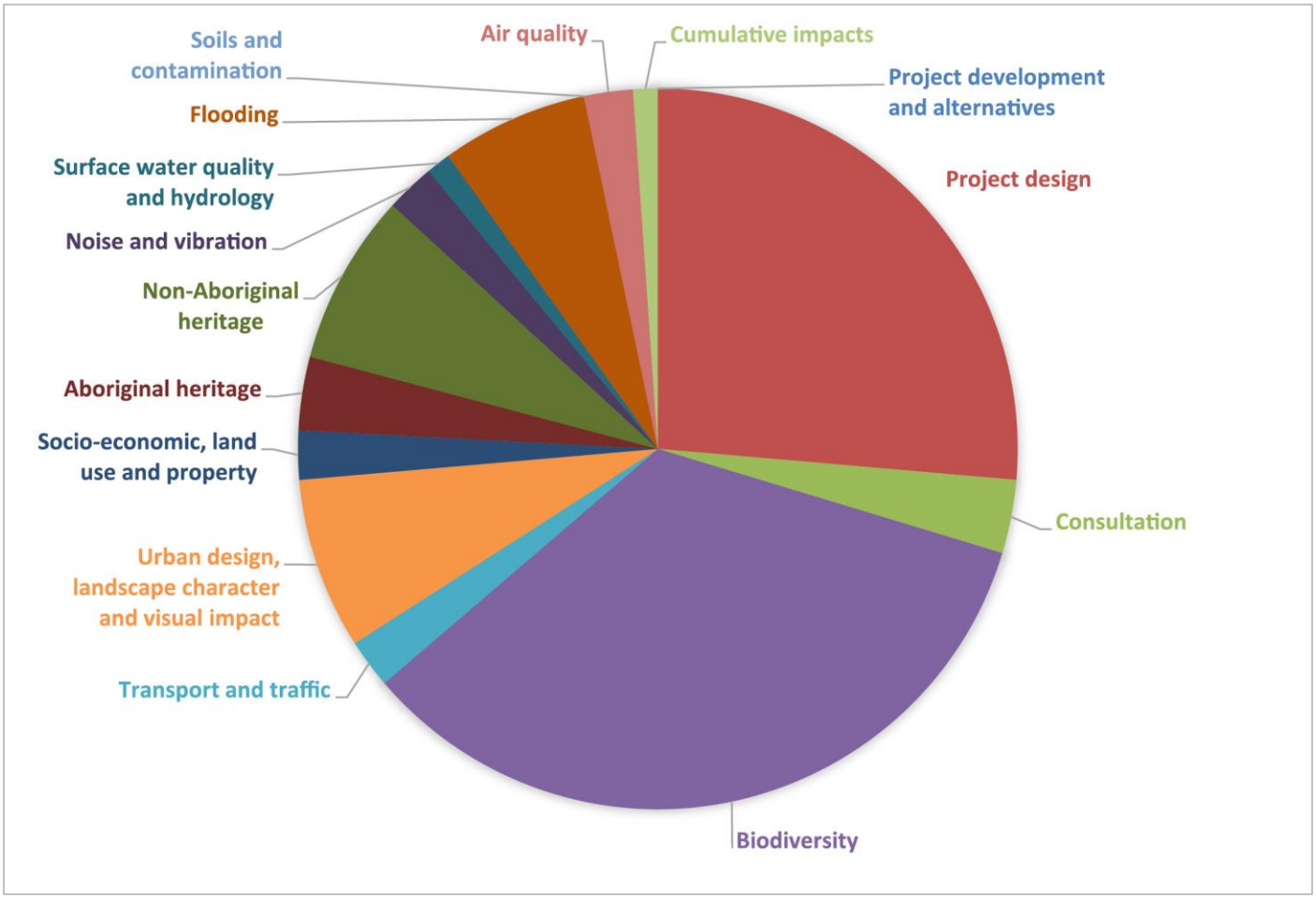


Figure 2-2 Issues raised by government authorities

3. Response to submissions from community and organisations

3.1 Introduction

A total of 24 community submitters provided submissions comprising 17 individual community members and seven from special interest groups or businesses.

A list of the community submissions is provided in Table 3-1, including where the issue has been addressed in this report. The community issues raised and Transport for NSW's response to these issues form the basis of this chapter.

Of the 24 community submissions, three submitters either marked 'support' as the classification of their submission or mentioned support for the project within their submission, 12 submitters objected to the project and nine submitters raised issues on the project without specifying whether they were in support of or objected to the project.

Table 3-1 List of community and organisation submitters

Submitter	Submission number	Section number where issues are addressed
Individual	1	3.2.1, 3.3.1, 3.4.1, 3.6.1, 3.10.3
Individual	2	3.10.3
Individual	3	3.6.1, 3.10.2
Individual	4	3.2.1
Individual	5	3.10.2
Individual	6	3.10.2, 3.14.1
Individual	7	3.10.3, 3.14.1
Individual	8	3.10.2
Individual	9	3.10.3
Individual	10	3.10.3
Individual	11	3.3.1
Individual	12	3.3.1, 3.4.1, 3.10.2
Individual	13	3.4.1
Individual	14	3.3.1, 3.3.3, 3.4.1, 3.10.2, 3.10.3

Individual	15	3.3.1
Individual	16	3.3.1
Individual	17	3.7.3
Cecil Park Resident Action Group	18	3.3.1, 3.4.1, 3.5.3, 3.10.3. 3.11.1
CSR Ltd (PGH bricks)	19	3.3.1
Endeavour Energy	20	3.3.1, 3.3.4, 3.3.5
Roy Medich/BHL	21	3.3.2, 3.3.3, 3.3.4, 3.5.1, 3.5.2, 3.6.1, 3.7.1, 3.7.2, 3.7.3, 3.7.4, 3.8.1, 3.9.1, 3.10.1, 3.10.3, 3.12.1, 3.13.1, 3.14.1, 3.15.1
Transgrid	22	3.4.2
Urban Development Institute of Australia NSW	23	3.3.2, 3.7.1
University of Sydney	24	3.3.1, 3.7.2, 3.11.1

3.2 Project development and alternatives

3.2.1 Selection of preferred route

Submission number(s)

1, 4

Issue description

Concern that environmental issues were not adequately assessed when considering alternatives for the Wallgrove Road re-alignment, and that the preferred alignment was selected based on land acquisition cost.

Concern about why and how the preferred route of the project was selected, particularly with regard to residential areas at Badgerys Creek.

Response

Transport for NSW has investigated a number of alternative routes for the Wallgrove Road realignment, and criteria considered for the route selection included environmental issues. Transport for NSW notes that major changes to the alignment outside the new acquisition boundaries were considered. However, the current design was found to provide the best overall compromise when taking into account factors such as minimising property acquisition, impacted lots and affected number of landowners, noise and visual impacts, road design to facilitate traffic flow and connectivity, mitigating impact to potential future

development of the surrounding land, and utilities, cost and constructability and minimising environmental impacts including vegetation clearing and impacts to drainage lines, Ropes Creek and existing dams.

In selecting the preferred route for the project corridor, the project development process considered possible alternative ways of meeting the project objectives and providing access to Western Sydney and the WSIA. The strategic route analysis carried out by Transport for NSW in 2015 involved identifying a long list of route corridor options which could satisfy the project objectives and design principles, including engineering standards and environmental and socio-economic issues. It considered opportunities and constraints in the study area.

A range of desktop environmental assessments were carried out to assess the long list of route options in order to develop a short list of route options. These included investigations into biodiversity, Aboriginal and non-Aboriginal heritage, land use planning, hydrology, flooding, socio-economic, traffic, soils, contamination, water, landscape character and utility issues.

The alignment of the project to the south of the Elizabeth Drive Landfill facility, known as Option B2, was considered in Section 7.3 of the M12 Motorway Strategic Route Options Analysis Preferred corridor route report (Roads and Maritime, 2016) ***https://www.rms.nsw.gov.au/projects/01documents/m12-motorway/m12-motorway-preferred-corridor-route-report.pdf***. It was compared against an alignment, known as Option B5, located to the north of the Elizabeth Drive Landfill facility.

Selection of the preferred corridor route, including Option B5 (north of the Elizabeth Drive Landfill facility) included public consultation in March 2016, a value management workshop in April 2016, and a comparative assessment of each option. The comparative assessment of corridor options in zone B (ie Option B2 versus Option B5) is presented in Table 8-4 of the M12 Motorway Strategic Route Options Analysis Preferred corridor route report (Roads and Maritime, 2016).

Option B5 was identified as the preferred corridor option in zone B due to a number of key factors. It would:

- Have fewer risks associated with project delivery. The delivery of the project would be simpler due to reduced local road improvements required, reduced length of floodplain to be crossed, and potential for increased working hours due to the distance from residential properties
- Potentially improve traffic network management
- Allow greater flexibility for future land use development along and north of Elizabeth Drive
- Be easier and safer to construct
- Be consistent with the Western Sydney Growth Priority Area planning
- Have less impact on business and community as there would be less severance
- Provide better functionality for airport traffic as it would allow for more and safer storage for traffic and buses inbound and outbound from the planned WSIA due to the longer access road.

Overall, corridor option B5 was recommended as it would have fewer impacts on current and future land uses and provide greater capacity for airport traffic due to the longer access road.

3.3 Project design

3.3.1 Road design

Submission number(s)

1, 11, 12, 14, 15, 16, 18, 19, 20, 21, 24

Issue description

Wallgrove Road realignment

Concern about the Wallgrove Road realignment impacts.

A submitter did not support the realignment of Wallgrove Road, and requested that alternative routes be considered.

A submitter requested that the amendment report should be updated and re-exhibited with the refined Wallgrove Road realignment.

Extension of the M12 corridor

A submitter suggested that the M12 is extended across the M7 to the Cumberland Highway in Fairfield.

Fast-tracking the upgrade of Elizabeth Drive

A submitter requested that the upgrade of Elizabeth Drive is fast-tracked.

A submitter sought further information about the widening of Elizabeth Drive and the provision of public transport along Elizabeth Drive.

M5 Motorway extension indicative corridor

A submitter requested details on the M5 Motorway Extension Indicative Corridor and interface with the M9 / Outer Sydney Orbital project.

Integration of the East-West Rail link project

Concern about the location of specific components of the East-West Rail link project with relation to the location of the M12.

Response

Wallgrove Road realignment

Elizabeth Drive experiences congestion at the M7 interchange and the relocation of the connection of Wallgrove Road to Elizabeth Drive would improve the operation of Elizabeth Drive in this area.

The Wallgrove Road realignment would allow the existing intersection with the M7 northbound exit ramp to be moved further west, providing extra capacity between both of the M7 Motorway exits. It would also allow for a direct connection from Elizabeth Drive to the M7 Motorway, which would be an improvement in the existing connection that exists further north off Wallgrove Road. Further, it would remove the loop ramp from the design as shown in the EIS, providing improved road performance and safety outcomes.

Section 5.2.1 acknowledges that the Wallgrove Road realignment design as presented in the amendment report had a number of matters to be addressed during further design development. These included:

- The realigned Wallgrove Road had a large construction footprint
- The geometry of the realigned Wallgrove Road where it deviates from the existing Wallgrove Road needed improvement
- The distance between the Wallgrove Road and Cecil Road roundabout intersection and the Elizabeth Drive/Wallgrove Road signalised intersection was unlikely to provide sufficient traffic capacity in the future.

Wallgrove Road realignment design refinements were required to address the above matters, particularly in regard to providing sufficient traffic capacity in the future. The preferred design option for the refined Wallgrove Road realignment (refer to Section 5.2.2) would provide:

- A Wallgrove Road and Cecil Road intersection with traffic signals that creates satisfactory traffic flow and efficiently performance targets for future predicated growth
- Improved long term solution for Fairfield City Council’s proposed Cecil Road corridor

- Improved geometry on the northern section of the realigned Wallgrove Road.

Transport for NSW investigated a number of alternate routes for the Wallgrove Road realignment. Major changes to the alignment outside the new acquisition boundaries were also considered. However, the current design was found to provide the best overall compromise when taking into account factors such as minimising property acquisition, impacted lots and affected number of landowners, noise and visual impacts, road design to facilitate traffic flow and connectivity, mitigating impact to potential future development of the surrounding land, and utilities, cost and constructability and minimising environmental impacts including vegetation clearing and impacts to drainage lines, Ropes Creek and existing dams. The amended design of the M12/M7 interchange, including the Wallgrove Road realignment and resulting property impacts, are described and assessed in an amendment report, prepared in line with Section 192 of the EP&A Regulation. The report describes the project changes and assesses impacts on biodiversity, traffic, socio-economics, property, waterways, visual amenity, heritage, noise, and vibration. A full environmental assessment for this area is also included in the report.

Environmental management measures have been identified (**Chapter 7**) to reduce, mitigate and offset environmental impacts due to the project's construction and operation. Minor design refinements have been made to address the concerns raised by nearby residents, including minimising the road footprint by steepening batters and potential retaining structures to minimise vegetation clearing, minor adjustments to road geometry within the new acquisition boundary, drainage, landscaping screening and revegetation.

As noted by the revised environmental management measure B30 in **Chapter 7**, Transport for NSW is committed to investigate strategies to further minimise impacts from the refined Wallgrove Road realignment. Strategies include but are not limited to changing the height of the road, steepening of batters and/or the use of retaining wall structures, and moving the horizontal alignment closer to the new proposed southern road reserve boundary. These strategies will aim to reduce the construction footprint area, native vegetation clearing and drainage line impacts. Any design refinements carried out after project approval would be reviewed by Transport for NSW to determine whether the impact of these refinements are consistent with the approved project.

Extension of the M12 corridor

The objective of the M12 Motorway project from its inception is to provide direct motorway standard east–west connection between the M7 Motorway and The Northern Road to the planned WSIA, allowing for future north–south connections.

While the project development process considered possible alternative ways of meeting the project objectives and providing access to Western Sydney and the WSIA, a connection east of the M7 Motorway, such as to the Cumberland Highway, is outside of the project scope.

Fast-tracking the upgrade of Elizabeth Drive

The upgrade of Elizabeth Drive is outside of the project scope. The NSW Government is planning for the future with funding allocated to investigate improvements to Elizabeth Drive between the M7 Motorway at Cecil Hills and The Northern Road at Luddenham; development of the concept design and environmental assessment has already commenced, and it is expected to include provision for public transport. Rapid bus routes from Penrith, Parramatta and Liverpool to the WSIA are outside of the scope of this project, and are currently being developed outside of this project.

Widening of Elizabeth Drive as part of the amended project is limited to under the M7 Motorway and approaches only. Further widening of Elizabeth Drive outside of this area is outside of the scope of this project.

Transport for NSW have been working in collaboration with the Western Sydney Planning Partnership (WSPP) on road network planning for new Western Sydney Aerotropolis precincts and identifying locations for connectivity to the M12 Motorway. Precinct plans were made available in November 2020 and can be accessed on DPIE webpage: ***https://www.planningportal.nsw.gov.au/WSAPP***.

M5 Motorway Extension Indicative Corridor

As described in Section 5 of the EIS, the project has been designed to consider and integrate future transport corridors including the proposed Outer Sydney Orbital.

Transport corridor planning for the Outer Sydney Orbital and link to the M5 Motorway is outside the scope of the project. More information about the Outer Sydney Orbital corridor and other transport corridors planned for western Sydney can be found at: ***https://www.transport.nsw.gov.au/corridor***.

Integration of the East-West Rail link project

The general alignment and the locations of specific components of the Sydney Metro – East-West Rail link project are outside of the project scope.

Transport for NSW is taking an integrated approach by planning for the long-term transport needs of western Sydney by identifying and protecting corridors of land for future transport infrastructure, including the proposed Sydney Metro – Western Sydney Airport East-West Rail link. Refer to the project website at: ***https://www.transport.nsw.gov.au/projects/current-projects/east-west-rail-link*** for further information.

3.3.2 Intersections and entry/exit ramps

Submission number(s)

12, 21, 23

Issue description

Lack of connections between Elizabeth Drive and M12 Motorway

More than one submitter requested inclusion of a connection between Elizabeth Drive and M12 Motorway to facilitate access to the WSIA and to the Western Sydney Aerotropolis

Connection from Elizabeth Drive to the M12 Motorway near the M7

A number of submitters questioned the need for both the Elizabeth Drive eastbound to M7 northbound entry ramp and the Wallgrove Road realignment. The submitters were of the opinion that future traffic demands do not justify both.

A number of submitters requested that the realigned Wallgrove Road / Elizabeth Drive/ Ramp to M12 Intersection is designed as to maximise the use of left turn slip lanes with long merge lanes onto joining road.

University of Sydney supported the amendments for the interchange at the M7 Motorway.

M12 Motorway / M7 Motorway entry and exit ramp

Concern about the location of entry and exit ramps in Cecil Hills.

Entry and exit ramps in Elizabeth Hill

Concern about the location of entry and exit ramps in Elizabeth Hill.

Wallgrove Road and Cecil Road intersection

A submitter requested clarification on the design of the intersection between Wallgrove Road and Cecil Road.

A submitter requested information on the rationale for the Wallgrove Road and Cecil Road intersection.

Intersections on Elizabeth Drive at WSIA

University of Sydney noted that it was positive to see Transport for NSW recognising the importance of the connections along Elizabeth Drive.

University of Sydney supports the provision of two signalised intersections linking the future WSIA with the University's lands.

University of Sydney requested further details of the design for intersection on Elizabeth Drive west of the M12.

Response

Lack of connections between Elizabeth Drive and M12 Motorway

Transport for NSW has now secured funding for the provision of entry and exit ramps between the M12 Motorway and Elizabeth Drive, Cecil Road and Wallgrove Road, which was identified as Option 2 for the M7 and M12 interchange in the amendment report.

A key benefit of Option 2 was the provision of a toll-free connection between Liverpool and the WSIA. The amendment report noted that the decision on which option would be built is dependent on funding being available to include the Elizabeth Drive connection. Transport for NSW has now secured funding for Option 2 which would be the preferred option for the project.

Transport for NSW is committed to investigate the opportunity to provide additional connectivity between Elizabeth Drive and the M12 Motorway at the WSIA entry. A preliminary design is presented in Figure 3-1. The interchange may result in changes to traffic performance along Elizabeth Drive and alterations to the construction and operational footprints of the project. These footprint changes may also result in some minor additional impacts to biodiversity, heritage and land acquisition. Note this design is not part of the project and would require either a planning approval modification or consistency assessment after the project is approved depending on the resultant environmental impacts.

Figure 3-1 Preliminary design of the connection to Elizabeth Drive at the WSIA (Note: this design is not part of the project and would require either a planning approval modification or consistency assessment after the project is approved depending on the resultant environmental impacts.)

Connection from Elizabeth Drive to the M12 Motorway near the M7

As noted in Section 5.2, the Wallgrove Road realignment design as presented in the amendment report had a number of matters to be addressed during further design development. A series of refined designs for the Wallgrove Road realignment were developed to address the matters listed above in consultation with affected property owners. A summary of the refined design options considered and their advantages and disadvantages is provided in Table 5-3.

The preferred refined Wallgrove Road realignment design option, Option D, is shown in Figure 3-2. A comparison between the Wallgrove Road realignment design as presented in the amendment report and Option D is shown in Figure 5-1.

The development of this preferred design option considered the following strategic objectives:

- Investigate proposed connection options between the proposed M12 Motorway and adjacent roads
- Ensure suitable connectivity and traffic weaving are considered for all movements
- Ensure motorist user safety by including infrastructure design necessary to avoid merge connections on the offside lane
- Provide minimal congestion or limit potential delays at proposed connections.
- Consider road connection options that can provide traffic flow efficiency and reduce delays during incidents (intersection line markings must be shown on all strategic design plans).

The comparison and assessment of the preferred design (Option D) and the design presented in the amendment report determined the road and intersection design and resolved the traffic flow deficiencies.

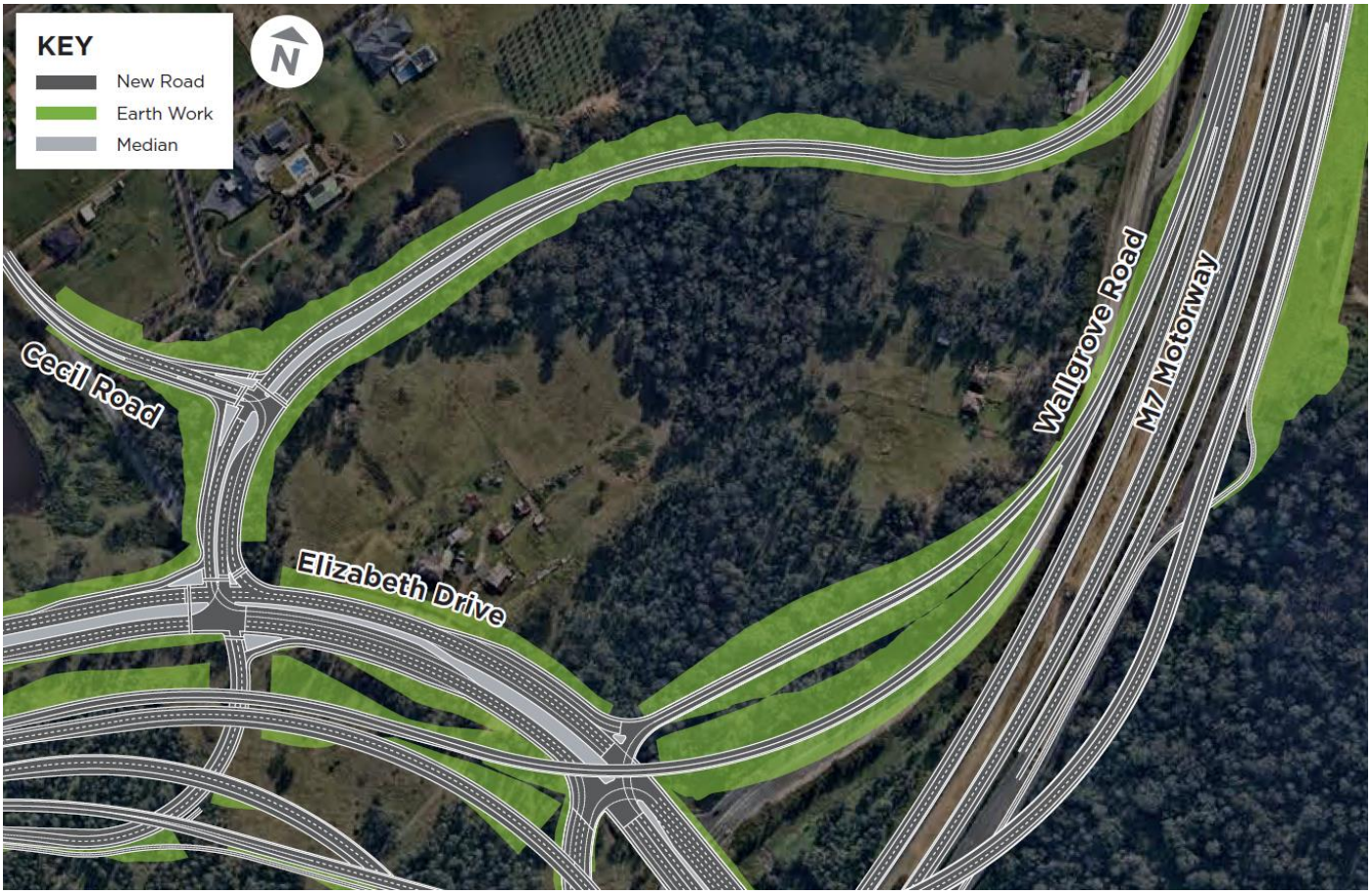


Figure 3-2 Preferred design option to connect Elizabeth Drive to the M12 Motorway near the M7

Both the Elizabeth Drive eastbound to M7 northbound entry ramp and the Wallgrove Road realignment are required components of the project, and the provision of both components will address existing capacity issues experienced in peak times at Elizabeth Drive and Wallgrove Road near the M7.

M12 Motorway / M7 Motorway entry and exit ramp

Transport for NSW acknowledges the concern from submitters in relation to the location and design of the M7 Motorway entry/exit ramps, particularly near Cecil Hills.

The location of the entry and exit ramps has been determined via an iterative process. A grade separated interchange provides a free-flowing connection for all movements between the M12 Motorway and the M7 Motorway. This interchange option was selected following a value management process that assessed a range of criteria including project delivery, land use, community, environmental and functionality factors. The grade separated interchange was considered to be the preferred option on balance of these factors. The inclusion of a tunnel as part of the project would have considerable construction, operation and maintenance costs, and is not considered a feasible option as part of the project design.

Management measures to manage impacts from the ramps including noise and visual impacts are discussed further in Section 3.7.1.3 and Section 3.11 of the amendment report.

Entry and exit ramps at Elizabeth Hills

No motorway access is proposed to be located in Elizabeth Hills. The closest feature of the project to Elizabeth is the tie-in of the M12 ramps to the M7 Motorway, located about one kilometre north-east of residential areas of Elizabeth Hills.

Wallgrove Road and Cecil Road intersection

As noted in Section 6.3, the Wallgrove Road and Cecil Road roundabout has been further developed since the amendment report and in the current project design is a signalised intersection. The signalised intersection would further improve the traffic performance and operations of the area by creating satisfactory traffic flow and performance for the predicted future growth.

Section 5.1 provides a clarification in relation to the data that was presented in the amendment report on the performance of the intersection of the realigned Wallgrove Road and Elizabeth Drive.

As stated in the revised environmental management measure TT09 in **Chapter 7**, traffic signals between the Wallgrove Road and Cecil Road intersection and the Elizabeth Drive and Wallgrove Road intersection would be coordinated to reduce congestion and manage traffic flow.

Intersections on Elizabeth Drive at WSIA

Transport for NSW acknowledges comments made by the University of Sydney.

The intersections along Elizabeth Drive to the east and west of the M12 Motorway that provide access to the WSIA are subject to further development during the detailed design phase. Ongoing consultation will be undertaken with adjacent landowners during the detailed design phase on the details of the intersection design.

3.3.3 Shared user path

Submission number(s)

14, 21

Issue description

A submitter questioned whether the shared user path will comprise part of the future road network for the Aerotropolis and if it will allow for future connections into private land.
A submitter sought further information about the provision of a shared user path along Elizabeth Drive.

Response

Section 4.2 of the amendment report provide details on the proposed shared user path connection to the boundary of the WSIA.

As noted in Section 5.4.3, since the amendment report was prepared, draft precinct plans for the Aerotropolis Core, Badgerys Creek, Wianamatta-South Creek, Agribusiness and Northern Gateway Precincts have been drafted by DPIE. The draft precinct plans establish the strategic vision and general objectives, proposed land uses, performance criteria for development of land, and the approach to both infrastructure and water cycle management.

The provision of active transport corridors within the WSIA is outside the scope of the project and would need to be driven by other agencies such as WSA Co, the Government Business Enterprise established to build the WSIA.

However, Transport for NSW have been working in collaboration with WSPP on road network planning for new Western Sydney Aerotropolis precincts and on identifying locations for road crossings of the M12 Motorway.

The shared user path has been designed to accommodate increased numbers of active transport users resulting from the proposed land use and infrastructure changes. The shared user path would create a safe pedestrian and cyclist facility for the wider western Sydney area. While the provision of future shared user path connections beyond the project boundary is outside the project scope, the shared user path to be delivered as part of the project will not preclude connections to future land uses.

The amended project would provide a shared user path that would extend along the western side of the airport access road up to the boundary of the Western Sydney Airport and would tie into a future shared user path along Elizabeth Drive. The provision of a shared user path along the entire length of Elizabeth Drive is outside of the scope of this project and would be delivered by the Elizabeth Drive Upgrade project. Development of the concept design and environmental assessment for this separate project has already commenced.

3.3.4 Utilities

Submission number(s)

20, 21

Issue description

Request that details of all adjustments to existing infrastructure on a submitter's landholding, including the relocation of utility services and any other relocation of services be provided to the submitter. The submitter also requested to the M12 Motorway utilities to service severed land parcels. The submitter objected to the project and requested design refinement.

Endeavour Energy requested clarification on response provided in Section 4.3.1.2 of the EIS submissions report, and requested that Transport for NSW consult with Endeavour Energy throughout the development of the project to increase efficiencies in co-locating utilities.

Response

The project would impact on several utilities and services and some may need to be modified, protected or relocated, including on land owned by the submitter. Utilities impacted by the project are discussed in Section 5.20 of the EIS and Section 3.3 of the amendment report. Identification of utility infrastructure that requires adjustment and/or relocation due to project construction is ongoing and would be confirmed upon detailed design, in consultation with affected property owners (regarding any adjustments to existing

infrastructure on their landholdings and potential future connections). Note that further design development may identify additional utility works, which may extend outside the construction footprint. During construction, utility works would be carried out in accordance with the utilities strategy prepared for the project in consultation with asset owners.

If there are any impacts on Endeavour Energy assets outside the construction footprint, they would be assessed during detailed design. New or revised management options for utility services may also be identified during detailed design. Transport for NSW understands that as part of Endeavour Energy's electrical design certification process, the ASP 3 electrical designer is required to Input into Endeavour's Summary Environmental Report Application. Transport for NSW can confirm that this process would be adhered to.

Consultation with Endeavour Energy is ongoing during the project detailed design and the construction stages, with regard to assets within and in proximity to the project construction footprint to ensure that the services that Endeavour Energy provides are not unreasonably affected, and Endeavour Energy can continue to access, operate and maintain its assets. Identification of Endeavour Energy's utility infrastructure that requires adjustment and/or relocation due to project construction is ongoing and would be confirmed upon detailed design.

Where future network extensions or capacity expansions planned by Endeavour Energy coincide with proposed project utility works, there would be an opportunity to coordinate these works to minimise future impacts on the local community and business subject to complying with the relevant conditions of approval.

3.3.5 Safety in design

Submission number(s)

20

Issue description

Request for Transport for NSW to ensure utilities relocations are carried out in accordance with safety in design processes and principles.

Response

Transport for NSW has a robust safety in design process in place which has been implemented during concept design and which would continue to be implemented during detailed design, to ensure that safety in design processes and principles are part of the project design development and constructability.

3.4 Consultation

3.4.1 Level and quality of consultation

Submission number(s)

1, 12, 13, 14, 18

Issue description

Concern that the outcomes of the consultation carried out to date has not been considered in the realignment of Wallgrove Road.

Concern about the level of notification and consultation during the amendment report public exhibition, and the period of time that the amendment report was placed on public display.

Request for clarification around consultation between Transport for NSW and the proponent of the State Significant Application number SSD 17_8859, for a site located at 1111 Elizabeth Drive, Cecil Park.

Response

The proposed Wallgrove Road realignment described in the amendment report and the refinement of this realignment discussed in Section 5.2 have been incorporated into the design as a result of submissions received during the EIS public exhibition. The refined Wallgrove Road realignment has now moved further to the south at Cecil Park. The Wallgrove Road realignment was assessed using a traffic model to predict the expected performance. A number of options were considered by Transport for NSW including a number of different alignments for the realigning Wallgrove Road and widening of Elizabeth Drive. Traffic modelling for ten years after opening the project included in the amendment report performed at an acceptable level. As noted in Section 6.3, the Wallgrove Road and Cecil Road roundabout has been further developed since the amendment report, and in the current project design, is now a signalised intersection. The signalised intersection would further improve the traffic performance and operations of the area. As stated in the revised environmental management measure TT09 in Chapter 7, traffic signals between intersections would be coordinated to reduce congestion and manage traffic flow.

The amendment report was placed on exhibition by DPIE for 14 days, in accordance with the EP&A Regulation. The exhibition period allowed the community and other stakeholders the opportunity to provide comment on the amended project, assessment undertaken, and any management measures proposed to minimise impacts from the amended project.

In line with the restrictions around large gatherings due to COVID-19, the project was unable to proceed with face to face community engagement activities for the amendment report. An alternative interactive community Facebook Live event was carried out, in addition to engagement over the phone, email and social media posts. A community update newsletter announcing the amendment report exhibition was distributed to around 6000 households and businesses along the project corridor including some of the residents from the Cecil Park Resident Action Group area of interest. Email notifications were sent out to approximately 500 people who had signed up for project email updates.

As described in Chapter 6 of the EIS, community consultation was carried out during the project development stage (between 2015 and August 2019) to provide community members, including Cecil Hills residents, with the opportunity to learn about the project and provide feedback before the public exhibition of the EIS. Consultation primarily included four main stages:

- 13 July – 14 August 2015: An announcement was made of the start of the M12 Motorway investigations and study area, as well as the start of the strategic route options analysis study. Feedback was sought from the community on the constraints near the project and for input into the strategic route options
- 15 February – 11 March 2016: Community feedback was sought on the eight shortlisted route options for the project for incorporation into the final route selection
- November 2016 – A community newsletter that announced the selection of the modified orange option as the preferred corridor route
- 22 February – 23 March 2018: Community feedback was sought on the modified preferred corridor, the preliminary design of the project and the preliminary access strategy.

In addition, a number of ongoing engagement channels were established for the project to seek input from the community and key stakeholders to facilitate engagement as the project developed, including a project email address, a project website, a toll-free project phone number for feedback, enquires and complaints, and a postal address to receive written feedback.

Transport for NSW will continue to update the local community and identified stakeholders about relevant activities and other project updates through the detailed design process and construction period, using the following engagement channels:

- Website updates
- Community update newsletters
- Notifications to affected receivers
- One-to-one landowner and stakeholder consultation.

3.4.2 Ongoing consultation

Submission number(s)

22

Issue description

TransGrid requested to continue to consult with Transport for NSW with regards to the detailed design to ensure the safety and protection of their assets.

Response

Transport for NSW acknowledges future plans by TransGrid to widen the Transmission Line 39 corridor as part of future augmentation work to secure the future supply of bulk electricity to Greater Sydney and Sydney Central Business District.

Where feasible and reasonable, the project would be designed with the aim of minimising impacts on existing utilities and services. Transport for NSW would continue to consult with TransGrid to seek to accommodate future widening work.

3.5 Transport and traffic

3.5.1 Road network strategy

Submission number(s)

21

Issue description

Concern that the project would not integrate with the Western Sydney Aerotropolis future road network.

Request that the project considers wide and regional connections, and that updated traffic modelling is shared with industry.

Request that the temporary haulage routes proposed across Cosgroves Creek are retained upon the completion of construction.

Response

Section 3.2 of the amendment report outlines two new signalised intersections from Elizabeth Drive into the WSIA as part of the project scope. These signalised intersections would not preclude the provision of access to the Western Sydney Aerotropolis Northern Gateway Precinct in the future.

Transport for NSW is committed to investigate the opportunity to connect to Elizabeth Drive at the WSIA entry in detailed design. A work in progress design is presented in Figure 3-1. Note this design is not part of the project and would require a planning approval modification or consistency assessment after the project is approved.

Transport for NSW is also committed to investigate the Mamre Road to Elizabeth Drive/Devonshire Road interchange which would be dependent on funding being available. Transport for NSW have been working in collaboration with WSPP on road network planning for new Western Sydney Aerotropolis precincts and identifying locations for road crossings of the M12 Motorway. Precinct plans were made available in November 2020 and can be accessed on the DPIE webpage: ***https://www.planningportal.nsw.gov.au/WSAPP***.

Transport Performance and Analytics (TPA) section of Transport for NSW is working with WSPP on traffic modelling for the wider area and will provide the updated Strategic Travel Model (STM) travel patterns in the Sydney Greater Metropolitan Area (GMA) to industry when ready.

Section 4.2 of the amendment report outlines the haulage routes to be used during construction. Elizabeth Drive is the only haulage route proposed across Cosgroves Creek outside of the M12 Motorway main alignment. Elizabeth Drive is currently a designated heavy vehicle route and will continue to be a designated heavy vehicle route in the future.

Transport for NSW notes the request from a submitter to utilise the temporary haulage route across Cosgroves Creek. However, the use of temporary haul roads would be strictly limited to construction traffic for the project only. Following construction, the haulage route will remain within the Transport for NSW road reserve as part of the controlled motorway corridor.

3.5.2 Property access

Submission number(s)

21

Issue description

Request that property access is maintained at all times throughout construction.

Response

As stated in environmental management measure TT07 in **Chapter 7**, existing property access will be maintained at all times. Access to private properties would be managed through consultation with landowners to establish safe and appropriate alternate access arrangements in situations where current access routes would be impacted.

Note that existing property access that is physically affected by the project would be reinstated to at least an equivalent standard, in consultation with affected property owners.

3.5.3 Impacts on traffic flows

Submission number(s)

18

Issue description

Concern about the traffic impacts from the Wallgrove Road realignment

Response

The Wallgrove Road realignment was assessed using a traffic model to predict the expected performance. A number of options were considered by Transport for NSW including a number of different alignments for the realignment of Wallgrove Road and widening of Elizabeth Drive. Traffic modelling for ten years after opening the arrangement included in the amendment report performed at an acceptable level and was the best of all options considered.

As noted in Section 6.3, the Wallgrove Road and Cecil Road roundabout has been further developed since the amendment report and in the current project design is now a signalised intersection. The signalised intersection would further improve the traffic performance and operations of the area. As stated in the revised environmental management measure TT09 in **Chapter 7**, traffic signals between intersections would be coordinated to reduce congestion and manage traffic flow.

3.6 Urban design, landscape character and visual impact

3.6.1 Impacts on visual amenity

Submission number(s)

1, 3, 21

Issue description

Request for vegetative screening/landscape mounds to screen road elements. A suggestion was provided to retain the ridgeline as a visual barrier.

Concern that the design of the Wallgrove Road realignment as presented in the amendment report does not enable any assessment of visual impact mitigation opportunities.

Concern about the M12 Motorway / M7 Motorway ramps encroaching across and above the ridgeline and creating unwanted visual impacts on the residents of Cecil Hills.

Response

Transport for NSW continues to work on minimising project visual impacts while considering the planting restrictions near WSIA land. An Urban Design Framework has been prepared and an Urban Design and Landscape Plan (UDLP) is being prepared to inform the detailed design of the project in order to minimise landscape character and visual impacts. The UDLP would detail and guide the implementation of landscape features to be installed as part of the project, including revegetation requirements. The UDLP would investigate opportunities to provide vegetative screening to soften the appearance of structural elements of the project and provide screening of sensitive views.

While the amended project includes changes to the construction footprint as described in the EIS and the provision of additional ancillary facilities, the amendment report determined that the visual impacts at viewpoints would be similar in nature during construction, and would be consistent with those described in the EIS. Design refinements were required to the Wallgrove Road realignment design as it was presented in the amendment report, particularly in regard to providing sufficient traffic capacity in the future.

The preferred design option for the refined Wallgrove Road realignment described in detail in section 5.2 would provide:

- Wallgrove Road and Cecil Road intersection with traffic signals that creates satisfactory traffic flow and efficient performance targets for future predicated growth
- Improved long term solution for Fairfield City Council's proposed Cecil Road corridor
- Improved geometry on the northern section of the realigned Wallgrove Road.

It has been determined that the refined Wallgrove Road realignment would result in a comparable amount of native vegetation clearing and impacts to the drainage line and dam as per the amendment report design. Changes to visual and noise impacts to the Cecil Road properties are also negligible between the amendment report and the refined design when considered in the context of the project as a whole. Refer to Section 5.2 for further details.

Note that refinements to the current design of the Wallgrove Road realignment are still being developed, with the intent of minimising impacts during the detailed design phase. During detailed design, Transport for NSW will investigate strategies to further minimise impacts including but not limited to changing the height of the road, steepening of batters and/or the use of retaining wall structures. The horizontal alignment of the realigned Wallgrove Road will be refined to position it closer to the new proposed southern road reserve boundary. These strategies will aim to reduce the construction footprint area and would result in less clearing of native vegetation and impacts to the drainage line.

3.7 Socio-economic, land use and property

3.7.1 Property access

Submission number(s)

21, 23

Issue description

A submitter has recommended that the project design is refined so as to limit land fragmentation.

Concern regarding property access to fragmented land parcels.

Request for a grade separated road access at a submitter's parcel of land that would be fragmented by the project.

Request for more detail on how the Elizabeth Drive overpass has considered potential locations for access into a submitter's landholding.

Response

Access to private properties during operation of the project would be further considered and determined during detailed design of the project as per revised environmental management measure TT07 in **Chapter 7.** Transport for NSW is also committed to working with property owners on their adjustment plans and access arrangements. Any changes to access would form part of Transport for NSW's property acquisition negotiations with the relevant landowners. Access to all land parcels would be provided via an alternate access on the property to at least an equivalent standard. Where alternative access is unable to be provided, Transport for NSW would endeavour to obtain an access easement to the land parcel from an adjoining property. Certain circumstances may warrant the purchase of severed or landlocked land for project purposes.

Note that existing property access that would be physically affected by the project would be reinstated to at least an equivalent standard, in consultation with affected property owners.

Subject to funding from the WSA Co, the amended project would include the construction of intersections at Elizabeth Drive to improve access to the WSIA. The intersections could provide for future connections to landholdings to the east and west of the project airport access road, and to future developments such as Northern Gateway. These intersections would be further developed during the detailed design phase of the project.

Transport for NSW is committed to investigate the opportunity to provide additional connectivity between Elizabeth Drive and the M12 Motorway at the WSIA entry. A preliminary design is presented in Figure 3-1. The interchange may result in changes to traffic performance along Elizabeth Drive and require adjustments to the configuration of adjacent intersections. Alterations to the construction and operational footprints of the project may also be required. These footprint changes may also result in some minor additional impacts to biodiversity, heritage and land acquisition. Note this design is not part of the project and would require either a planning approval modification or consistency assessment after the project is approved depending on the resultant environmental impacts.

3.7.2 Impacts on future development

Submission number(s)

21, 24

Issue description

Concern that the project would result in fragmented landholdings, limiting future land uses and sterilising the landholdings for future development.

Concern that the project would not integrate Western Sydney Aerotropolis future land uses.

Concerned on the proposed connectivity north of Elizabeth Drive along the alignment of an unmade road which runs through the University of Sydney's land.

Concern about the connectivity between precincts given M12 Motorway will have no access points along this route through University of Sydney's land.

Response

Transport for NSW acknowledges the request by submitters for the project to accommodate future development.

The objective of the M12 Motorway project from its inception is to provide direct motorway standard east–west connection between the M7 Motorway and The Northern Road to the planned WSIA, allowing for future north–south connections. The location of the airport access road through these landholdings was largely driven by the connection point into the WSIA that was provided by the Federal Government, and was designed and aligned to minimise impacts on property.

Where a property may be subject to partial acquisition due to the project not impacting the whole of the property, consideration was given to ensuring that residual land holdings remain viable for their existing land use. Transport for NSW would continue working with property owners individually on their property acquisition adjustment plans and would continue to consult with landowners through the detailed design process about these land parcels. Any changes to access would form part of Transport for NSW's property acquisition negotiations with the relevant landowners. Where alternative access is unable to be provided, Transport for NSW would endeavour to obtain an access easement to the land parcel from an adjoining

property. Certain circumstances may warrant the purchase of severed or landlocked land for project purposes.

The M12 Motorway transport corridor has been identified in the Western Sydney Aerotropolis Plan. The project was designed and aligned to minimise impacts on property.

Future connectivity across the M12 Motorway is not precluded from further design development, as the project progresses through the detailed design phase. During the planning phase of Western Sydney Aerotropolis Transport for NSW identified potential areas for crossings including at Badgerys Creek and Cosgroves Creek, in consultation with the WSPP. The design principles outlined in the M12 Urban Design Framework would apply to any additional crossings provided along the M12 Motorway.

The amendment report included an option for the M12 Motorway to provide a new connection between the M12 Motorway and Elizabeth Drive near the M7 Motorway interchange. Transport for NSW is committed to investigate the opportunity to connect to Elizabeth Drive at the WSIA in detailed design. An indicative design is shown in Figure 3-1.

3.7.3 Property acquisition and compensation

Submission number(s)

17, 21

Issue description

A submitter requested clarification on property acquisition for Ancillary Facility AF 3.

A submitter requested clarification on whether sufficient land has been acquired to accommodate the carriageways to be built as part of the M9 Outer Sydney Orbital.

A submitter requested details of farm dams to be removed within the project construction footprint.

Concern about temporary lease arrangements and consultation with landowners directly affected by the project.

Response

Section 6.4 of the amendment report outlines the properties directly affected by the project. Property acquisition and lease arrangements outlined in the EIS and the amendment report are indicative. Transport for NSW's preference would be to temporarily lease the land for Ancillary Facility AF 3 through negotiation with the landowner. To access the facility a temporary construction easement or access license may also need to be obtained from an adjacent landholding. If the temporary lease of the property and acquisition of an easement are unable to be secured, Transport for NSW would investigate further options. Transport for NSW would consult and negotiate with the relevant landowners for each proprietary interest required for the construction or operation of the project. If property access cannot be provided, Transport for NSW would seek to acquire the property.

Additional land acquisition would be needed to accommodate the M9 Outer Sydney Orbital. The acquisition of such land is outside the project scope. More information about the proposed M9 Outer Sydney Orbital corridor can be found at ***https://www.transport.nsw.gov.au/corridors***.

Based on the amended project, 16 farm dams would be removed from landholdings. This is discussed in Section 3.3.5 and Section 4.2.2 of the amendment report.

Where reasonably practicable, the project was designed and aligned to minimise impacts on property. Where a property may be subject to partial acquisition due to the project not impacting the whole of the property, consideration was given to ensuring that residual land holdings remain viable for their existing

land use. Ancillary facilities identified in the EIS and amendment report are indicative only. Transport for NSW would continue working with property owners individually in regards to temporary leases for construction and would continue to consult with land owners throughout the detailed design process and construction period about these land parcels.

3.7.4 Impacts on businesses

Submission number(s)

21

Issue description

A submitter has requested for the fauna passage under Bridge 02 to be suitable for livestock access across the project footprint, or alternatively, for the provision of a separate livestock access passage.

Response

The design of Bridge 02 at Cosgroves Creek allows for the provision of an access road under the bridge in addition to native fauna passage.

The project is unable to provide a separate livestock passage under Bridge 02 given the lowering of the WSIA interchange at this location as part of the amended project. Transport for NSW would continue to consult with the landholder regarding impacts on their property.

3.8 Aboriginal heritage

3.8.1 Request for information

Submission number(s)

21

Issue description

Request for information on location of Potential Archaeological Deposits outside the project construction footprint.

Response

The locations of Potential Archaeological Deposits are considered sensitive, and therefore redacted from the EIS and amendment report. Findings of the survey and test excavations have been provided to DPIE Environment, Energy and Science Group (EESG) and added to the Aboriginal Heritage Information Management System (AHIMS) register. This register is used to inform future developments. The AHIMS register is publicly available and is located at: ***https://www.environment.nsw.gov.au/awssapp/login.aspx***.

3.9 Non-Aboriginal heritage

3.9.1 Request for information

Submission number(s)

21

Issue description

Request for details on the thematic heritage study of the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and McMaster Field Station.

Response

Transport for NSW has engaged a heritage specialist to prepare a thematic heritage for the project which would include the study of CSIRO and other agricultural research stations, including both McMaster Field Station and McGarvie Smith Farm, and other relevant agricultural research stations and similar facilities located in NSW.

The thematic study would include a review of the role of such properties in veterinary research, association with agricultural, pastoral and animal husbandry groups, use of pioneering methods and practices and contribution to development of farming in NSW and Australia.

The thematic heritage study is being funded by Transport for NSW and would be completed prior to construction. The study would be provided to the landholders.

3.10 Noise and vibration

3.10.1 Construction noise impacts

Submission number(s)

21

Issue description

Concern about the potential impacts of construction noise on temporary or future land uses.

Request that Transport for NSW consult with a submitter in relation to construction noise management measures.

Response

The implementation of construction noise and vibration management measures would be based on the existing land use and the Noise Mitigation Guideline (NMG) (Roads and Maritime 2015).

As stated in environmental management measure NV01 in **Chapter 7**, a Construction Noise and Vibration Management Plan (CNVMP) which forms part of the Construction Environmental Management Plan (CEMP) would be prepared for the project to mitigate and manage noise and vibration impacts during construction.

Examples of standard construction environmental management measures are provided in Table 7-2 of Appendix K of the EIS.

In line with environmental management measure G01 in **Chapter 7**, ongoing consultation would continue with affected landholders in accordance with a Community Communication Strategy that would be prepared for the project to manage impacts during construction.

3.10.2 Operational noise impacts

Submission number(s)

3, 5, 8, 12, 14

Issue description

Concern about project operational road traffic noise impacts, including impacts at the exit ramp from the M12 Motorway to the M7 Motorway, on residents of Cecil Hills and neighbouring suburbs, particularly as a result of ramps encroaching across and above the ridgeline at Cecil Hills.

Response

Transport for NSW acknowledges the concern from submitters in relation to the location and design of the M7 Motorway entry/exit ramps, particularly near Cecil Hills.

The location of the M12 Motorway entry and exit ramps have been determined via an iterative process. A grade separated interchange provides a free-flowing connection for all movements between the M12 Motorway and the M7 Motorway. This interchange option was selected following a value management process that assessed a range of criteria including project delivery, land use, community, environmental and functionality factors. The grade separated interchange was considered to be the preferred option on balance of these factors. The inclusion of a tunnel as part of the project would have considerable construction, operation and maintenance costs, and is not considered a feasible option as part of the project design.

Compared with the EIS, the amended project has lowered the M7 Motorway southbound exit to M12 Motorway westbound and for the M7 Motorway southbound entry from M12 Motorway eastbound, near Cecil Hills. This is discussed further in Section 3.1 of the amendment report. Where possible, the design of the ramps (including the camber of the ramps) would continue to be refined during detailed design to minimise noise and visual impacts on Cecil Hills residents.

A noise and vibration assessment report was prepared for the project as part of the EIS (see Appendix K of the EIS). This assessment has been updated to assess the noise and vibration impacts of the amended project as part of the amendment report (see Appendix G of the amendment report). For both assessments, the operational noise assessment compared road traffic noise levels predicted due to the project in 2026 (modelled as the year ‘at opening’) and 2036 (modelled as 10 years after opening) with those predicted without the project (but assuming background traffic growth based on traffic forecast for 2026 and 2036).

Generally, the change in road traffic noise exposure as a result of the amended project is predicted to remain unchanged from the project as described in the EIS, with less than a 2 db(A) increase in noise levels in areas adjacent to the existing major roads such as the M7 Motorway, Elizabeth Drive and The Northern Road. This would include the Cecil Hills area to the east of the M7 Motorway. This change in road traffic noise exposure is considered by the EPA to be barely perceptible.

Operational road traffic noise impacts will continue to be considered throughout detailed design to minimise noise impacts on Cecil Hills residents. As described in Section 5.16.3 of the EIS, a signposting scheme for the project would provide clear and unambiguous direction and information to motorists, achieving a safe

and compliant design. Signs would be installed to enforce road rules and regulations, indicating items such as the direction of travel, posted speed limits, the use of compression braking and parking restrictions.

As stated in environmental management measure NV15 in **Chapter 7**, Transport for NSW is committed to compare the actual project operational noise performance to predicted operational noise performance within 12 months of start of operation of the project. The need for additional mitigation or management measures to address identified operational performance issues and meet relevant operational noise criteria will be assessed and implemented where feasible and reasonable.

3.10.3 Operational road traffic noise mitigation

Submission number(s)

1, 2, 7, 9, 10, 14, 18

Issue description

Concern about the operational road traffic noise impacts from the project, including residences near the Wallgrove Road realignment and the intersection between the M12 Motorway and Elizabeth Drive.

Concern about the lack of noise barriers to mitigate operational road traffic noise impacts.

A number of submitters requested clarification on the Wallgrove Road and Cecil Road intersection design considered for the project's noise barrier analysis.

Request for appropriate operational road traffic noise mitigation measures to be provided to ensure that potential impacts do not adversely affect the types of land uses that can be achieved on a submitter’s landholding in the future.

A submitter requested a noise barrier to mitigate operation noise impacts at the M12 Motorway exit ramp at Elizabeth Drive

Response

Transport for NSW acknowledges the concern from submitters in relation to operational road traffic noise, particularly from residents near the Wallgrove Road realignment and the intersection between the M12 Motorway and Elizabeth Drive.

A noise and vibration assessment report was prepared for the project as part of the EIS (see Appendix K of the EIS). This assessment has been updated to assess the noise and vibration impacts of the amended project as part of the amendment report (see Appendix G of the amendment report). Both assessments included assessment of impact on residences adjacent to the Wallgrove Road realignment and the intersection between the M12 Motorway and Elizabeth Drive.

For both assessments, the operational noise assessment compared road traffic noise levels predicted due to the project as described in the EIS in 2026 (modelled as the year ‘at opening’) and 2036 (modelled as 10 years after opening) with those predicted without the project (but assuming background traffic growth based on traffic forecast for 2026 and 2036).

Where road traffic noise levels at sensitive receivers are predicted to be above the *Noise Criteria Guideline* (NCG) (Roads and Maritime 2015) criteria, the requirement for additional noise mitigation is determined using guidance from the NMG (Roads and Maritime 2015) and based on existing land use. It is important to note that the noise exceedance levels are based on existing noise levels taken during the development of the EIS.

Potential operational road traffic noise management measures, in order of preference outlined in the NSW *Road Noise Policy* (RNP) (DECCW, 2011), may include:

- Quieter road pavement surfaces
- Noise mounds
- Noise barriers
- At-property treatments.

For the amended project, 212 sensitive receiver buildings (310 individual floors) for Option 1 (without Elizabeth Drive connection) and 220 sensitive receiver buildings (320 individual floors) for Option 2 (with Elizabeth Drive connection) have been considered for additional noise mitigation. As noted in Section 1.2, Transport for NSW has now secured funding for Option 2 which would be the preferred option for the project.

The RNP (DECCW, 2011) prescribes the study area for an operational road traffic noise assessment, a distance of 600 metres from the centre line of the outermost traffic lane on each side of the road to be assessed (ie the M12 Motorway). This helps ensure that noise is appropriately assessed and any necessary mitigation applied at the locations most affected. Locations further than 600 metres from centre line of the outermost traffic lane on each side of the M12 Motorway have not been specifically considered by the noise and vibration assessment prepared for the amended project.

Based on the updated noise assessment provided in the amendment report, no noise barrier would be provided in proximity to Clarence Drive and Dobroyd Drive in Elizabeth Hills, because this location does not meet the criteria defined in the NMG (Roads and Maritime, 2015). Note that an updated noise assessment will be completed as part of the detailed design, during which the operational road traffic noise mitigation for the project will be refined.

While the design of the Wallgrove Road realignment has been refined since the amendment report (refer to Section 5.2), the changes are not expected to alter the outcome of the noise barrier analysis included in Appendix G of the amendment report. A noise barrier (NW.07) on the northern side of the realigned Wallgrove Road was investigated in the amendment report and subject to a noise barrier analysis. The results of the analysis documented in Appendix G of the amendment report found that the barrier was not reasonable as it did not achieve the required noise attenuation benefit and did not reduce the need for at-property treatments at any triggered receivers. The required noise attenuation benefit (or insertion loss) required by the NMG (RMS, 2015) is:

- 5 dBA at representative receivers for barrier heights of up to five metres
- 10 dBA at representative receivers for barrier heights above five metres high and up to eight metres high.

Noise barrier NW.07 provided only a 2dB benefit to triggered receivers at a height of eight metres and as such was not considered reasonable.

In addition, since the preparation of the amendment report, low-noise diamond grind concrete pavement has been selected as the pavement type for the main alignment of the M12 Motorway (refer to Section 5.4.1). This pavement type would reduce the overall noise levels across the study area by about 3 dB when compared to plain concrete pavement which was the assumed pavement type for the M12 Motorway main alignment in the EIS and amendment report noise modelling. Note that pavement types on M12 Motorway ramps and bridges would likely be dense graded asphalt, which has a similar outcome for noise levels as low-noise diamond grind concrete pavement.

As stated in the revised environmental management measure NV14 in **Chapter 7**, residences identified as eligible for noise treatment triggered by the project will be contacted by Transport for NSW and/or the construction contractor in due course.

Note that the review and consideration of operational noise and vibration management measures was based on the existing land use and NMG (Roads and Maritime, 2015). The operational road traffic noise assessment does not consider future developments which were not approved at the time of the assessment.

As stated in the revised environmental management measure NV14 in **Chapter 7**, noise mitigation options would be determined during the detailed design taking into account whole-of-life engineering considerations and the overall social, economic and environmental benefits. The preference would be given to noise management measures that reduce outdoor noise levels and reduce the number of at-property treatments required. Management measures which would reduce source noise levels would also be determined during detailed design.

As stated in environmental management measure NV14 in **Chapter 7**, Transport for NSW is committed to review the operational road traffic noise mitigation measures, including quieter noise pavements, noise barriers, and at-property treatments as the detailed design progresses. The implementation of treatments will be carried out in accordance with Transport for NSW NMG and in accordance with the hierarchy of mitigation where at source controls are the first form of operational noise mitigation considered followed by measures between the noise source and the receiver and lastly, measures to be implemented at the receiver.

In addition, environmental management measure NV15 in **Chapter 7** commits Transport for NSW to compare the actual project operational noise performance to predicted operational noise performance within 12 months of start of operation of the project. The need for additional mitigation or management measures to address identified operational performance issues and meet relevant operational noise criteria will be assessed and implemented where feasible and reasonable.

3.11 Surface water quality and hydrology

3.11.1 Impacts on property owners

Submission number(s)

18, 24

Issue description

Concern for a potential decrease in water quality in a tributary of Ropes Creek affecting nearby dams.

University of Sydney requested further details on stormwater drainage and detention, where it appears stormwater runoff will discharge directly onto the University's lands.

Response

The tributary of Ropes Creek referred to is a small ephemeral second order drainage line, subject to previous disturbance. It is not defined as key fish habitat by Fisheries - NSW Department of Primary Industries and would not support threatened fish species. The refined Wallgrove Road realignment described in Section 5.2 has considered minimising impact to this drainage line as well as property acquisition and biodiversity.

The project would result in some changes to the volume and velocity of stormwater run-off and an assessment of surface water and hydrology impact is contained within the Appendix M of the EIS and Appendix I of the amendment report. Surface water quality and hydrology impacts of the project would be managed through:

- Temporary construction sediment basins and other erosion and sediment control measures such as silt fencing
- Drainage structures, grassed swales and scour protection to reduce the velocity of runoff and reduce erosion and sedimentation
- Surface water quality monitoring prior to, during and following construction to ensure mitigation measures are effective in controlling water quality impacts.

Further environmental management measures are outlined in **Chapter 7**.

During the development of the detailed design, Transport for NSW has consulted with University of Sydney; the work in progress stormwater drainage design has also been provided. Transport for NSW will continue working in consultation with University of Sydney as the stormwater drainage design further develops.

3.12 Flooding

3.12.1 Impacts on private land

Submission number(s)

21

Issue description

Concern that the flood work carried out by Transport for NSW did not consider the cumulative impacts of the future development within the Western Sydney Aerotropolis boundary to ensure that the impact of the project does not adversely impact the development potential of adjacent land.

Concern about the potential for increased flows and residual impacts identified for drainage lines CC DL 4900, CC DL 4600 and CC DL 5050. The submitter was of the opinion that the project must not discharge water to overland flow paths such that any increase in rate and volume of runoff should impact upon private land to the extent that it would adversely affect the future development potential of the subject landholding.

Response

As stated in environmental management measure F01 in Chapter 7, Transport for NSW is committed to carrying out further flood investigations and hydrological and hydraulic modelling during detailed design to ensure the flood immunity objectives and design criteria for the project are met which include minimising adverse flooding impact to land, buildings and infrastructure. The modelling will be used to define the nature of both main stream flooding and major overland flow along the full length of the project corridor under pre- and post- project conditions and to define the full extent of any impact that the project will have on patterns of both main stream flooding and major overland flow. The modelling will take into account any updated regional flood modelling and information available at the time.

In addition, ongoing consultation is being carried out with WSIA and as further details of their flood management and earthworks are developed, these will be incorporated into an updated M12 Motorway flood model for the detailed design phase of the project.

A cumulative flood study of the Western Sydney Aerotropolis area is beyond the scope of project. Further flood investigations and hydrological and hydraulic modelling would consider flood investigations carried out in the project area by others where relevant (refer to the revised environmental management measure F01 in **Chapter 7**).

Transport for NSW is committed to carry out further modelling to verify the nature and extent of impacts and to confirm the type of mitigation measures required, including potential mitigation measures identified throughout the EIS. Refer to environmental management measure SWH13 in **Chapter 7**.

As stated in the revised environmental management measure SWH13 in **Chapter 7**, if further modelling identifies impacts to private properties, Transport for NSW will consult with landowners regarding appropriate management measures to be implemented by the contractors in relation to each individual property.

3.13 Soils and contamination

3.13.1 Contamination

Submission number(s)

21

Issue description

Concern about the level of contamination identified within the EIS noting that boreholes BH202 and BH207 exceeded contaminant guidelines.

Response

Section 8.1 of the EIS identified a number of areas of environmental interest (AEI) that may pose potential contamination or other risks for further investigation. As described in the submission, the assessment identified that boreholes BH202 and BH207 exceeded contaminant guidelines. BH202 is located within the generic AEI for 'identified areas of potential fill' and BH207 is located within AEI 10: SUEZ Kemps Creek Resource Recovery Park.

As stated in environmental management measure SC03 in **Chapter 7**, a Contaminated Land Management Plan (CLMP) would be prepared for the project, which would outline control measures to manage identified areas of contamination within the project footprint, requirements for the excavation of unexpected contaminants and the disposal of contaminated waste in accordance with regulations.

3.14 Air quality

3.14.1 Impacts on health

Submission number(s)

7, 21

Issue description

Concern regarding air quality impacts on surrounding residents, and on temporary or future land uses on the submitter's landholding.

Response

The assessment documented in Appendix P of the EIS concluded that the project would not lead to unacceptable air quality impacts, and that the need for more detailed assessment would not be required. This conclusion is based on the determination of potential local and regional impacts to air quality during both construction and operational stages, including potential cumulative impacts.

No operational air quality environmental measures were deemed necessary as the assessment found that the project would not result in unacceptable changes in air quality for receivers near the project. In addition, the project would result in traffic-related air quality contributions that are comparable to, or less than, those in the vicinity of The Northern Road, the M7 Motorway and Elizabeth Drive.

An air quality updated technical memorandum has been prepared for the amended project (Appendix L of the amendment report) and is discussed in Section 6.12 of the amendment report. The air quality memorandum concluded the amended project would not result in any substantial changes to the local operational air quality outcomes compared with the project as described in the EIS.

Requirements to co-ordinate with the other identified projects have also been included in order to limit the potential for cumulative air quality impacts during concurrent project construction activities. Further details on the quantitative assessment are provided in Section 8.2.4 of the EIS.

3.15 Cumulative impacts

3.15.1 Construction impacts

Submission number(s)

21

Issue description

Request that Transport for NSW explain how they intend to manage cumulative impacts during construction given the likelihood of the M12 Motorway project and the submitter's development occurring at the same time.

The construction hours for the project must not impact upon the submitter's construction program.

Response

As stated in environmental management measure CU01 in **Chapter 7**, regular consultation would be carried out with nearby/adjoining project teams and key stakeholders during the detailed design and construction phases to review potential cumulative impacts and integrate designs and construction methodologies (including construction traffic impacts) as far as practicable to minimise cumulative impacts.

4. Response to submissions from government authorities

4.1 Introduction

In addition to the 24 community submissions addressed in **Chapter 3** of this report, DPIE received a total of 17 government authority submissions in response to exhibition of the amendment report.

An overview of the issues raised by government authorities is provided in Table 4-1. This chapter addresses each submission and associated response provided by Transport for NSW. Each submission is outlined and individual responses have been provided specific to each submission.

Table 4-1 Issues and comments raised by government authorities

Submitter	Submission number	Category of issue raised	Section addressed
Agriculture - NSW Department of Primary Industries	25	No further comments	N/A
Fairfield City Council	26	Project design Biodiversity Transport and traffic Noise and vibration Flooding Urban design, landscape character and visual impact	4.2
Fisheries - NSW Department of Primary Industries	27	No further comments	N/A
DPIE Crown Lands	28	No further comments	N/A
DPIE Environment, Energy and Science Group	29	Biodiversity Urban design, landscape character and visual impact Flooding	4.3
DPIE Water and Natural Resources Access Regulator	30	No further comments	N/A
Heritage Council of NSW	31	Non-Aboriginal heritage	4.4
Liverpool City Council	32	Project design	4.5

		Consultation Biodiversity Transport and traffic Urban design, landscape character and visual impact Socio-economic Flooding	
NSW Environment Protection Agency (EPA)	33	Emissions to land, water and air	4.6
NSW Health	34	Emissions to air and land Surface water quality and hydrology Air quality Cumulative impacts	4.7
NSW Heritage (Aboriginal Cultural Heritage)	35	Aboriginal heritage	4.8
NSW Resources Regulator	36	No further comments	N/A
Penrith City Council	37	Project design Biodiversity Aboriginal heritage Non-Aboriginal heritage Urban design, landscape character and visual impact	4.9
Sydney Water	38	Utilities	4.10
WaterNSW	39	Asset protection	4.11
Western Sydney Parklands Trust	40	Consultation	4.12
Western Sydney Planning Partnership	41	Urban design, landscape character and visual impact	4.13

4.2 Fairfield City Council

4.2.1 Project design

Issue description

Council endorses Option 2 (Elizabeth Drive connection near the M7 Motorway) as this provides the greatest scope for road network improvements to the broader community of the Western Parkland City by providing a toll free option (via the M12) to the WSIA at Badgerys Creek.

Request for updated traffic modelling on local roads.

Request for Transport for NSW to ensure the road corridor can accommodate future upgrades including bus priority and shared path infrastructure.

Request for the inclusions of ramps between the M12 Motorway and Elizabeth Drive, Wallgrove Road and Cecil Road.

Response

Council endorsement of Option 2 Elizabeth Drive connections near M7 Motorway is acknowledged. The amendment report noted that the decision on which option would be built is dependent on funding being available to include the Elizabeth Drive connection. Transport for NSW has now secured funding for Option 2 and confirm the Elizabeth Drive connection would be delivered.

Traffic modelling undertaken during further development of the design shown in the amendment report revealed a traffic flow issue at Wallgrove Road and Cecil Road roundabout. Modelling identified the potential for traffic queues when traffic volumes increased in the future due to the limited distance between the roundabout and the traffic signals at Elizabeth Drive and Wallgrove Road. Traffic queues would eventually result in delays and would have a negative flow on effect for other major traffic movements in the area. This was a major driver in the development of the refined design at Wallgrove Road (refer to Section 5.1).

The refined design presented in Section 5.2 includes traffic signals at the Wallgrove Road and Cecil Road intersection. Modelling undertaken has shown that the provision of traffic signals at this intersection creates satisfactory traffic flow and efficient performance targets for future predicated growth. Comparison and assessment of the refined design with the amendment report design determined the refined road and intersection design resolved the traffic flow deficiencies resulting in a positive impact from a traffic performance perspective.

The refined project operational footprint presented in Section 5.3 has sufficient space to accommodate the infrastructure mentioned by Council.

Alternatives suggested by Council are beyond the project scope. Road connectivity to support the Western Sydney Aerotropolis, South West Growth Centre and other planned employment precincts would be a function delivered by a combination of the motorway, arterial road, and the local road network. Future road network plans are also being developed by WSPP and included in the draft precinct plans that were placed on public exhibition on 10th November 2020. Transport for NSW is working with WSPP and strategic planning divisions within DPIE to integrate the M12 Motorway and the arterial roads with the future local road network.

Widening of Elizabeth Drive as part of the amended project is limited to under the M7 Motorway and approaches only. Further widening of Elizabeth Drive beyond of this area is outside the project scope. The NSW Government is planning for the future with funding allocated to investigate improvements to

Elizabeth Drive between the M7 Motorway at Cecil Hills and The Northern Road at Luddenham; and development of the concept design and environmental assessment has already commenced.

4.2.2 Biodiversity

Issue description

The proposed western re-alignment of Wallgrove Road will impact on additional areas of Cumberland Plain Woodland with high conservation values between Wallgrove Road and Cecil Road. Fairfield City Council requested further assessment and consideration of biodiversity offsets required for the project.

Response

The re-alignment of Wallgrove Road has resulted in a small reduction in the area of Cumberland Plain Woodland in the Sydney Basin Bioregion (*Threatened Species Conservation Act 1995* (NSW) (TSC Act) Critically Endangered) required to be cleared in this area, from 3.65 hectares to 3.44 hectares (a reduction of 0.21 hectares). Similarly, the re-alignment of Wallgrove Road has resulted in a small reduction in the area of Cumberland Plain Woodland in the Sydney Basin Bioregion (EPBC Act Critically Endangered) required to be cleared in this area, from 2.22 hectares to 2.13 hectares (a reduction of 0.09 hectares).

However, refinement of the overall construction footprint would result in an increase of cleared area of 0.41 hectares, and an increase of cleared Cumberland Plain Woodland in the Sydney Basin Bioregion (EPBC Act Critically Endangered) area of 0.42 hectares when compared to the construction footprint presented in the amendment report. Removal of Cumberland Plain Land Snail habitat would be reduced by 0.12 hectares (excluding certified areas) for the overall project when compared with the impacted area reported in the amendment report. Biodiversity impacts due to the refined construction footprint is discussed further in Section 6.2.

As stated in in revised environmental management measure B04 in **Chapter 7**, Transport for NSW would obtain biodiversity offsets for the project in accordance with *NSW Biodiversity Offsets Policy for Major Projects* (OEH, 2014). Consultation on the measures to offset biodiversity impacts would be carried out in accordance with this guideline, the conditions of approval for the project (should it be approved) and the commitments made within the EIS, the EIS submissions report, the amendment report and this report.

Transport for NSW will continue to consult with Fairfield City Council throughout the detailed design phase and construction phase of the project.

4.2.3 Transport and traffic

Issue description

Request for the traffic modelling to be amended to assess traffic impacts on local roads.

Response

Transport for NSW acknowledges that the tables showing intersection performance (Table 6-24 and Table 6-25) in the amendment report did not correctly reflect the results of the modelling for the intersections of Elizabeth Dr/M7 ramps and Elizabeth Dr/Wallgrove Road.

The names assigned to these two intersections in the first column of Table 6-24 and Table 6-25 were confusing between the existing conditions and the project case. Also, the intersection of Elizabeth Drive with the M7 Ramps on the western side of interchange was accidently omitted from Table 6-24 and Table 6-25.

Table 5-1 and Table 5-2 in Section 5.1 provide the corrected and additional information. These tables demonstrate the benefit of the design change, as operational performance of all intersections has improved when compared to the operational performance of the design presented in the EIS.

4.2.4 Noise and vibration

Issue description

Request for operational noise mitigation options to be reviewed by and developed in consultation with Fairfield City Council

Response

Council comments are acknowledged.

Conditions of approval are a matter for DPIE to consider during its assessment of the project.

Note that an updated noise assessment will be completed as part of the detailed design, during which the operational road traffic noise mitigation for the project will be re-considered. Transport for NSW is committed to compare the actual project operational noise performance to predicted operational noise performance within 12 months of the start of operation of the project. The need for additional mitigation or management measures to address identified operational performance issues and meet relevant operational noise criteria will be assessed and implemented where feasible and reasonable. Refer to environmental management measure NV15 in **Chapter 7**.

4.2.5 Flooding

Issue description

Request for further flood investigations to be carried out for the refined Wallgrove Road realignment

Response

Transport for NSW is committed to carrying out further modelling during detailed design to verify the nature and extent of impacts, including impacts from the refined Wallgrove Road realignment, and to confirm the type of mitigation measures required, including potential mitigation measures identified throughout the EIS. Refer to environmental management measure SWH13 in **Chapter 7**. Where required, Transport for NSW would consult with landowners regarding appropriate management measures to be implemented in relation to each individual property.

4.2.6 Urban design, landscape and visual impact

Issue description

Concern about the objectives of the Urban Design Framework being constrained by the detailed design of the project and not being able to be effectively implemented

Response

Transport for NSW is committed to realising the Urban design objectives and principles outlined in section 5.3 of the EIS. The ongoing development of the Urban Design Framework will incorporate the outcomes of consultation with relevant stakeholders in the project. For example, Transport for NSW is currently working

with the WSPP to determine suitable plant species that can be planted within three kilometres of the WSIA.

Transport for NSW held a briefing for government stakeholders on 01 December 2020, with regard to the progressive development of the Urban Design Framework. Stakeholders invited to attend included the WSPP, DPIE, Heritage NSW, EESG, Fairfield City Council, Liverpool City Council and Penrith City Council.

Transport for NSW would continue to consult with councils regarding the urban design outcomes for the project.

4.3 DPIE Environment, Energy and Science Group

4.3.1 Biodiversity

Issue description

EPBC offsets

Concern that the EPBC offset figures in Tables 1, 2 and 3 will be inaccurate as EESG has not yet updated their assessment.

Threatened flora and fauna

Recommends that additional surveys for *Pimelea spicata* habitat in areas added to the construction footprint should be undertaken.

Concern regarding accuracy of mapping of Cumberland Plain Land Snail. Suggests additional surveys should be undertaken.

Clarity required regarding Southern Myotis breeding habitat and whether points represent tree hollows.

Clarity required on statement in Table 5-1 regarding Wallgrove Road realignment impact.

Vegetation disturbance and clearance should be avoided / minimised.

Details on the number of trees and tree species to be removed are to be provided.

Riparian areas and creek diversions

Suggestion that riparian areas should be restored with fully structured local provenance native vegetation (trees, shrubs and groundcover species) from the relevant local native vegetation community or communities that occur at the crossing locations. In addition, a vegetation management plan should be prepared to protect and restore riparian corridors.

Suggestion that creek diversions should be avoided / minimised and that environmental management measure B13 should be amended to state that any diversion should mimic the local natural creek system and an assessment of impact to aquatic native fauna should be made, along with provisions to protect aquatic native fauna affected by such works.

Conditions of approval

Request for particular conditions of approval to be included in the project approval, regarding: reuse of trees; maximising canopy cover beneath bridges; vegetation protection and bridge design; culvert design that provides for passage of both terrestrial and aquatic fauna, and maximises light penetration, and dewatering of farm dams, including the preparation of a dewatering plan.

Suggestion that environmental management measure B10 be amended to improve riparian / terrestrial connectivity beneath bridge structures.

Response

EPBC offsets

Revised EPBC ecosystem and species credit offset requirements are presented in Section 6.2.5. Transport for NSW will submit shapefiles and a revised calculator to EESG to inform their assessment.

As a result of the amended project, a net total of about seven hectares of additional native vegetation was incorporated into the amended construction footprint. As a result, three additional days of field surveys were conducted for the amended project between 16 January and 29 January 2020.

Threatened flora and fauna

Transport for NSW acknowledges the surveys carried out in January 2020 may not have detected *Pimelea spicata*, an inconspicuous species often not visible above ground unless soils remain moist.

Accordingly, Transport for NSW proposes to carry out additional targeted threatened surveys for this species in 2021, in favourable survey conditions as defined by the NSW Bionet Threatened Biodiversity Profile Data Collection, maintained by DPIE. Refer to environmental management measure B29 in **Chapter 7**.

The area of Moderate/Good – Medium vegetation adjoining the Cumberland Plain Land Snail species polygon (Figure 4-1 and Figure 4-2) located in Cecil Park was surveyed and excluded from the species polygon due to the absence of specific habitat components. There is a lack of sufficient leaf litter, bark and fallen timber in the ground layer to provide habitat for the species. This is illustrated in the photographs below. Although there were drought conditions in the months prior to survey, there was over 30 millimetres of rainfall in the week prior to surveys in January 2020, and live individuals were recorded on site.

Figure 4-1 The area of Moderate/Good – Medium vegetation in Cecil Park adjoining the CPLS species polygon was surveyed and excluded from the species polygon due to the absence of specific habitat components

Figure 4-2 The area of Moderate/Good – Medium vegetation in Cecil Park adjoining the CPLS species polygon was surveyed and excluded from the species polygon due to the absence of specific habitat components

Section 6.1.3.1 of the amendment report noted that the main driver for the Wallgrove Road realignment is to improve intersection performance at the existing signalised intersection of Wallgrove Road and Elizabeth Drive and to minimise impact on existing residential properties and land that is currently the subject of a proposed State Significant Development. As a result, avoidance of biodiversity impacts for this design change has not been practicable.

Further refinement options for the Wallgrove Road realignment are described in Section 5.2.
The assessment of these refinement options include consideration of project delivery, land use, community impact, environmental impact, and road design/functionality. The preferred refined Wallgrove Road realignment described in Section 5.2 together with other minor refinements to the project footprint presented in Section 5.3 would result in vegetation clearing amounts marginally higher than to those presented in the amendment report. In accordance with the environmental management measures outlined

in **Chapter 7**, Transport for NSW is committed to implementing connectivity measures in accordance with *Wildlife Connectivity Guidelines for Road Projec*ts (Transport for NSW, under preparation).

The refined re-alignment of Wallgrove Road has resulted in a small reduction in the area of Cumberland Plain Woodland in the Sydney Basin Bioregion (NSW TSC Act Critically Endangered) required to be cleared, from 3.65 hectares to 3.44 hectares (a reduction of 0.21 hectares). Similarly, the re-alignment of Wallgrove Road has resulted in a small reduction in the area of Cumberland Plain Woodland in the Sydney Basin Bioregion (EPBC Act Critically Endangered)) required to be cleared, from 2.22 hectares to 2.13 hectares (a reduction of 0.09 hectares).

Southern Myotis breeding habitat recorded in the amended project construction footprint (shown in Figure 4-3 of amendment report and Appendix A Biodiversity supplementary technical report (October 2020)) that consists of hollow bearing trees, is shown as pink circles within red squares. Southern Myotis breeding habitat represents a 10 metre buffer surrounding each hollow-bearing tree within 200 metres of riparian zones. The EESG submission references the Biodiversity Development Assessment Report (BDAR) prepared for a proposed development at 1111 Elizabeth Drive (SSD 8859) (GHD 2020), which adjoins and overlaps the amended construction footprint. Arcadis recorded one hollow-bearing tree in Quadrat 42, which is located in approximately the same location as plot 2 of GHD (2020); this hollow-bearing tree was not included in the revised fauna assessment. Inclusion of the two additional hollow-bearing trees, with a buffer of 10 metres, in the species polygon for Southern Myotis results in an increase in the area of species polygon impacted of 0.06 hectares, requiring one additional species credit. Updated Southern Myotis polygons within the refined construction footprint are presented in Figure 6-6.

In accordance with revised environmental management measure B03 in **Chapter 7**, efforts to minimise impacts on native vegetation, and therefore minimise the clearing of native vegetation, is continuing throughout the detailed design phase of the project.

Transport for NSW has commenced a tree survey along the length of the M12 Motorway alignment to understand the number of trees to be removed, and their potential for re-use. This tree survey, which will also record the species to be removed, will continue throughout the detailed design phase of the project.

Riparian areas and creek diversions

EESG support on the maintenance of connectivity at the creek crossings is acknowledged.

Strategic native vegetation planting would be implemented as part of landscaping of the project, which would include revegetation under bridges where reasonable and feasible, to re-establish connectivity. As prescribed by environmental management measure B08 in **Chapter 7**, revegetation will be carried out in accordance with *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011) (Guide 3: Reestablishment of native vegetation) and the Landscape Plan prepared for the project. In accordance with Guide 3: Reestablishment of native vegetation, plants should be grown from local provenance seed where possible, and where native plants grown from local provenance seed are not available, then native species grown from seed collected from the region are acceptable. Transport for NSW has already commenced a native local seed collection program for the project, and this will continue until construction commences.

Transport for NSW suggests that revegetation would be most appropriately addressed by the Urban Design and Landscape Plan (UDLP), as outlined in environmental management measure LVIA01 in **Chapter 7**. The UDLP is being prepared to minimise landscape character and visual impacts, and detail and guide the implementation of landscape features to be installed as part of the project, including re-vegetation requirements.

Transport for NSW acknowledges EESGs preference to avoid or minimise creek diversions. Development of the detailed design of the project is aiming to avoid diversions at Badgerys, South and Kemps Creek. Environmental management measure B13 in **Chapter 7** states that creek adjustments will be investigated and removed or minimised during detailed design where feasible. Proposed creek adjustments will be designed such that they result in minimal changes to flow velocities. This revised environmental

management measure does not preclude creek realignments being designed to mimic a natural creek system from the local area.

Conditions of approval

Conditions of approval, including the preparation of specific management plans and strategies, are a matter for DPIE to consider during its assessment of the project. However, Transport for NSW can provide the following assurances:

- As outlined in environmental management measure B02 in **Chapter 7**, a Habitat Compensation Plan (HCP) will be prepared and implemented as part of the Construction Flora and Fauna Management Plan (CFFMP) for the project. The HCP will target those species that will be impacted by the loss of hollows. Measures will include the installation of nest boxes, reuse of salvaged hollows and/or new technologies (eg chainsaw hollows), as well as replacement of woody debris and bushrock with consideration to Guide 5 and Guide 8 of *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011). Transport for NSW has commenced consultation with key stakeholders that manage land that could receive salvaged material from the project, including Councils and Western Sydney Parklands Trust, to understand opportunities for re-use of trees
- Bridge design for the project would be in accordance with the relevant design criteria and standards. Where reasonable and feasible bridges would be designed to minimise impact to riparian vegetation
- Vegetation under bridges would be retained wherever possible. Strategic native vegetation planting would be also implemented as part of landscaping of the project, which would include revegetation under bridges where reasonable and feasible to re-establish connectivity. As prescribed by environmental management measure B08 in **Chapter 7**, revegetation will be carried out in accordance with *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011) (Guide 3: Reestablishment of native vegetation) and the Landscape Plan prepared for the project
- Transport for NSW is investigating the provision of reasonable and feasible fauna connectivity, including the provisions of culverts that could offer opportunities for fauna crossings, during the detailed design phase of the project. Fauna connectivity design will consider the features suggested by ESSG where reasonable and feasible.

The aim of the revised environmental management measures in **Chapter 7** is to outline clear and considered management objectives that would be implemented prior to and during the project construction. The commitment to prepare plans and strategies, such as the Construction Flora and Fauna Management Plan (CFFMP) (environmental management measure B01), does not necessarily prescribe the entire content of that plan. Preparation of the CFFMP would not preclude the preparation of plans and strategies that are not explicitly included in **Chapter 7**, such as a procedure for dewatering farm dams and relocation aquatic fauna.

4.3.2 Urban design, landscape character and visual impact

Issue description

Suggestion that landscaping / planting uses local provenance native species from native vegetation communities that occur on the route (or that previously occurred on the route).

Request for details on the type, locations and numbers of replacement trees to be planted. Suggest that replacement trees are of a size to improve urban tree canopy and local biodiversity.

Request for particular condition of approval to be included in the project approval, regarding revegetation.

Response

EESG support for the engagement of a bush regenerator to provide advice on using local native provenance species is acknowledged. Transport for NSW has engaged an organisation specialising in environmental restoration to collect local seed and propagate plants for use in project landscaping.

As outlined in environmental management measure B08 in **Chapter 7**, revegetation will be carried out in accordance with *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011) (Guide 3: Reestablishment of native vegetation) and the Urban Design and Landscape Plan (UDLP) prepared for the project. In accordance with Guide 3: Reestablishment of native vegetation, plants should be grown from local provenance seed where possible. Species selection for landscaping would also need to meet requirements for planting in proximity to WSIA to reduce the risk of wildlife strike. In addition, as stated by environmental management measure LVIA18 in **Chapter 7**, species considered for landscaping would be resilient to future modelled climatic conditions and be suitable for growth on the gradients of road embankments.

The general locations and density of proposed revegetation and tree planting as well as recommended pot sizes would be addressed by the Urban Design and Landscape Plan (UDLP), as outlined in environmental management measure LVIA01 in **Chapter 7**. The UDLP is being prepared to minimise landscape character and visual impacts, and detail and guide the implementation of landscape features to be installed as part of the project, including re-vegetation and wildlife strike requirements. In accordance with LVIA08 in **Chapter 7**, Transport for NSW will investigate opportunities to undertake early tree planting in consultation with landowners, including Western Sydney Parklands Trust.

Conditions of approval for the project, are a matter for DPIE to consider during its assessment of the project.

4.3.3 Flooding

Issue description

Request to validate EIS / amendment report flood modelling against Infrastructure NSW assessment.

Request for Transport for NSW to prepare a flood emergency management response in consultation with NSW State Emergency Service, particularly with consideration of rare flood events.

Response

Transport for NSW acknowledges the South Creek Sector catchment wide cumulative impact assessment carried out by Infrastructure NSW (refer to the revised environmental management measure F01 in **Chapter 7**). A number of environmental management measures have been included in Chapter 7 to mitigate flooding impacts associated with other projects within the South Creek catchment and other catchments traversed by the project. These environmental management measures include updated modelling, design considerations and flood management plans which will take into account any relevant new information available since the EIS was prepared.

The 5, 20, 50, 100 and 2000 Average Recurrence Interval as well as the Probable Maximum Flood storm events were modelled as part of the flood assessment of the amended project, as detailed in Section 6.8 of the amendment report.

Flooding impacts associated with the amended project are generally consistent with impacts described in the EIS and can be managed through the implementation of the proposed management measures described in **Chapter 7**. As detailed in environmental management measure F03, a flood management plan will be prepared as part of the CEMP for the project and will detail the processes for flood preparedness, materials management, weather monitoring, site management and flood incident management during construction of the project.

The environmental management measures outlined in **Chapter 7** would not preclude the preparation of management plans and strategies that are not explicitly included in Table 7-1 of the amendment report, such as a Flood Emergency Response Management Plan. However, the preparation of specific management plans and strategies, as a conditions of approval for the project, are a matter for DPIE to consider during its assessment of the project.

Note that the M12 Motorway would not be a flood evacuation route. Consultation with NSW Police Service, NSW Rural Fire Service, NSW Fire Brigade, State Emergency Service and other emergency services is ongoing and will continue during the project detailed design and construction stages.

4.4 Heritage Council of NSW

4.4.1 Non-Aboriginal heritage

Issue description

Heritage NSW are of the view that no further archaeological excavation is required at the Cecil Park Complex Archaeological Site where "relics" are unlikely to be disturbed.

Heritage NSW requested that their recommended (and amended) conditions be included in the project approval.

Response

Transport for NSW acknowledges Heritage NSW advice that it would be unlikely for 'relics' within the meaning of the *Heritage Act 1977* to be disturbed and no further archaeological excavation is required at the Cecil Park Complex site. In response to this advice, Transport for NSW has updated environmental management measure NAH09 (refer to **Chapter 7**) to remove the requirement for archaeological salvage of the site and storage of artefacts. Environmental management measure NAH09 has also been revised to include a requirement for a suitably qualified archaeologist to be present at site during initial excavation for early work or construction excavation to confirm that artefacts and remains uncovered are in line with the findings of the test excavations. Where an unexpected find of a 'relic' is encountered, works would stop and the unexpected finds protocol for the project would be implemented.

Conditions of approval, including the preparation of specific management plans and strategies, are a matter for DPIE to consider during its assessment of the project. However, Transport for NSW will implement environmental management measures NAH01-NAH10 as outlined in **Chapter 7**.

4.5 Liverpool City Council

4.5.1 Project design

Issue description

Council requested that the connection between the M12 Motorway and Elizabeth Drive is constructed and that council is consulted for the detailed design of this connection.

Council supports the lowering of the M7 Motorway southbound exit to M12 Motorway westbound, and the M7 Motorway southbound entry from M12 Motorway eastbound, near Cecil Hills. Council requested that consultation with council continues and that Transport for NSW organises and additional information for the Cecil Hill residents.

Council supports the lowering of the M7 Motorway southbound exit to M12 Motorway westbound, and the M7 Motorway southbound entry from M12 Motorway eastbound, near Cecil Hills. Council requested that consultation with council continues and that Transport for NSW organises and additional information for the Cecil Hill residents.

Council welcomed that Transport for NSW has made a provision for future interchange at Elizabeth Drive/Mamre Road/Devonshire Road and recommends its construction is fast-tracked.

Council supports the incorporation of shared user paths in the project design and requested to review the shared user path and the cycle route within the Western Sydney Parkland design. Council also requested consultation with DPIE, WSPT and council on future shared user paths connections along the M12 Motorway.

Response

Transport for NSW has now secured funding for the provision of entry and exit ramps between the M12 Motorway and Elizabeth Drive, Cecil Road and Wallgrove Road, which was identified as Option 2 for the M7 and M12 interchange in the amendment report. A key benefit of Option 2 was the provision of a toll-free connection between Liverpool and the WSIA. The amendment report noted that the decision on which option would be built is dependent on funding being available to include the Elizabeth Drive connection. Transport for NSW has now secured funding for Option 2 which would be the preferred option for the project.

Transport for NSW is committed to investigate the opportunity to provide additional connectivity between Elizabeth Drive and the M12 Motorway at the WSIA entry. A preliminary design is presented in Figure 3-1. The connection may result in changes to traffic performance along Elizabeth Drive and alterations to the construction and operational footprints of the project. These footprint changes may also result in some minor additional impacts to biodiversity, heritage and land acquisition. Note this design is not part of the project and would require either a planning approval modification or consistency assessment after the project is approved depending on the resultant environmental impacts.

Transport for NSW is also committed to investigate the Mamre Road to Elizabeth Drive/Devonshire Road interchange which would be dependent on funding being available.

Council support of the lowering of the M7 Motorway southbound exit to M12 Motorway westbound is acknowledged.

Consultation with council is ongoing and would continue throughout the detailed design phase. Transport for NSW attended a Cecil Hills resident meeting by invitation outside the exhibition period to discuss concerns raised by the attendees. Further information including visualisations of the proposal were also provided to residents following the meeting. Consultation with the community including Cecil Hill residents is ongoing and would continue throughout the detailed design phase.

Council support of the incorporation of shared user paths in the project design is acknowledged. Consultation with DPIE, WSPT, council and other government agencies on the project design including shared user paths and future connections is ongoing and would continue during the detailed design phase.

4.5.2 Consultation

Issue description

Council requested a telephone hotline and information service to be provided for community queries and concerns.

Response

A number of ongoing engagement channels have been established for the project to seek input from the community and key stakeholders to facilitate engagement as the project develops. These included:

- A project email address to receive feedback from the community and provide updates to subscribers – m12motorway@rms.nsw.gov.au
- A toll-free project phone number for feedback, enquiries and complaints – 1800 517 155
- A postal address to receive written feedback (M12 Motorway, PO Box 973 Parramatta NSW 2124)
- A project website (**www.rms.nsw.gov.au/m12**) that provides background information on the project, along with maps, project updates and announcements, and information on how to provide feedback on the project.

Transport for NSW has continued to engage with the local community, government agencies, councils, utility providers and business and industry stakeholders following the exhibition of the EIS. This is discussed further in Chapter 5 of the amendment report. Transport for NSW would continue to update the local community and identified stakeholders about relevant activities and other project updates using the following engagement channels:

- Website updates
- Notifications to affected receivers
- One-on-one landowner consultation.

As outlined in environmental management measure G01 in **Chapter 7**, a Community Communication Strategy will be prepared for the project to facilitate communication with the local community including relevant Government agencies, Councils, adjoining affected landowners and businesses, and other relevant stakeholders that may be affected by the project. The strategy will:

- Identify people or organisations to be consulted during the delivery of the project
- Set out procedures and mechanisms for the regular distribution of information about the project
- Outline mechanisms to keep relevant stakeholders updated on site construction activities, schedules and milestones
- Outline avenues for the community to provide feedback (including a 24-hour, toll free project information and complaints line) or to register complaints and through which Transport for NSW will respond to community feedback
- Outline a process to resolve complaints and issues raised.

The Community Communication Strategy will include a Construction Fatigue Protocol to minimise impacts associated with construction fatigue. The Protocol will include consideration of noise attenuation and restriction of out-hours work or use of noise intensive equipment where reasonable and feasible.

4.5.3 Biodiversity

Issue description

Request for an assessment of the existing and proposed tree canopy cover for the project to be carried out.

Response

Transport for NSW has commenced a tree survey along the length of the M12 Motorway alignment to understand number of trees to be removed, and their potential for re-use. This tree survey, which will also record the species to be removed, will continue throughout the detailed design phase of the project.

As outlined in environmental management measure B08 in **Chapter 7**, revegetation will be carried out in accordance with *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011) (Guide 3: Reestablishment of native vegetation) and the UDLP being prepared for the project.

Note that the conditions of approval for the project are a matter for DPIE to consider during its assessment of the project.

4.5.4 Transport and traffic

Issue description

Council requested interim traffic signals or roundabout at the Elizabeth Drive and Devonshire Road intersection during construction.

Response

Transport for NSW is committed to investigate and implement appropriate construction traffic management measures to manage the expected delay at the Elizabeth Drive and Devonshire Road intersection.

Management measures would be outlined in the construction transport and traffic management plan (CTTMP) for the project. Refer to revised environmental management measure TT10 in **Chapter 7**.

4.5.5 Urban design, landscape character and visual impact

Issue description

Request for the preparation of a detailed Landscape Plan for the project.

Council requested measures to avoid the risk of distracting aircraft pilots and that the project consider minimising light spill from the motorway and from travelling vehicles.

Response

As outlined in environmental management measure LVIA01 in **Chapter 7**, an Urban Design and Landscape Plan (UDLP) will be prepared for the project. The UDLP is currently being prepared to minimise landscape character and visual impacts, and detail and guide the implementation of landscape features to be installed as part of the project, including re-vegetation requirements.

Lead landscape architects preparing the UDLP are Registered Landscape Architects, and work for companies whose inclusion on the Transport for NSW register of contractors means they are familiar with best practice in this regard. As outlined in environmental management measure B08 in **Chapter 7**, revegetation will be carried out in accordance with *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011) (Guide 3: Reestablishment of native vegetation) and the UDLP being prepared for the project.

Transport for NSW is committed to design and implement temporary and permanent lighting with consideration of the need to orientate lighting to minimise light spill and glare impacts on nearby receivers along the M12 Motorway and to meet the requirements of the National Airports Safeguarding Framework (NASF) (National Airports Safeguarding Advisory Group, n.d.) for operational lighting. This commitment is reflected in environmental management measure LVIA07 in **Chapter 7**.

4.5.6 Socio-economic

Issue description

Council requested Transport for NSW consults with the owner of 1400-1480 Elizabeth Drive, Cecil Park (Lot 1 to 9 DP1054778) on property access matters.

Council notes its City Economy Unit is available to support in engaging with local businesses during construction and operation of the project.

Response

Transport for NSW is in discussion with this property owner at Cecil Park in relation to property access arrangements. Transport for NSW is committed to working with property owners on their adjustment plans and access arrangements. Any changes to access would form part of Transport for NSW's property acquisition negotiations with the relevant landowners. Access to all land parcels would be provided via an alternate access on the property. Where alternative access is unable to be provided, Transport for NSW would endeavour to obtain an access easement to the land parcel from an adjoining property. Certain circumstances may warrant the purchase of severed or landlocked land for project purposes.

Transport for NSW acknowledges Council City Economy Unit availability to support in engaging with local businesses during construction and operation of the project.

4.5.7 Flooding

Issue description

Council requested Transport for NSW minimises impact of flooding at Badgerys Creek upstream of Elizabeth Drive during the detailed design; identifies and consult with private properties that would be impacted by flooding due to the proposed work; obtains written consent stating the understanding of flood impact and no objection for proposed development.

Response

Transport for NSW is committed to carry out further modelling to verify the project's impacts on private land and to confirm proposed management measures. As noted in environmental management measure SWH13 in **Chapter 7**, hydrologic and hydraulic models will be used to verify the nature and extent of impacts and to confirm the type of mitigation measures required, including potential mitigation measures identified throughout the EIS (see Table 5-9 in Appendix M of the EIS) and the amendment report (see Table 5-6 in Appendix I of the amendment report).

In addition, as noted in environmental management measure F07 in **Chapter 7**, Transport for NSW will seek to refine the design of the works at Elizabeth Drive near Badgerys Creek to minimise flood affectation during the detailed design phase of the project. Mitigation measures may include adjustment of road levels and/or flood relief culverts through the road.

Where required, Transport for NSW would consult with landowners regarding appropriate management measures to be implemented by the contractors in relation to each individual property. Consultation would be carried out in accordance with the conditions of approval for the project.

4.6 NSW Environment Protection Authority (EPA)

4.6.1 Emissions to land, water and air

Issue description

Request for specific content to be included in management plans concerning contamination, water quality and noise and vibration issues.

Response

As stated in the revised environmental management measures SC03 and SC04 in **Chapter 7**, an asbestos management plan, a contaminated land management plan and an unexpected finds protocol would be included in the suite of documents required under the CEMP for the project to manage contamination on the project during construction. Furthermore, a Construction Soil and Water Management Plan (CSWMP) and Construction Noise and Vibration Management Plan (CNVMP) would also be developed as part of the suite of documents required under the CEMP in accordance with environmental management measure SWH01 and NV01 in **Chapter 7**.

As stated in revised environmental management measure SC05 in **Chapter 7**, detailed site contamination investigations will be carried out in accordance with *Sampling Design Guidelines* (NSW EPA 1995) and other NSW EPA endorsed guidance including the *National Environment Protection (Assessment of Site Contamination) Measure (NEPM) Guidelines* (NSW EPA 2013) at selected AEI to confirm the presence of contamination before the start of construction at these locations.

In relation to the water quality impacts, Transport for NSW would consult with NSW EPA on the preparation of the detailed water pollution/discharge impact assessment prepared under revised environmental management measure SWH08.

Appendix J of the amendment report concluded groundwater inflow rates at three potential cut areas are low and as such the risk of discharge would also be unlikely as the groundwater would be managed through evaporation. As stated in GW02 in **Chapter 7**, the potential impacts on groundwater flows will be reconsidered during detailed design particularly if the vertical alignment of the project changes. In the event that groundwater flows are higher than expected, additional measures would be implemented.

Transport for NSW confirms no crushing or grinding of material would occur as out of hours work. Supply of concrete through onsite batching facilities may be required to support out of hours work activities and ensure concrete quality is of a suitable standard.

Conditions of approval, including the content requirements for management plans for the project, are a matter for DPIE to consider during its assessment of the project.

4.7 NSW Health

4.7.1 Emissions to air and land

Issue description

Mitigation measures described in the EIS should be implemented to ensure that residents of the Penrith Local Government Area are not subjected to excessive noise, dust, vibration or other disturbances which may affect Public Health.

Response

Transport for NSW are committed to implementing the management measures described in the EIS as well as the environmental management measures outlined in **Chapter 7**. A CEMP and associated sub-plans including a CNVMP and Construction Air Quality Management Plan (CAQMP) would be prepared and implemented for the project to mitigate and manage noise and vibration, air quality and other impacts during construction.

4.7.2 Surface water quality and hydrology

Issue description

Request for appropriate surface and groundwater mitigation measures to be provided.

Response

Surface water and groundwater environmental management measures SWH01, SWH14, GW01 and GW04 as detailed in **Chapter 7** have been provided to management these environmental aspects of the project. In particular, a CSWMP would be prepared for the project to mitigate and manage surface water and ground water quality impacts during construction. Details of surface water and groundwater quality monitoring to be carried out before, throughout, and following construction will be included in CSWMP which will be prepared for the project.

4.7.3 Air quality

Issue description

Concern that air quality will be compromised during construction of the M12 Motorway.

Response

A CAQMP will be developed and implemented for the project to manage potential air quality impacts associated with construction. The CAQMP will identify activities that may results in air quality and odour impacts and associated mitigation measures to avoid or minimise these impacts.

4.7.4 Cumulative impacts

Issue description

Concern about the potential for cumulative construction impacts when combined with other road upgrades in Western Sydney.

Response

Regular consultation would be carried out with nearby/adjoining road upgrade project teams and key stakeholders including WSA Co and Sydney Metro during the detailed design and construction phases to review potential cumulative impacts and integrate designs and construction methodologies (including noise, water quality and air quality management) as far as practicable to minimise cumulative impacts.

4.8 NSW Heritage (Aboriginal Cultural Heritage)

4.8.1 Aboriginal heritage

Issue description

Heritage NSW (Aboriginal cultural heritage) notes the proposed modifications to the footprint have a negligible increase of harm to Aboriginal cultural heritage and minimal risk to harming PAD-OS-7 and KC/ED2.

Response

Heritage NSW (Aboriginal cultural heritage) comments are acknowledged.

4.9 Penrith City Council

4.9.1 Project design

Issue description

Council expressed concern about the lack of an interchange to allow access from the M12 Motorway to the Western Sydney Aerotropolis.

Council requested that the project should be consistent with the Draft Precinct Plans for the Western Sydney Aerotropolis, and particularly the Precinct Plan for the Northern Gateway.

Council expressed concern about future-proofing the M12 Motorway to allow for future road connections to the Western Sydney Aerotropolis.

Council requested that the widening of the M7 be fast-tracked.

Council expressed concern that the shared user path doesn't provide access to creek lines.

Response

The project design would not preclude a future interchange via Mamre Road /Devonshire Road to allow direct access from the M12 to the Western Sydney Aerotropolis.

Transport for NSW is investigating an interchange that would provide additional connectivity between Elizabeth Drive and the M12 Motorway at the WSIA entry. An indicative design of the interchange is shown in Figure 3-1. The interchange may result in changes to traffic performance along Elizabeth Drive and alterations to the construction and operational footprints of the project. These footprint changes may also result in some minor additional impacts to biodiversity, heritage and land acquisition. Note this design is not part of the project and would require either a planning approval modification or consistency assessment after the project is approved depending on the resultant environmental impacts.

The Western Sydney Aerotropolis Draft Precinct Plans establish the strategic vision and general objectives, proposed land uses, performance criteria for development of land, and the approach to both infrastructure and water cycle management, were placed on public exhibition on 10th November 2020.

As noted in Section 6.3, the project would continue to support the implementation of the WSAP. As stated in Section 3.1.6 of the EIS, the M12 Motorway is listed as ‘committed transport infrastructure’ under this plan and would connect the Aerotropolis to the WSIA and the rest of western Sydney. The project would enable jobs in the Aerotropolis to be easily accessible.

Future connectivity across the M12 Motorway is not precluded from further design development, as the project progresses through the detailed design phase. Transport for NSW has worked with the WSPP to identify potential locations for road crossings of the M12 Motorway including at Badgerys Creek and Cosgroves Creek. The design principles outlined in the M12 Urban Design Framework would apply to any additional crossings provided along the M12 Motorway.

Widening of the M7 Motorway is outside of the project scope. However, an unsolicited proposal from WSO Co. Pty Limited (comprising of Transurban Group, QIC Limited and Canada Pension Plan Investment Board) to widen the M7 Motorway has been submitted to the NSW Government for consideration.

Currently, the land adjacent to creek lines that transect the project are held in private ownership. Accordingly, Transport for NSW is unable to provide shared user path access to and through private property. However, future connectivity of the shared user path is not precluded from further design development, and Transport for NSW is currently planning where shared user path connections could be implemented in the future in consultation with WSPP, and in consideration with WSPP's vision for more efficient and higher quality outcomes.

4.9.2 Biodiversity

Issue description

Fauna connectivity

Council expressed concern that fauna passages at four main creek lines (Cosgroves, South, Kemps and Badgerys Creeks) would not be adequately represented in detailed design.

Biodiversity management and offsets

Council expressed concern that the biodiversity offset calculations do not adequately account for:

- Indirect impacts on biodiversity
- Loss of connectivity
- Exacerbation of Key Threatening Processes
- All relevant species that should have been included.

Council requested to review the project offset strategy prior to commencement of construction.

Council requested that biodiversity management plans be prepared in accordance with *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011) and incorporate the actions outlined in strategies and plans concerning Key Threatened Processes.

Council requested the preparation of the following specific management plans:

- Seed collection plan
- Plant translocation plan for *Dillwynia tenuifolia* and *Pultenea parviflora*
- A White-bellied Sea-eagle Management Plan
- A Cumberland Plain Land Snail translocation plan.

Council expressed concern that the revised environmental management measures to do not adequately protect threatened flora species, and requested specific management measures to address:

- Managing threatened species within exclusion zones
- Minimising the impacts of lighting on threatened flora.

Council requested that an ecologist review detailed design documentation.

Response

Fauna connectivity

Fauna connectivity at Cosgroves, South, Kemps and Badgerys Creeks has been included in the project detailed design and in accordance with Transport for NSW requirements. As outlined in Chapter 7 environmental management measure B23, connectivity measures will be implemented in accordance with *Wildlife Connectivity Guidelines for Road Projects* (Transport for NSW, under preparation), and detailed design is to retain fauna passage at all four main creek lines (Cosgroves, South, Kemps and Badgerys Creeks). Transport for NSW can confirm that fauna connectivity at these four main creek lines would be included in design drawings from the 50 per cent design development stage onwards.

Biodiversity management and offsets

A Biodiversity Offset Strategy (BOS) was prepared in accordance with the *Framework for Biodiversity Assessment* (FBA) (OEH, 2014), to identify residual biodiversity impacts and detail how required offset credits are to be retired (Annexure D of Appendix E of the EIS).

Refer to Section 6.2.5 for details on biodiversity offsets that would be required for the project including species credit offset requirements. A summary of these requirements are as follows:

- The likelihood of indirect impacts to threatened flora species was considered in the BAR. The 140 plants of *Pultenaea parviflora* and 44 plants of Dillwynia tenuifolia located within one and 15 metres of the construction footprint are situated within a thin strip of vegetation on the western side of Clifton Avenue are currently subject to impacts of fragmentation and edge effects, and it is not considered likely that the project would result in further impacts to these individuals, provided suitable site controls are implemented. The 44 plants of *Dillwynia tenuifolia* located within 30 metres of the eastern edge of the construction footprint was considered to be potentially indirectly impacted by edge effects, however given that most (40) of these individuals are at least 10 metres from the edge of the construction footprint and that based on observations in the locality, the species appears to tolerate disturbance, indirect impacts to this species are unlikely
- It is a requirement of the FBA to determine connectivity value scores for linear shaped development or development that has multiple fragmentation impacts, such as the amended project, and to assess indirect impacts of the project. Loss of connectivity is accounted for by the landscape score assigned in the FBA calculator. The landscape score includes an assessment of connectivity, and the landscape value contributes to the credit calculation. The spatial extent of the loss of connectivity is already represented by the area of habitat that would be directly impacted
- The key threatening process (KTP) identified are ‘Aggressive exclusion of birds from potential woodland and forest habitat by overabundant noisy miners’ and ‘Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners’. The listing advice for the KTP related to noisy miners recognises measures such as revegetation and increasing the size and structural complexity of habitat to make the area less accessible to noisy miners and more accessible to other native species. These actions would be considered during the review of project landscape plans by qualified ecologists. A draft strategy under the Saving Our Species program has been developed to assist managing the threat of bell miner associated dieback. The strategy recommends the control of invasive weeds, namely lantana as an action. The CFFMP prepared for the project would include measures for the control and management of weeds
- Only one of the fauna species listed in Table 7-14 of the EIS is a full species credit species, namely Cumberland Plain Land Snail
- White-bellied Sea Eagle and several microbat species are dual credit species. Impacts to breeding habitat for these species would require offset with species credits, whereas impacts to their foraging habitat would require offsets with ecosystem credits. Breeding habitat for Southern Myotis has been identified in the amended construction footprint and species credits are proposed to offset direct impacts to this habitat. There are no areas of breeding habitat for any other dual credit species located within the amended construction footprint, and therefore only ecosystem credits apply to these species. There is a White-bellied Sea Eagle nest located 40 metres from the construction

footprint that represents breeding habitat, and there is consideration in the BAR of potential impacts to this nest.

Key biodiversity offset strategies for M12 Motorway have involved securing available credits from EESG public registers as well as undertaking EOIs to find and secure credits from interested landowners. Offset sites where credits have been secured to date are located in Penrith, Liverpool, Wollondilly and Camden local government areas. Further offset documentation will be developed in accordance with the conditions of approval for the project and submitted to DPIE as required.

Note that on 25 August 2017, the *Biodiversity Conservation Act 2016* (NSW) (BC Act) came into effect, repealing the former *Threatened Species Conservation Act 1995* (NSW) (TSC Act). The Biodiversity Conservation (Savings and Transitional) Regulation 2017 (BC (Savings and Transitional) Reg) provides the criteria under which a project would be saved, meaning the former planning provisions would continue to apply. An application was made to the Secretary of the DPIE (Planning and Assessment) to consider whether substantial environmental assessment had been undertaken for the project by Transport for NSW. This application was granted on 5 April 2018. Accordingly, the project can be assessed under the TSC Act and in accordance with the NSW Biodiversity Offsets Policy for Major Projects (2014) which is underpinned by the Framework for Biodiversity Assessment 2014 (FBA).

As outlined biodiversity environmental management measures in **Chapter 7**, Transport for NSW is committed to preparing management plans, strategies and procedures in accordance *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011). Transport for NSW notes that while reference to specific Biodiversity Guidelines, such as *Protecting and managing biodiversity on RTA projects (Guide 7: Pathogens)*, is not explicitly included in environmental management measure B27, the intention of Transport for NSW is always to implement management measures in accordance with all relevant sections of Biodiversity Guidelines: Protecting and managing biodiversity on RTA project. Transport for NSW has demonstrated this intention by the repeated reference of management measures being implemented in accordance with the various sections of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) throughout the environmental management measures.

The aim of the revised environmental management measures in **Chapter 7** is to outline clear and considered management objectives that would be implemented prior to and during the project construction. The environmental management measures would not preclude the preparation of management plans and strategies that are not explicitly included in Chapter 7, such as seed collection plan, a plant translocation plan for threatened flora species, a White-bellied Sea-eagle Management Plan or a Cumberland Plain Land Snail translocation plan. However, with regard to these specific biodiversity issues, Transport for NSW can provide the following assurances:

- Transport for NSW has already commenced work on the native seed collection program for the project, and will continue to manage this process until construction commences
- The CFFMP (environmental management measure B01 in Chapter 7) would detail management measures specific to the protection of the White-bellied Sea Eagle and its nesting habitat prior to and during construction. While the amended project will remove 3.69 hectares of foraging habitat for the White-bellied Sea-eagle, the known nesting habitat for the species would not be directly impacted. Environmental management measure B05 in Chapter 7 states that and initial pre-clearing inspection will be carried out at least 21 days prior to commencement of clearing, to give the ecologist time to check the nest and then relocate if needed. This management measure would be further detailed in the Construction Flora and Fauna Management Plan.
- The CFFMP (environmental management measure B01) would detail management measures specific to the protection of the Cumberland Plain Land Snail, which could involve the translocation and monitoring of individuals.

Note that the preparation of specific management plans and strategies, as a conditions of approval for the project, as well as consultation for the preparation of the BOS, are matters for DPIE to consider during its assessment of the project.

With regard to specific management measures to manage threatened species within exclusion zones, the CFFMP will include the identification of clearing limits and exclusion fencing (as outlined in revised environmental management measures B01 in **Chapter 7**). In addition, revised environmental management measures B24 states that exclusion zones will be set up at the limit of clearing in accordance with *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011) (Guide 2: Exclusion zones). Exclusion zones will be set up to protect potential indirect impacts to threatened flora in accordance with the areas identified in Figure 5-3.

With regard to specific management measures to minimise the impacts of lighting on threatened flora, revised environmental management measure B28 states that "the need for artificial lighting during construction and operation will be minimised through detailed design where feasible, including directing lighting away from vegetated areas where practicable". It should also be noted that with the exception of interchanges and entry and exit ramps, the main motorway alignment generally will not support lighting. While the shared user path would be lit for its entire length, directional lighting would be installed to direct light away from adjacent fauna habitat and vegetation.

Biodiversity-related documentation and design drawings being prepared for the project detailed design are being reviewed by qualified and experienced ecologists.

4.9.3 Aboriginal heritage

Issue description

Request details on how or why the proposed route was identified with consideration to Aboriginal sites.

Response

The preferred corridor route and evaluation of the modified shortlisted options for the project took into account a number of environmental considerations, including impacts to Aboriginal heritage sites. The impact assessment was informed by desktop assessment and field investigations.

The results of the environmental investigations together with community feedback and preliminary costings were used by workshop participants to carry out a comparative assessment of each option against the criteria and to recommend a preferred route. Further information on the route options considered for the project are detailed in Chapter 4 of the EIS and the preferred route corridor report which is provided at ***https://www.rms.nsw.gov.au/projects/01documents/m12-motorway/m12-motorway-preferred-corridor-route-summary-report-2016-11.pdf***.

The location of the potential archaeological deposits within the study area are extensive and re-routing of the proposed motorway would not avoid all impacts on Aboriginal heritage. The focus has been on minimising impacts on the areas of highest Aboriginal heritage significance.

4.9.4 Non-Aboriginal heritage

Issue description

Request non-Aboriginal heritage report conclusions to be prepared by a suitably qualified heritage architect.

Request for more detail on the assessment of significance of the McGarvie Smith Farm and McMaster Field Station.

Request the McGarvie Smith Farm thematic study be carried out prior to determination.

Concern that indirect impacts of the project on all elements of Luddenham Road Alignment heritage item have not been entirely considered and assessed

Response

Appendix F of the amendment report has been prepared by suitable qualified heritage consultants who have visited and surveyed the study area during the preparation of the EIS. The heritage consultants have a good appreciation of the heritage items and settings discussed in their report.

The EIS contained an assessment of significance and a statement of heritage impact. The amendment report is a supplementary report to the EIS which focussed on assessing the impacts of the changes to the design since the EIS. Appendix F of the amendment report noted that EIS assessed the heritage significance of the McGarvie Smith Farm (Penrith LEP 857) and the McMaster Field Station and that there would be no change to impacts to these heritage items as a result of the amended project.

The EIS considered McGarvie Smith Farm to be of State significance and it is noted that the site is currently listed as a local heritage item. Transport for NSW has commenced work on thematic study to inform the detailed design process.

The curtilage of Luddenham Road Alignment, listed on the Penrith LEP (PLEP 843), extends further into the amended construction footprint, as described in the amendment report. The amended project includes a new construction ancillary facility adjacent to Luddenham Road (Figure 4-1 of Appendix F of the amendment report). While this facility is located within the boundaries of the EIS study area, the project footprint has changed and now extends around 65 metres further south into this heritage item than it did previously.

A Statement of Heritage Impact (SOHI) was used to identify what impact the amended project would have on the Luddenham Road Alignment. It was found that direct physical impacts on the heritage item relate to the installation of underground utilities, new property access points and culverts within the cadastral reserve. As such, the level of impact on this heritage item, during construction and operation of the amended project, both options 1 and 2, would be negligible. This is consistent with the assessment carried out as part of the EIS and, as such, there is no change in impact as described in the EIS.

Where post and rail fencing of heritage significance is identified within the construction footprint, Transport for NSW will seek to avoid directly impacting such features. Where avoidance is not practicable, Transport for NSW would seek to minimise and mitigate impact in consultation with a suitably qualified heritage specialist.

4.9.5 Urban design, landscape character and visual impact

Issue description

Council requested to review the project Landscape Plan prior to commencement of construction.

Response

Landscape plans will be supplied to council for review as part of the detailed design process.
Transport for NSW held a briefing for government stakeholders on 01 December 2020, with regard to the progressive development of the Urban Design Framework and landscaping matters. Stakeholders invited to attend included the WSPP, DPIE, Heritage NSW, EESG, Fairfield City Council, Liverpool City Council and Penrith City Council.

4.10 Sydney Water

4.10.1 Utilities

Issue description

Sydney Water encouraged early consultation regarding its wastewater and potable water assets.

Sydney Water noted potable water flows for the project will depend on system capability and will be confirmed during detail design.

Sydney Water reserved the right to assess project impact on its assets and the need to accommodate safe unrestricted accessibility to its assets, new pavement locations and changes to structures.

Sydney Water recommended allowing sufficient time for Sydney Water to schedule and program shutdowns and reconnections of its assets to ensure Sydney Water continues to meet its Operating Licence and customer service obligations.

Sydney Water requested Transport for NSW to adhere to Sydney Water's asset adjustment process. If assets are required to be changed, the project approval should cover any works identified that may fall outside of the project boundary but be a result of the project works.

Sydney Water noted that any trade waste licence request will need to meet Sydney Water's requirements.

Sydney Water noted that the project approval needs to meet the discharge protocols of chlorinated water due to watermain shutdown and reconnection of live Sydney Water assets that will need to be adjusted.

Sydney Water requested early consultation on asset amplifications required to facilitate future growth along the development corridor.

Sydney Water requested to add the *Sydney Water Act 1994 t*o Chapter 2 Assessment Process, Section 2.2 Other NSW Legislation, Table 2-2.

Sydney Water encouraged early consultation regarding meeting stormwater objectives and that the impacts to Sydney Water stormwater assets is minimised, or improvements to the receiving environment can be achieved.

Sydney Water requested to ensure that satisfactory measures are taken to protect existing stormwater assets. Transport for NSW should consider taking measures to minimise or eliminate potential flooding, degradation of water quality, and avoid adverse impacts on any heritage items, and create pipeline easements where required.

Response

Sydney Water's comments are acknowledged, and Transport for NSW would continue to consult Sydney Water in regard to potable water requirements.

Transport for NSW acknowledges the presence of existing and future assets and would continue to consult Sydney Water regarding existing and future wastewater and potable water assets to minimise potential impacts to the construction and operation of assets.

Utilities impacted by the project are discussed in Section 5.20 of the EIS and Section 3.3 of the amendment report. A number of Sydney Water assets have been identified within the project construction footprint that may be potentially impacted by the project. Further design development may identify additional utility works, which may extend outside the construction footprint. The impact on any existing Sydney Water assets outside the construction footprint would be assessed during detailed design.

New or revised management options for utility services may also be identified during detailed design. Consultation and coordination between the project and Sydney Water is ongoing and would continue during detailed design and construction in regard to assets within and in proximity to the project construction

footprint to ensure that the services Sydney Water provides are not unreasonably affected and Sydney Water can continue to access, operate and maintain its assets.

Sydney Water asset adjustments and relocations would be subject to the detailed design, which is being developed by Transport for NSW contractor(s). Consultation with Sydney Water would continue throughout further detailed design development and construction, with regard to the staging, timing and duration of works and potential impacts to Sydney Water assets and operations, particularly impacts that are anticipated early in the construction program. A number of Sydney Water assets have been identified within the project construction footprint that may be potentially impacted by the project. The impact to these assets would be confirmed with Sydney Water through ongoing consultation.

Any utility adjustment and/or relocation would be carried out according to utility provider requirements on a like for like basis unless an agreement is made prior to the design for a relocation of an asset. Where future network extensions or capacity expansions planned by Sydney Water coincide with proposed project utility works, there would be an opportunity to coordinate these works to minimise future impacts on the local community and business subject to complying with the relevant conditions of approval.

Sydney Water asset adjustment process is acknowledged.

Sydney Water's comment regarding that the requirements of a trade waste licence are met is noted, subject to the proposed work being consistent with the project as approved and in accordance with the conditions of approval.

Sydney Water's discharge protocols would be followed for water main shutdown and reconnection of live Sydney Water assets.

Sydney Water Act approval requirements are acknowledged. Transport for NSW would comply with relevant utility provider approval requirements for the project.

Chapter 7 details the environmental management measures proposed during project construction and operation to manage flooding, water quality and heritage impacts.

4.11 WaterNSW

4.11.1 Asset Protection

Issue description

Request for a revised assessment of impacts on the Upper Canal corridor due to the amended project.

Request for particular condition of approval to be included in the project approval.

Response

As stated in the revised environmental management measure NAH06 in Chapter 7, Transport for NSW will provide an updated report to WaterNSW on project design changes as they relate to WaterNSW Upper Canal corridor during detailed design. Transport for NSW will continue to consult with WaterNSW throughout detailed design and construction.

Conditions of approval are a matter for DPIE to consider during its assessment of the project.

4.12 Western Sydney Parklands Trust

4.12.1 Consultation

Issue description

Request for Transport for NSW to continue to consult with Western Sydney Parklands Trust on the project design.

Response

Western Sydney Parklands Trust's (WSPT) commitment to continue working with Transport for NSW on the project design development is noted. Transport for NSW commits to working with WSPT to consider and negotiate the matters outlined in the WSPT's submission.

4.13 Western Sydney Planning Partnership

4.13.1 Urban design, landscape character and visual impact

Issue description

Request for a specific condition to be included in the project approval, regarding the preparation of an Urban Design and Landscape Plan (UDLP).

Response

Transport for NSW is committed to the preparation of an UDLP to minimise landscape character and visual impacts, and detail and guide the implementation of landscape features to be installed as part of the project, including re-vegetation requirements. Refer to environmental management measure LVIA01 in **Chapter 7**.

Conditions of approval are a matter for DPIE to consider during its assessment of the project.

5. Clarifications

5.1 Predicted intersection performance during peak periods

The amendment report Table 6-24 and 6-25 showed the years 2026 and 2036 intersection performance ‘with amended project’ scenarios modelling results during morning and evening peak.

These tables did not correctly show the results for the intersections of Elizabeth Drive / M7 ramps and Elizabeth Drive / Wallgrove Road and the names of the intersections in the table were confusing. Furthermore, the intersection of Elizabeth Drive / M7 ramps on the western side of interchange was accidently omitted.

Table 5-1 and Table 5-2 provide the corrected additional information and demonstrate the benefit of the amendment report design over the EIS design. The EIS design intersection performance level of service (LoS) was modelled as being LoS F compared with the amendment report design worst-case intersection performance of LoS C. It is noted that ‘N/A’ was stated against the Elizabeth Drive / Wallgrove Road realignment (existing Cecil Road) intersection in Table 5-1 for the ‘Do Minimum’ and EIS options because traffic signals were not proposed at Cecil Road in either the ‘Do Minimum’ or EIS design options.

Table 5-1 Intersection performance – 2026 and 2036 'with amended project' scenarios – morning peak

Intersection	2026 'do minimum'		2026 'with project' as described in EIS		2026 'with amended project' – option 1		2026 'with amended project' – option 2		2036 'do minimum'		2036 'with project' as described in EIS		2036 'with amended project' – option 1		2036 'with amended project' – option 2	
	Average delay (secs)	LoS	Average delay (secs)	LoS	Average delay (secs)	LoS	Average delay (secs)	LoS	Average delay (secs)	LoS	Average delay (secs)	LoS	Average delay (secs)	LoS	Average delay (secs)	LoS
Elizabeth Drive / Realigned Wallgrove Road (existing Cecil Road)	N/A	N/A	N/A	N/A	43	C	35	C	N/A	N/A	N/A	N/A	50	D	29	C
Elizabeth Drive / M7 Northbound on ramp (existing Wallgrove Road)	32	C	84	F	14	A	13	A	98	F	49	D	18	B	18	B
Elizabeth Drive / M7 Motorway southbound off ramp	257	F	264	F	26	B	24	B	339	F	271	F	31	C	28	B

Table 5-2 Intersection performance – 2026 and 2036 'with amended project' scenarios – evening peak

Intersection	2026 'do minimum'		2026 'with project' as described in EIS		2026 'with amended project ' – option 1		2026 'with amended project ' – option 2		2036 'do minimum'		2036 'with project' as described in EIS		2036 'with amended project ' – option 1		2036 'with amended project ' – option 2	
	Average delay (secs)	LoS	Average delay (secs)	LoS	Average delay (secs)	LoS	Average delay (secs)	LoS	Average delay (secs)	LoS	Average delay (secs)	LoS	Average delay (secs)	LoS	Average delay (secs)	LoS
Elizabeth Drive / Realigned Wallgrove Road (existing Cecil Road)	N/A	N/A	N/A	N/A	31	C	36	C	N/A	N/A	N/A	N/A	40	C	38	C
Elizabeth Drive / M7 Northbound on ramp (existing Wallgrove Road)	58	E	66	E	14	A	13	A	71	F	73	F	18	B	18	B
Elizabeth Drive / M7 Motorway southbound off ramp	257	F	278	F	35	C	34	C	294	F	97	F	43	C	42	C

5.2 Refinement to the Wallgrove Road realignment design

5.2.1 Wallgrove Road realignment as described in the amendment report

The Wallgrove Road realignment as presented in the amendment report is shown in Figure 5-1.

The Wallgrove Road realignment design as presented in the amendment report had a number of matters to be addressed during further design development. These included:

- The realigned Wallgrove Road had a large construction footprint
- The geometry of the realigned Wallgrove Road where it deviates from the existing Wallgrove Road needed improvement
- The distance between the Wallgrove Road and Cecil Road roundabout intersection and the Elizabeth Drive/Wallgrove Road signalised intersection was unlikely to provide sufficient traffic capacity in the future.

Design refinements were required to the amendment report Wallgrove Road realignment design to address the above matters, particularly in regard to providing sufficient traffic capacity in the future.

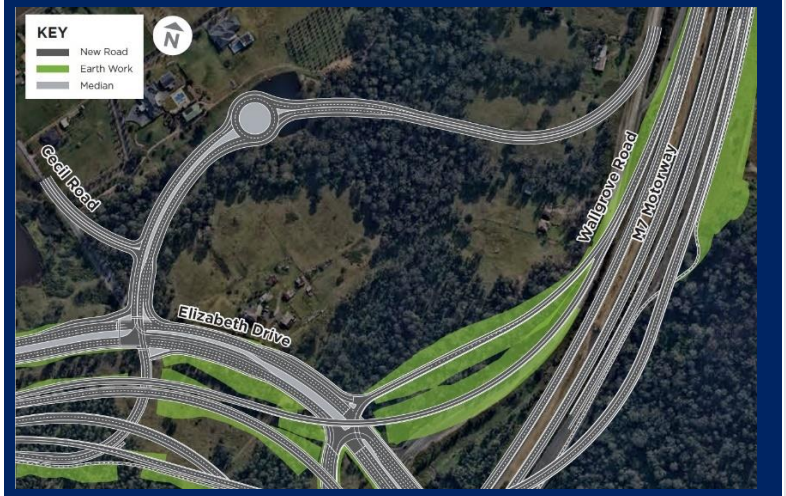
5.2.2 Proposed refinement

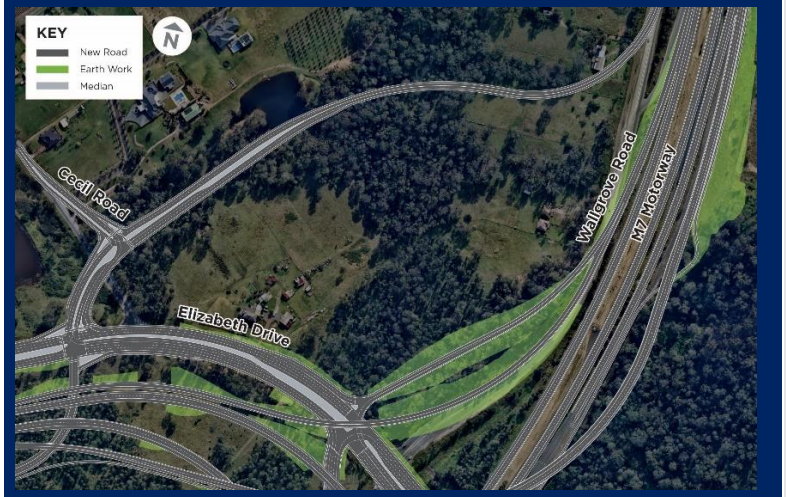
A series of refined designs for the Wallgrove Road realignment were developed to address the matters listed above in consultation with affected property owners.

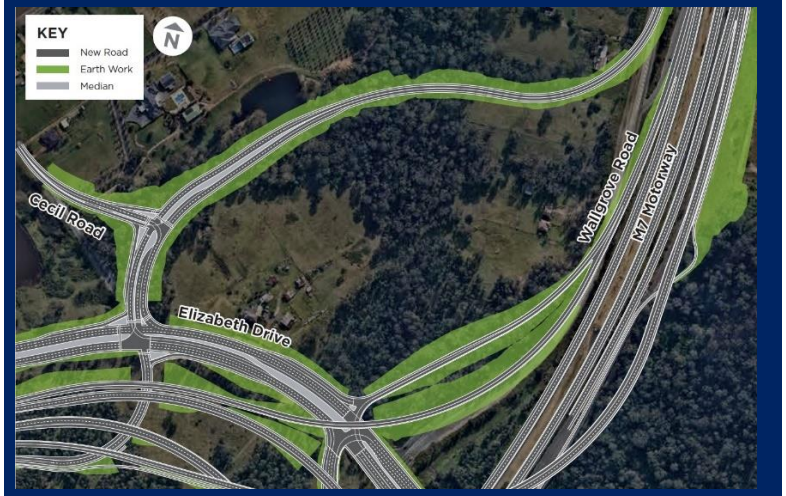
The refined design options were assessed against the same criteria used throughout the project development for options assessments, including consideration of project delivery, land use, community impact, environmental impact, and road design/functionality. Assessment of options also weighed up the benefits of future proofing the functionality of the M7 Motorway interchange at the compromise of impacts to private properties.

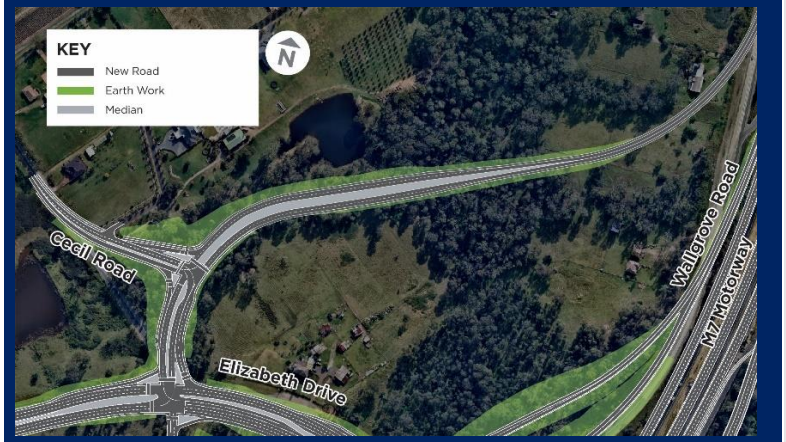
The assessment of refined design options considered is documented in the M12 Motorway Wallgrove Road / M7 / M12 interchange design development and options report (Transport for NSW, December 2020) available in the project's website: ***https://www.rms.nsw.gov.au/projects/m12-motorway/index.html***.
A summary of the refined design options considered and their advantages and disadvantages is provided in Table 5-3.

Table 5-3 Wallgrove Road realignment design refinement options analysis

Design option	Advantages	Disadvantages
Option A  Left in left out intersection at Cecil Road and Wallgrove Road and dual-lane roundabout further east on Wallgrove Road. This option was not progressed.	When compared to the Wallgrove Road realignment design as presented in the amendment report, this option would result in: ▪ Improvements in the traffic flow performance ▪ Reduced impact on the current and future land use and development potential of the Western Sydney Parkland lots (less severing of lots) ▪ Decreased property acquisition of Western Sydney Parklands along the western side of Cecil Road ▪ Improved road geometry on the northern section of Wallgrove Road.	When compared to the Wallgrove Road realignment design as presented in the amendment report, this option would: ▪ Be more difficult to construct and manage drainage work ▪ Have greater noise and visual impacts to 16, 18 and 20-22 Cecil Road ▪ Have increased impact on the current and future land use and development potential of the 1111-1141 Elizabeth Drive ▪ Have increased property acquisition at 16 and 20-22 Cecil Road, and 1111-1141 Elizabeth Drive ▪ Have increased impact to drainage line and requirements for drainage line realignment ▪ Result on complete removal of the dam Have no right turn movement in to or out of Cecil Road increasing community inconvenience and travel time.
Option B This option is a modified version of A above and was developed to convert the Wallgrove Road and Cecil Road intersection from a left in-left out arrangement to a seagull intersection. The roundabout was also removed. This option was not progressed.	When compared to Option A, this option would allow for all traffic movements from Wallgrove Road and Cecil Road intersection eliminating community inconvenience and additional travel time.	When compared to Option A, this option would result in safety risks associated with seagull intersection. This type of intersection is better suited to low traffic environments.

Design option	Advantages	Disadvantages
Option C  This option is a modified version of option B. The seagull intersection between Wallgrove Road and Cecil Road was replaced with traffic signals. To increase the distance between these intersections, the intersection of Elizabeth Drive and Wallgrove Road was moved further west which also meant Cecil Road would not have to be realigned as much as it did in option B. Due to design constraints imposed on the future design and development of the M12 Motorway ramps and intersections, safety and road design deficiencies, this design option was not progressed.	When compared to Option A and Option B, this option would: ▪ Be easier to build ▪ Result in less drainage work and less impact on the drainage line ▪ Result in substantial reduction in the current and future land use and development of 1111-1141 Elizabeth Drive ▪ Decrease property acquisition for 1111-1141 Elizabeth Drive, and for 16, 18 and 20-22 Cecil Road ▪ Decrease visual and amenity impact to 16, 18 and 20-22 Cecil Road ▪ Allow for all traffic movements from the Wallgrove Road and Cecil Road intersection to meet the future traffic performance and efficiently targets.	When compared to Option A and Option B, this option would: ▪ Increase property acquisition to Western Sydney Parklands lots at the western corner Cecil Road and Elizabeth Drive ▪ Increase impact on the current and future land use on Western Sydney Parklands lots at the western corner Cecil Road and Elizabeth Drive ▪ Have challenging road geometry ▪ Increase safety concerns caused by traffic weaving resulting from the reduced distance between the new location of the Wallgrove Road / Elizabeth Drive intersection to the M12 Motorway eastbound exit ramp to Elizabeth Drive Result on vertical geometry and design constraints on the design of M12 Motorway interchange ramps.

Design option	Advantages	Disadvantages
Option D (preferred refined design option)  This option retained the location of the Wallgrove Road / Elizabeth Drive intersection to eliminate the critical design constraints associated with option C. The alignment of Cecil Road was also modified to achieve a satisfactory intersection separation and to improve the road geometry of the approach to Wallgrove Road. This increased the curvature of Cecil Road and shifted it in north-easterly direction. Although disadvantages remain, this option was determined to be the best overall comprised solution.	When compared to Option C, this option would: ▪ Reduce property acquisition to Western Sydney Parklands lots at the western corner of Cecil Road and Elizabeth Drive ▪ Reduce impact on the current and future land use on Western Sydney Parklands lots at the western corner of Cecil Road and Elizabeth Drive ▪ Result in acceptable road geometry on the Wallgrove Road approach to the Wallgrove Road / Elizabeth Drive intersection ▪ Eliminate safety concerns regarding traffic weaving on Elizabeth Drive ▪ Result in no significant vertical geometry and design constraints imposed on the future design development of M12 Motorway interchange ramps.	When compared to Option C, this option would: ▪ Increase impacts to the current and future land use and development of 1111-1141 Elizabeth Drive ▪ Increase property acquisition at 1111-1141 Elizabeth Drive and at the frontages of 18, 20-22, 24 and 28 Cecil Road properties Increase native vegetation clearing at the corner of Cecil Road and Elizabeth Drive.

Design option	Advantages	Disadvantages
Option E  In response to the feedback from ongoing consultation with directly affected land owners and stakeholders, an alternative route was developed by Transport for NSW. Due to road design standards, criteria and constraints the road design and alignment of the approach of Wallgrove Road into Elizabeth Drive is the same design as Option D. But the remaining section of the Wallgrove Road alignment is shifted further south when compared with Option D.	When compared to Option D, this option would: ▪ Reduce visual impacts on number 18, 20-22, 24 and 28 Cecil Road properties ▪ Reduce impact to the drainage line. ▪ Although Option E road footprint avoids or minimises direct impact on the existing dam, it is likely that the dam would still need to be drained, backfilled and reshaped or modified for construction purposes as it is situated partially with road reserve and private property.	When compared to Option D, this option would: ▪ Increase the total area of acquisition required by approximately 8210 square metres or 14 percent due to the increase in the severance of properties where access cannot be provided to the severed portion of land ▪ Increase impact of the current and future land use of number 1111-1141 Elizabeth Drive and Western Sydney Parklands. Increase Endangered Ecological Community and Critically Endangered Ecological Community vegetation clearing area of approximately 4185 square metres or 12 percent.

The preferred design option (Option D) for the Wallgrove Road realignment design refinement addresses the traffic capacity constraints identified with the amendment report design and provides the following additional advantages:

- Provision of a Wallgrove Road and Cecil Road intersection with traffic signals that creates satisfactory traffic flow and efficiently performance targets for future predicated growth
- Improved long term solution for Fairfield City Council's proposed Cecil Road corridor
- Improved geometry on the northern section of the realigned Wallgrove Road.

The design refinement would result on a comparable amount of native vegetation clearing and impacts to the drainage line and dam as per the amendment report design. Changes to visual and noise impacts to the Cecil Road properties are also negligible between the amendment report and the refined design. Refer to Chapter 6 for further details.

The design refinement would result in an overall reduction of approximately 13,210 square metres of land acquisition; however 12,935 square metres of land would be required that was not previously affected by the amendment report design.

Refinements to the current design are still being developed following consultation with private land owners affected by the amendment report design including impacts due to acquisition, native vegetation clearing, changes to a drainage line and back-filling of a dam, access changes and visual amenity and noise impacts.

During detailed design, Transport for NSW will investigate strategies to further minimise impacts including but not limited to changing the height of the road, steepening of batters and/or the use of retaining wall structures. The horizontal alignment of the realigned Wallgrove Road will be refined to position it closer to the new proposed southern road reserve boundary. These strategies will aim to reduce the construction footprint area and would result in less clearing of native vegetation and impacts to the drainage line.

The detailed design process is also an opportunity for the project team to consider design impacts on underground utilities more accurately, future traffic volume predictions and local development plans.

A comparison of the Wallgrove Road realignment design as presented in the amendment report and the proposed refined design is shown in Figure 5-1.

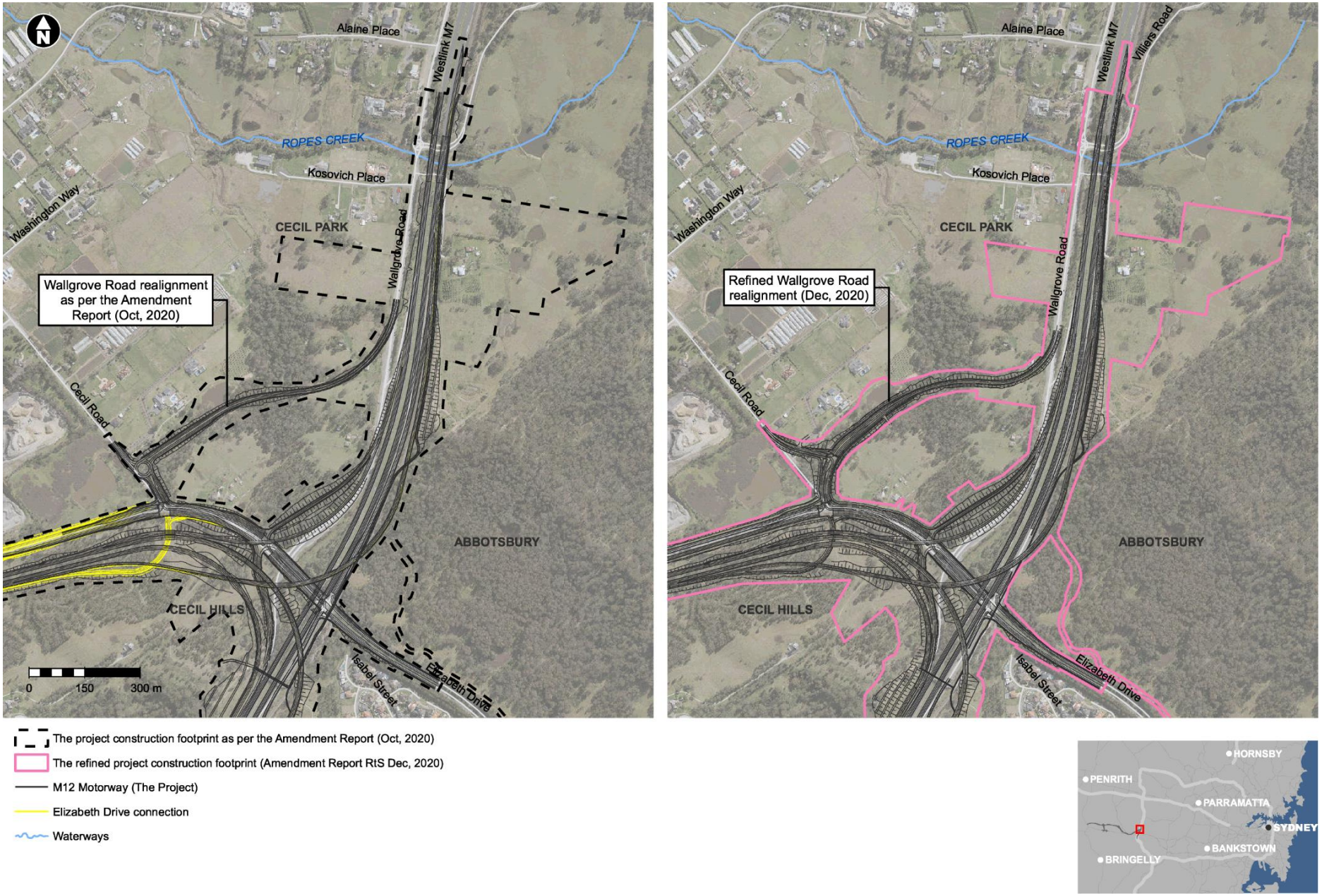


Figure 5-1 Wallgrove Road realignment

5.3 Refinement to project operational and construction footprints

5.3.1 Project operational and construction footprints as described in the amendment report

The project operational footprint as described in the amendment report generally includes the M12 Motorway and additional areas required for operation and maintenance of the project, and comprised about 317 hectares.

The project construction footprint as described in the amendment report included the land required to accommodate the project construction requirements including ancillary facilities and the full extent of buildings and dams that would be impacted by the project. The construction footprint presented in the amendment report comprised about 441 hectares.

5.3.2 Proposed refinement

Progression of the project design development has identified minor refinements required to the operational and construction footprints to:

- Facilitate the Wallgrove Road realignment refinement as discussed in Section 5.2
- Accommodate drainage and water quality infrastructure and maintenance access requirements
- Further minimise property acquisition, particularly within the Western Sydney Parklands.

The refined operational footprint would comprise about 313 hectares, which is about 4 hectares smaller than the operational footprint as described in the amendment report. The refined construction footprint would comprise about 440 hectares, which is about 1 hectare smaller than the construction footprint as described in the amendment report.

The refined project operational and construction footprints are shown in Figure 5-2 and Figure 5-3.

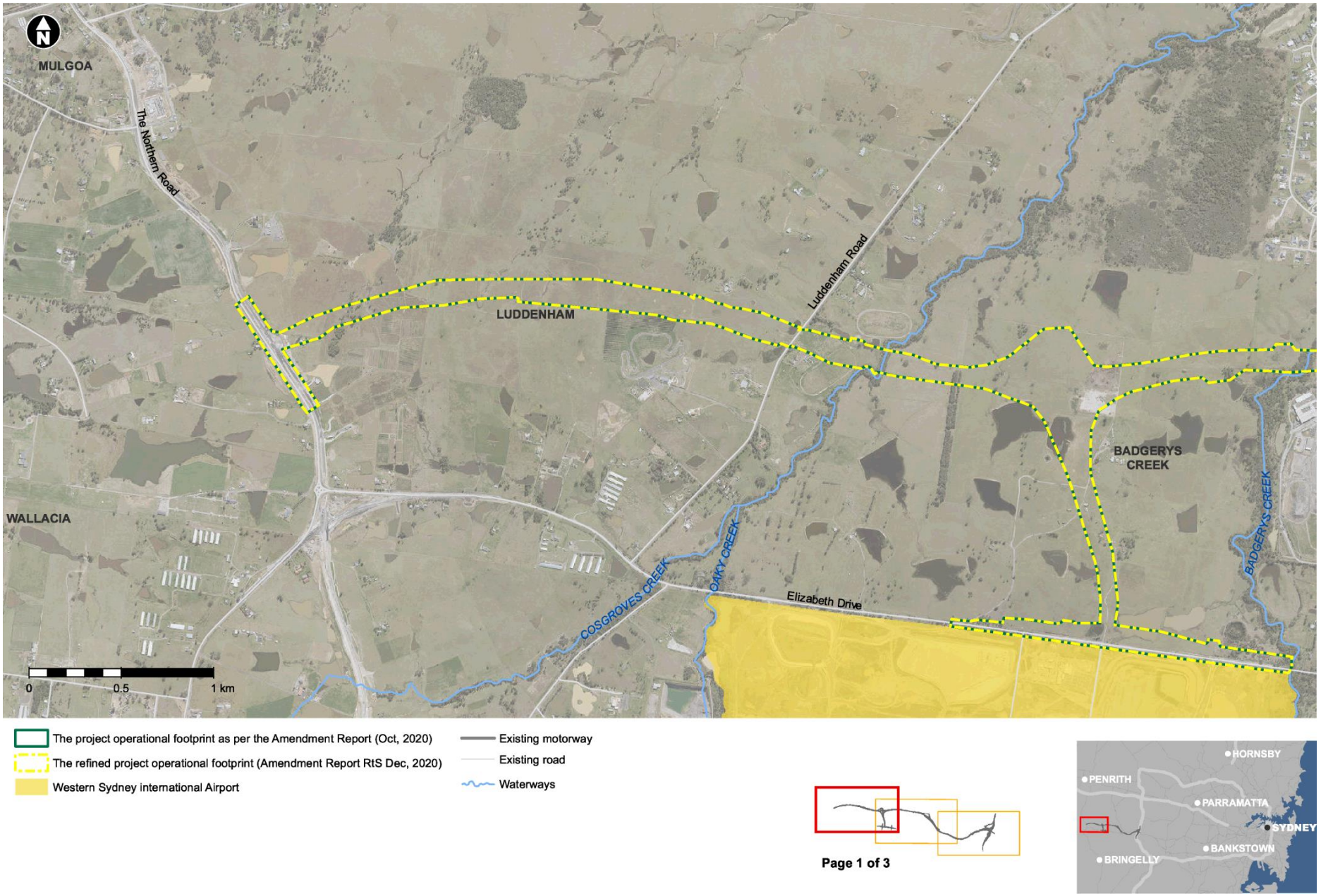


Figure 5-2 Refined project operational footprint

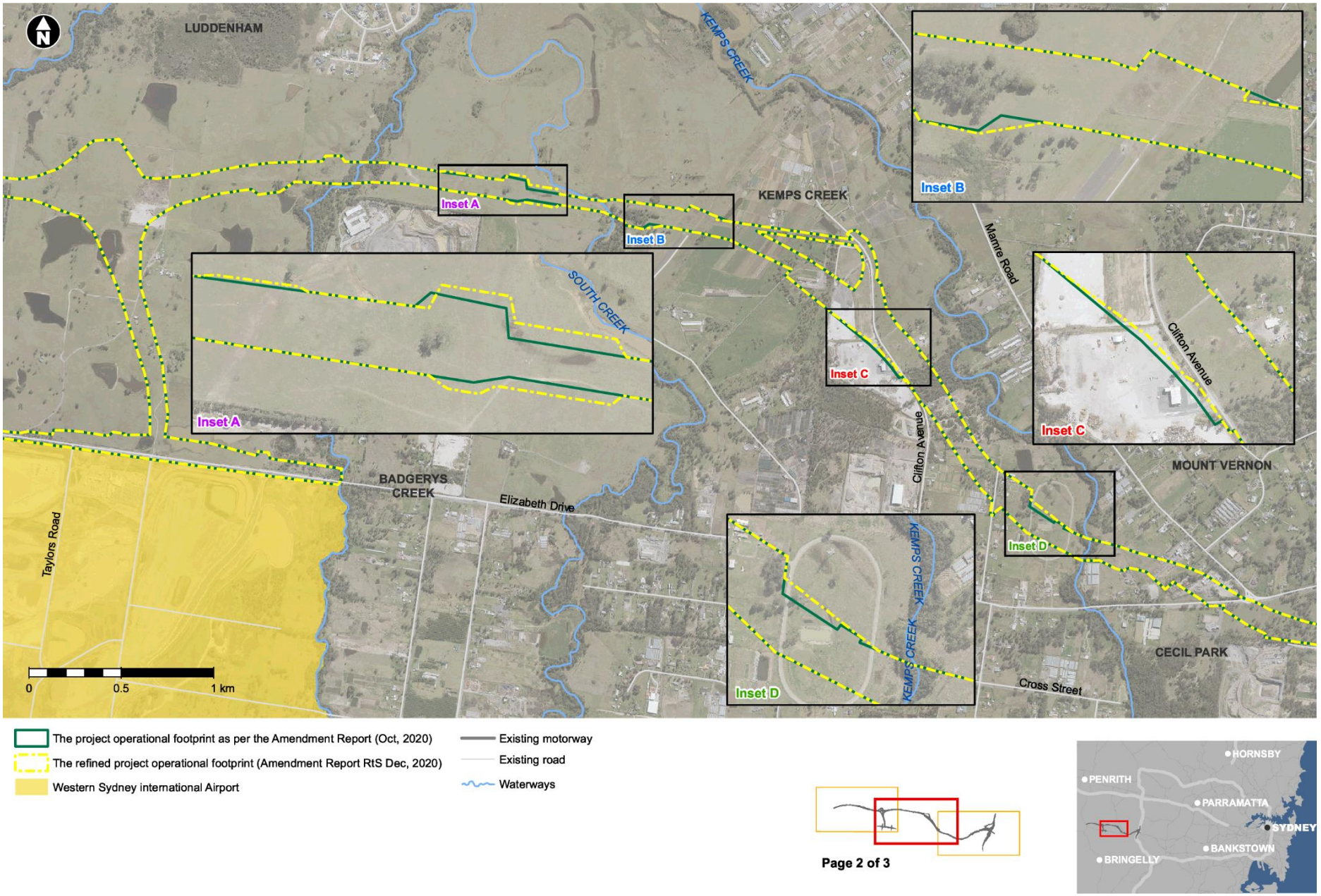


Figure 5-2 Refined project operational footprint

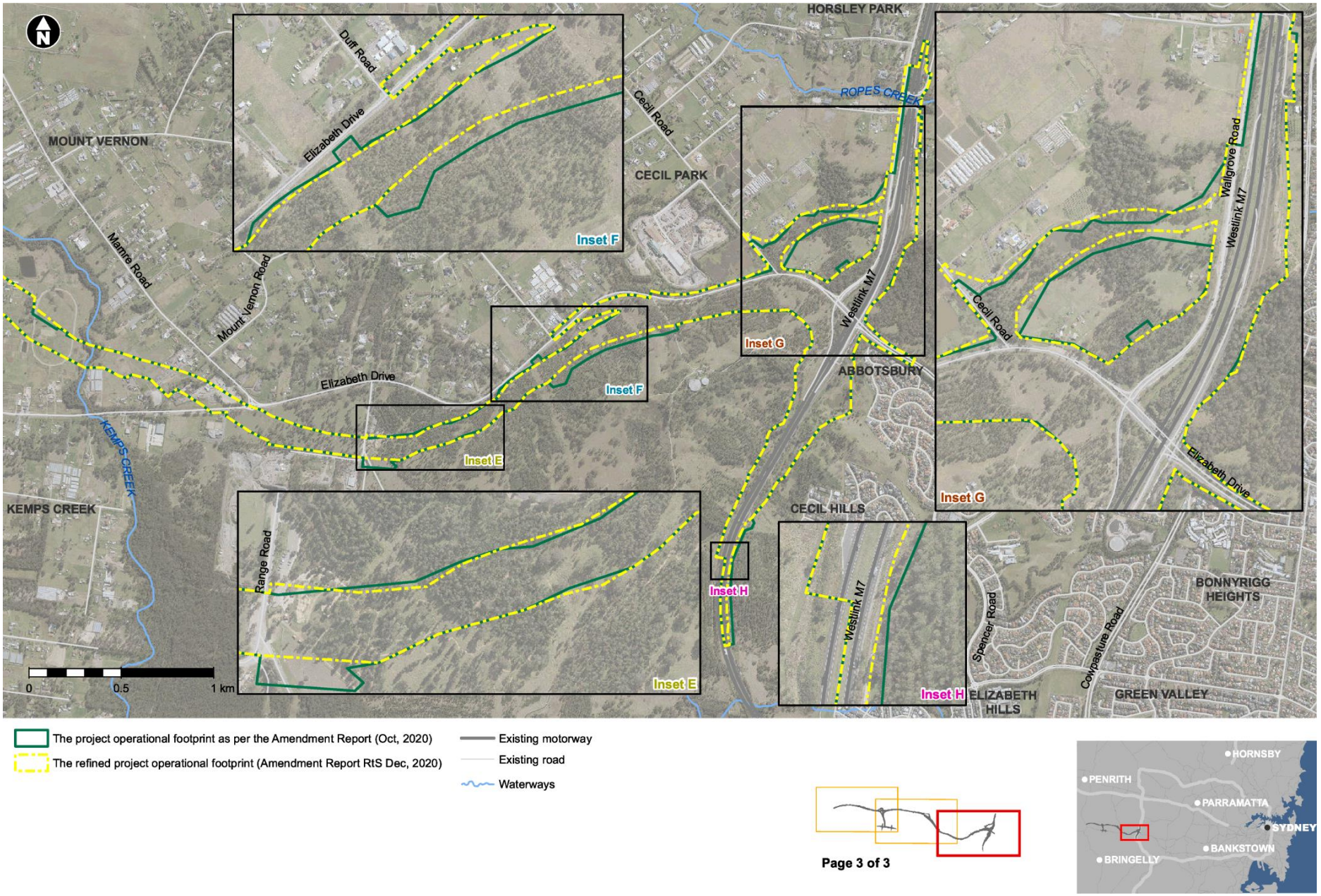


Figure 5-2 Refined project operational footprint

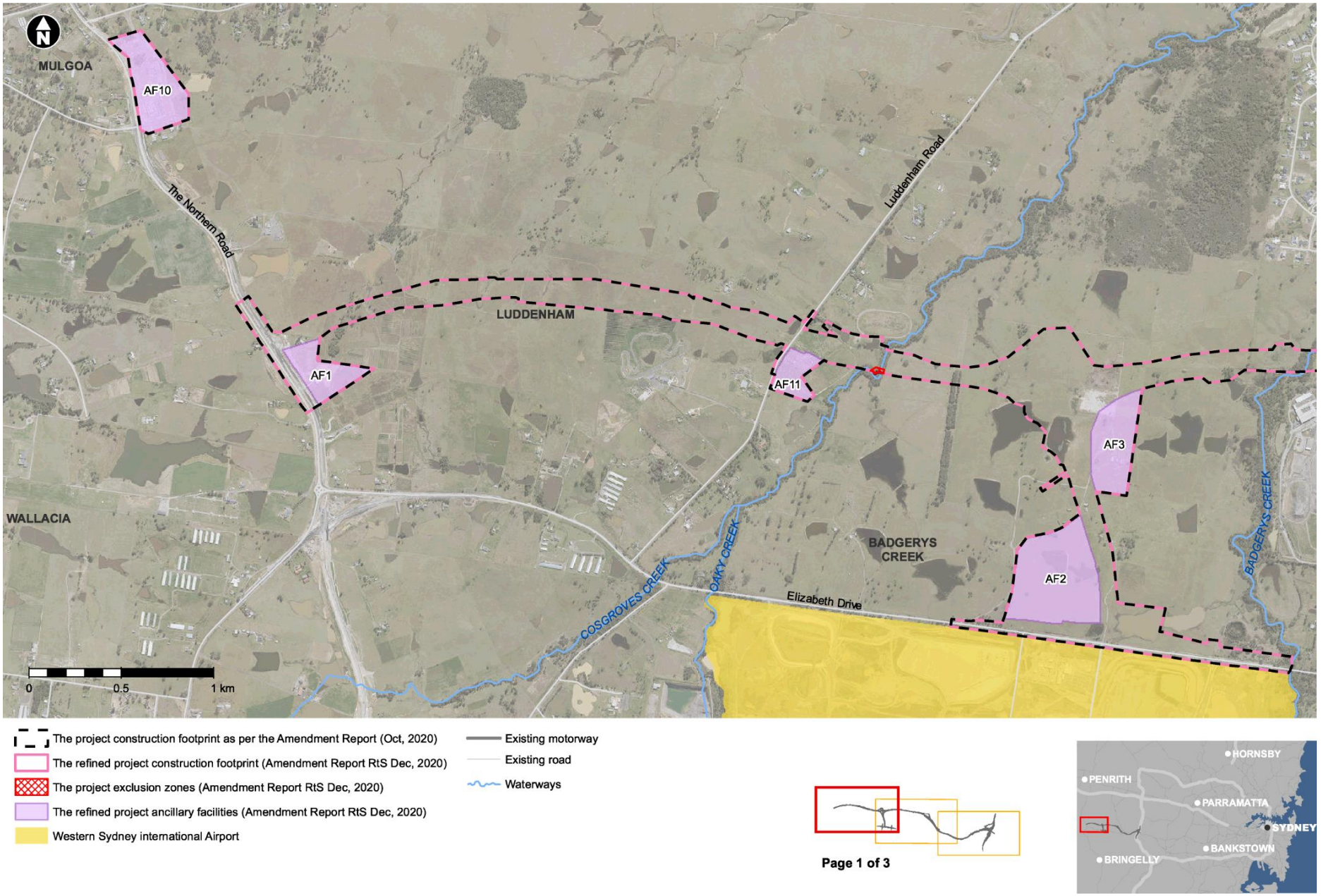


Figure 5-3 Refined project construction footprint

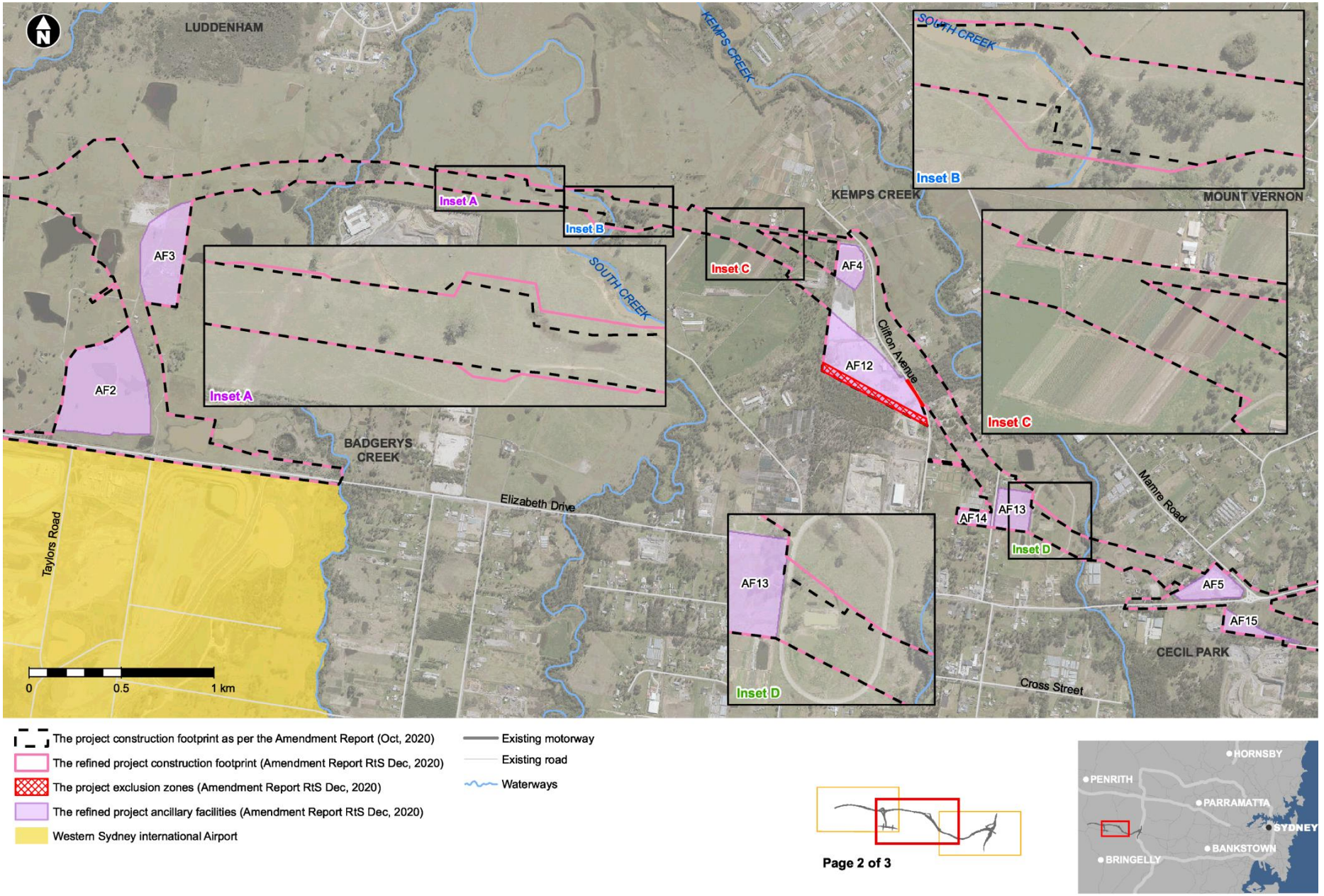


Figure 5-3 Refined project construction footprint

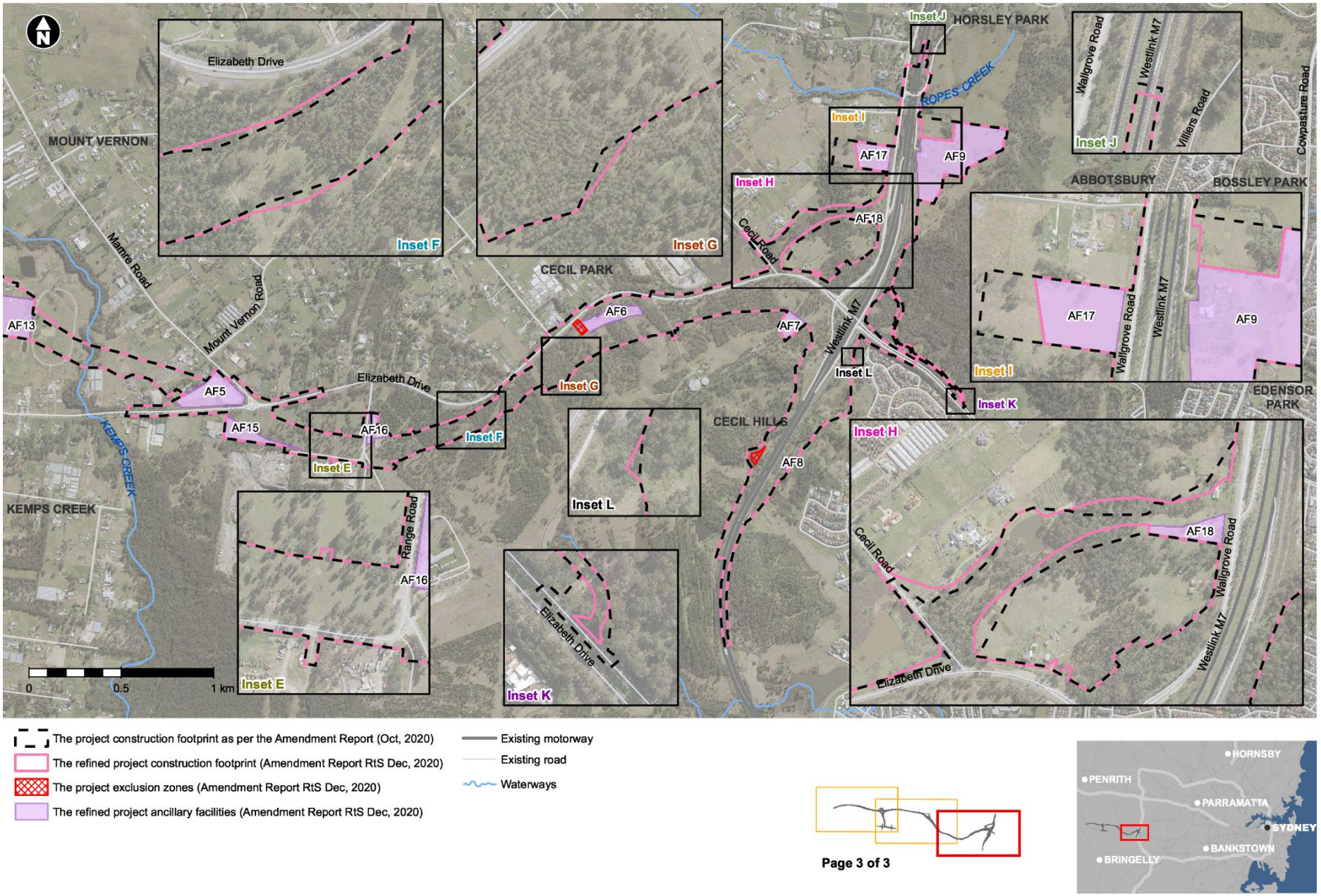


Figure 5-3 Refined project construction footprint

5.4 Project updates

This section provides updates to the project operational road traffic noise mitigation that have occurred as part of the design development and updates to the Western Sydney Aerotropolis Planning Package since the amendment report was prepared. These updates are presented for information purposes only, and do not require further environmental assessment.

5.4.1 Operational road traffic noise mitigation update

Since preparation of the amendment report, design development has progressed, and further noise modelling, analysis and reasonable and feasible consideration of mitigation measures has been carried out in accordance with the Noise Mitigation Guideline (NMG) (Roads and Maritime, 2015).

Operational road traffic noise mitigation in the amendment report

The amendment report (Appendix G) included a preliminary feasible and reasonable assessment of operational mitigation measures to inform the detailed design stage of the project. This included preliminary assessment for pavement selection, noise barriers and architectural treatment. As stated in the amendment report, preferred noise mitigation options (low noise pavement, noise barriers, at-property treatments, or a combination of these) should be regarded as indicative and will be finalised during detailed design.

The amendment report preliminary feasible and reasonable assessment of operational mitigation measures concluded:

- The use of quieter pavement types would provide a reduction in operational noise levels across the study area by about 3-5dB depending on the pavement type
- Four noise barriers were identified for further reasonable and feasible consideration during detailed design, based on predicted noise attenuation benefit. These were:
    - NW.02, located along the northern boundary of the amended project, east of South Creek to Clifton Avenue overbridge
    - NW.03, located along the northern boundary of the amended project, from Clifton Avenue overbridge to Kemps Creek
    - NW.04, located along the northern boundary of the amended project, from Kemps Creek to Western Sydney Parklands
    - NW.06, located along the southern boundary of the amended project, between Clifton Avenue overbridge and Elizabeth Drive
- Four noise barriers were identified not to be feasible based on predicted noise benefit and were not further considered during the concept design. These were:
    - NW.01, located along the northern boundary of the amended project west of Luddenham Road to the WSIA interchange
    - NW.05, located along the northern boundary of the amended project, within the Western Sydney Parklands
    - NW.07, located along the northern boundary of the realigned Wallgrove Road, extending 360 m from Cecil Road
    - NW.08, located along the northern boundary of the amended project, east of the interchange with the future WSIA
- Additional receivers were identified as eligible for consideration of additional noise mitigation using guidance from the NMG (Roads and Maritime, 2015).

Updated operational road traffic noise mitigation

Since the preparation of the amendment report, diamond grind concrete pavement has been selected as the pavement type for the main alignment of the M12 Motorway. This pavement type would reduce the overall noise levels across the study area by about 3 dB when compared to plain concrete which was the assumed pavement type for the EIS and amendment report assessments. Dense graded asphalt would likely be the pavement type used for ramps and bridges for the project.

In accordance with the NMG, an assessment of the feasibility and reasonableness of the identified noise barriers, including a visual impact assessment, was undertaken to determine which, if any should be taken forward for implementation as part of the project. In the context of the planned Western Sydney Aerotropolis, current and changing land use and zoning was also considered, along with the cumulative noise impact from operation of the WSIA.

Table 5-4 provides an updated analysis of each noise barrier while Figure 5-4 shows the location of these barriers and their predicted insertion loss. This analysis is based on the amendment report design and refined alignment of Wallgrove Road realignment as outlined in section 5.2.

Table 5-4 Updated noise barrier analysis

ID	Indicative location and dimension	Potential visual impact with barrier	Number of potentially benefiting receivers and NCA	Assessment results/discussion
NW.02	Along the northern boundary of the amended project, east of South Creek to Clifton Avenue overbridge. NW.02 would be about 914 m long and 4 m high	Moderate-low (viewpoint 11 in the EIS) Negligible (viewpoint 12 in the EIS)	Four receivers in NCA07	• Four receivers achieve at least a 2 dB insertion loss • The noise barrier does not achieve the required insertion loss of at least 5 dB and therefore has not been considered further in accordance with the NMG. Discussion: • 6 out of 10 residences would still require at-property treatments with a noise barrier in place • Since the amendment report, further design development in this area of the project has resulted in NW.02 being moved further from the road to allow for maintenance access and provision of the shared user path, the vertical alignment of the road has also been lowered in this area. These design refinements have reduced the effectiveness of the barrier when compared to the amendment report design.
NW.03	Along northern boundary of project, from Clifton Avenue overbridge to Kemps Creek. NW.03 would be about 1978 m long and 5 m high	Negligible (viewpoint 13 in the EIS) High-moderate (viewpoint 16 in the EIS)	16 receivers in NCA03	The noise barrier would provide an insertion loss of: • 7.7dB maximum benefit at a single isolated residence • No other receiver would receive at least a 5dB insertion loss from this barrier • 16 receivers achieve at least a 2dB insertion loss. Discussion: • Land between the Motorway and the receivers is subject to future development with changed land uses under the Western Sydney Aerotropolis Plan, including commercial and light industry, reducing the future effectiveness of the barrier • No future residential land uses would be allowed under the Western Sydney Aerotropolis Plan

ID	Indicative location and dimension	Potential visual impact with barrier	Number of potentially benefiting receivers and NCA	Assessment results/discussion
				• A large proportion of wall would be demolished as part of the proposed future Mamre / Devonshire road connection • NW.03 would be located directly under one of the future flight paths for the WSIA • 12 out of 18 residences would still require at-property treatment with a wall in place • Design and constructability issues associated with building a 5 metre high wall on a bridge.
NW.04	Along northern boundary of project, from Kemps Creek to Elizabeth Drive. NW.04 would be about 748 m long and 5 m high	High-moderate (viewpoint 17 in the EIS) Moderate-Low (viewpoint 18 in the EIS)	8 receivers in NCA04	The noise barrier would provide an insertion loss of: • 7.2dB for the most benefiting receiver and 6.2 dB for one other receiver. However, the benefit was found to be due to the building shielding noise from Mamre Road. This introduces a pocket of lower noise behind the building. The barrier is not predicted to achieve a 5 dBA insertion loss on the other façades of the building. • Overall 8 receivers achieve an insertion loss of at least 2dB. Discussion: • The barrier would require a substantial structural element to be constructed in landscape identified as having a high visual sensitivity and would increase the resulting visual impact of the project • NW.04 would be partly located under one of the future flight paths for the WSIA • The barrier would not provide a noise attenuation benefit to residences to the north-east of the project that is outside of the Western Sydney Aerotropolis Plan 2020. This land is currently impacted by noise from Mamre Road during the day and night, which would remain the case in 2036 if the M12 was not built. • 70 out of 71 triggered residences would still require at-property treatment with a wall in place • The noise barrier would require a gap to allow for the 500kV transmissions line.
NW.06	Along southern boundary of project, between Clifton Avenue overbridge and Elizabeth Drive. NW.06 would be about 2243 m long and 5 m high	Moderate-Low (viewpoint 15 in the EIS) High-moderate (viewpoint 16 in the EIS)	23 receivers in NCA04 and NCA06	The noise barrier would provide an insertion loss of: • 7.2dB for the most benefiting receiver and 7.0 dB for one other receiver • Overall 23 receivers achieve an insertion loss of at least 2dB. Discussion: • A large proportion of wall would be demolished as part of the proposed future Mamre / Devonshire road connection • The barrier would require a substantial structural element to be constructed in landscape identified as

ID	Indicative location and dimension	Potential visual impact with barrier	Number of potentially benefiting receivers and NCA	Assessment results/discussion
				having a moderate visual sensitivity and would increase the resulting visual impact of the project • NW.06 would be partly located under one of the future flight paths for the WSIA • 40 out of 47 triggered residences would still require at-property mitigation • The noise barrier would require a gap to allow for the 500kV transmissions line.

Based on the above, the inclusion of these noise barriers for the project is not considered reasonable for the following reasons:

- Expected changes in land use and future development in the area surrounding the M12 Motorway due to the Western Sydney Aerotropolis Plan would reduce the effectiveness of the barriers in the long term
- Expected changes to the surrounding noise environment as a result of the 24 hour operation of the WSIA would also reduce the effectiveness of the barriers in the long term, especially the outdoor noise benefit usually achieved by barriers
- Expected construction of the Devonshire / Mamre Road connection would result in the demolition of a large portion of NW.03 and NW.06 in the future to enable this connection
- Increased visual impact from noise barriers NW.04 and NW.06
- No expected noise attenuation benefit to residences to the north-east of the project area (outside of the Western Sydney Aerotropolis Plan 2020) due to existing noise from Mamre Road
- Nearly all residual receivers would still require at-property treatment should a noise barrier be provided.

Noise barriers NW.02, NW.03, NW.04 and NW.06 are no longer proposed for the project. A combination of low noise diamond grind continuous reinforced concrete pavement and at-property treatments would be provided for operational road traffic noise mitigation.

Noise modelling would continue to be completed during further design development to confirm the operational noise mitigation management measures for the project.

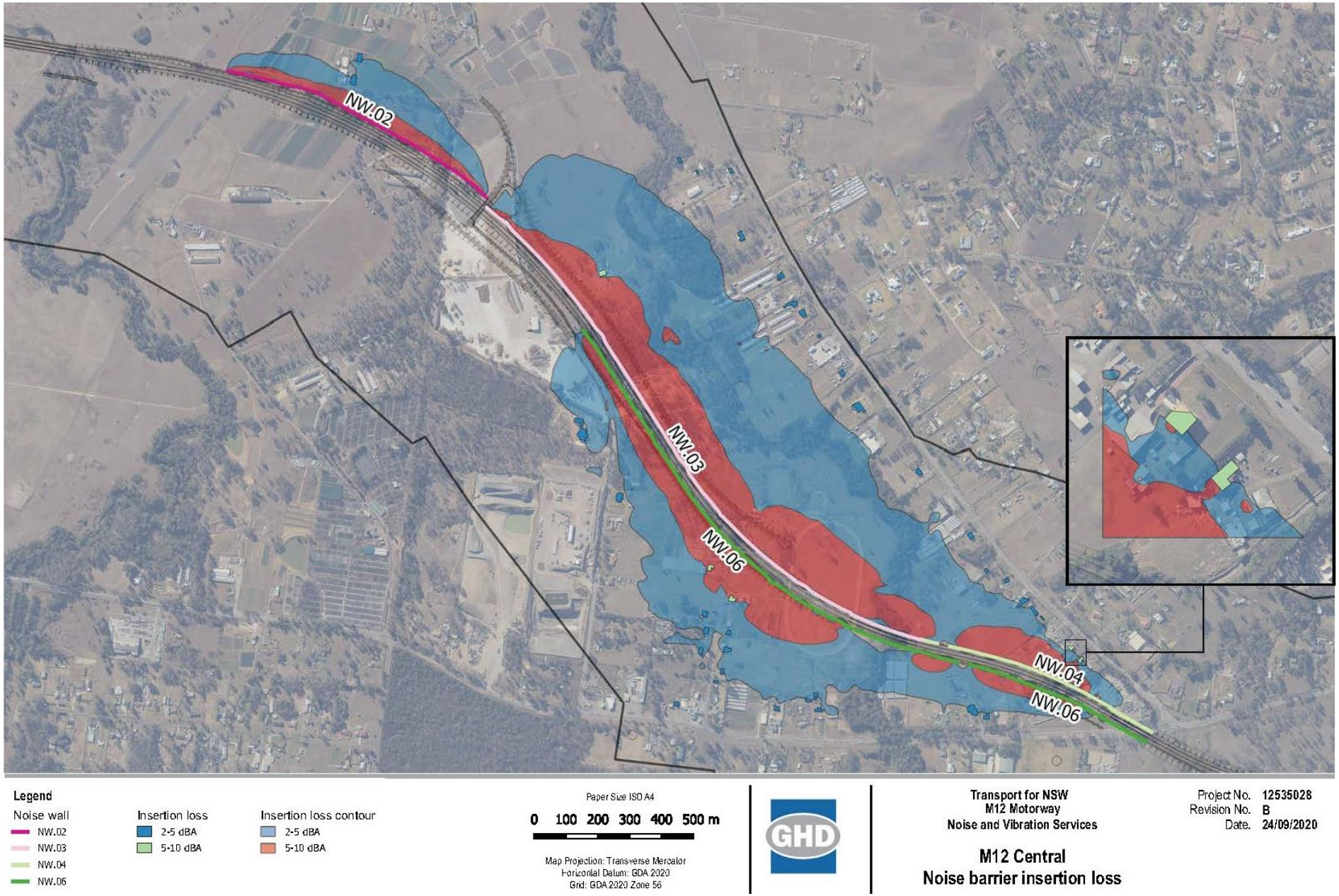


Figure 5-4 Indicative locations of noise barriers considered and predicted insetion loss

5.4.2 Western Sydney Aerotropolis Planning Package update

Since the amendment report was prepared, the Western Sydney Aerotropolis State Environmental Planning Policy (SEPP) came into effect on 1 October 2020.

The SEPP aims to facilitate the development of the Western Sydney Aerotropolis Plan (WSAP) which outlines the NSW Government's vision for the Aerotropolis. It also aims to ensure development is compatible with the long-term growth and development of the WSIA and other critical transport infrastructure. The SEPP applies to land within the Aerotropolis and areas beyond the Aerotropolis, where that land is affected by airport safeguarding considerations.

The project would continue to support the implementation of the WSAP. As stated in Section 3.1.6 of the EIS, the M12 Motorway is listed as 'committed transport infrastructure' under this plan and would connect the Aerotropolis to the Western Sydney Airport and the rest of western Sydney. The project would enable jobs in the Aerotropolis to be easily accessible.

5.4.3 Western Sydney Aerotropolis Draft Precinct Plans

Since the amendment report was prepared, draft plans for the Aerotropolis Core, Badgerys Creek, Wianamatta-South Creek, Agribusiness and Northern Gateway Precincts have been drafted by DPIE. The draft precinct plans establish the strategic vision and general objectives, proposed land uses, performance criteria for development of land, and the approach to both infrastructure and water cycle management.

The draft precinct plans set up centre hierarchy and the strategic transport, land use, open space, height and built form frameworks for the lands covered by the plan. The draft precinct plans acknowledge the M12 Motorway alignment as presented in this report.

5.4.4 Western Sydney draft place-based infrastructure area report

Since the amendment report was prepared, the *Draft Place-based Infrastructure Area report* (Greater Sydney Commission, 2020) was placed on exhibition for public comment. This draft report is set to support economic hubs of new industries in the centre of the Western Parkland City and it covers an area of about 36,000 hectares of land spanning from Greater Penrith through to the planned Airport to Glenfield.

The report acknowledges the M12 Motorway as part of the city building infrastructure projects that would contribute towards the Western Parkland City vision.

6. Environmental assessment

6.1 Environmental impact screening assessment

An environmental impact screening assessment was carried out for the Wallgrove Road realignment design refinement (refer to Section 5.2) and for the project operational and construction footprints refinement (refer to Section 5.3) to determine if these refinements could result in consequential changes to any of the impacts as presented in the amendment report.

Where the initial screening assessment identifies that the refinements were unlikely to result in a change to the potential impacts as presented in the EIS and amendment report, no further assessment was required. Additional environmental impact assessment has been provided where a potential change to impact was identified in the environmental impact screening.

Where impacts may change from that as described in the EIS and amendment report, the assessment should be read in conjunction with the EIS and amendment report.

The environmental impact screening assessment is presented in Table 6-1. Table 6-1 identifies the environmental aspects where additional environmental assessment of the proposed refinements is required and the aspects where no further assessment is required. Where further detailed assessment is required, this, along with any amended mitigation measures, are provided in Sections 6.2 to 6.4.

Table 6-1 Environmental screening assessment

Environmental aspect	Changes to any of the impacts as presented in the amendment report	Further assessment required?
Biodiversity	Yes. Changes to vegetation clearing area based on refined construction footprint.	Yes. Refer to Section 6.2.
Transport and traffic	Yes. Changes on traffic performance from the Wallgrove Road realignment design refinement.	Yes Refer to Section 6.3.
Urban design, landscape character and visual amenity	No. Although the refinement of the Wallgrove Road realignment discussed in Section 5.2.1 would result in the alignment moving closer to a number of nearby properties and in the removal of some vegetation between these properties and the project, there would be minimal change in the context of the impacts of the project as a whole. Impacts can be managed through the revised environmental management measures described in **Chapter 7** of this report.	No
Socio-economic, land use and property	Yes. Changes to property acquisition area based on refined operational and construction footprints.	Yes. Refer to Section 6.4.
Aboriginal heritage	No. The proposed refinements would not result in changes to the potential Aboriginal heritage impacts identified in the amendment report.	No

Environmental aspect	Changes to any of the impacts as presented in the amendment report	Further assessment required?
Non-Aboriginal heritage	No. The proposed refinements would not result in changes to the potential non-Aboriginal heritage impacts identified in the amendment report.	No
Noise and vibration	No. Although the refinement of the Wallgrove Road realignment discussed in Section 5.2 would result on the alignment moving closer to a number of sensitive receivers, there would be minimal change in the context of the impacts of the project as a whole. Impacts can be managed through the revised environmental management measures described in **Chapter 7** of this report.	No
Flooding	No. The Wallgrove Road realignment refinement is likely to change the flood modelling predictions for the local drainage catchment as presented in the EIS. However the environmental management measures described in **Chapter 7** of this report already commit to carry out further flood investigations and hydrological and hydraulic modelling to ensure the flood immunity objectives and design criteria for the project are met. The modelling will be used to define the nature of both main stream flooding and major overland flow along the full length of the project corridor under pre- and post- project conditions and to define the full extent of any impact that the project will have on patterns of both main stream flooding and major overland flow.	No
Surface water quality and hydrology	No. The proposed refinements would result in negligible changes to the potential surface water quality and hydrology impacts identified in the amendment report. Impacts can be managed through the revised environmental management measures described in **Chapter 7** of this report.	No
Groundwater quality and hydrology	No. The proposed refinements would not result in changes to the potential groundwater quality and hydrology impacts identified in the amendment report.	No
Soils and contamination	No. The proposed refinements would result in negligible changes to the potential soils and contamination impacts identified in the amendment report. Impacts can be managed through the revised environmental management measures described in **Chapter 7** of this report.	No
Air quality	No. The proposed refinements would not result in changes to the potential air quality impacts identified in the amendment report.	No
Health and safety	No. The proposed refinements would not result in changes to the potential health and safety impacts identified in the amendment report.	No

Environmental aspect	Changes to any of the impacts as presented in the amendment report	Further assessment required?
Sustainability	No. The proposed refinements would not result in changes to the potential sustainability impacts identified in the amendment report.	No
Waste	No. The proposed refinements would not result in changes to the potential waste impacts identified in the amendment report.	No
Climate change risk and greenhouse gas	No. The proposed refinements would not result in changes to the potential climate change risk and greenhouse gas impacts identified in the amendment report.	No

6.2 Biodiversity

This section should be read in conjunction with the project EIS Appendix E Biodiversity Assessment Report (the EIS BAR) and the amendment report Appendix A biodiversity supplementary technical report (amendment report Appendix A).

6.2.1 Summary of additional study and methodology

No additional studies have been conducted for this assessment.

The methodology for this assessment is described in Section 7.1.2 of the EIS and Section 3.1 and Chapter 4 of the EIS BAR. These methodologies contain detailed descriptions and explanations on the assessment guidelines and assessment methods used.

The assessment presented below compares impacts against those documented in the amendment report.

6.2.2 Description of existing environment

This section provides a comparison of landscape features and values, native vegetation and fauna habitat, threatened species and aquatic habitat between the construction footprint as described in the amendment report and the refined construction footprint shown in Figure 5-3.

Landscape values

Section 7.1.3 of the EIS and Section 2.4 of the EIS BAR described the landscape features of the project, and these are updated in Section 4.1 of the amendment report Appendix A.

A review of the refined construction footprint did not identify any change to landscape features compared with the construction footprint presented in the amendment report.

Plant Community Types

Seven Plant Community Types (PCTs) were identified in the construction footprints described in the EIS BAR and amendment report Appendix A. No additional PCTs were identified in the refined construction footprint.

There are some minor differences in the areas of four PCTs within the refined construction footprint compared with the construction footprint as described in the amendment report, as presented in Table 6-2. There are very small increases in the areas of PCTs 724, 835 and 849, and a very small decrease in the area of PCT 850 within the refined construction footprint when compared with the construction footprint as described in the amendment report. There is a net increase of 0.14 hectares of native vegetation to be cleared.

Table 6-2 PCTs identified with the project construction footprint

PCT No.	PCT Name	Area within construction footprint as per the amendment report (October 2020) excluding certified areas (ha)	Area within refined construction footprint (December 2020) excluding certified areas (ha)	Change in area excluding certified areas (ha)
724	Broad-leaved Ironbark - Grey Box - Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion	6.89	6.91	+0.02
830	Forest Red Gum - Grey Box shrubby woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	0.44	0.44	0.00
835	Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	3.01	3.18	+0.17
849	Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	6.24	6.34	+0.10
850	Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion (includes revegetation within Western Sydney Parklands and derived grasslands in Low condition)	60.67	60.52	-0.15
883	Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin Bioregion	0.57	0.57	0.00
1800	Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter valley	2.82	2.82	0.00
Total		**80.64**	**80.78**	**+0.14**

Vegetation zones

Fifteen vegetation zones were identified within the seven PCTs in the construction footprint, as described in Section 3.2.3 of the EIS BAR and Section 4.2.2 of the amendment report Appendix A. The areas of and site values for each vegetation zone within the amendment report construction footprint and the refined construction footprint are listed in Table 6-7 in 6.2.3 of this report and shown on Figure 6-1.

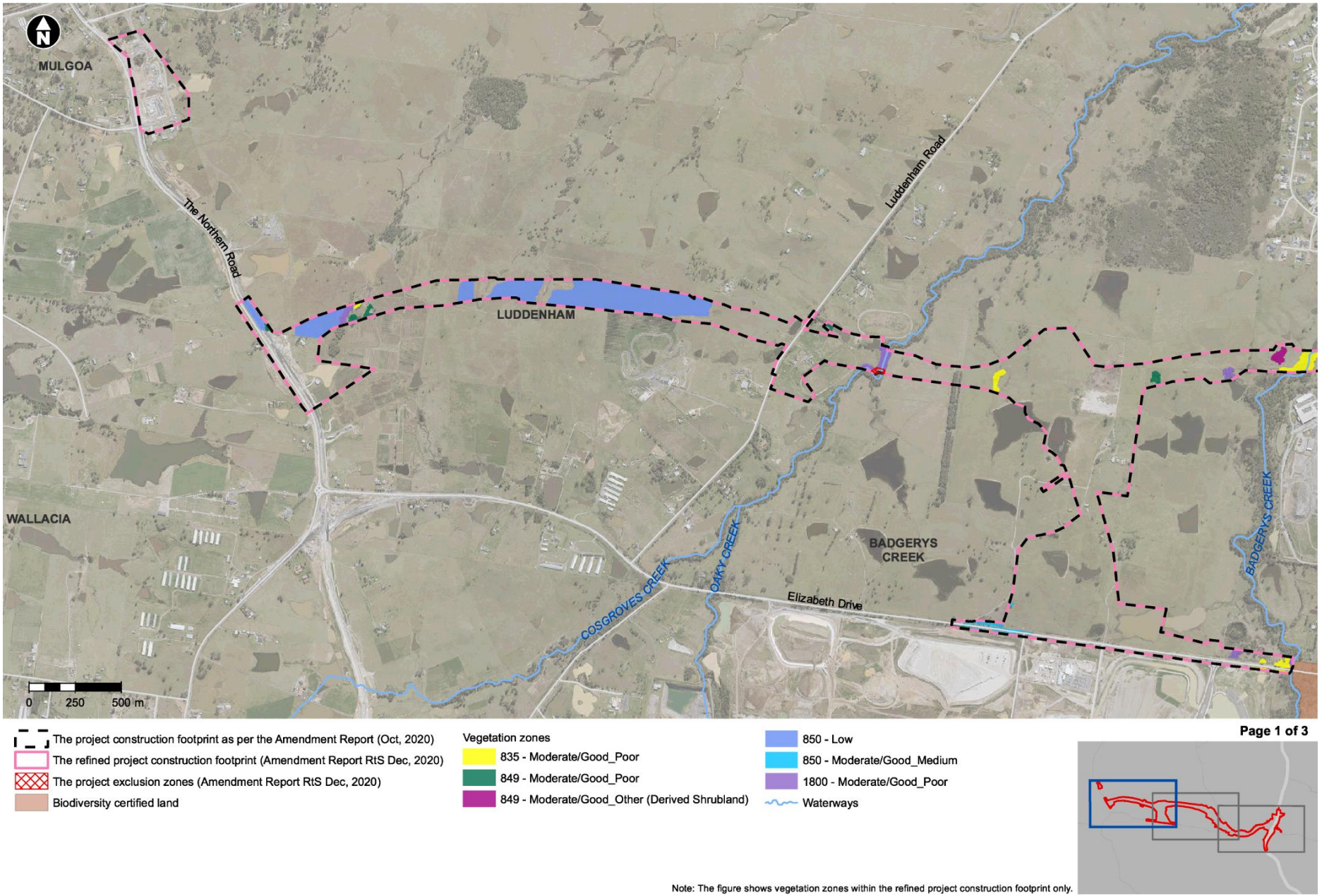


Figure 6-1 Vegetation zones

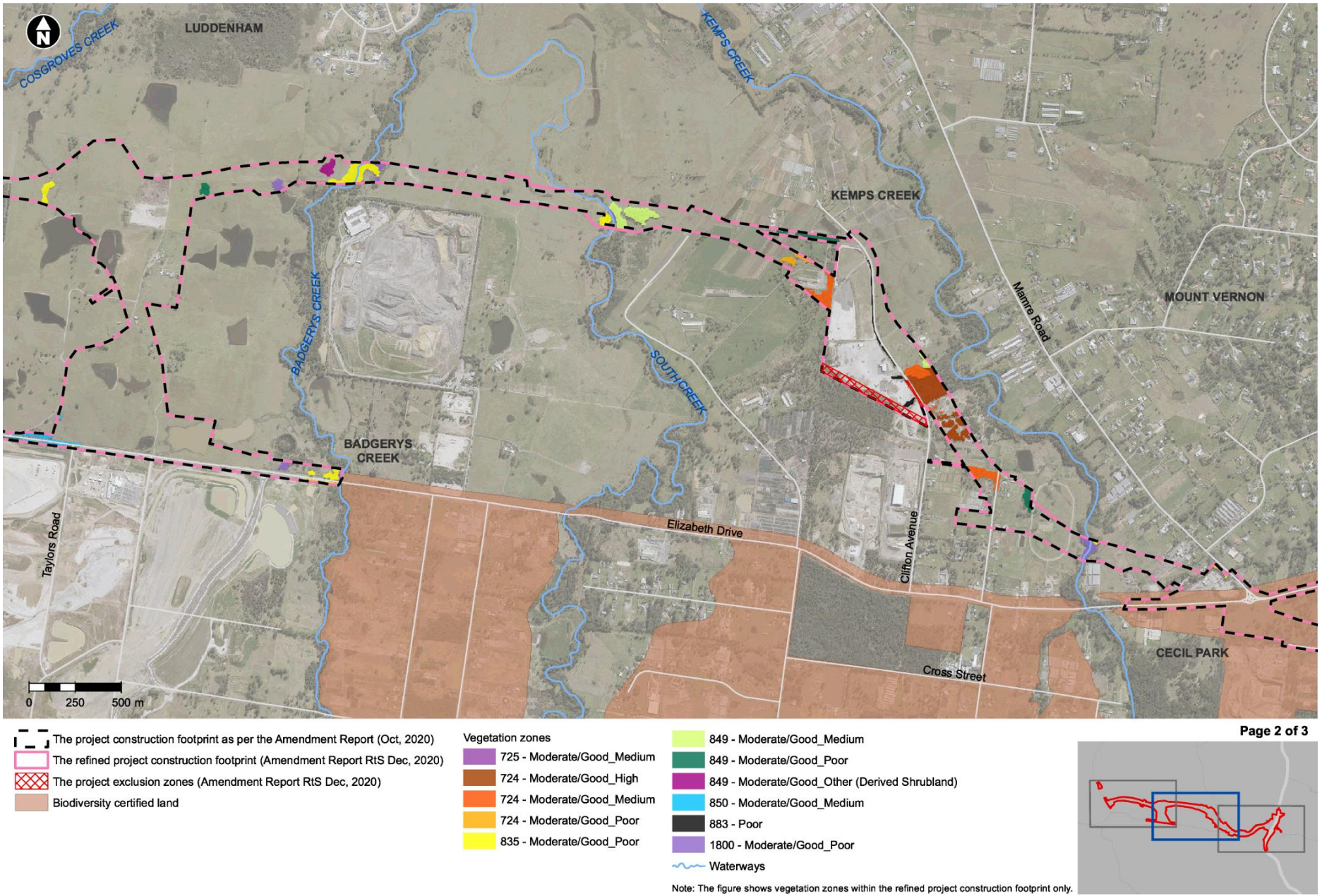


Figure 6-1 Vegetation zones

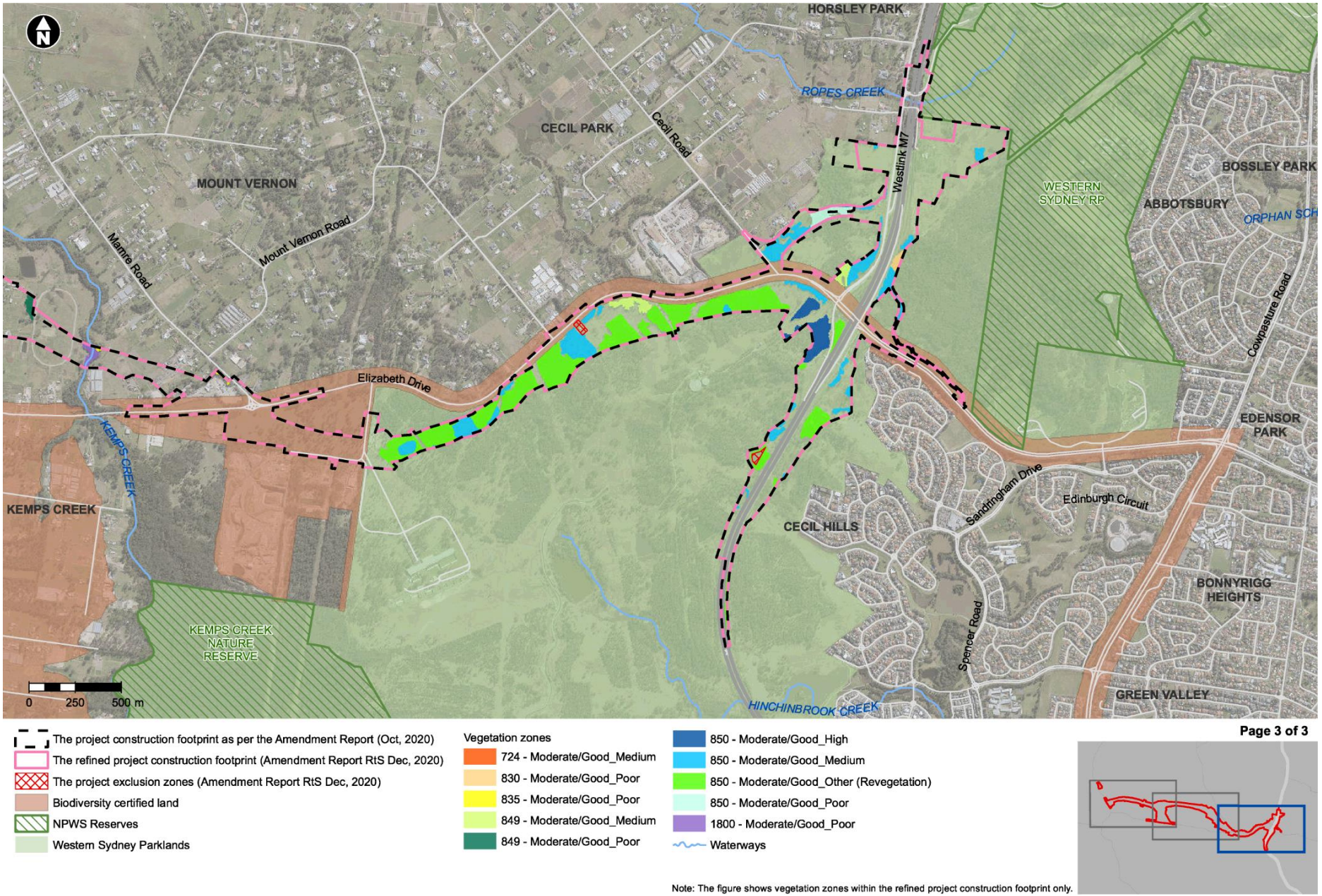


Figure 6-1 Vegetation zones

Threatened ecological communities

Six of the PCTs in the construction footprint as described in the amendment report were found to meet the criteria for five threatened ecological communities (TECs) listed under the TSC Act. One PCT (PCT 883) was excluded from further assessment as it did not meet the description of the associated TEC as defined under the TSC Act. No additional TECs were identified in the refined construction footprint.

The refined construction footprint contains some minor differences in areas in comparison to the construction footprint as described in the amendment report for three TECs, as presented in Table 6-3 and shown on Figure 6-2.

Table 6-3 Threatened ecological communities under the TSC Act

TEC Name	TSC Act Status	PCT(s)	Area within construction footprint as per the amendment report (October 2020) excluding certified areas (ha)	Area within refined construction footprint (December 2020) excluding certified areas (ha)	Change in area excluding certified areas (ha)
Shale Gravel Transition Forest in the Sydney Basin Bioregion	Endangered	724	6.89	6.91	+0.02
Moist Shale Woodland in the Sydney Basin Bioregion	Endangered	830	0.44	0.44	0.00
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Endangered	835	3.01	3.18	+0.17
Cumberland Plain Woodland in the Sydney Basin Bioregion	Critically Endangered	849 850	66.91 (includes about 24.31 ha of revegetation and about 18.06 ha of derived native grassland in Low condition)	66.86 (includes about 24.58 ha of revegetation and about 18.07 ha of derived native grassland in Low condition)	-0.05 (includes an increase of about 0.27 ha of revegetation and about 0.01 ha of derived native grassland in Low condition)
Swamp oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner bioregions	Endangered	1800	2.82	2.82	0.00
Total			**80.07**	**80.21**	**+0.14**

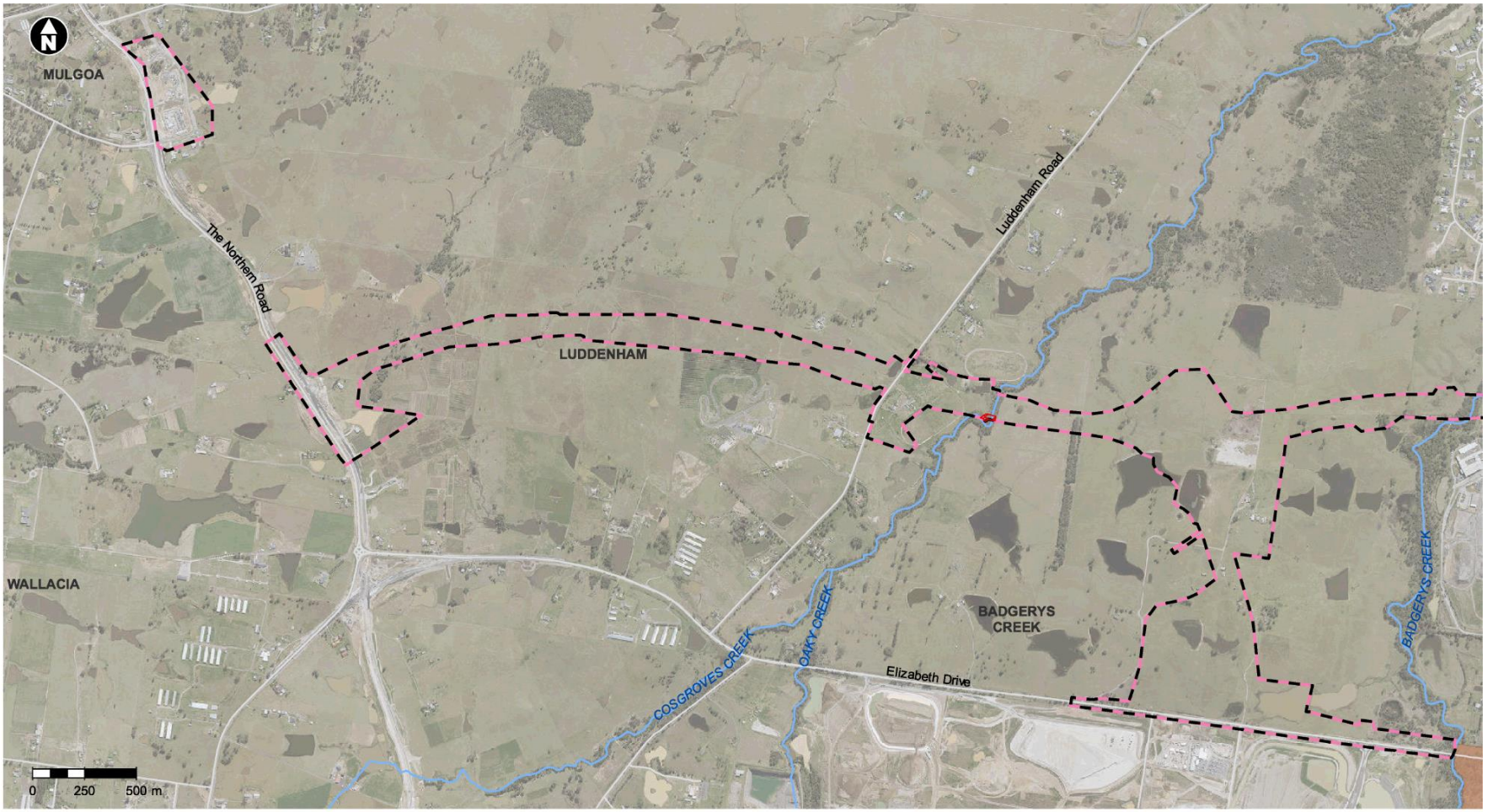


Figure 6-2 Threatened ecological communities under the TSC Act

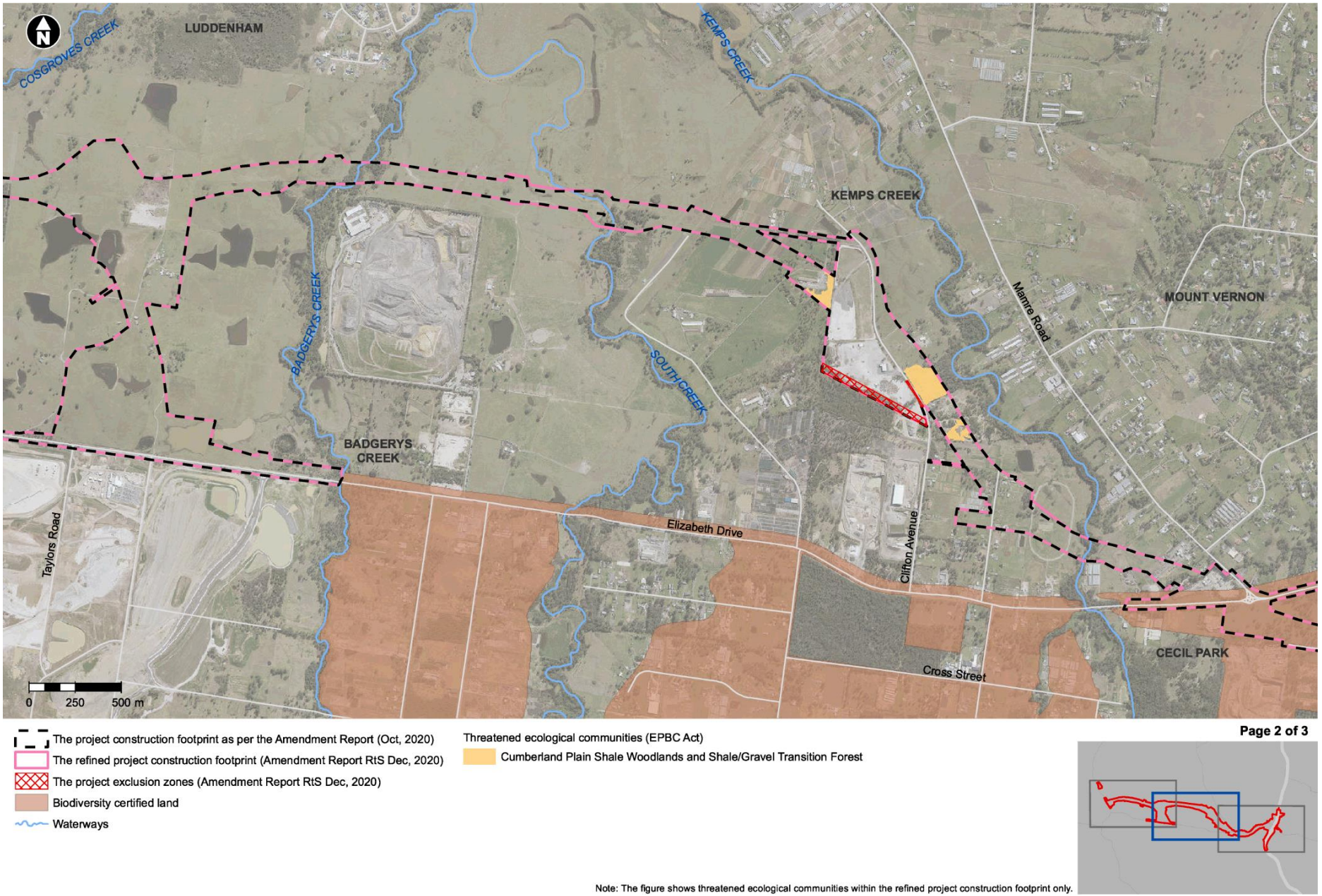


Figure 6-2 Threatened ecological communities under the TSC Act

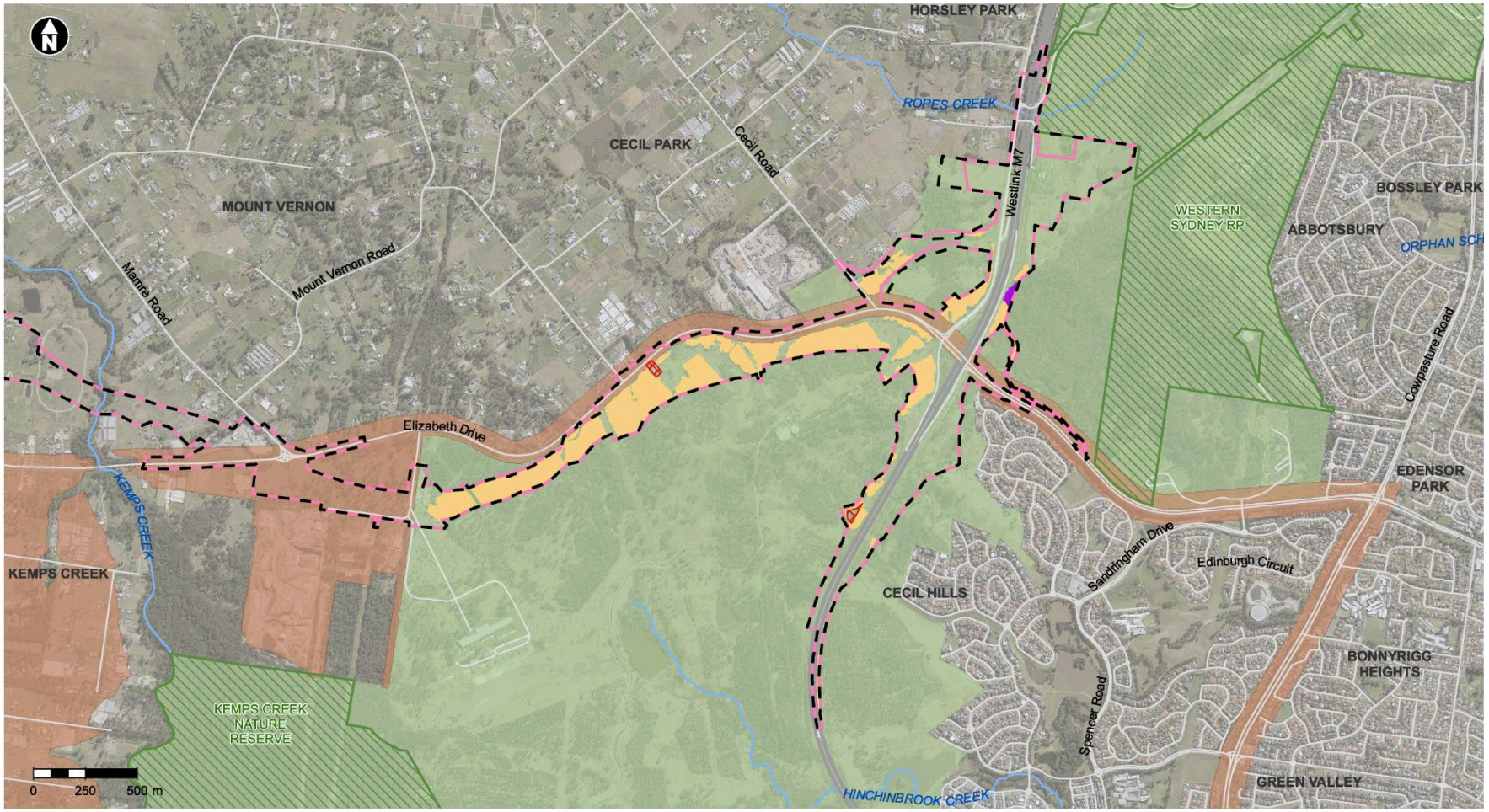


Figure 6-2 Threatened ecological communities under the TSC Act

Four of the PCTs in the construction footprint as described in the amendment report were found to meet the criteria for two TECs listed under the EPBC Act. No additional TECs listed under the EPBC Act were identified in the refined construction footprint.

The refined construction footprint contains some minor differences in areas in comparison to the construction footprint as described in the amendment report for one TEC listed under the EPBC Act: Cumberland Plain Woodland in the Sydney Basin Bioregion (Table 6-4). The increase of 0.42 ha of areas of this TEC within the refined construction footprint is mainly located in additional areas in Western Sydney Parklands to the west of the M7 (Figure 6-3).

Table 6-4 Threatened ecological communities under the EPBC Act

TEC Name	TSC Act Status	PCT(s)	Area within construction footprint as per the amendment report (October 2020) excluding certified areas (ha)	Area within refined construction footprint (December 2020) excluding certified areas (ha)	Change in area excluding certified areas (ha)
Cumberland Plain Woodland in the Sydney Basin Bioregion	Critically Endangered	724 849 850	42.47 (includes about 22.04 ha of revegetation)	42.89 (includes about 22.05 ha of revegetation)	+0.42 (includes an increase of about 0.01 ha of revegetation)
Western Sydney Dry Rainforest and Moist Woodland on Shale	Critically Endangered	830	0.44	0.44	0.00
Total			**42.91**	**43.33**	**+0.42**

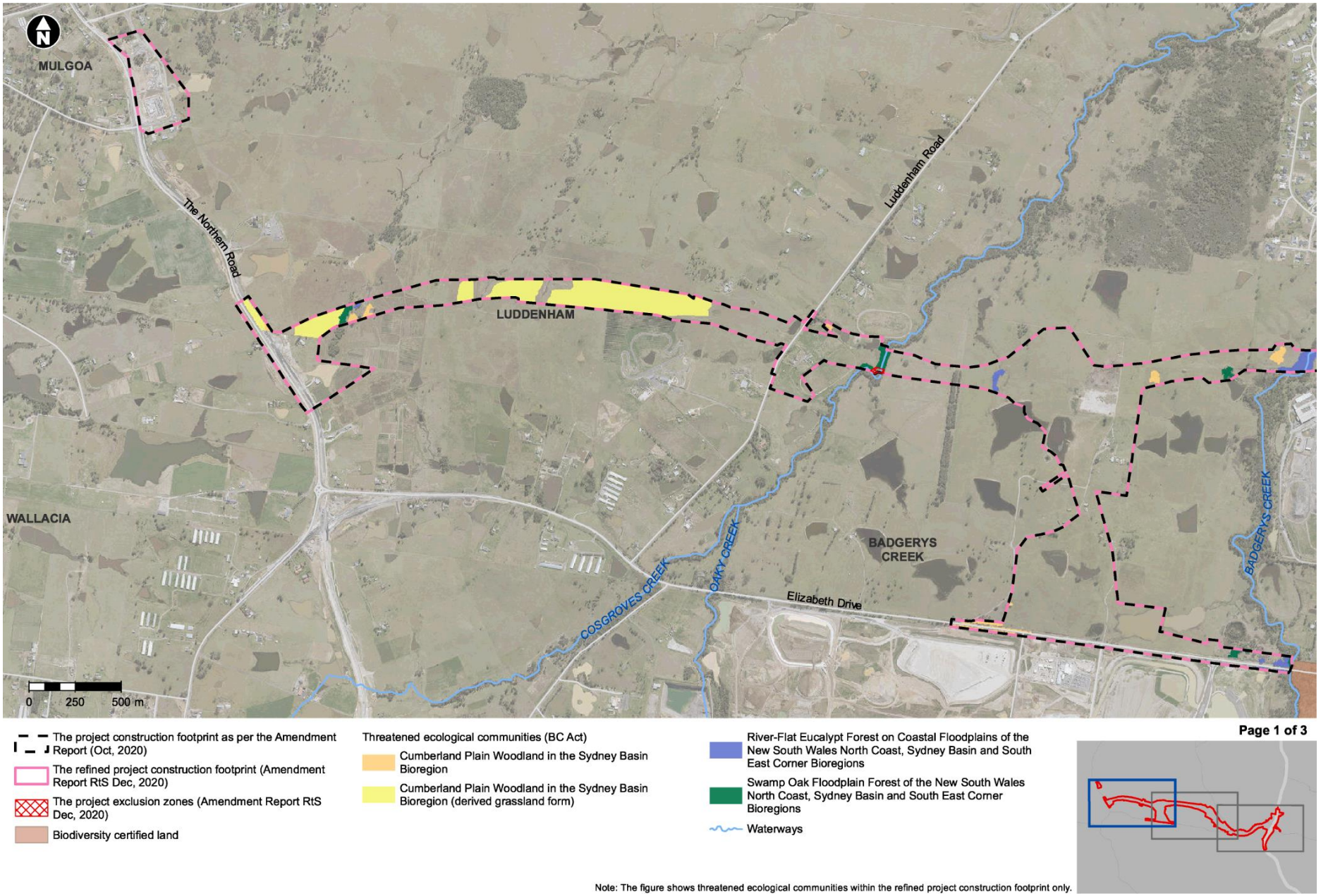


Figure 6-3 Threatened ecological communities under the EPBC Act

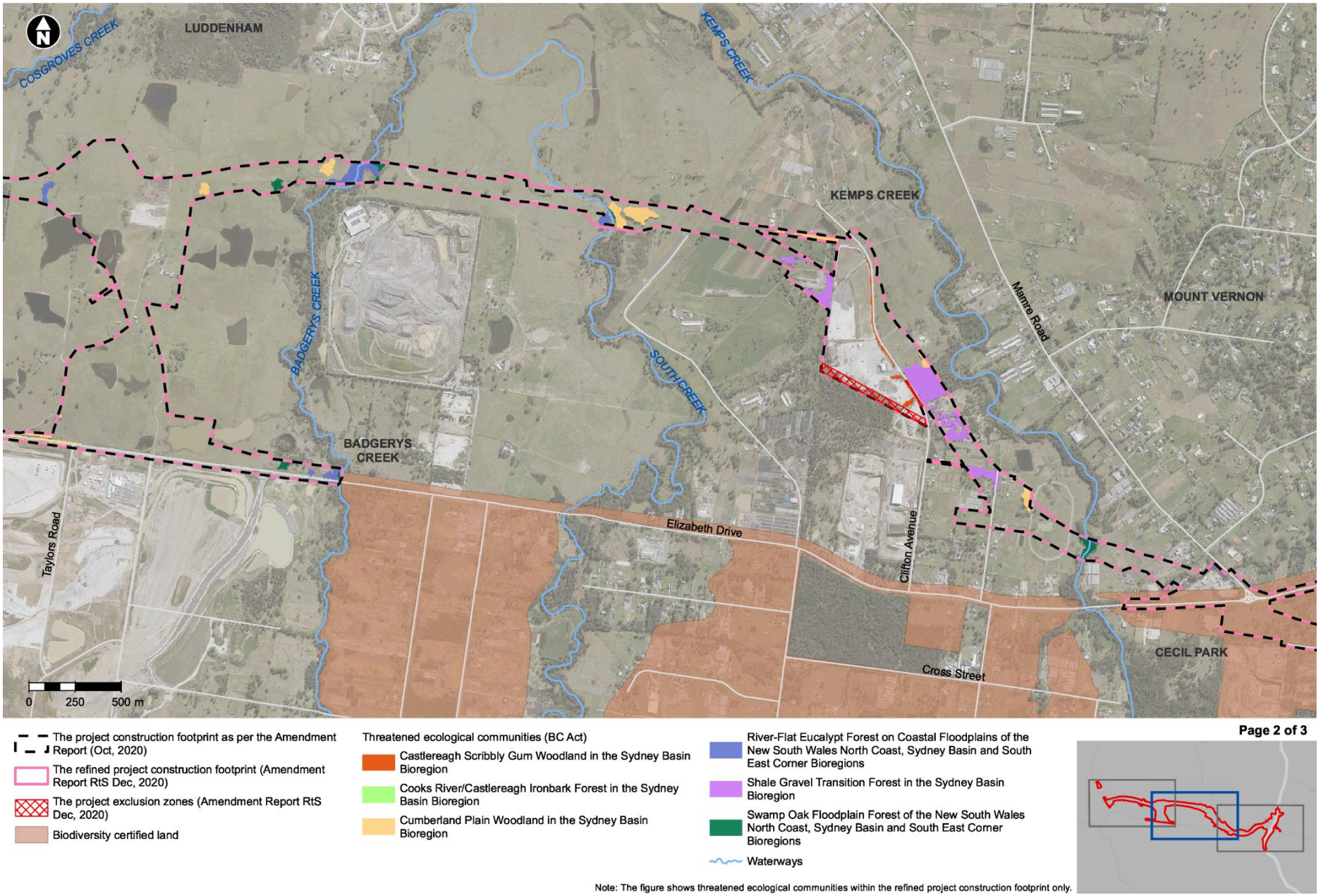


Figure 6-3 Threatened ecological communities under the EPBC Act

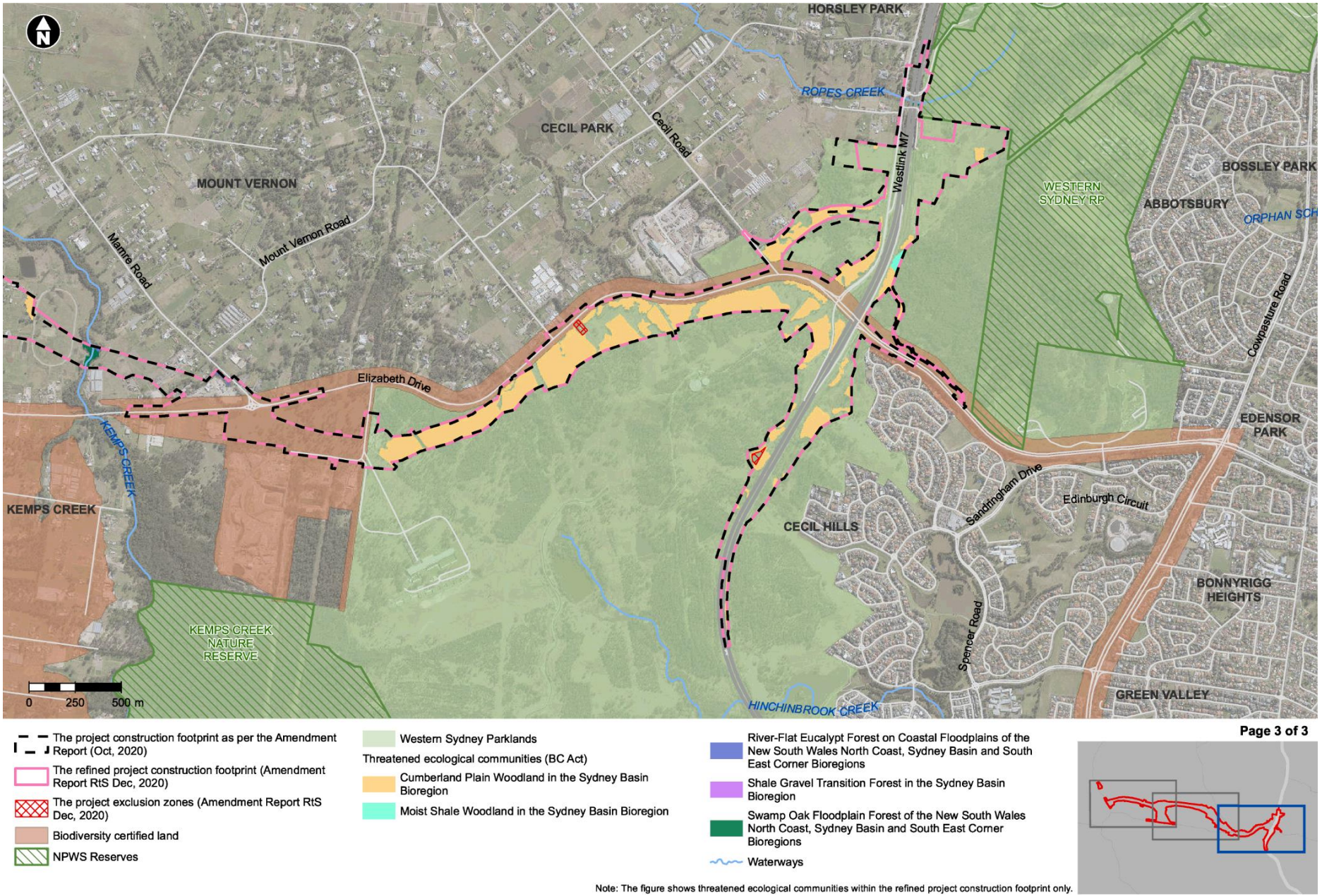


Figure 6-3 Threatened ecological communities under the EPBC Act

Fauna habitat types

Vegetation communities within the construction footprint as described in the EIS were consolidated into broader fauna habitats based on general similarities in vegetation type, geology, landscape setting, habitat connectivity and fauna habitat values. Four fauna habitats were identified: Woodland, Riparian forest, Grassland and Wetlands and watercourses. Table 6-5 compares fauna habitat in the construction footprint as described in the amendment report and the refined construction footprint.

Table 6-5 Fauna habitat identified in the construction footprint

Habitat type	Habitat description	Area within construction footprint as per the amendment report (October 2020) excluding certified areas (ha)	Area within refined construction footprint (December 2020) excluding certified areas (ha)	Change in area excluding certified areas (ha)
Woodland	All mature and regenerating grassy, shrubby and heathy woodland vegetation within the study area not associated with riparian corridors on alluvial flats	56.75 (PCTs 724, 830, 849, 850 and 883)	56.69 (PCTs 724, 830, 849, 850 and 883)	-0.06
Riparian forest	All mature and regenerating forest/woodland vegetation associated with drainage lines on alluvial flats	5.83 (PCTs 835 and 1800)	6.00 (PCTs 835 and 1800)	+0.17
Grassland	All native and exotic grasslands, pastures and parklands. Scattered trees and landscape plants may also be present	277.04 (no associated PCTs)	274.46 (no associated PCTs)	-2.58
Wetlands and watercourses	All naturally occurring and constructed permanent or ephemeral dams, ponds, creeks and drainage channels	4.53 (no associated PCTs)	5.01 (no associated PCTs)	+0.48
Total		**344.15**	**342.16**	**-1.99**

Threatened species

There are no additional threatened flora species records within the amendment report construction footprint, compared with the refined construction footprint.

There are minor changes to the extent of fauna species polygons in the October 2020 construction footprint, compared with the construction footprint as per the amendment report. These are presented in Table 6-11 in Section 6.2.3 of this report.

Aquatic habitat

Aquatic habitat is described in Section 4.3 of the EIS BAR. No additional areas of aquatic habitat were identified in the refined construction footprint.

Matters of National Environmental Significance

Section 7.1.3 of the EIS, Section 5 of the EIS BAR and Section 4.5 of the amendment report considered all potential Matters of National Environmental Significance (MNES) likely to occur within the study area (ie threatened species, ecological communities and migratory species).

No additional MNES have been identified in the refined construction footprint. Section 6.2.3 below provides further discussion of impacts to MNES within the construction footprint as described in the amendment report and the refined construction footprint.

6.2.3 Potential impacts

Areas not requiring further assessment

Certified areas within the Growth Centres SEPP, which have already been subject to assessment as part of the certification of this area, have been excluded from impact assessment calculations under the Framework for Biodiversity Assessment (FBA). The areas of each PCT identified in the certified areas within the refined construction footprint are listed in Table 6-6.

Table 6-6: Plant Community Types mapped within certified land

PCT Name	TSC Act Status	EPBC Act status*	Area within construction footprint as per the amendment report (October 2020) and within certified areas (ha)	Area within refined construction footprint (December 2020) and within certified areas (ha)	Change in area within certified areas (ha)
Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion (PCT 849)	Critically Endangered	Critically Endangered	0.66	0.66	0.00
Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion (PCT 850)	Critically Endangered	Critically Endangered	10.04 (includes 0.12 ha of revegetation)	9.95 (includes 0.12 ha of revegetation)	-0.09
Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter valley (PCT 1800)	Endangered	Endangered	0.01	0.01	0.00
Total			**10.71**	**10.62**	**-0.09**

Areas requiring assessment

Direct impacts to native vegetation

The refined construction footprint, excluding certified areas, contains about 80.78 hectares of PCTs. This is an increase of about 0.2 per cent when compared to direct impacts to native vegetation within the construction footprint as described in the amendment report (80.64 hectares). The areas of each vegetation

zone that would be directly impacted by the amended project and the change in area impacted from what was described in the amendment report are listed below in Table 6-7.

Table 6-7: Direct impacts to native vegetation within the refined construction footprint

Veg zone	Vegetation zone code	PCT Name	Site value score	Area within construction footprint as per the amendment report (October 2020) excluding certified areas (ha)	Area within refined construction footprint (December 2020) excluding certified areas (ha)	Change in area excluding certified areas (ha)
1	724 - Moderate/ Good_High	Broad-leaved Ironbark - Grey Box - Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion	74.64	3.49	3.50	+0.01
2	724 - Moderate/ Good_Medium		55.07	2.95	2.96	+0.01
3	724 - Moderate/ Good_Poor		28.99	0.45	0.45	0
4	830 - Moderate/ Good_Poor	Forest Red Gum - Grey Box shrubby woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	35.94	0.44	0.44	0
5	835 - Moderate/ Good_Poor	Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	35.76	3.01	3.18	+0.17
6	849 - Moderate/ Good_Medium	Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	45.65	3.54	3.64	+0.10
7	849 - Moderate/ Good_Poor		22.46	2.22	2.22	0
8	849 - Moderate/ Good_Other (Derived Shrubland)		26.09	0.48	0.48	0
9	850 - Moderate/ Good_High	Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	50.97	3.21	3.29	+0.08
10	850 - Moderate/ Good_Medium		42.03	13.75	13.33	-0.42
11	850 - Moderate/ Good_Other (Revegetation)		57.97	24.31	24.58	+0.27
12	850 - Moderate/Good_Poor		31.88	1.34	1.25	-0.09
13	850 - Low		13.77	18.06	18.07	+0.01

Veg zone	Vegetation zone code	PCT Name	Site value score	Area within construction footprint as per the amendment report (October 2020) excluding certified areas (ha)	Area within refined construction footprint (December 2020) excluding certified areas (ha)	Change in area excluding certified areas (ha)
14	883 - Poor	Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin Bioregion	N/A	0.57	0.57	0.00
15	1800 - Moderate/ Good_Poor	Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter valley	27.26	2.82	2.82	0
Total				**80.64**	**80.78**	**+0.14**

All areas of native vegetation to be removed, except for PCT 883, fall within the definitions of TECs listed under the TSC Act and/or the EPBC Act. The areas of each TEC that would be directly impacted as a result of the amended project and the change in area impacted from what was described in the amendment report are listed in Table 6-8.

Table 6-8: Direct impacts to TECs within the refined construction footprint (December 2020)

TSC Act TEC	EPBC Act TEC	PCT(s)	Total area directly impacted excluding certified areas (ha)	Change in area excluding certified areas (ha)	Area impacted meeting EPBC TEC criteria excluding certified areas (ha)	Change in area impacted meeting EPBC TEC criteria excluding certified areas (ha)
Shale Gravel Transition Forest in the Sydney Basin Bioregion (Endangered)	Cumberland Plain Woodland in the Sydney Basin Bioregion (Critically Endangered)	724	6.91	0.02	4.87	+0.01
Cumberland Plain Woodland in the Sydney Basin Bioregion (Critically Endangered)		849 850	66.86	-0.05	38.02	+0.41
Moist Shale Woodland in the Sydney Basin Bioregion (Endangered)	Western Sydney Dry Rainforest and Moist Woodland on Shale (Critically Endangered)	830	0.44	0.00	0.44	0.00

TSC Act TEC	EPBC Act TEC	PCT(s)	Total area directly impacted excluding certified areas (ha)	Change in area excluding certified areas (ha)	Area impacted meeting EPBC TEC criteria excluding certified areas (ha)	Change in area impacted meeting EPBC TEC criteria excluding certified areas (ha)
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (Endangered)	N/A	835	3.18	+0.17	N/A – not listed	N/A – not listed
Swamp oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner bioregions (Endangered)	Swamp oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner bioregions (Endangered)	1800	2.82	0.00	0.00	0.00
Total			**80.21**	**+0.14**	**43.33**	**+0.42**

Indirect impacts to native vegetation

The project would also result in indirect impacts to some areas of native vegetation adjoining the refined construction footprint, mainly due to fragmentation of vegetation and creation of new edges, which may result in edge effects. The methodology for analysis of indirect impacts to native vegetation is described in Chapter 8.2.1 of the EIS BAR.

A 30 metre buffer was applied from the edge of the refined construction footprint and an analysis of native vegetation mapped within the buffer zone was conducted. The areas of each of the five categories for potential edge effects from the amended project and the change in impact from the amendment report are listed in Table 6-9, and the categories were mapped (Figure 6-4).

Table 6-9: Potential for edge effects in vegetation within 30 metres of the refined construction footprint (December 2020) in Western Sydney Parklands and adjoining Clifton Avenue

Category	Area of vegetation within 30 metre buffer excluding certified areas (ha) – WSP	Area of vegetation within 30 metre buffer excluding certified areas (ha) – Clifton Avenue	Total	Change in area excluding certified areas (ha)
Non-viable fragment	0.14	0	0.14	-0.07
New edge	12.71	0.45	13.16	-0.15
Existing edge	3.64	1.53	5.17	+0.29
Existing edge set back	0.79	0.27	1.06	+0.10

Category	Area of vegetation within 30 metre buffer excluding certified areas (ha) – WSP	Area of vegetation within 30 metre buffer excluding certified areas (ha) – Clifton Avenue	Total	Change in area excluding certified areas (ha)
Fragmented and disturbed	2.89	4.57	7.46	+0.01
Total	**20.17**	**6.82**	**26.99**	**+0.18**

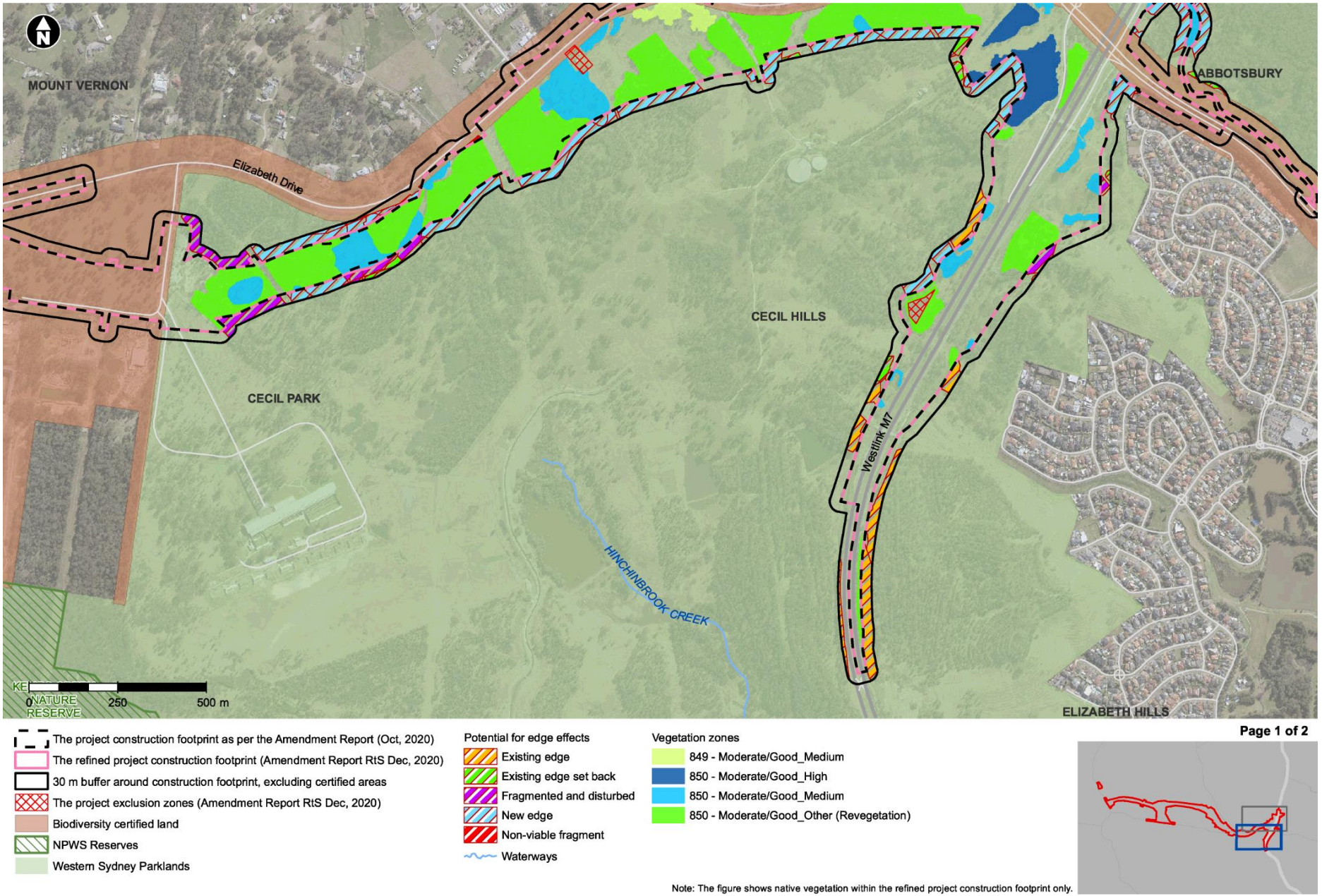


Figure 6-4 Indirect impacts to native vegetation in Western Sydney Parklands

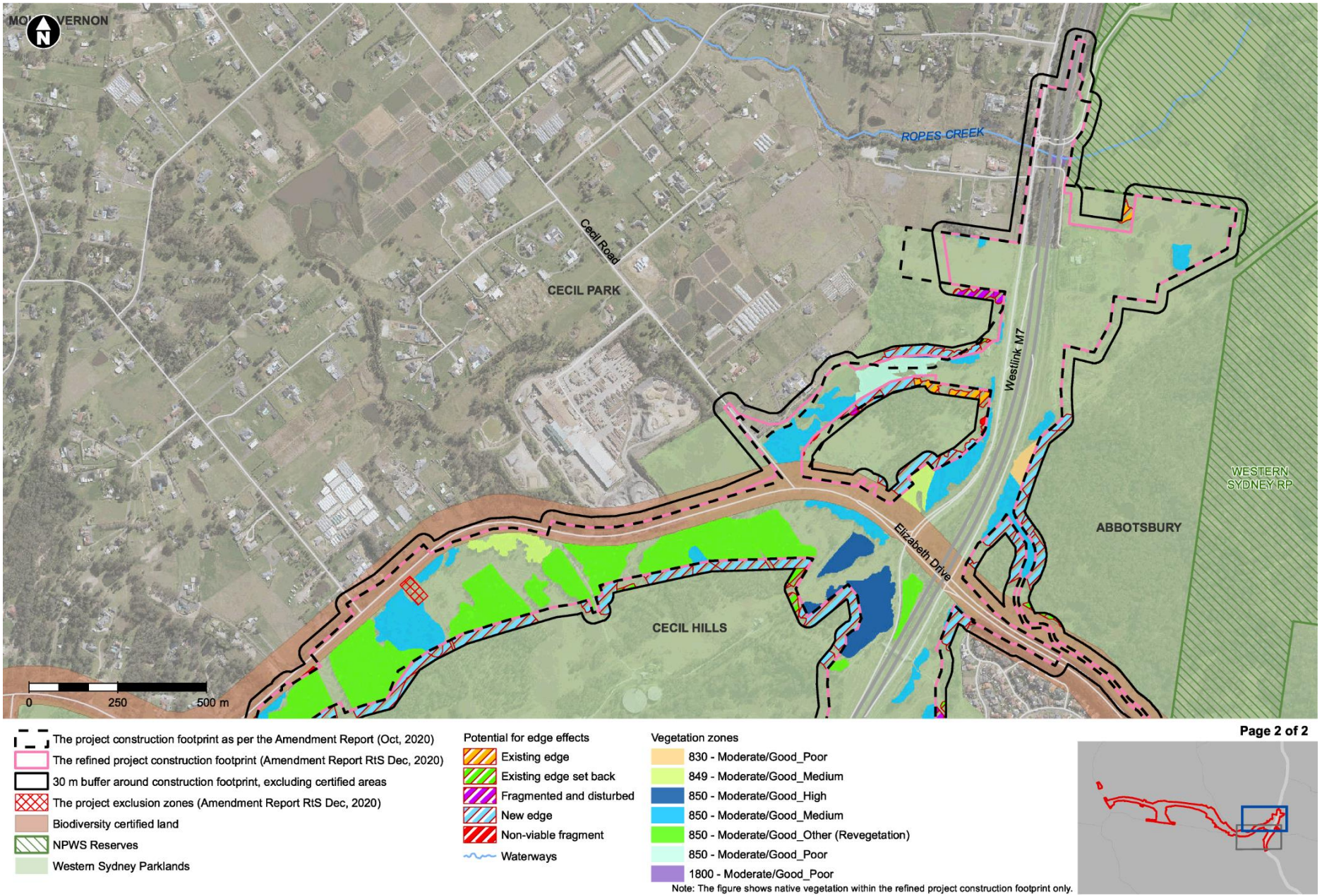


Figure 6-4 Indirect impacts to native vegetation in Western Sydney Parklands

All areas of indirect impact meet the criteria for TSC Act listed TECs, and 12.74 hectares of the total 13.30 hectares indirectly impacted meets the criteria for the EPBC Act listed TECs. The indirect impacts of the project on native vegetation and the change in impact from the amendment report are detailed in Table 6-10 and shown on Figure 6-4. Offsets for these impacts are considered in Section 6.2.5 of this report.

Table 6-10 Native vegetation subject to indirect impacts (potential edge effects)

Location	PCT	Condition	Area of indirect impacts as described in the amendment report excluding certified areas (ha)	Area of indirect impacts of amended project (ha)	Change in area excluding certified areas (ha)
Western Sydney Parklands (excluding certified areas)	**Non-viable fragments**				
	Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion (PCT 850)	Moderate/ Good_Medium	0.18	0.11	-0.07
		Moderate/ Good_Other (Revegetation)	0.03	0.03	0.00
	New edges				
	Forest Red Gum - Grey Box shrubby woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion (PCT 830)	Moderate/ Good_Poor	0.61	0.61	0.00
	Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion (PCT 849)	Moderate/ Good_Medium	0.57	0.57	0.00
	Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion (PCT 850)	Moderate/ Good_High	1.24	1.61	+0.37
		Moderate/ Good_Medium	3.31	3.44	+0.13
		Moderate/Good_ Poor	1.14	0.56	-0.58
		Moderate/ Good_Other (Revegetation)	5.99	5.92	-0.07
	Total Western Sydney Parklands		**13.07**	**12.85**	**-0.22**

Location	PCT	Condition	Area of indirect impacts as described in the amendment report excluding certified areas (ha)	Area of indirect impacts of amended project (ha)	Change in area excluding certified areas (ha)
East of Clifton Avenue	Broad-leaved Ironbark - Grey Box - Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion (PCT 724)	Moderate/ Good_High	0.45	0.45	0.00
	Total East of Clifton Avenue		**0.45**	**0.45**	**0**
Grand total			**13.52**	**13.30**	**-0.22**

Removal of threatened fauna habitat

Section 3.4 of the EIS BAR provides a detailed description and assessment of impacts to fauna habitat and examples of the type of habitat found. The four types of fauna habitat to be removed are Woodland, Riparian Forest, Grassland (much of which is disturbed, exotic grasses and contains hard stand areas) and Wetlands and watercourses. See Table 6-5 for detailed comparison of construction footprint as described in the amendment report and the refined construction footprint.

For species credit species under the FBA, there are minor changes in the area of habitat to be removed (Table 6-11).

Table 6-11 Fauna species polygons in the construction footprint

Species name	Area of species polygon (ha) within construction footprint as per the amendment report (October 2020) excluding certified areas	Area of species polygon (ha) within refined construction footprint (December 2020) excluding certified areas	Change in area excluding certified areas (ha)
Meridolum corneovirens Cumberland Plain Land Snail	5.22	5.10	-0.12
Myotis macropus Southern Myotis	0.96	0.99	+0.03

The construction footprint as described in the amendment report required the removal of 56 hollow-bearing trees within non-certified areas. These include two hollow-bearing trees that were not identified in the amendment report. Two additional hollow-bearing trees located in Cecil Park would be removed for the within refined project construction footprint.

Figure 6-5 and Figure 6-6 show the location of the Cumberland Plain Land Snail and Southern Myotis species polygons within the refined construction footprint.

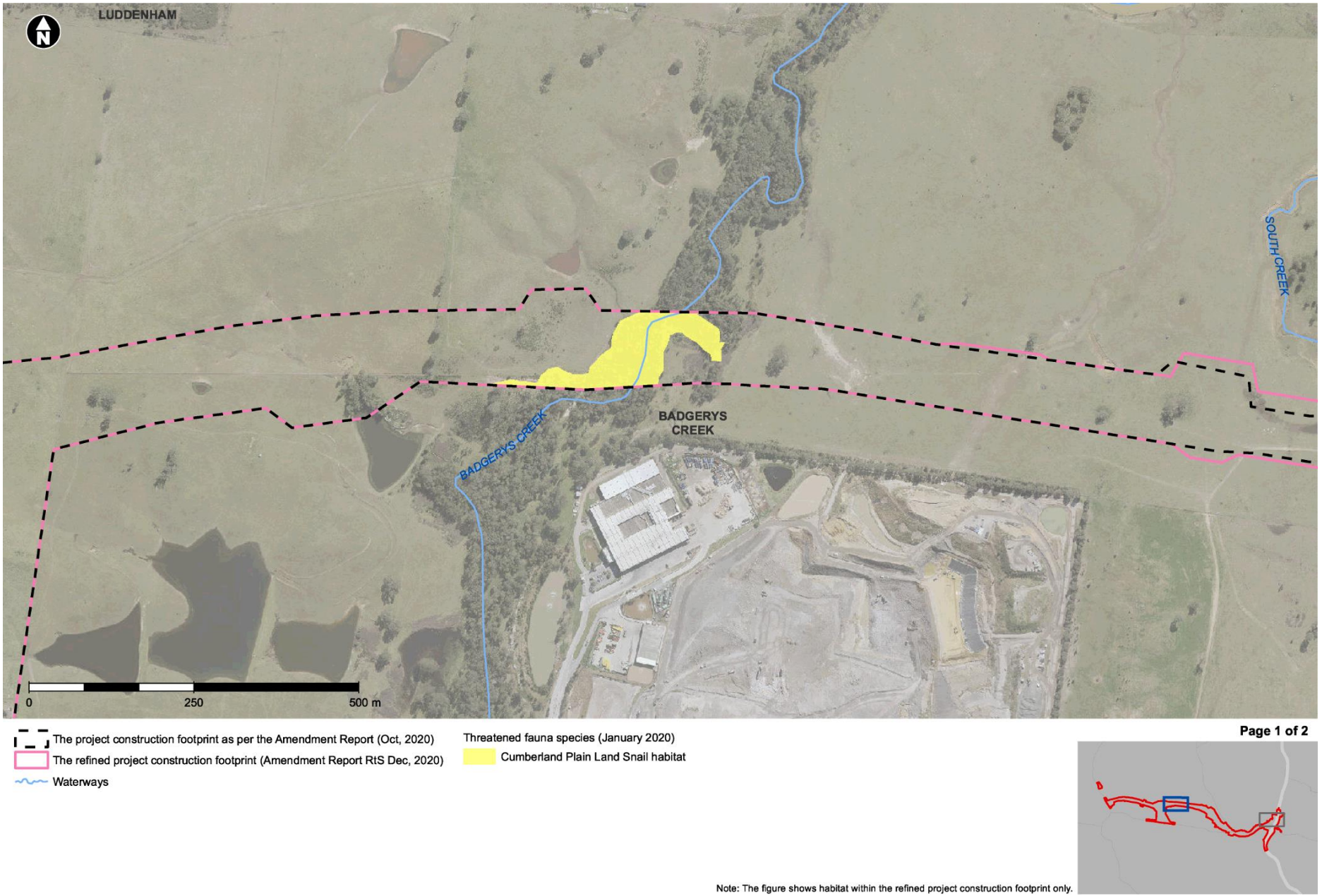


Figure 6-5 Cumberland Plain Land Snail species polygons within the refined construction footprint

Figure 6-5 Cumberland Plain Land Snail species polygons within the refined construction footprint

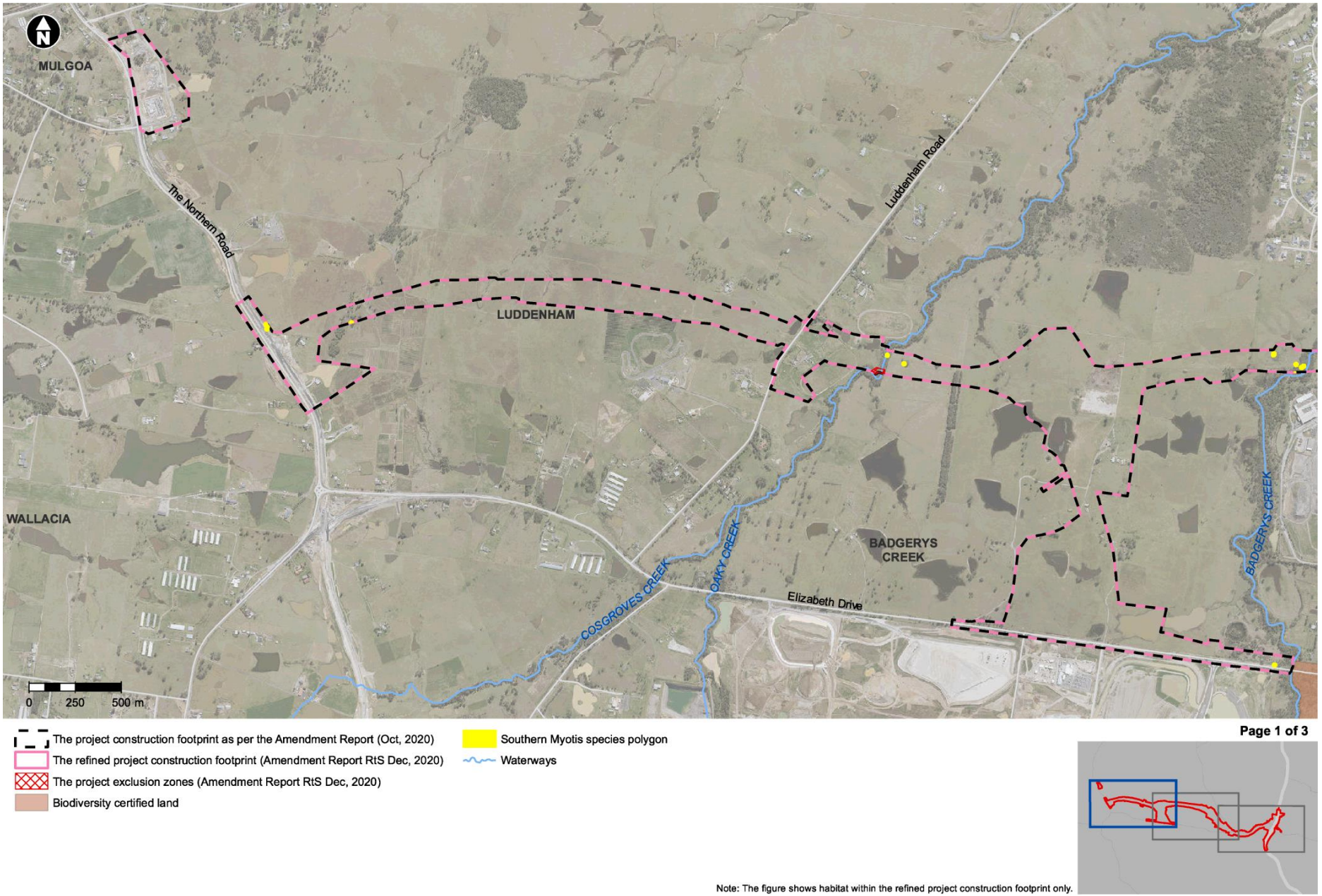


Figure 6-6 Southern Myotis species polygons within the refined construction footprint

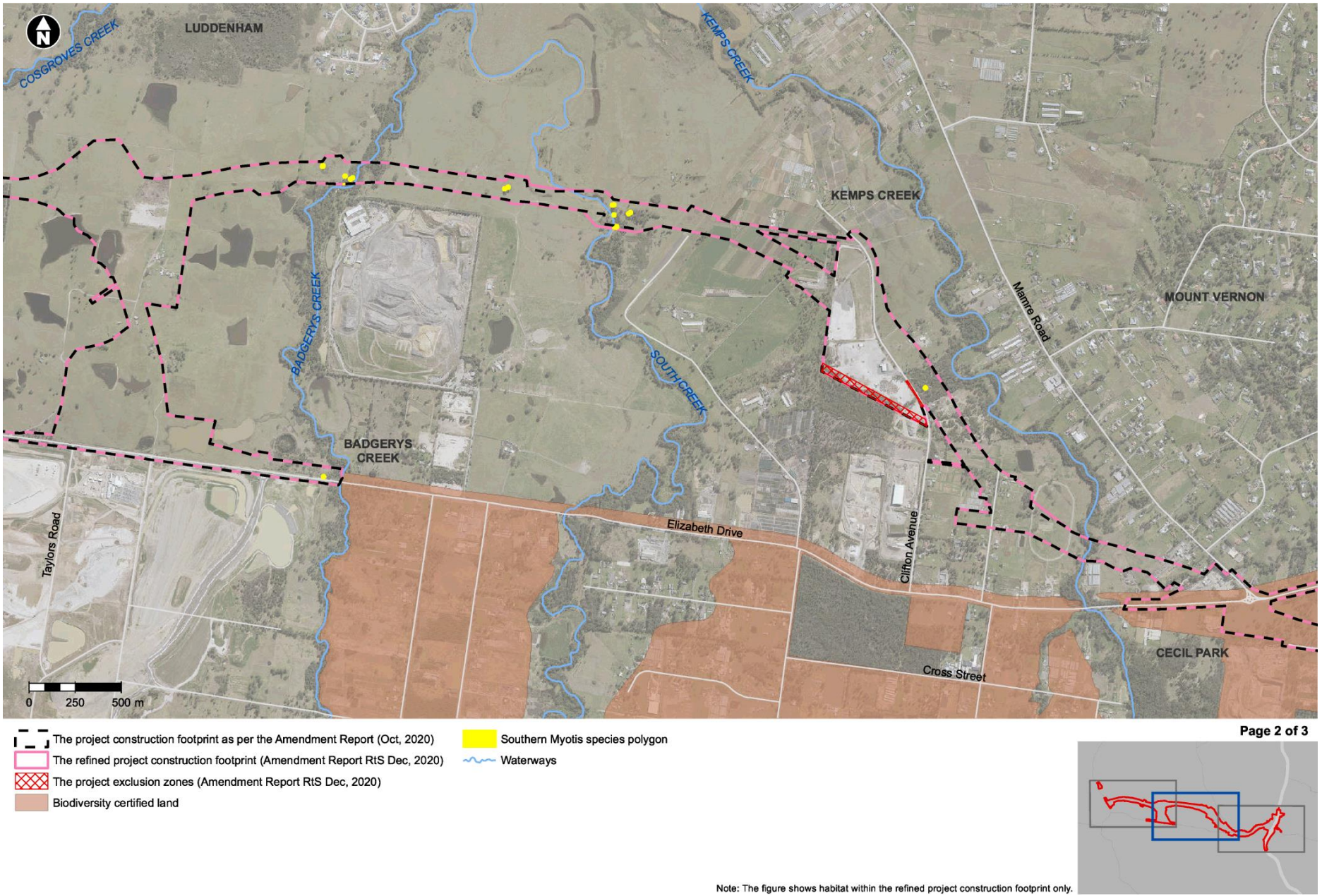


Figure 6-6 Southern Myotis species polygons within the refined construction footprint

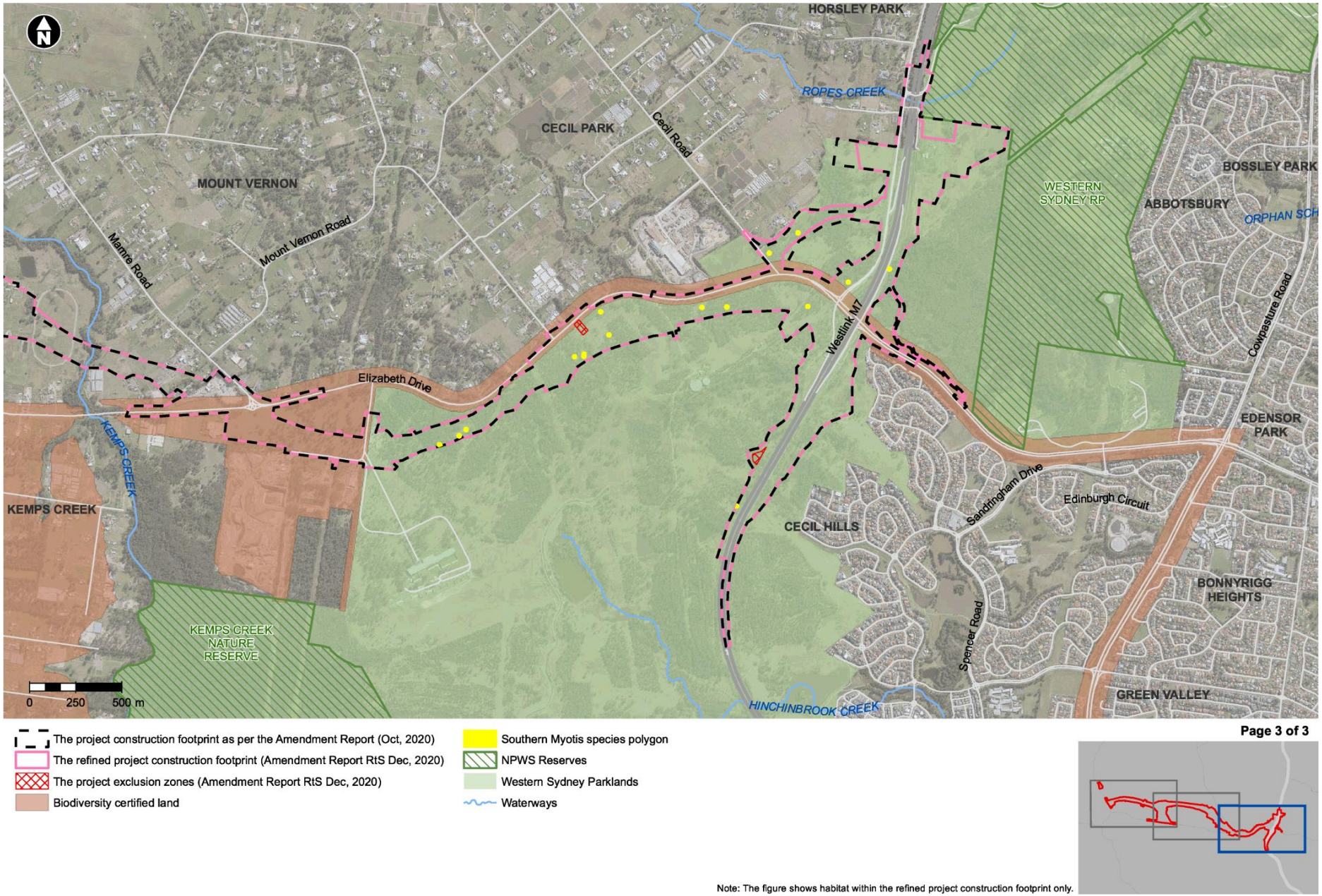


Figure 6-6 Southern Myotis species polygons within the refined construction footprint

Removal of threatened flora

The project would result in direct impacts to two threatened plant species:

- *Pultenaea parviflora* (listed as Endangered under the TSC Act and Vulnerable under the EPBC Act)
- *Dillwynia tenuifolia* (listed as Vulnerable under the TSC Act).

There is no change to impacts to these species from the project refinements.

Matters of National Environmental Significance

MNES identified in the amendment report Appendix A were assessed for impacts and comparisons between the impacts of construction footprint as described in the amendment report and the refined construction footprint (Table 6-12). The changes to impacts are minor and no changes to the conclusions of significant impact assessments for any MNES would be required.

Table 6-12 Comparison of MNES for the construction footprint as per the amendment report and the refined construction footprint

MNES	Number or area (ha) within construction footprint as per amendment report (October 2020) excluding certified areas	Number or area (ha) within refined construction footprint (December 2020) excluding certified areas	Significant impact assessment in EIS BAR/ amendment report?	Change in area excluding certified areas (ha)	Any change to significant impact assessment for project refinements?
Threatened ecological communities					
Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest	42.47 ha (includes 22.04 ha of revegetation)	42.89 ha ((includes 22.05 ha of revegetation)	Yes	+0.42 ha	No. Still significantly impacted.
Western Sydney Dry Rainforest and Moist Woodland on Shale	0.44 ha	0.44 ha	No	0	No. There is no change in impact. Still not significant.
Threatened flora					
Pultenaea parviflora	Up to 100 individuals	Up to 100 individuals	Yes	0	No. Still significantly impacted.
Pimelea spicata	0	0	No	0	No. There is no change in impact. Still not significant.
Threatened fauna					
Grey-headed Flying-fox	62.58 ha (foraging)	62.69 ha (foraging)	No. Foraging habitat is impacted, but this will be offset and no breeding habitat is affected.	+0.11 ha	No. Still not considered significant.
Migratory species					

Migratory species	N/A no migratory species recorded	N/A no migratory species recorded	No	N/A	No change. Not significant.
Commonwealth land					
Commonwealth land	0	0	No.	0	No change. Not significant.

6.2.4 Revised environmental management measures

Section 8 of the amendment report Appendix A provides a summary of the environmental management measures that would be required to minimise, avoid or mitigate the impacts of the amended project on biodiversity in the amended project study area.

No additional safeguards or management measures are required as a result of the project refinements. Additional biodiversity environmental management measures have been prepared in response to submissions made during the public display of the amendment report. These additional measures are found in Chapter 7.

6.2.5 Offset requirements

Section 8 of the amendment report Appendix A presented the biodiversity offsets that would be required for the project. Table 6-13, Table 6-14 and Table 6-15 provide a comparison of the ecosystem and species credits calculated for the refined construction footprint with the credit requirements for the project as described in the amendment report presented in the amendment report Appendix A.

Table 6-16 presents a summary of all biodiversity credit offset requirements for the project.

Table 6-13 Ecosystem credit offset requirements: direct impacts

PCT name	All impacts (including EPBC TEC impacts)				Change in credits required	EPBC TEC impacts only				Change in credits required
	Construction footprint as per the amendment report excluding certified areas		Refined construction footprint (December 2020) excluding certified areas			Construction footprint as per the amendment report excluding certified areas		Refined construction footprint (December 2020) excluding certified areas		
	Area (ha)	Credits	Area (ha)	Credits		Area (ha)	Credits	Area (ha)	Credits	
Broad-leaved Ironbark - Grey Box - Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion PCT: 724 BVT: HN512	6.89	370	6.91	372	+2	4.86	275	4.87	276	+1
Forest Red Gum - Grey Box shrubby woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion PCT: 830 BVT: HN524	0.44	15	0.44	15	0	0.44	15	0.44	15	0
Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion PCT: 835 BVT: HN526	3.01	99	3.18	105	+6	N/A – not listed	N/A	N/A – not listed	N/A	N/A

PCT name	All impacts (including EPBC TEC impacts)				Change in credits required	EPBC TEC impacts only				Change in credits required
	Construction footprint as per the amendment report excluding certified areas		Refined construction footprint (December 2020) excluding certified areas			Construction footprint as per the amendment report excluding certified areas		Refined construction footprint (December 2020) excluding certified areas		
	Area (ha)	Credits	Area (ha)	Credits		Area (ha)	Credits	Area (ha)	Credits	
Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion PCT: 849 BVT: HN528	6.24	206	6.34	210	+4	1.60	65	1.60	65	0
Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion PCT: 850 BVT: HN529	60.67	1909	60.52	1908	-1	36.01	1639	36.42	1659	+20
Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter valley PCT: 1800 BVT: HN674	2.82	75	2.82	75	0	0.00	0	0.00	0	0
Total	**80.07**	**2674**	**80.21**	**2685**	**+11**	**42.91**	**1994**	**43.33**	**2015**	**+21**

Table 6-14 Ecosystem credit offset requirements: indirect impacts

PCT name	All indirect impacts (including EPBC TEC impacts)				Change in credits required	EPBC TEC impacts only				Change in credits required
	Construction footprint as per the amendment report excluding certified areas		Refined construction footprint (December 2020) excluding certified areas			Construction footprint as per the amendment report excluding certified areas		Refined construction footprint (December 2020) excluding certified areas		
	Area (ha)	Credits	Area (ha)	Credits		Area (ha)	Credits	Area (ha)	Credits	
Broad-leaved Ironbark - Grey Box - Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion PCT: 724 BVT: HN512	0.45	6	0.45	6	0	0.45	6	0.45	6	0
Forest Red Gum - Grey Box shrubby woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion PCT: 830 BVT: HN524	0.61	6	0.61	6	0	0.61	6	0.61	6	0
Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion PCT: 849 BVT: HN528	0.57	6	0.57	6	0	0.57	6	0.57	6	0

PCT name	All indirect impacts (including EPBC TEC impacts)				Change in credits required	EPBC TEC impacts only				Change in credits required
	Construction footprint as per the amendment report excluding certified areas		Refined construction footprint (December 2020) excluding certified areas			Construction footprint as per the amendment report excluding certified areas		Refined construction footprint (December 2020) excluding certified areas		
	Area (ha)	Credits	Area (ha)	Credits		Area (ha)	Credits	Area (ha)	Credits	
Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion PCT: 850 BVT: HN529	11.89	137	11.85	135	-2	10.75	125	11.11	127	+2
Total	**13.52**	**155**	**13.48**	**153**	**-2**	**12.38**	**143**	**12.85**	**145**	**+2**

Table 6-15 Species credit offset requirements

Species name	Loss of habitat (ha) or individuals within construction footprint as per the amendment report excluding certified areas	Species credits required for impacts of construction footprint as per the amendment report	Loss of habitat (ha) or individuals within refined construction footprint excluding certified areas	Species credits required for impacts of refined construction footprint	Change in credits required
Dillwynia tenuifolia	244 individuals	4392	244 individuals	4392	0
Pultenaea parviflora Sydney Bush-pea	Up to 100 individuals	1500	Up to 100 individuals	1500	0
Meridolum corneovirens Cumberland Plain Land Snail	5.22	68	5.10	66	-2
Myotis macropus Southern Myotis	0.96	21	0.99	23	+2
Total species credits		**5,981**		**5,981**	**0**

Table 6-16 Summary of credit offset requirements

PCT / BVT /Species name	Credits required to offset direct impacts		Credits required to offset indirect impacts		Credits required to offset all impacts	
	All impacts (including EPBC listed impacts)	EPBC listed impacts only	All impacts (including EPBC listed impacts)	EPBC listed impacts only	All impacts (including EPBC listed impacts)	EPBC listed impacts only
Ecosystem credits						
PCT 724 / HN512	372	276	6	6	378	282
PCT 830 / HN524	15	15	6	6	21	21
PCT 835 / HN526	105	N/A	0	N/A	105	N/A
PCT 849 / HN528	210	65	6	6	216	71
PCT 850 / HN529	1908	1659	135	127	2043	1786
PCT 1800 / HN674	75	0	0	0	75	0
Total ecosystem credits	**2685**	**2015**	**153**	**145**	**2838**	**2160**
Species credits						
Dillwynia tenuifolia	4392	N/A	0	0	4392	0
Pultenaea parviflora Sydney Bush-pea	1500	1500	0	0	1500	1500
Meridolum corneovirens Cumberland Plain Land Snail	66	N/A	0	0	66	0
Myotis macropus Southern Myotis	23	N/A	0	0	23	0
Total species credits	**5981**	**1500**	**0**	**0**	**5981**	**1500**

6.3 Traffic and transport

This assessment should be read in conjunction with the project EIS Appendix F Transport and Traffic Assessment Report (EIS Appendix F) and the amendment report Appendix B Transport and traffic updated technical report (amendment report Appendix B).

6.3.1 Description of existing environment

The existing environment is consistent with the description provided in Chapter 4 of the EIS Appendix F and in Chapter 4 of the amendment report Appendix B.

6.3.2 Summary of additional study and methodology

Additional assessments were undertaken at two locations:

- Eastbound exit ramp to Elizabeth Drive. The traffic and safety assessment compared grade separation against signalised intersection
- Realigned Wallgrove Road and Cecil Road intersection. The traffic and safety assessment compared a roundabout against traffic signals

The assessments were carried out using traffic modelling which involved updating the microsimulation model with the above arrangements and then comparing the results between the options.

6.3.3 Potential impacts

Traffic modelling undertaken during further development of the design shown in the amendment report revealed a traffic flow issue at the realigned Wallgrove Road and Cecil Road roundabout. Modelling identified the potential for traffic queues when traffic volumes increased in the future due to the limited distance between the roundabout and the traffic signals at Elizabeth Drive and realigned Wallgrove Road. Traffic queues would eventually result in delays and would have a negative flow on effect on other major traffic movements in the area. This was a major driver in the development of a refined design for the realigned Wallgrove Road (refer to Section 5.2).

The refined design includes traffic signals at the realigned Wallgrove Road and Cecil Road intersection. Modelling undertaken has shown that the provision of traffic signals at this intersection creates satisfactory traffic flow and efficient performance targets for future predicated growth. Comparison and assessment of the refined design with the amendment report design determined the refined road and intersection design resolved the traffic flow deficiencies and would result on a positive impact from a traffic performance perspective.

6.3.4 Revised environmental management measures

No additional safeguards or management measures are required as a result of the project refinements . Additional traffic and transport environmental management measures have been prepared in response to submissions made during the public display of the amendment report. These additional measures are found in **Chapter 7**.

6.4 Socio-economic, land use and property

This section should be read in conjunction with Section 6.4 and Appendix D of the amendment report, as well as Section 7.4 and Appendix H of the EIS.

6.4.1 Assessment methodology

A desktop assessment was undertaken to determine changes on potential socio-economic, land use and property impacts associated with the refinements.

6.4.2 Description of existing environment

The existing environment is consistent with the description provided in the amendment report.

6.4.3 Potential land use and property impacts

The proposed refinements would likely result in localised changes to socio-economic and land use impacts and are considered to have minimal variation from the impacts described in the amendment report. There would be minor changes to the following impacts:

- Directly affected properties
- Impacts of property acquisition, temporary leases and property adjustments.

The proposed refinements would change the partial acquisition areas of twelve properties and seven temporary leases or property adjustments. There is one new affected lot owned by WSPT identified that would require partial acquisition and temporary lease of 0.2 hectares (property ID 38/40 in Table 6-17 and Figure 6-7).

One other lot not previously identified as being affected by temporary lease would be impacted up to 0.5 hectares (property ID 24 in Table 6-17 and Figure 6-7). This property was previously identified for partial acquisition.

Property ID 11 is no longer impacted by the project as identified in Table 6-17. This is because the project boundary has been refined at this location to avoid impact to an existing dam.

Four of the twelve properties identified as impacted by changes to partial acquisition would see a reduction in land requiring acquisition compared to the amendment report. The decrease is most noticeable to the Western Sydney Parklands as a result of the Wallgrove Road realignment design refinement and the elimination of a sediment basin at the corner of the existing Wallgrove Road / Elizabeth Drive intersection. There is also reduction in land acquisition of 1111-1141 Elizabeth and to the Cecil Road properties around the existing dam and drainage line.

The other eight properties would generally see a very minor increase in property impact. These are mostly due to the realignment of Wallgrove Road, and the removal of the roundabout seen in the amendment report design, to allow for the provision of traffic signals at the intersection with Cecil Road.

Impacts to current and potential land use were considered in development of the options that led to the proposed refinements. These are discussed in Table 5-3.

The refinements would impact on the current and future land use and development potential at some locations however, the impact is expected to be minor. The proposed design would also require the demolition of a Western Sydney Parklands property at 95 Wallgrove Road. A summary of properties directly affected by the amended project during construction and operation are provided in Table 6-17 and shown in Figure 6-7 and Figure 6-8. No changes are proposed to the other properties identified in the EIS or amendment report for acquisition, temporary lease or property adjustment.

The types of impacts on the land use and property acquisition associated with the amended project would be consistent with those described in Section 6.4.3.1 of the amendment report and Section 7.4.4 of the EIS. In addition, access to properties subject to temporary lease would remain consistent with the access discussed in the EIS.

Acquisition of additional land required for the amended project would be undertaken in accordance with the provisions of the NSW *Land Acquisition (Just Terms Compensation) Act 1991* and the Land Acquisition Reform 2016 process (***https://www.propertyacquisition.nsw.gov.au/***). Where properties are only partly affected by the project, Transport for NSW would generally undertake a partial acquisition of the directly affected portion in consultation with the landowner.

The proposed refinement to the Wallgrove Road realignment is not expected to change access routes for properties at Wallgrove Road compared to the amendment report. Transport for NSW will continue to consult with property owners affected by partial acquisition and temporary lease arrangements about property access and property adjustments as the project progresses.

6.4.4 Revised environmental management measures

No additional or revised environmental management measures are proposed. Impacts can be managed through the revised environmental management measures described in **Chapter 7** of this report.

Table 6-17 Additional and amended properties to be acquired or temporarily leased for the project

ID	Lot (lot or section/ DP)	Ownership	Existing land use	Total property area (hectares)	Area of land within refined operational footprint (December 2020) (hectares) (proportion of property in brackets)	Area of land outside of the refined operational footprint (December 2020) subject to temporary lease or property adjustment (hectares) (proportion of property in brackets)	Property improvements affected (eg dwellings, sheds, farm dams, shade houses)	Change from amendment report
9	63/DP1087838, 62/DP1087838, 3/DP164242, 1/DP74574, 21/DP258414, 1/DP88836	Private	Rural land – The University of Sydney farms	343.9	**35.3 (10.3%)**	**25 (7.3%)**	Farm dams	Change to the operational footprint (from 33.6 hectares to 35.3 hectares). Increase in the area subject to temporary lease (from 23.2 hectares to 25 hectares). Boundary adjusted to provide adequate buffer for sediment basins and embankments.
11	55/DP734584	Private	Agriculture – horticulture	10.1	**0**	0		Property no longer within refined operational footprint (from 0.04 hectares to no impact).
12	1/DP587135, 2/DP587135, 7/DP812284	Private (company)	Agriculture – horticulture, grazing (identified for future urban development)	88.1	10.8 (12.2%)	**0.02 (0.02%)**	Horticultural gardens, internal roads	Reduction in the area subject to temporary lease (from 0.1 hectares to 0.02 hectares). No change to land within refined footprint.
13	47/DP734584	Private (company)	Rural land	10.7	**5.93 (55.4%)**	4.6 (43.0%)	-	Reduction in land within the operational footprint (from 6.1 hectares to 5.93 hectares). No change to the property area subject to temporary lease.

ID	Lot (lot or section/ DP)	Ownership	Existing land use	Total property area (hectares)	Area of land within refined operational footprint (December 2020) (hectares) (proportion of property in brackets)	Area of land outside of the refined operational footprint (December 2020) subject to temporary lease or property adjustment (hectares) (proportion of property in brackets)	Property improvements affected (eg dwellings, sheds, farm dams, shade houses)	Change from amendment report
14	3/DP812284	Private (company)	Recycling facility, commercial (TreeServe)	12.8	**0.32 (2.5%)**	12.0 (93.8%)	-	Reduction in land within the operational footprint (from 0.8 hectares to 0.32 hectares). No change to the property area subject to temporary lease.
24	B/DP102214	Private	Commercial (horse training facility – Bara Lodge)	18.8	**4.5 (23.9%)**	**0.5 (2.7%)**	Training track, farm dam, internal roads/tracks	Increase in land within the operational footprint (from 4.0 hectares to 4.5 hectares). This lot was not subject to temporary lease in the amendment report. An area of land is now required for temporary lease (0.5 hectares) to provide adequate buffer for sediment basins and embankments.
37	9/DP1054778, 8/DP1054778, 7/DP1054778, 6/DP1054778, 5/DP1054778, 4/DP1054778, 3/DP1054778, 2/DP1054778, 1/DP1054778	Private	Agriculture – grazing	18.9	8.3 (43.7%)	**1.73 (9.2%)**	-	Minor increase of 0.03 hectares in the property area affected by temporary lease.

ID	Lot (lot or section/ DP)	Ownership	Existing land use	Total property area (hectares)	Area of land within refined operational footprint (December 2020) (hectares) (proportion of property in brackets)	Area of land outside of the refined operational footprint (December 2020) subject to temporary lease or property adjustment (hectares) (proportion of property in brackets)	Property improvements affected (eg dwellings, sheds, farm dams, shade houses)	Change from amendment report
38 / 40	3/DP1087825, 1/DP875790, 2/DP922940, 28/DP654786, 1/DP308358, 6/DP629798, 5/DP629798, 1/DP1041390, 2/DP1041390, 10/DP1021940, 11/DP1021940, 12/DP1021940, 14/DP1021940, 1/DP724970, 11/DP860893***6***, 13/DP1021940, 1/DP522269, **1/DP236527** **2/DP236527**	Public (Western Sydney Parklands Trust)	Western Sydney Parklands	**805.4**	**49.3 (6.1%)**	**18.7 (2.3%)**	Wylde Mountain Bike Trail and other recreation uses, International Shooting Centre, car parking area, vegetated areas, orchard trees, dwelling, sheds, farm dams (two)	Total property area has been increased by 4.1 hectares as a result of the inclusion of Lot 1 and Lot 2 DP236527 Reduction in land within the operational footprint (from 53.5 to 49.3). Reduction in the property area affected by temporary lease (from 20.4 to 18.7). Land within the operational footprint due to the refinement of the Wallgrove Road realignment.
43	2/4/DP2954	Private	Rural residential	7.4	**2.6 (35.1%)**	**0.7 (9.5%)**	Vegetated area, farm dam	Reduction in land within the operational footprint (from 3.3 to 2.6) due to proposed changes to the realignment of Wallgrove Road. The need for temporary lease was omitted in error from the amendment report, however the 0.7 hectares

ID	Lot (lot or section/ DP)	Ownership	Existing land use	Total property area (hectares)	Area of land within refined operational footprint (December 2020) (hectares) (proportion of property in brackets)	Area of land outside of the refined operational footprint (December 2020) subject to temporary lease or property adjustment (hectares) (proportion of property in brackets)	Property improvements affected (eg dwellings, sheds, farm dams, shade houses)	Change from amendment report
								required would be a reduction of about 0.7 hectares.
44	7/DP629798, 1/DP1222339, 26B/DP387529, 26A/DP387529, 25/4/DP2954, 24/DP1152887	Public (Western Sydney Parklands Trust)	Rural and rural residential	14.9	**3.0 (20.1%)**	**2.5 (16.8%)**	Dwelling, sheds, vegetated area	Increase in land within the operational footprint (from 2.9 to 3.0) due to proposed changes to the realignment of Wallgrove Road. Reduction in the property area affected by temporary lease (from 4.3 to 2.5).
45	302/DP1122172 304/DP1122172	Private	Residential	4.3	**0.44 (14.2%)**	**0.3 (9.7%)**	-	Increase in land within the operational footprint (from 0.02 to 0.44) due to proposed changes to the realignment of Wallgrove Road. Increase in the property area potentially affected by property adjustment (from 0.02 to 0.3).
46	301/DP1122172	Private	Residential	1.3	**0.1 (7.7%)**	**-**	-	Increase in land within the operational footprint (from 0.02 to 0.1) due to proposed changes to the realignment of Wallgrove Road.

ID	Lot (lot or section/ DP)	Ownership	Existing land use	Total property area (hectares)	Area of land within refined operational footprint (December 2020) (hectares) (proportion of property in brackets)	Area of land outside of the refined operational footprint (December 2020) subject to temporary lease or property adjustment (hectares) (proportion of property in brackets)	Property improvements affected (eg dwellings, sheds, farm dams, shade houses)	Change from amendment report
47	300/DP1122172	Private	Residential	1.0	**0.14 (14%)**	**-**	-	Increase in land within the operational footprint (from 0.01 to 0.14) due to proposed changes to the realignment of Wallgrove Road.
48	**303/DP1122172**	**Private**	**Residential**	**1.2**	**0.014 (1.2%)**	**-**	**-**	**Increase in land within the operational footprint (from 0.004 to 0.014) due to proposed changes to the realignment of Wallgrove Road.**

Notes:

[1] Property ID38 now includes land within the WSPT identified separately in the EIS as Property ID40. Rural residential land owned by the WSPT has also been removed from Property ID38 and is shown separately as Property ID44

[2] Values that have changed since the preparation of the amendment report are shown in bold font.

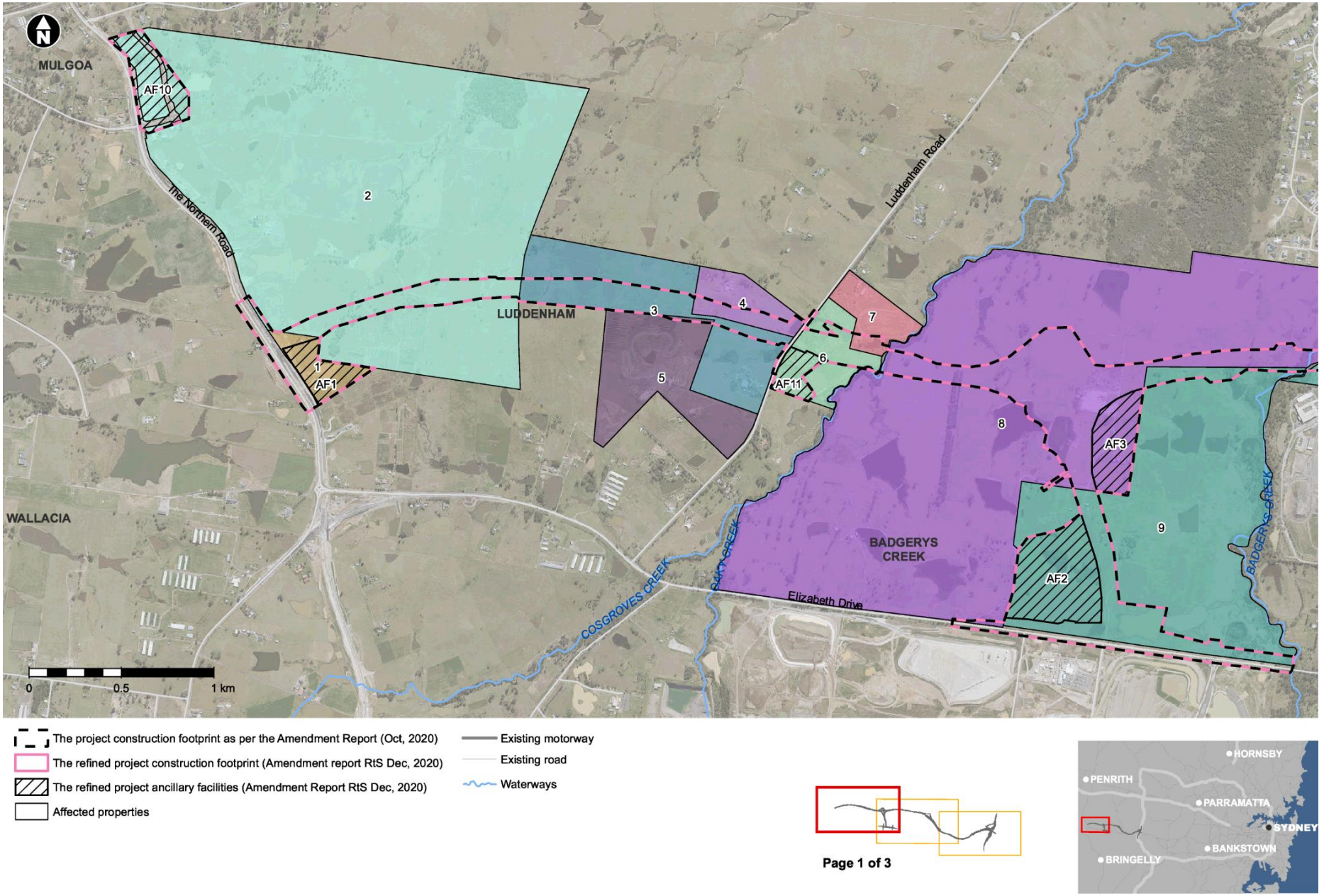


Figure 6-7 Properties within the refined construction footprint

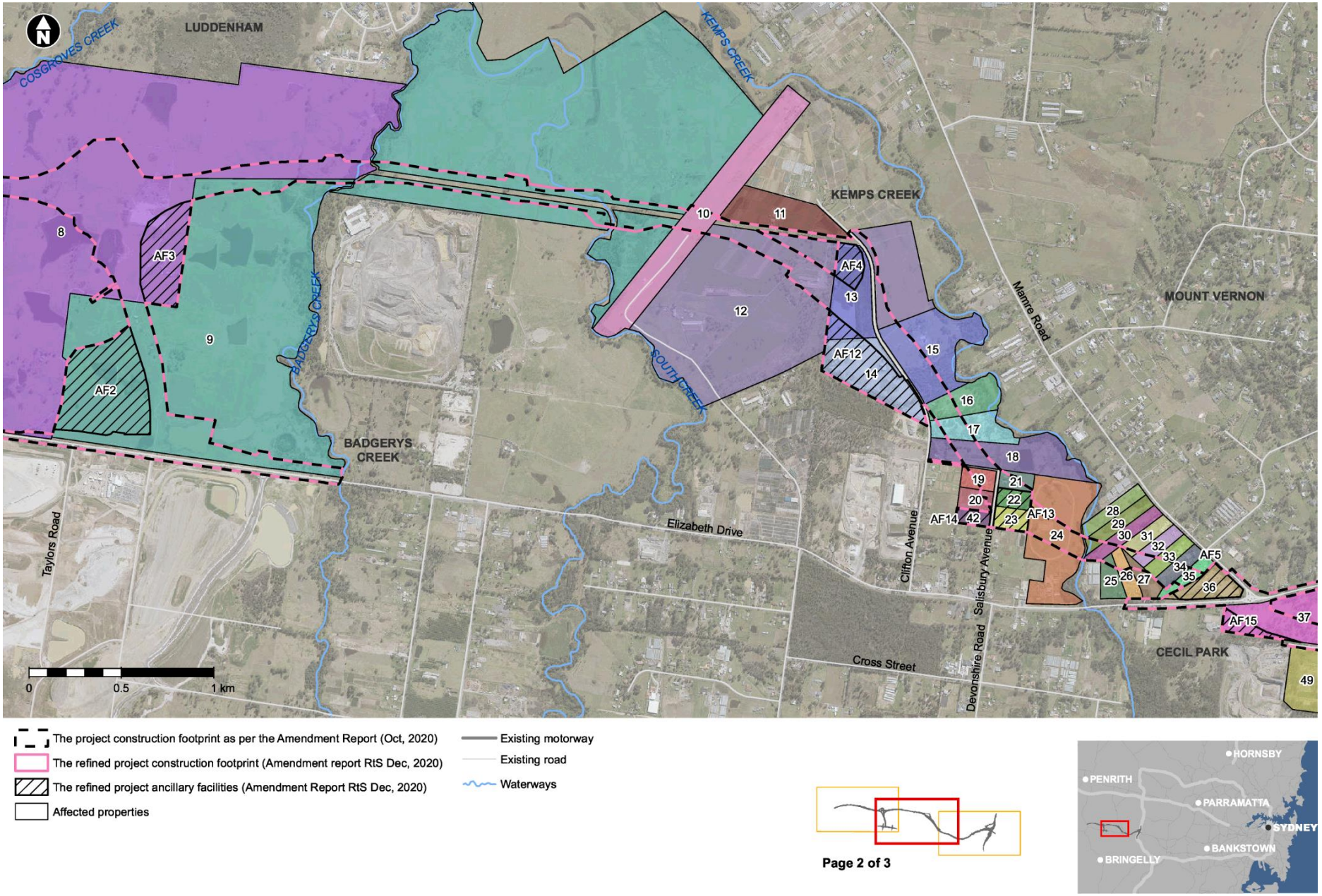


Figure 6-7 Properties within the refined construction footprint

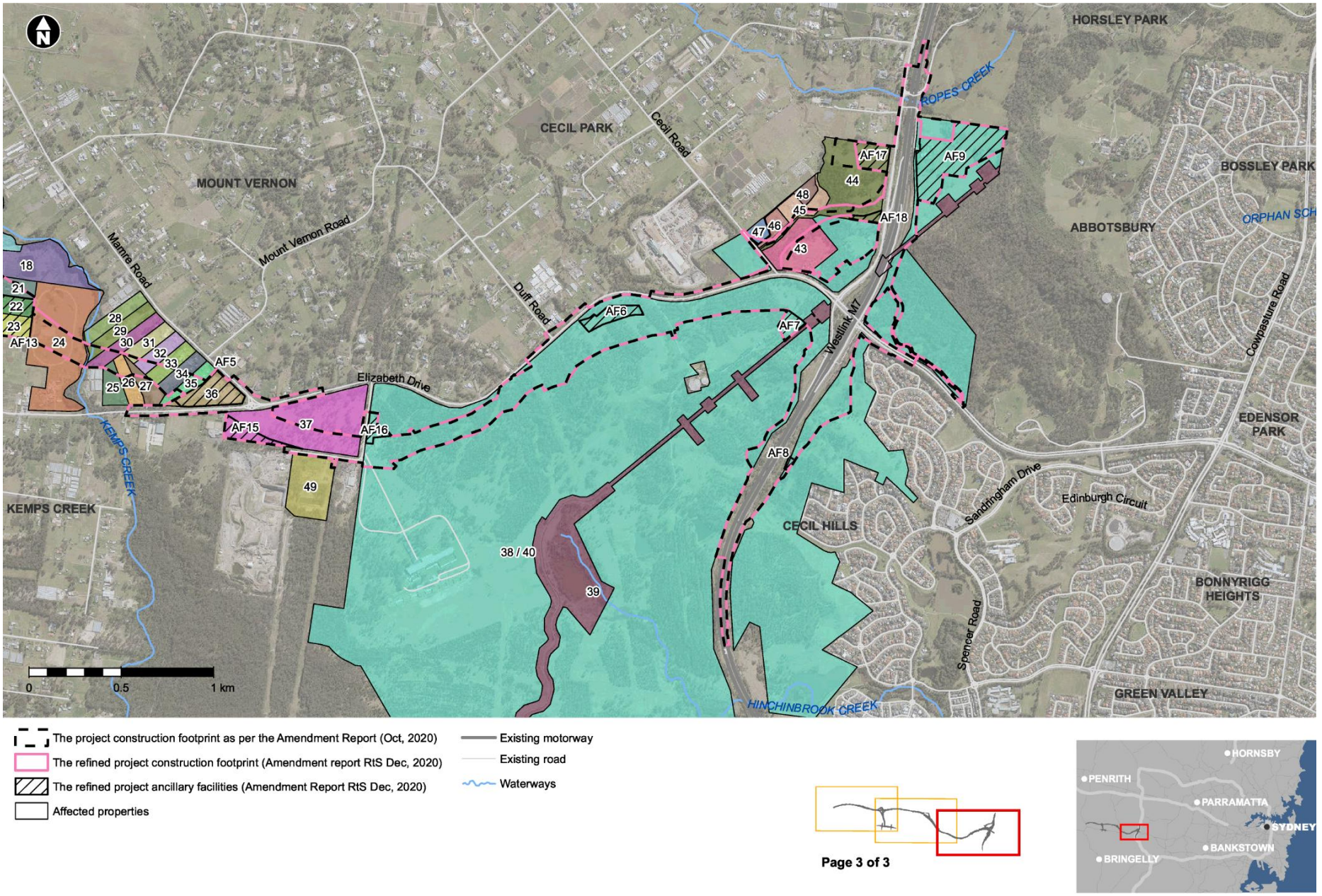


Figure 6-7 Properties within the refined construction footprint

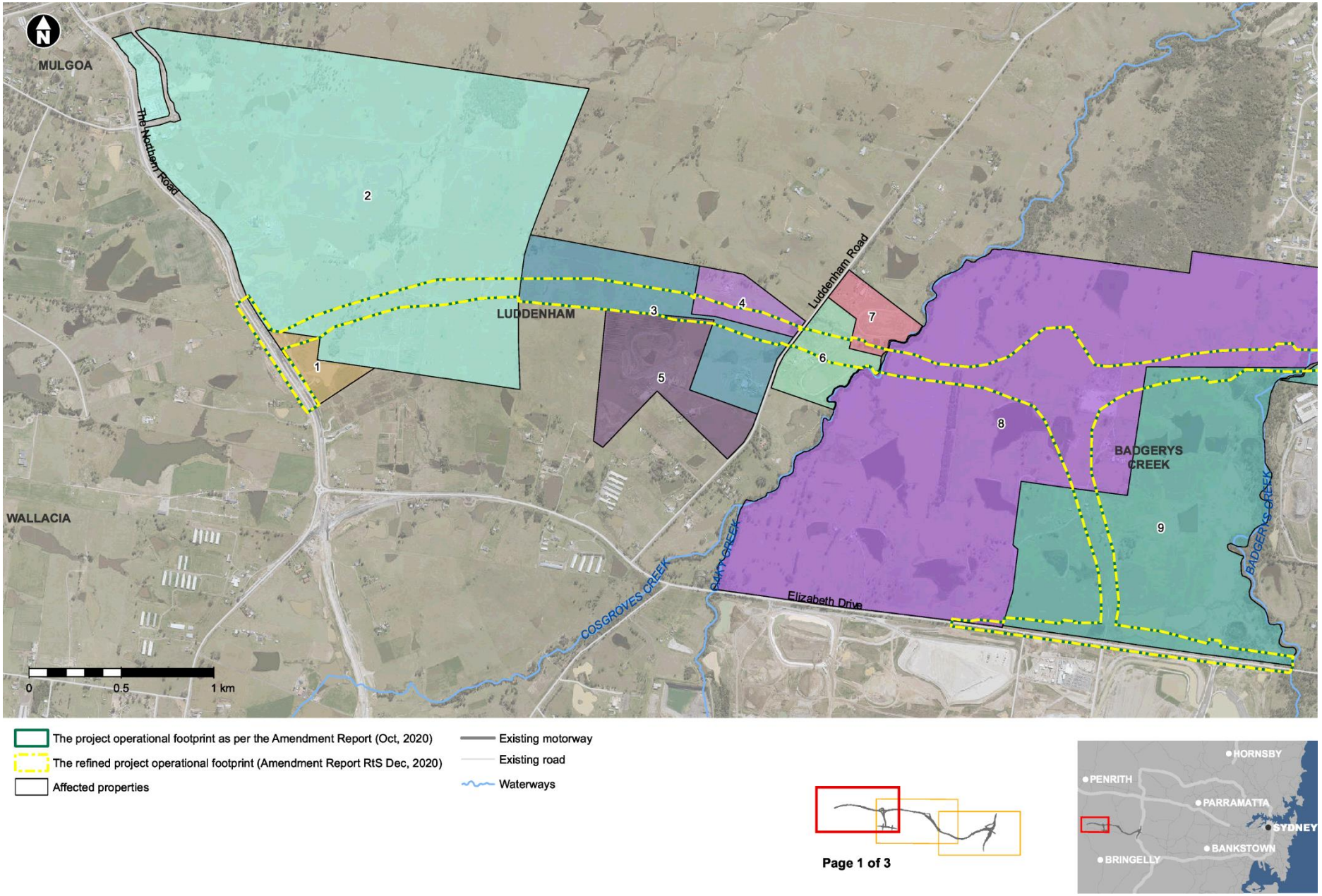


Figure 6-8 Properties within the refined operational footprint

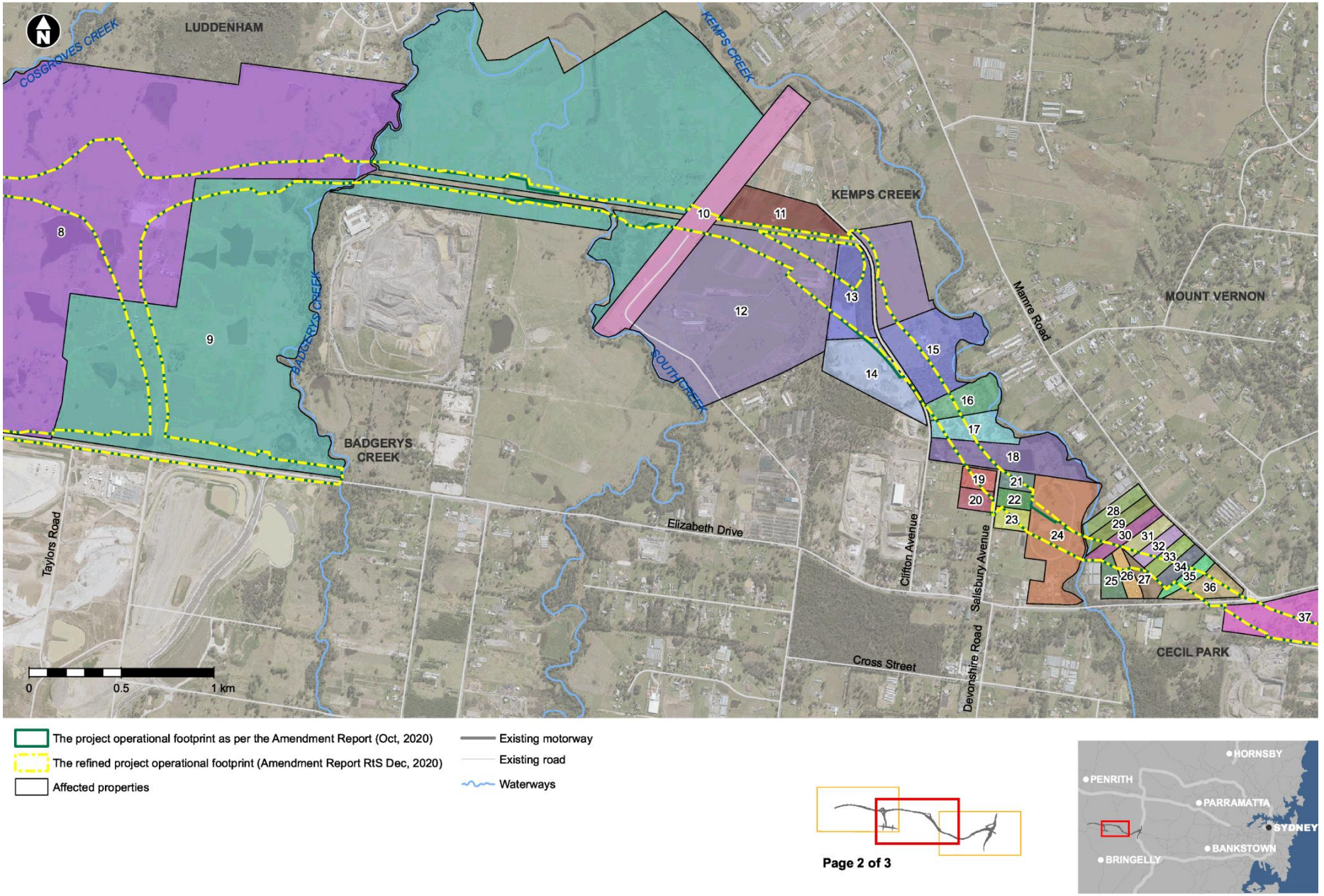


Figure 6-8 Properties within the refined operational footprint

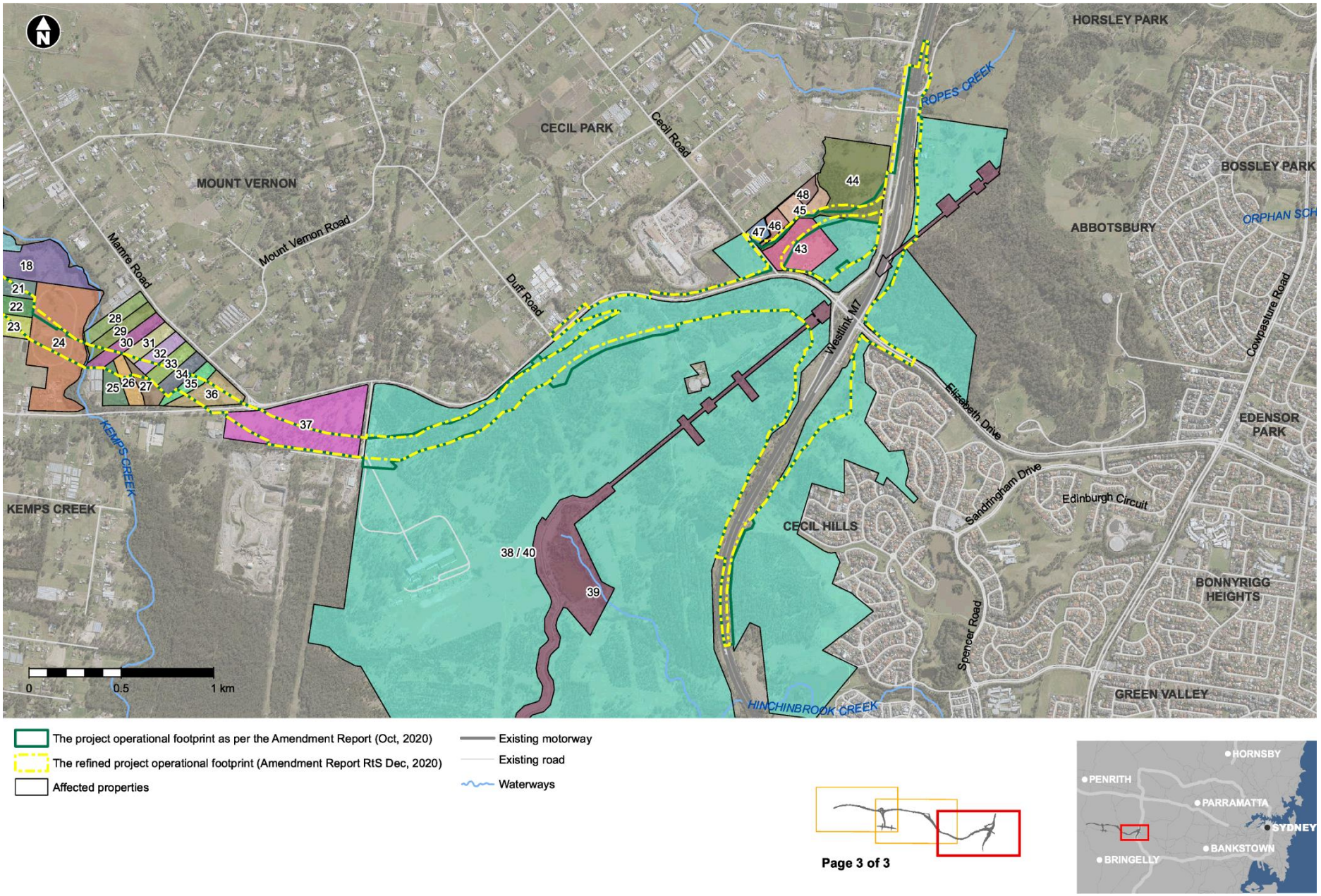


Figure 6-8 Properties within the refined operational footprint

7. Revised environmental management measures

7.1 Overview

The amendment report for the M12 Motorway identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts.

After consideration of the issues raised in the public submissions, the environmental management measures for the proposal (refer to **Chapter 7** of the amendment report) have been revised. Should the proposal proceed, the environmental management measures in Table 7-1 will guide the subsequent phases of the proposal. Additional and/or modified environmental safeguards and management measures to those presented in the amendment report have been underlined and deleted measures, or parts of measures, have been struck out.

Where additional and/or modified environmental management measures have been included in response to submissions made to the amendment report, they are highlighted in orange. Where they have been included in response to the design changes and construction updates described in **Chapter 5** and **Chapter 6**, they are highlighted in blue.

Table 7-1 Summary of environmental safeguards and management measures

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
General				
Community consultation	G01	A Community Communication Strategy will be prepared for the project to facilitate communication with the local community including relevant Government agencies, Councils, adjoining affected landowners and businesses, and other relevant stakeholders that may be affected by the project. The strategy will: Identify people or organisations to be consulted during the delivery of the project • Set out procedures and mechanisms for the regular distribution of information about the project • Outline mechanisms to keep relevant stakeholders updated on site construction activities, schedules and milestones • Outline avenues for the community to provide feedback (including a 24-hour, toll free project information and complaints line) or to register complaints and through which TfNSW will respond to community feedback • Outline a process to resolve complaints and issues raised. The Community Communication Strategy will include a Construction Fatigue Protocol to minimise impacts associated with construction fatigue. The Protocol will include consideration of noise attenuation and restriction of out-of-hours work or use of noise intensive equipment where reasonable and feasible.	TfNSW/ Contractor	Prior to construction
General construction management	G02	A CEMP will be prepared and implemented for the project in accordance with the Department of Infrastructure, Planning and Natural Resources Guideline for the Preparation of Environmental Management Plans (DIPNR 2004), for the ongoing management of environmental issues during construction of the project.	Contractor	Prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Biodiversity				
All biodiversity impacts	B01	A CFFMP will be prepared. The measures in the CFFMP will include: • A site specific induction • Identification of clearing limits and exclusion fencing • Pre-clearance surveys • Vegetation clearing procedures • An unexpected finds procedure • Procedures for weed management and monitoring • A process for de-watering farm dams and the relocation of aquatic fauna • Provision of supplementary fauna habitat (eg nest boxes).	Contractor	Prior to construction
	B02	A Habitat Compensation Plan (HCP) will be prepared and implemented as part of the CFFMP for the project. The HCP will target those species that will be impacted by the loss of hollows. Measures will include: nest boxes, reuse of salvaged hollows and/or new technologies eg chainsaw hollows), as well as replacement of woody debris and bushrock with consideration to Guide 5 and Guide 8 of Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011).	Contractor	Prior to construction
Removal of native vegetation, threatened species, and threatened species habitat	B03	Native vegetation, threatened species and threatened species habitat removal will be minimised where practicable through detailed design. This will include avoiding the nest and surrounds of the White-bellied Sea-Eagle, where practicable.	Contractor	Detailed design
	B04	Biodiversity offsets for the project will be purchased and managed in accordance with the Biodiversity Offset Strategy prepared for the project.	TfNSW	Prior to operation

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Removal of native vegetation, threatened species, and threatened species habitat	B05	Pre-clearing surveys will be carried out in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 1: Pre-clearing process). The following species identified on or near the study area will require particular attention: • White-bellied Sea-Eagle If design cannot avoid the White-bellied Sea-Eagle nest, then pre-clearing measures to avoid impact on the nest will be implemented. This will include pre-clearing survey to establish if it is currently being used and removal of the nest by an ecologist experienced in similar procedures. The potential impacts of habitat removal will be minimised by removing the nest outside of the nesting period (typically lays between June and September, with young remaining in the nest for 70 days). An initial pre-clearing inspection will be carried out at least 21 days prior to commencement of clearing, to give the ecologist time to check the nest and then relocate if needed. • Cumberland Plain Land Snail Pre-clearance surveys will be carried out immediately before clearing works by a qualified ecologist in all vegetated areas to be disturbed that were identified as known or potential habitat for Cumberland Plain Land Snail (see Section 6.2). As identified in the CFFMP, all individual Cumberland Plain Land Snails found during pre-clearance surveys will be translocated to adjacent areas of suitable habitat.	Contractor	Prior to construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Removal of native vegetation and threatened species habitat	B06	An unexpected threatened species finds procedure will be developed as part of the CFFMP and based on Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 1: Pre-clearing process). The procedure will include requirements for workers to be made aware of the potential flora and fauna species that may be encountered during construction (including training staff on species identification) and outline the process for the identification and management of unexpected flora and fauna. In the event that any threatened species are identified during construction, the following steps would be carried out: 1. Stop work immediately in the location of the unexpected find to avoid any potential impacts. 2. Notify the environmental manager. 3. Environmental manager will arrange for an ecologist to conduct an assessment of significance of the likely impact, develop management options, and notify DPIE, EESG, and DAWE as appropriate. 4. If a significant impact is unlikely to occur, re-begin work and maintain regular site inspections. 5. If a significant impact is likely to occur: a. Consult with DPIE, EESG and DAWE as appropriate. b. Obtain approvals, licenses or permits as required. c. Re-begin work once advice is sought and necessary approvals, licenses and permits are obtained. 6. Include species in subsequent inductions, toolbox talks and update the CEMP.	Contractor	During construction
	B07	Vegetation and habitat removal will be carried out in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 4: Clearing of vegetation and removal of bushrock).	Contractor	During construction
	B08	Revegetation will be carried out in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 3: Re-establishment of native vegetation) and the Landscape Plan prepared for the project.	TfNSW / Contractor	During construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	B09	Habitat will be replaced or re-instated in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 5: Re-use of woody debris and bushrock and Guide 8: Nest boxes). A Habitat Compensation Plan, as described in B02 will include this measure.	Contractor	During construction
Riparian vegetation and aquatic impacts	B10	Removal of riparian vegetation at creek crossings will be minimised and vegetation connectivity across the riparian zone will be maintained where possible.	Contractor	During construction
	B11	Measures to protect aquatic and riparian habitat will be outlined in the CFFMP and protected in accordance with *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011) (*Guide 10: Aquatic habitats and riparian zones*) and Section 3.3.2 *Standard precautions and mitigation measures* of the Policy and guidelines for fish habitat conservation and management (DPI, 2013).	Contractor	Prior to construction
Aquatic impacts	B12	A snag management plan would be prepared as part of the CFFMP for the project for snag removal and relocation at Badgerys Creek, Kemps Creek and South Creek in accordance with the Policy and guidelines for fish habitat conservation and management (DPIE, 2013). The management plan will be informed by additional field work which will provide details of the snags to be relocated (such as numbers and locations) and relocation methods. In accordance with Section 3.2.5.2 of the Policy and guidelines for fish habitat conservation and management (DPI 2013), the snag management plan will: • Clearly outline the objectives to be achieved • Document the actions to be taken for each individual snag • Detail the methods and machinery to be use • Specify the season or time period over which the works will be carried out.	Contractor	Prior to construction
	B13	Creek adjustments will be investigated and removed or minimised during detailed design where feasible. Proposed creek adjustments will be designed such that they result in minimal changes to flow velocities.	Contractor	Detailed design

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	B14	Creek corridors will be revegetated with locally native riparian vegetation, in accordance with the requirements of the Policy and guidelines for fish habitat conservation and management (DPI, 2013) and in consideration of the Guidelines for instream works on waterfront land (DPI, 2012). The creek channels will be rehabilitated to preconstruction conditions or better.	TfNSW/ Contractor	During construction
	B15	Bridge pier locations within instream (main waterway channel) or on creek banks will be avoided during detailed design at the South Creek, Cosgroves Creek, Badgerys Creek and Kemps Creek crossings. Where avoidance is not possible, further biodiversity assessment will be required.	Contractor	Detailed design
	B16	Large woody debris will be retained for creek crossing works where practicable. Any large woody debris placed in the realigned waterways will be relocated in consultation with an ecologist.	Contractor	During construction
	B17	Permanent and temporary waterway crossings will be designed and constructed to maintain fish passage in accordance with Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (Fairfull and Witheridge, 2003). Crossing types should be matched to waterway type as per Table 1 in Fairfull and Witheridge (2003).	Contractor	During construction
	B18	The temporary application of mulch during construction will be managed to avoid the potential for material and tannin run-off into waterways. This will include limiting the application of mulch near waterways where practicable. The application of mulch for permanent landscaping must be designed and planned to avoid material and tannin runoff.	TfNSW/ Contractor	During construction
	B19	Emergency response protocols and procedures will be included in the Project CEMP and implemented in the event of a contaminant spill or leak.	Contractor	During construction
	B20	Spill kits will be located to allow for timely response to uncontained spills. Site inductions will include a briefing on the use of spill kits.	Contractor	During construction
Groundwater Dependent Ecosystems	B21	Interruptions to water flows associated with groundwater dependent ecosystems will be minimised through detailed design.	Contractor	Detailed design

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Changes to hydrology	B22	Changes to existing surface water flows will be minimised through detailed design.	Contractor	Detailed design
Fragmentation of identified biodiversity links and habitat corridors	B23	Connectivity measures will be implemented in accordance with Wildlife Connectivity Guidelines for Road Projects (TfNSW, under preparation). Fencing will be located to reduce roadkill of fauna species and funnel animals to creek crossings where safe passage will be available. Detailed design is to retain fauna passage at all four main creek lines (Cosgroves, South, Kemps and Badgerys Creeks).	Contractor	Detailed design and during construction
Edge effects on adjacent native vegetation and habitat	B24	Exclusion zones will be set up at the limit of clearing in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 2: Exclusion zones). Exclusion zones will be set up to protect potential indirect impacts to threatened flora in accordance with the areas identified in the EIS and this amendment report (including Figure 1-2 of Appendix A of the amendment report).	Contractor	During construction
Injury and mortality of fauna	B25	Fauna will be managed in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 9: Fauna handling).	Contractor	During construction
Invasion and spread of pest species	B26	Weed species will be managed in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 6: Weed management).	Contractor	During construction
Invasion and spread of pathogens and disease	B27	Pathogens will be managed in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 2: Exclusion zones).	Contractor	During construction
Noise, light and vibration	B28	Shading impacts will be minimised through detailed design of bridge and culvert structures. The need for artificial lighting during construction and operation will be minimised through detailed design where feasible, including directing lighting away from vegetated areas where practicable.	Contractor	Detailed design, during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Identification of Threatened Species	**B29**	**Additional targeted surveys for *Pimelea spicata* will be conducted in optimal conditions, as defined by *NSW Bionet Threatened Biodiversity Profile Data Collection* (DPIE). *Pimelea spicata* must be surveyed at least three occasions, with each occasion at least a month apart unless the species is found prior. A reference population must also be surveyed on each occasion.**	**TfNSW**	**Detailed design, prior to construction**
Biodiversity impacts due to the Wallgrove Road realignment	**B30**	**Opportunities to further minimise native vegetation clearing and drainage line impacts from the Wallgrove Road realignment will be investigated. Opportunities for investigation will include, but will not be limited to changing the height of the road, steepening of batters and/or the use of retaining wall structures and moving the horizontal alignment closer to the new proposed southern road reserve boundary.**	**TfNSW**	**Detailed design, prior to construction**
Transport and traffic				
Construction transport and traffic	TT01	A construction transport and traffic management plan (CTTMP) will be prepared as part of the CEMP in consultation with relevant local Councils, and in accordance with relevant guidelines. The CTTMP will outline: • Staging and planning of works to minimise the need to occupy roads where practicable, including identification of haulage routes • Safe alternative routes for pedestrians and cyclists in accordance with relevant safety and accessibility standards • The requirements for traffic control plans to be prepared for each work area which will include details of site access and specific traffic control measures (including signage) to manage traffic movements • Road safety audit requirements • Parking arrangements for construction staff • Identification of access arrangements at construction sites detailing vehicle access movements • Measures to minimise changes to the existing road network, property access, bus stops and pedestrian/cyclist facilities where feasible	Contractor	Prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
		• Measures to communicate and notify of any changes in traffic conditions on roads or paths to road users, emergency services, public transport operators, and other relevant stakeholders • Measures to manage construction traffic interfaces and access arrangements with WSIA and Sydney Metro – Western Sydney Airport • Requirements for appropriate warning and signage for traffic and other road users such as cyclists and pedestrians in the vicinity of work areas and work site access, and road diversions.		
	TT02	Changes to bus stops will be implemented in consultation with TfNSW, relevant councils, and relevant bus operators. Alternate temporary bus stops will be provided with appropriate signage to direct commuters. Safe access will be provided in accordance with relevant safety and accessibility standards.	Contractor	Prior to construction, during construction and after construction
	TT03	Movements of haulage vehicles will be planned to minimise movements on the road network during the AM and PM peak periods where practicable.	Contractor	Prior to construction and during construction
Impacts on M7 Motorway traffic and shared user path users	TT04	Consultation will be carried out with the operators of the M7 Motorway to develop measures to manage the potential impacts of construction within the operating M7 Motorway corridor.	TfNSW / Contractor	Detailed design, prior to construction, and during construction
	TT05	TfNSW will continue to work with Western Sydney Parklands Trust to support the delivery of a shared user path within Western Sydney Parklands to connect from Range Road to the existing M7 Motorway shared user path. If it is determined during consultation that the shared user path connection through the Western Sydney Parklands will not be delivered, TfNSW will provide an alternative alignment for the shared user path in this section via either Elizabeth Drive, or alongside the M12 Motorway from Range Road to the M7 Motorway shared user path network.	TfNSW	Detailed design, during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Damage or impacts on local road infrastructure	TT06	A road dilapidation report will be prepared before impacts on local roads in consultation with relevant councils and other relevant stakeholders. The report will document the existing conditions of local roads and outline measures to repair damage to roads from heavy vehicle movements associated with the project.	Contractor	Prior to construction
Impacts on property access	TT07	Existing property access would be maintained at all times. Any changes to access arrangements or alternative access that are necessary during construction will be done with consultation with the landowner. Any changes to access will provide the same equivalent pre-existing level of access unless agreed to by the land owner. Property access that is physically affected by the project will be reinstated to at least an equivalent standard, in consultation with the landowner.	TfNSW / Contractor	Detailed design, prior to construction, during construction ~~and operation~~
Impacts on businesses	TT08	A signage strategy will be prepared as part of the CTTMP to provide for appropriate signage for businesses where existing signage is obscured/no longer visible or where customers are required to use alternative access to reach the businesses during construction.	Contractor	Prior to construction
Operational traffic	**TT09**	**Traffic signals will be coordinated to minimise congestion and manage traffic flows.**	**TfNSW**	**Detailed design**
Impacts on Devonshire Road traffic during construction	**TT10**	**Investigate and develop an appropriate traffic solution to manage the expected traffic delays during construction in the vicinity of Devonshire Road. The options considered and the preferred solution will be documented in a memo and then implemented through the CTTMP for the project.**	**TfNSW / Contractor**	**Prior to construction**

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Urban design, landscape character				
Impacts on views and landscape character from construction and operation of the project	LVIA01	An Urban Design and Landscape Plan (UDLP) will be prepared to minimise landscape character and visual impacts, and detail and guide the implementation of landscape features to be installed as part of the project, including re-vegetation requirements. This will include requirements for the provision of vegetative screening to soften the appearance of structural elements of the project such as noise ~~**walls**~~ ***barriers*** and provide screening of sensitive views. The UDLP will also consider the requirements of the heritage interpretation framework that will be prepared for the project (NAH02). The UDLP will be prepared in accordance with applicable guidelines, be consistent with the concept project identity in the EIS and relevant urban design objectives and principles for the project including consideration of implementation of Crime Prevention Through Environmental Design (CPTED) principles, and in consultation with relevant councils.	Contractor / TfNSW	Detailed design
	LVIA02	A detailed Landscape Plan will be prepared for the project and implemented throughout construction. The plan will guide the implementation of measures to minimise landscape character and visual impacts, including revegetation requirements.	Contractor	Detailed design, prior to construction and during construction
	LVIA03	Existing vegetation within the construction footprint will be retained and protected where possible. This includes densely vegetated areas such as remnant riparian forests and Cumberland Woodlands in Western Sydney Parkland.	Contractor	Detailed design and during construction
	LVIA04	Site levels and grades for the project will integrate with the surrounding terrain to help the visual assimilation of the project into the surrounding landscape where practicable. Engineered slopes will have gradients no steeper than 3H:1V where possible to maximise the establishment of vegetation on these batters and allow for appropriate maintenance.	Contractor	Detailed design

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	LVIA05	Project elements such as ancillary facility hoardings will be designed and maintained to minimise impacts on landscape character and visual amenity. This will include selecting colours and materials that are visually recessive and blend into the surrounding landscape where practicable, and the prompt removal of graffiti.	Contractor	Detailed design, prior to construction and during construction
	LVIA06	Where noise mitigation such as noise barriers are required, they will be designed with the aim of minimising visual impacts.	Contractor	Detailed design
	LVIA07	Temporary and permanent lighting will be designed and implemented with consideration of: • The need to orientate lighting to minimise light spill and glare impacts on nearby receivers • The need to minimise vandalism and maintenance requirements • Requirements of the National Airports Safeguarding Framework (NASF) (National Airports Safeguarding Advisory Group, n.d.) for operational lighting • Opportunities to implement sustainability initiatives in design such as energy efficient or solar lighting.	Contractor	Detailed design, prior to construction and during construction
	LVIA08	TfNSW will investigate opportunities to undertake early tree planting in consultation with landowners to soften impact of structural elements and screen sensitive views.	TfNSW	Prior to and during construction
Urban design elements	LVIA09	The findings and recommendation of the Aboriginal cultural heritage design process managed by Balarinji will be incorporated into the urban design and implemented as part of the project, including interpretive initiatives.	TfNSW / Contractor	Detailed design, prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	LVIA10	Shared user paths to be delivered as part of the project will not preclude connections to future open space corridors and land use as identified in the Western Sydney Land Use and Infrastructure Implementation Plan (LUIIP) (DPE 2018). Where further design of adjacent open space corridors is undertaken, shared user paths will be provided to connect at an appropriate location. Shared user paths will be designed to be located away from road-side edges to provide an immersive landscape experience for pedestrians and cyclists, where possible.	TfNSW / Contractor	Detailed design
	LVIA11	Establish an Urban Design Review Panel to provide advice and input into the development of the UDLP.	TfNSW	Detailed design
	LVIA12	Highly visible elements of the project including potential noise barriers, retaining walls, bridge structures and urban design material selection will be designed to satisfy functional requirements and adopt the design principles detailed in the M12 Motorway EIS Landscape Character, Visual Impact Assessment and Urban Design Report. The proposed designs will be documented in the relevant UDLP for the project.	Contractor	Detailed design
	LVIA13	Consider a standard design for retaining walls and major structures across the project, to present a coordinated ‘suite of elements’.	Contractor	Detailed design
Safety in design	LVIA14	The project must consider CPTED principles during detailed design to minimise safety risks to all users. The project must carry out periodic CPTED reviews by a qualified professional and implement any additional recommendations where reasonable and feasible.	Contractor	Detailed design

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Revegetation and landscaping	LVIA15	A tree management strategy will be prepared for the project, outlining: • Measures to minimise tree removal to retain and protect as many trees within the construction footprint as reasonable and feasible • Measures to avoid damage to trees that are to be retained within the construction footprint to ensure the maintenance of health and stability of the trees in accordance with AS4970-2009 Protection of trees on development sites • Requirements for the pruning of trees to be carried out by a suitably qualified person in accordance with AS 4373-2007 Pruning of amenity trees • Consideration of maintenance requirements and safety standards • Requirements for the replacement trees where removal cannot be avoided including: – Net increase in the number of trees (not identified as within an EEC) – Where it is not practicable to plant trees in the operational footprint an alternative location will be identified in consultation with relevant councils and in consideration of future development in the local area • Minimum pot size in accordance with part 3.2.1 (Rural road reserves) in the TfNSW Landscape Guideline (2018) subject to long-term viability of the plant.	Contractor	Detailed design and prior to construction
	LVIA16	Revegetation for the project will consider the land use requirements of the National Airports Safeguarding Framework (NASF) (National Airports Safeguarding Advisory Group, n.d.) to minimise the risk of wildlife strikes at the Western Sydney Airport.	Contractor	Detailed design
	LVIA17	Carry out appropriate soil analysis and identify soil preparation requirements for landscaping treatments to inform the Urban Design and Landscaping Plan and vegetation management in accordance with TfNSW Batter Surface Stabilisation Guideline (Roads and Maritime 2015).	Contractor	Detailed design and during construction
	LVIA18	**Species selected for landscaping will consider species that are resilient to future modelled climatic conditions and are suitable for establishment on road embankments.**	**Contractor**	**Detailed design**

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Socio-economic, land use and property				
Property acquisition and lease	SLP01	Areas of land leased for the purposes of construction will be reinstated at the end of the lease to at least equivalent standard in consultation with the landowner.	Contractor	During construction
	SLP02	All partial and full acquisitions and associated property adjustments will be carried out in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991* and the Land acquisition reform 2016 in consultation with landowners.	TfNSW	Prior to construction
	SLP03	A Personal Manager - Acquisition (PMA) will be appointed to assist landowners and residents who may be affected by acquisition requirements for the project. The PMA will provide ongoing support for relocated persons, including dispute resolution and counselling, and provision of contact information for relevant services.	TfNSW	Detailed design
	SLP04	Property adjustments, including replacement of farm infrastructure (such as fencing) and relocation of property access, prior to work that impact the property will be carried out in consultation with property owners/ business managers.	Contractor / TfNSW	Prior to construction, during construction
Utility impacts	SLP05	The project will be designed with the aim of minimising impacts on existing utilities and services, in consultation with utility owners and/or providers of services where feasible and reasonable.	Contractor / TfNSW	Detailed design
	SLP06	Utility owners and/or providers of services will be identified and consulted with before works start, to determine the requirements for access to, protection of, or relocation of services. Disruption to existing services will be minimised where feasible and local residents and businesses will be notified before any planned disruption.	Contractor	Prior to construction
Agricultural land use	SLP07	Construction activities will be planned to minimise disruption to existing agricultural operations/activities in surrounding properties where feasible and reasonable (eg stock access, access to farm dams, etc) unless otherwise agreed by the landowner.	Contractor	Prior to construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Social infrastructure	SLP08	Adjustments to facilities in Western Sydney Parklands (eg walking and cycling trails and Sydney International Shooting Centre access) will be carried out in consultation with the Western Sydney Parklands Trust.	TfNSW / Contractor	Prior to construction and during construction
	SLP09	TfNSW will continue to work with Western Sydney Parklands Trust to support their delivery of a replacement for the Wylde Mountain Bike Trail by Western Sydney Parklands Trust.	TfNSW	Prior to construction
Impacts on community facilities	SLP10	Ongoing consultation regarding management of potential impacts will be carried out in accordance with the Community Communication Strategy with the following community facilities: • Kemps Creek Sporting and Bowling Club • Kemps Creek Cougars Baseball Club • Science of the Soul Study Centre • Muhammadi Welfare Association of Australia • Schools such as Kemps Creek Public School and Christadelphian Heritage College, and Irfran College • Western Sydney Parklands • Sydney International Shooting Centre.	TfNSW / Contractor	Prior to construction and during construction
Construction fatigue	SLP11	Construction fatigue will be managed in accordance with the Community Communication Strategy.	TfNSW / Contractor	Prior to construction and during construction
Impacts on businesses	SLP12	On-going consultation will be carried out with local business owners that may be impacted during construction (including owners of agricultural businesses) in accordance with the Community Communication Strategy for the project.	TfNSW / Contractor	Prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	SLP13	A business impact risk register will be established and maintained for the duration of construction to identify and manage specific impacts on individual businesses.	Contractor	Prior to construction and during construction
Employment opportunities	SLP14	Employment opportunities for the project will align with the commitments outlined in the Western Sydney City Deal (2018), including targets for Indigenous, social and local employment and procurement.	TfNSW / Contractor	Prior to construction and during construction
Aboriginal heritage				
General	AH01	A construction cultural heritage management plan (CCHMP) will be developed for the project in consultation with the project RAPs and EESG. The CCHMP will include: • An unexpected finds procedure for the discovery of Aboriginal ancestral remains, Aboriginal objects or new Aboriginal sites consistent with TfNSW Standard Management Procedure Unexpected Heritage Items (Roads and Maritime, 2015). This procedure will also outline requirements to manage unexpected human remains finds in accordance with NSW statutory requirements, and relevant guidelines and standards prepared by EESG. The Procedure will outline the process for consulting with the RAPs in the event that previously unidentified Aboriginal heritage is discovered. • Procedures for the management and curation of salvaged Aboriginal objects • Detailed locations and installation procedures for fencing and protective coverings • Details of permissible activities inside protected Aboriginal areas • Details of permissible activities inside protected Aboriginal areas • Procedures for consideration of heritage aspects within site inductions and toolbox talks for construction workers and supervisors.	Contractor	Prior to construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	AH02	A detailed Aboriginal Cultural Salvage Strategy will be prepared for the project in consultation with project RAPs and EESG to guide the salvage excavation process for Aboriginal sites that will be salvaged. The strategy will address specific questions about each site and will be based on the salvage excavation methodology outlined in the ACHAR and prepared in consultation with EESG and project RAPs. All salvage collections and excavations will be carried out by a suitably qualified and experienced archaeologist. The method and extent of excavation required, and management of artefacts finds will be determined in consultation with project RAPs and EESG. Following completion of all salvage works associated with Aboriginal heritage sites, an Aboriginal Cultural Heritage Report will be prepared in accordance with relevant guidelines and in consultation with project RAPs and EESG. The Aboriginal Cultural Heritage Report will document all results of the salvage activities including analysis of artefacts from collections and excavations and management of all artefact finds.	TfNSW / Contractor	Detailed design
Impacts on Aboriginal heritage	AH03	~~A work method statement will be prepared for the works within~~ ***Impacts on*** identified Aboriginal sites will be minimised ***where feasible*** in consultation with a suitably qualified and experienced archaeologist. ~~The method statement will be prepared to minimise impacts on Aboriginal sites where feasible, including input into detailed design~~. Measures ***considered*** will include (but not be limited to): • Designing and locating bridges (including bridge pylons), haulage routes and other access roads to minimise potential disturbance of soils where feasible • Focusing protection measures on the zone within 100 metres of creeks including consideration of opportunities to cover the original cultural deposits in temporary protective barriers such as geotextile fabric and a layer of clean fill.	Contractor	***Detailed design*** ~~Prior to construction and during construction~~
Impacts on identified cultural deposits	AH04	An investigation will be carried out during detailed design to minimise impacts on the CHRP site where feasible.	Contractor	Detailed design

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	AH05	Investigations will be carried out during detailed design to determine the feasibility of retaining cultural deposits between the pylons of bridges or elevated structures at the following sites: • BCW • BCE • SCW T1 • SCW T2 • SCE. This will include covering the original cultural deposits beneath temporary protective barriers ***where feasible***, such as geotextile fabric and a layer of clean fill material.	Contractor	Detailed design
	AH06	Salvage collection of surface artefacts will be carried out at the following sites: • BCE • SCW T2 • KCW • PCP8 • CHRP • RR • M12A1 • Isolated artefact 4 • TNR-AFT-14.	Contractor / TfNSW	Prior to construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	AH07	Salvage excavation will be carried out at the following sites: • CCW • BWB • BCW • SCW T1 • SCW T2 • SCE • KCW • CHRP. The methodology and extent of excavations required for the above sites will be in accordance with site specific requirements outlined in the ACHAR prepared for the project.	Contractor / TfNSW	Prior to construction
	AH08	Exclusion zones will be set up in the form of an appropriate barrier / fencing along the portion of AHIMS site 45-5-2721 (PAD-OS-7) that extends into the refined construction footprint, with visible signage notifying construction personnel to avoid ground impacts.	Contractor / TfNSW	Prior to construction and during construction
	AH09	Archaeological text excavation will be carried out at PAD-OS-7 in the instance that construction restrictions result in impacts to that site. Test excavations would be conducted in accordance with Requirement 16a of the Code of Practice (DECCW 2010), Stage 2 PACHCI (Roads and Maritime 2011) and in consultation with RAPs.	Contractor / TfNSW	Prior to construction
Non-Aboriginal heritage				
General	NAH01	A construction cultural heritage management plan (CCHMP) will be prepared for the project as part of the CEMP in consultation with DPC (Heritage). The CCHMP will include as a minimum: • A list, plan and maps with GIS layers showing the location of identified heritage items both within, and near, the construction footprint • A significance assessment and statement of significance for each item	Contractor	Prior to construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
		• Protocols and procedures including inductions and toolbox talks for all contractors and subcontractors working in the area to be informed of all exclusion zones, the elements and their significance, to prevent accidental damage or encroachment • Protocols and procedures to be implemented during construction to avoid or minimise impacts on items of heritage significance including protective fencing • The TfNSW Unexpected Heritage Items Procedure (Roads and Maritime, 2015) which would be followed in the event that unexpected heritage finds are uncovered during construction.		
	NAH02	A suitably qualified heritage specialist will be engaged to prepare a heritage interpretation framework to guide development of the detailed urban design for the project. This framework will be prepared in accordance with the Interpreting Heritage Places and Items Guidelines (NSW Heritage Office, 2005) and will include: • Integration of heritage themes and values to be incorporated • Collaboration with other design elements and themes for the project, including those associated with Western Sydney Airport and Sydney Metro – Western Sydney Airport, to develop an integrative design approach with surrounding development • Opportunities for design responses for Aboriginal and non-Aboriginal heritage.	Contractor / TfNSW	Detailed design
	NAH03	Impacts on Non-Aboriginal heritage items will be avoided or minimised where reasonable and feasible. Where impacts are unavoidable, works will be carried out in accordance with the measures for individual Non-Aboriginal heritage items outlined in measures NAH04 to NAH11.	TfNSW / Contractor	Detailed design, prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
McGarvie Smith Farm (Item 1, Penrith LEP 857)	NAH04	A suitably qualified heritage consultant will be engaged to prepare an archival photographic recording of the site in accordance with the Heritage Information Series How to prepare archival records of heritage items (NSW Heritage Office, 1998). This will include both buildings and landscape features such as dams, and earthworks. The recording will include a detailed map showing the location of the features. Options will be investigated to provide funding support to the property's current owner to prepare a thematic heritage study of CSIRO and other agricultural research stations, including both McGarvie Smith Farm and McMaster Field Station, and other relevant agricultural research stations and similar facilities located in NSW. The thematic study will include a review of the role of such properties in veterinary research, association with agricultural, pastoral and animal husbandry groups, use of pioneering methods and practices and contribution to the development of farming in Australia. In the event that landowners do not prepare this study, TfNSW will engage a heritage specialist to do so.	TfNSW / Contractor	Detailed design and prior to construction
The Fleurs Radio Telescope Site (Item 2, Penrith LEP 832)	NAH05	• All extant elements of the radio telescopes and associated infrastructure, including rubbish mounds situated outside the construction footprint will be left intact • Ground penetrating radar, or other remote sensing survey techniques, will be carried out under the supervision of a suitably qualified and experienced archaeologist before any ground disturbance within the heritage curtilage of the Fleurs Radio Telescope Site contained within the construction footprint to identify any sub-surface cables • Measures will be included in the CHMP to describe how the heritage values of the site will be conserved and managed during construction • TfNSW will engage a suitably qualified heritage consultant to prepare an archival photographic recording of the impacted areas of the property, in accordance with DPC (Heritage) guidelines (Heritage Council of NSW 2006) • The heritage interpretation framework for the project (NAH02) will include interpretation measures that will improve community awareness of the history of the Fleurs Radio Telescope as well as determine suitable locations for the presentation of information that are publicly accessible.	TfNSW / Contractor	Detailed design and prior to construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Upper Canal System (Pheasants Nest Weir to Prospect Reservoir (Item 4, SHR 01373))	**NAH06**	• Relevant conservation policies outlined in the Upper Canal CMP (NSW Public Works Government Architect's Office, 2016) will be considered during detailed design and incorporated into CCHMP to ensure heritage fabric is not impacted by the project. • The CCHMP will be consistent with and require implementation of relevant measures outlined in the Guidelines for development adjacent to the Upper Canal and Warragamba Pipelines (WaterNSW 2020) which sets out guidelines for designing, planning or assessing development on land adjacent to the canal at this location. Additional structures identified in the construction footprint will be investigated and measures implemented to avoid or minimise impacts. • Guidelines and associated safe working distances to be adhered to for heritage structures as outlined in Appendix K of the EIS • A safe working distance exclusion zone will be established around the exposed tunnel air shaft in the M7 Motorway median in accordance with the process outlined in noise and vibration management measures NV09 - NV10 • **Transport for NSW will provide an updated report to WaterNSW on project design changes as they relate to the WaterNSW Upper Canal corridor during detailed design.**	TfNSW / Contractor	**Detailed design,** prior to construction and during construction
McMaster Field Station (Item 6)	NAH07	• A suitably qualified heritage consultant will be engaged to prepare an archival photographic recording of the impacted area, in accordance with DPC (Heritage) guidelines (Heritage Council of NSW 2006). This will include both buildings and landscape features such as dams, and earthworks. The recording will include a detailed map showing the location of the features. • Options will be investigated to provide funding support to property's current owner to prepare a thematic heritage study of CSIRO and other agricultural research stations, including both McMaster Field Station and McGarvie Smith Farm, and other relevant agricultural research stations and similar facilities located in NSW. The thematic study will include a review of the role of such properties in veterinary research, association with agricultural, pastoral and animal husbandry groups, use of pioneering methods and practices and contribution to development of farming in NSW and Australia. In the event that landowners do not prepare this study, TfNSW will engage a heritage specialist to do so.	TfNSW / Contractor	Detailed design, prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
		• A potential use zone will be established around the McMaster Farm group of buildings, including a suitable buffer zone, and no construction activities will take place within this zone. This zone will be incorporated into the construction heritage management plan (CHMP). The potential use zone will include safe working distances to be adhered to for heritage structures as outlined in Appendix K of the EIS. Before occupying or utilising the buildings, a dilapidation survey will be carried out and a heritage architect will be engaged to advise on proposed modifications and management measures to avoid and minimise impact on the buildings.		
Fleurs Aerodrome (Item 7)	NAH08	• A suitably qualified heritage consultant will be engaged to prepare an archival photographic recording of the impacted area before its disturbance and/or removal, in accordance with DPC (Heritage) guidelines (Heritage Council of NSW 2006). The recording will include a detailed map showing the location of the features. • An interpretive framework developed for the project will include consideration of elements to enable the continued interpretation and understanding of the airstrip at Fleurs Aerodrome as a linear and continuous element. This will be carried out in consultation with Department of Defence and consider opportunities for involvement of veterans groups. • Relevant guidelines and associated safe working distances will be adhered to for remaining heritage structures as outlined in the Appendix K of the EIS	Contractor / TfNSW	Detailed design, prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Cecil Park School, Post Office and Church Site (Item 8)	**NAH09**	• **A suitably qualified archaeologist will be present during the excavation of the area occupied by the Cecil Park Archaeological site to confirm that the significance of artefacts and remains are in line with the findings of the test excavations already completed. If remains with the potential to be considered 'relics' (as defined in the *Heritage Act 1977*) are found, then works will stop and the unexpected finds procedure (RMS, 2015) will be followed.** • ~~TfNSW will liaise with local museums and/or historical societies to arrange a long-term secure artefact repository for the artefact assemblage. Once that arrangement has been made, DPC (Heritage) will be notified for their records. In the short term, TfNSW will provide secure short-term secure storage for the assemblage.~~ • ~~Archaeological salvage excavations will be carried out for the Cecil Park School, Post Office and Church Site (Item 8) in accordance with the research design and methodology outlined in the *M12 Motorway: Former Cecil Park Historical Complex Historical Archaeological Salvage Research Design and Methodology* (Jacobs, 2020).~~	Contractor / TfNSW	**During construction** ~~Detailed design~~
South, Kemps and Badgerys Creek Confluence Weirs Scenic Landscape (Item 12)	NAH10	• Management measures identified in the project UDLP (LVIA01) will be implemented during detailed design to minimise impacts on landscape and vistas • Flooding management measures (F01 to F08) and surface water quality and hydrology management measures (SWH01 to SWH14) will be implemented to reduce broader impacts on the surrounding scenic landscape.	Contractor / TfNSW	Detailed design, prior to construction and during construction
Luddenham Road (Item 03)	**NAH11**	**Where post and rail fencing of heritage significance is identified within the construction footprint, Transport for NSW will seek to avoid directly impacting such features. Where avoidance is not practicable, Transport for NSW will seek to minimise and mitigate impact in consultation with a suitably qualified heritage specialist.**	**Contractor/ TfNSW**	**Detailed design, prior to construction and during construction**
Noise and vibration				

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
General construction noise and vibration	NV01	A construction noise and vibration management plan (CNVMP) will be prepared for the project to mitigate and manage noise and vibration impacts during construction. The CNVMP will be implemented for the duration of construction of the project and will: • Identify nearby sensitive receivers • Include a description of the construction activities equipment and working hours • Identify relevant noise and vibration performance criteria for the project and license and approval conditions. • Include modelling results showing construction noise impacts based on detailed design information • Outline standard and additional mitigation measures from the Construction Noise and Vibration Guideline (CNVG) (Roads and Maritime 2016) and information about when each will be applied • Outline requirements for the development and implementation of an Out-of-hours Work Protocol • Outline requirements for noise and vibration monitoring that will be carried out to monitor project performance associated with the noise and vibration criteria • Describe community consultation and complaints handling procedures in accordance with the Community Communication Strategy to be developed for the project • Outline measures to manage noise impacts associated with heavy vehicle movements both on and offsite • Outline measures to minimise cumulative construction impacts and the likelihood for 'construction fatigue' from concurrent and consecutive projects in the area • Outline requirements to minimise and manage construction fatigue, in consultation with the community.	Contractor	Prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	NV02	Measures to minimise and manage construction fatigue are to be investigated through the planning of construction staging.	Contractor	Detailed design, prior to construction and during construction
	NV03	Detailed noise assessments will be carried out for ancillary facilities with the potential to involve high noise generating activities (including batching plant operations). The assessments will consider the proposed site layouts and noise generating activities that will occur at the facilities and assess predicted noise levels against the relevant noise management criteria. The assessments will also consider the requirement for appropriate noise mitigation within ancillary facilities and adjacent to construction works, depending on the predicted noise levels. Any mitigation measures required will be implemented before the start of activities that generate noise and vibration impacts.	Contractor	Prior to construction
	NV04	Monitoring will be carried out at the start of high noise and vibration activities to confirm that actual noise and vibration levels are consistent with the noise and vibration impact predictions. Where mitigation measures were included, measurements will be carried out to confirm the effectiveness. Where the monitoring identifies higher levels of noise and vibration compared to predicted levels, or where mitigation is shown to be ineffective against measured noise and vibration levels, additional mitigation measures will be identified and implemented to appropriately manage impacts where feasible and reasonable.	Contractor	Construction
	NV05	Where reasonable and feasible, receivers identified as requiring at-property treatment for operational noise mitigation will be identified and offered treatment before construction activities begin that are likely to impact them.	TfNSW / Contractor	Prior to construction
Vibration impacts	NV06	Activities that generate vibration will be managed to avoid impacts on structures and sensitive receivers. This includes implementing appropriate safe working distances where practicable.	Contractor	Prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	NV07	The use of alternatives to vibration generating equipment will be considered where vibration impacts are predicted.	Contractor	During construction
	NV08	Where works are within the minimum working distances and considered likely to exceed the cosmetic damage objectives (as shown in Figure 7-3 of Appendix G of the amendment report), construction works will not proceed unless: • A different construction method with lower source vibration levels is used, where feasible • Attended vibration measurements are carried out at the start of the works to determine the risk of exceeding the vibration objectives.	Contractor	During construction
	NV09	Building Condition Surveys will be offered in writing to property owners before construction where there is a potential for construction activities to cause structural or cosmetic damage. A comprehensive report will be prepared by a suitably qualified professional before the relevant works begin and will comprise a written and photographic condition.	Contractor	Prior to construction
Vibrations impacts on the Upper Canal System and Gas Pipelines	NV10	Surveys will be carried out to confirm the existing condition of the WaterNSW Upper Canal System and Jemena high pressure gas pipelines to determine appropriate vibration criteria. This will also include consideration of distances from the vibration intensive activity (piling, rock-breaking and vibratory rolling), as well as ground conditions. A vibration criterion of a peak particle velocity (PPV) will be determined in consultation with the relevant utility/service providers, including WaterNSW. In-situ monitoring will be carried out to confirm the vibration levels and assess the impact of vibration. Where the monitoring identifies exceedances in the relevant criteria, or where impacts are identified, additional mitigation measures will be identified and implemented to appropriately manage impacts.	TfNSW / Contractor	Detailed design and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Vibration impacts on heritage structures	NV11	The following structures have the potential to be within the safe working distances for sensitive structures (Group 3 from DIN 4150): • Item 1: McGarvie Smith Farm • Item 2: Fleurs Radio Telescope Site • Item 4: Upper Canal System • Item 6: McMaster Field Station • Item 7: Fleurs Aerodrome. A detailed survey will be completed to determine the potential for vibration impacts and to define appropriate criteria for each heritage item. Vibration monitoring will be carried out when vibration intensive tasks are occurring within the minimum working distances to heritage structures. Where the monitoring identifies exceedances in the relevant criteria, or where impacts are identified, additional mitigation measures will be identified and implemented to appropriately manage impacts.	Contractor	Prior to construction and during construction
Construction traffic noise	NV12	Construction vehicle movements (both on and offsite) will be managed to minimise noise impacts. Where feasible, this will include (but not be limited to): • Establishment and use of internal haul routes, or existing major roads where this is not feasible • Restriction of heavy vehicle movements to standard construction hours • Locating traffic marshalling areas away from residences to minimise noise impacts from idling vehicles • Instructing workers on the operation of heavy vehicles entering and exiting the site to minimise noise.	Contractor	During construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Cumulative construction impacts	NV13	The likelihood of cumulative construction noise impacts will be considered during detailed design when detailed construction schedules of other projects are available. Construction works will be scheduled with the aim of minimising concurrent works near sensitive receivers where possible in consultation with managers of other nearby projects that are likely to result in a cumulative impact. This will include the coordination of respite between the various construction projects where receivers are likely to experience concurrent construction impacts where feasible. Coordination between project teams would be carried out throughout construction.	Contractor	Prior to construction and during construction
Operational noise and vibration	**NV14**	Operational noise and vibration mitigation measures will be identified in an Operational Noise and Vibration Review (ONVR). Requirements for mitigation measures, including quieter noise pavements, noise barriers, and at-property treatments, will be reviewed as part of the ONVR and as the detailed design progresses. The implementation of treatments will be carried out in accordance with TfNSW Noise Mitigation Guidelines (2015). **Owners of residences identified as eligible for noise treatment triggered by the project will be contacted by TfNSW and/or TfNSW's contractor.**	Contractor / TfNSW	Detailed design, **prior to and** during construction and prior to operation
	NV15	Within 12 months of start of operation of the project, actual operational noise performance will be compared to predicted operational noise performance. The need for additional mitigation or management measures to address identified operational performance issues and meet relevant operational noise criteria will be assessed and implemented where feasible and reasonable.	TfNSW	During operation
Flooding				
Potential changes to flood impacts resulting from detailed design	F01	Further flood investigations and hydrological and hydraulic modelling will be carried out during detailed design to ensure the flood immunity objectives and design criteria for the project are met. The modelling will be used to define the nature of both main stream flooding and major overland flow along the full length of the project corridor under pre- and post- project conditions and to define the full extent of any impact that the project will have on patterns of both main stream flooding and major overland flow. The hydraulic model(s) will be based on two-dimensional hydraulic modelling software. The modelling will take into account any updated regional flood modelling and information available at the time	Contractor	Detailed design

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Flooding impacts on property	F02	Should the updated flood modelling show the project will result in an adverse flooding impact, TfNSW will consult with landowners regarding appropriate mitigation measures to be implemented by the contractor in relation to each individual property.	TfNSW / Contractor	Detailed design
Flooding impacts during construction	F03	A flood management plan will be prepared as part of the CEMP for the project and will detail the processes for flood preparedness, materials management, weather monitoring, site management and flood incident management. The flood management plan will be developed in accordance with: • Managing Urban Stormwater, Soils and Construction, Volume 1 4th Edition, March 2004 (Landcom 2004) and Managing Urban Stormwater, Volume 2D – Main Road Construction (DECC 2008) • TfNSW Erosion and Sedimentation Management Procedure (Roads and Traffic Authority 2009) • TfNSW Technical Guideline: Temporary Stormwater Drainage for Road Construction (Roads and Maritime 2011) • TfNSW Stockpile Management Guideline (Roads and Maritime 2011).	Contractor	Prior to construction
Flooding and creek adjustment impacts	F04	Creek adjustments would be re-considered and/or further refined to minimise the impact on the creeks during detailed design.	TfNSW / Contractor	Detailed design
Flooding impacts of bridges and culverts	F05	Detailed construction staging plans will be developed during detailed design so that bridges and culverts are constructed in a way that minimises flood risk.	Contractor	Detailed design
	F06	Measures to address potential impacts of culvert blockage on afflux will be further investigated during detailed design and may include the installation of debris deflectors, trash racks or similar on drainage inlets where reasonable and feasible.	Contractor	Detailed design
	F07	During the detailed design phase, TfNSW will seek to refine the design of the works at Elizabeth Drive near Badgerys Creek to minimise flood affectation. Mitigation measures may include adjustment of road levels and/or flood relief culverts through the road.	TfNSW / Contractor	Prior to and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Impacts on existing drainage systems	F08	Activities that may affect existing drainage systems during construction will be carried out so that existing hydraulic capacity of these systems is maintained where practicable.	Contractor	During construction
Flooding impacts during operation	F09	The proposed bridges, culverts and changes to watercourses will be further refined during the detailed design to minimise potential flooding impacts.	TfNSW / Contractor	Detailed design
Consultation regarding flooding impacts	F10	Ongoing consultation will be carried out with WSIA and as further details of their flood management and earthworks are developed, these will be incorporated into an updated M12 Motorway flood model for the detailed design phase of the project.	TfNSW / Contractor	Prior to and during construction
Surface water quality and hydrology				
General	SWH01	A construction soil and water management plan (CSWMP) will be prepared for the project. The plan will outline measures to manage soil and water impacts associated with the construction works, including contaminated land. The CSWMP will provide: • Measures to minimise/manage erosion and sediment transport both within the construction footprint and offsite including requirements for the preparation of erosion and sediment control plans (ESCP) for all progressive stages of construction • Measures to manage waste including the classification and handling of spoil • Procedures to manage unexpected contaminated finds including asbestos which would be outlined in the contaminated land management plan and asbestos management plan to be prepared for the project • Measures to manage stockpiles including locations, separation of waste types, sediment controls and stabilisation • Measures to manage groundwater de-watering and impacts including mitigation required • Processes for de-watering of water that has accumulated on site and from sediment basins, including relevant discharge criteria • Measures to manage potential tannin leachate	Contractor	Prior to construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
		• Measures to manage accidental spills including the requirement to maintain materials such as spill kits • Measures to manage potential saline soils • Details of surface water and groundwater quality monitoring to be carried out before, throughout, and following construction • Controls for sensitive receiving environments including SEPP Coastal Wetlands which may include but not be limited to: – Designation of 'no go' zones for construction plant and equipment – Creation of catch/diversion drains and sediment fences at the downstream boundary of construction activities where practicable to ensure containment of sediment-laden runoff and diversion toward sediment sump treatment areas (not sediment basins) to prevent flow of runoff to the SEPP Coastal Wetland. • Erosion and sediment control measures will be implemented and maintained at all work sites in accordance with the principles and requirements in Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom 2004) and Volume 2D (NSW Department of Environment, Climate Change and Water 2008), commonly referred to as the "Blue Book", as well as relevant TfNSW Guidelines.		
	SWH02	A soil conservation specialist will be engaged by both TfNSW and the Contractor for the duration of construction of the project to provide advice on the planning and implementation of erosion and sediment control including review of ESCPs.	TfNSW / Contractor	Prior to construction and during construction
	SWH03	A water reuse strategy will be developed for both construction and operational phases of the project to reduce reliance on potable water. This strategy will be prepared during the detailed design stage and implemented throughout the project and will outline the construction and operational water requirements and potential water sources to supply the water demand in consultation with Sydney Water. Alternative water supply options to potable water will be investigated, with the aim of reusing water using recycled water where feasible.	Contractor	Detailed design, prior to construction, and throughout construction and operation

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Impacts of stockpiles	SWH04	Stockpiles will be managed to minimise the potential for mobilisation and transport of dust and sediment in runoff in accordance with TfNSW Stockpile Sites Management Guideline (Roads and Maritime, 2015). This will include: • Minimising the number of stockpiles, area used for stockpiles, and time that they are left exposed • Locating stockpiles away from drainage lines, waterways and areas where they may be susceptible to wind erosion • Stabilising stockpiles, establishing appropriate sediment controls and suppressing dust as required.	Contractor	Construction
Surface water quality impacts	SWH05	A construction water quality monitoring program will be developed and included in the CSWMP for the project to establish baseline conditions, observe any changes in surface water and groundwater during construction, and inform appropriate management responses. The program will be based on the water quality monitoring methodology water quality indicators and the monitoring locations identified in the Surface water and hydrology assessment report (Appendix M of the EIS) and supplementary memo (Appendix I of the amendment report), and Groundwater quality and hydrology assessment report (Appendix N of the EIS) and supplementary memo (Appendix J of the amendment report). Baseline monitoring will be carried out monthly for a minimum of 12 months before the start of construction. As a minimum this will include three wet weather sampling events over six months where feasible. Sampling locations and monitoring methodology to be carried out during construction will be further developed in detailed design in accordance with the Guideline for Construction Water Quality Monitoring (RTA 2003) and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018). It will include collection of samples for analysis from sedimentation basin discharge points, visual monitoring of other points of release of construction waters and monitoring of downstream waterways.	TfNSW / Contractor	Prior to construction, and during construction and operation

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Surface water quality impacts	SWH06	An operational water quality monitoring program will be developed and implemented following the completion of construction to observe any changes in surface water and groundwater following construction, and inform appropriate management responses. The program will be based on the water quality monitoring methodology, water quality indicators, and the monitoring locations presented in the Surface water and hydrology assessment report (Appendix M of the EIS), and Groundwater quality and hydrology assessment report (Appendix N of the EIS). The monitoring program will be carried out monthly and will preferentially monitor following wet weather events when rainfall results in discharge from control sites or is greater than a nominated rainfall threshold which will be identified in detailed design. Monitoring will be carried out for a minimum of 12 months following the completion of construction, or until the affected waterways are certified by a suitably qualified and experienced independent expert as being rehabilitated to an acceptable condition and/or the permanent water quality structures are deemed to be operating satisfactorily. Should the results of monitoring identify that the water quality management measures are not effective in adequately mitigating water quality impacts, additional mitigation measures will be identified and implemented as required.	TfNSW / Contractor	Prior to operation and during operation
	SWH07	The performance water quality controls developed for the design as set out in the EIS and the amended water quality and hydrology controls outlined in the amendment report (including but not limited to temporary and permanent sediment basins) will be verified as the detailed design develops for the project to ensure the objectives of the project are achieved. In the instance that water quality ~~(MUSIC)~~ modelling carried out during detailed design cannot demonstrate that the water quality controls would be effective in mitigation potential impacts, potential additional mitigation measures would be identified and implemented where possible.	Contractor	Detailed design
	SWH08	Further water quality assessment will be undertaken during detailed design to establish site specific discharge criteria for construction sediment basins. Based on this, the number, location and size of the basins will be further refined during the detailed design with consideration to the relevant NSW EPA Environment Protection Licence application requirements and the environmental values of the downstream receiving waterway.	TfNSW / Contractor	Detailed design

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	SWH09	Practical measures to prevent water pollution and control, abate or mitigate impacts to the environment will be investigated at the detailed design stages of the project with the aim to make improvements to the currently proposed water quality controls. Such measures may include: • Larger or high efficiency temporary basins • Alternative dry bioretention operational basins.	TfNSW / Contractor	Detailed design
	SWH10	The use of water sensitive urban design measures will be considered during detailed design to meet water quality objectives.	Contractor	Detailed design
Impacts of dewatering	SWH11	A de-watering management plan will be prepared as part of the CSWMP which will outline the de-watering methodology, supervision requirements, staff responsibilities and training, and approvals required before any de-watering activity begins.	Contractor	During construction
Impacts on water bodies	SWH12	The following measures will be carried out to manage activities within watercourses or on waterfront land: • Implementing practices to minimise disturbance of banks • Undertaking bank stabilisation and installing instream structures • Maintaining minimum flows to assist in maintaining the viability of aquatic communities and preventing barriers to fish passage • Constructing instream crossings during low flows and design so that drainage off crossing doesn't contribute sediment load to the stream • All drainage feature crossings (permanent and temporary watercourse crossings and stream diversions), drainage swales and depressions will be designed by a suitably qualified and experienced professional and will be designed and constructed in accordance with relevant guidelines.	Contractor	Prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	SWH13	A set of hydrologic and hydraulic models will be developed, which are to be used to define the nature of both main stream flooding and major overland flow along the full length of the project operational footprint under pre- and post-project conditions. The hydraulic model is to extend a sufficient distance upstream and downstream of the project operational footprint, to negate any boundary effects and to define the full extent of any impact that the project will have on patterns of both main stream flooding and major overland flow. The hydraulic model(s) is to be based on the TUFLOW (or equivalent) two-dimensional (in plan) hydraulic modelling software. The models will be used to verify the nature and extent of impacts and to confirm the type of mitigation measures required, including potential mitigation measures identified throughout the EIS (see Table 5-9 in Appendix M of the EIS) and this amendment report and supplementary memo (see Table 5-6 in Appendix I of the amendment report). The models will also be used during detailed design to describe the interaction between the project and flows particularly with respect to culverts and to assist in refining the design for flows arriving at and travelling through culverts. **If further modelling identifies impacts to private properties, TfNSW will consult with landowners regarding appropriate management measures to be implemented.**	Contractor	Detailed design
Impacts on SEPP Coastal Wetlands	SWH14	Consideration will be given to the design of operational water quality, erosion and sediment controls incorporated into the design of the construction access track being left in place upstream from the SEPP wetland, and within the proximity area of the SEPP Coastal Wetland ID117.	Contractor	Detailed design
Groundwater quality and hydrology				
Impacts on groundwater quality and flows	GW01	Groundwater monitoring will be carried out as part of the construction water quality monitoring program for the project. The groundwater monitoring will be based on the water quality monitoring methodology, water quality indicators and the monitoring locations shown in Appendix N of the EIS and Table 7-1 in the groundwater supplementary technical memorandum (Appendix J of amendment report). Baseline groundwater monitoring will be carried out at least monthly for at least six months before construction. Monitoring will also be carried out at least monthly during construction and will continue for at least six months of operation to verify that there are no groundwater impacts, and that management measures are adequate.	TfNSW / Contractor	Prior to construction, and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Alteration of groundwater flows and levels	GW02	Potential impacts on groundwater flows will be reconsidered as the detailed design for the project progresses, particularly in relation to the project's vertical alignment and extent of road cuttings. The aim of this will be to ensure that the groundwater controls proposed for the design as set out in this document would remain effective in mitigating groundwater impacts. In the instance that, during detailed design it cannot be demonstrated that the groundwater controls would be effective in mitigating potential impacts, or if observed groundwater inflow rates into the western cut or airport interchange northern and southern cuts are higher than estimated, additional measures will be implemented to minimise potential impacts to groundwater to minimise potential impacts on groundwater flows due to road cuttings or other sub-surface components of the project.	Contractor	Detailed design
	GW03	Installation of supplementary groundwater monitoring bores in the area of both airport interchange cuts would be carried out at detailed design stage, to better understand groundwater depths and levels (and groundwater quality) in these areas.	Contractor	Detailed design
	GW04	Groundwater will be monitored at the airport interchange northern and southern cuts and the western cut during the construction phase and operational phase as outlined in Table 7-1 in the groundwater supplementary technical memorandum (Appendix J of amendment report). The groundwater indicators to be monitored will be as per Section 7.2.5 of Appendix N of the EIS. Groundwater inflows to the airport interchange northern and southern cuts and the western cut are to be observed by the groundwater monitoring contractor during the construction and operational phases at monthly intervals. As part of observing the airport interchange northern and southern cuts and the western cut groundwater inflows, the groundwater monitoring contractor is to estimate the groundwater inflow rates and note the areas where groundwater inflow is occurring. During construction, if groundwater inflows are observed from the airport interchange northern and southern cuts and the western cut, the groundwater quality from the cut is to be sampled. Operational phase groundwater quality sampling, including the quality sampling of the airport interchange northern and southern cuts and the western cut inflows, is to occur at a monthly interval for at least 6 months.	Contractor	Construction and operation

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Soils and contamination				
Salinity	SC01	Construction within areas of moderate to high risk saline soils will be managed in accordance with the CSWMP. Specific measures will also include (but not be limited to): • Ongoing groundwater monitoring of salinity as part of the water quality monitoring program • Identification and management of saline discharge sites • Progressive stabilisation and revegetation of exposed areas following disturbance as soon as is practicable • Testing to confirm the presence of saline soils in areas of high salinity potential prior to disturbance. • Soil salinity management will also be carried out in accordance with the NSW Department of Primary Industries (2014) Salinity Training Handbook.	Contractor	Prior to construction and during construction
	SC02	Testing will be carried out to confirm the presence of saline soils in areas of high salinity potential and to confirm the presence of ASS around creeks prior to disturbance.	Contractor	Prior to construction and during construction
Impacts of soil and groundwater contamination	SC03	A contaminated land management plan (CLMP) will be prepared for the project. The CLMP will include: • Control measures to manage identified areas of contamination, including surface soils in the vicinity of TP303, TP304, TP310 and TP311 containing heavy metal and PAH concentrations • Procedures for unexpected contamination • Measures to manage potential ASS (as required based on testing results) within sediments of the creeks in the construction footprint to minimise impacts to the environment • Requirements for excavation of unexpected contaminants to be carried out in consultation with project Remedial Actions Plans. • Requirements for the disposal of contaminated waste in accordance with the POEO Act and the Protection of the Environment Operations (Waste) Regulation 2014.	Contractor	Prior to construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	SC04	An asbestos management plan (AMP) will be prepared as part of the CLMP for the project. The AMP will guide the excavation, handling, storage and disposal of management of asbestos discovered during construction, including procedures for any unexpected asbestos. The AMP will also outline requirements for the encapsulation of asbestos to be carried out in accordance with project Remedial Action Plans.	Contractor	Prior to construction
	SC05	Detailed site (contamination) investigations will be carried out in accordance with the NSW EPA (1995) Sampling Design Guidelines and other NSW EPA endorsed guidance including the NEPM (2013) guidelines within the following AEI locations to confirm the presence of contamination before the start of construction at these locations: • AEI 17: Stockpiles within Hi-quality Quarry Group Head Office • Within AEI 19: the area of miscellaneous construction activities and stockpiles of building materials along Luddenham Road (Lot 1, DP228498) • Within AEI 7: Area of waste and imported fill • Within AEI 21: Area of illegally dumped material along Range Road, Cecil Park • Within AEI 24: Stockpiles within the OzSource property • Within AEI 26: TreeServe (wood processing, stockpiles of woodchips, logs and fire wood) • Within the 'potential areas of existing fill' identified in the Soils and contamination assessment report (Appendix K) ~~for the amended project~~ of the amendment report. Further soil investigations will be required in areas of the refined construction footprint located adjacent to the following two AEIs to confirm the presence of contamination before the start of construction at these locations: • Within AEI 6: PGH Bricks and Pavers • Within AEI 9: Sydney Recycling Park/ Wanless Recycling and Former Kari & Ghossayn Pty Ltd (Solid Waste Landfill) • AEI 10: SUEZ Kemps Creek Resource Recovery Park. Additional soil and groundwater investigations will be required in the areas of additional cut around the airport interchange northern cut and airport interchange southern cut to further assess the potential impacts to the amended project. Depending on results of the investigations, or if remediation is deemed required at any site within the refined construction footprint, a Remedial Action Plan will be prepared before the construction.	Contractor	Prior to ***and during*** construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Impacts of soil and groundwater contamination	SC06	Further intrusive asbestos investigations throughout the construction footprint will be carried out to assess asbestos risks before the start of construction. The investigations are to include visual assessments and ground truthing along the length of the project.	Contractor	Prior to construction
	SC07	A hazardous building materials management plan will be prepared in accordance with relevant guidelines to manage the removal of known and unexpected hazardous building during demolition activities. Before demolishing structures and/or buildings, a hazardous building materials audit will also be carried out in accordance with Australian Standard (AS 2601-2001) The demolition of structures. Where hazardous building materials are present, they will be managed to reduce the potential for contamination in accordance with the POEO Act and the Protection of the Environment Operations (Waste) Regulation (2014).	Contractor	Prior to construction and during construction
	SC08	All waste will be classified in accordance with the NSW EPA's Waste Classification Guidelines, with appropriate records and disposal dockets retained for audit purposes.	Contractor	Before and during construction
	SC09	A section B site audit statement will be prepared for the asbestos encapsulation and for sites where intrusive investigations confirm highly complex contamination issues.	Contractor	Prior to construction and during construction
Soil gas contamination	SC10	A detailed investigation will be carried out within the area next to the SUEZ Kemps Creek Resource Recovery Park to assess the extent of high-risk soil gas. A report will be prepared to document the outcomes of the investigation and outline measures to manage risks including nuisance odours to the surrounding area during excavation, and prevent the build-up of gases in buildings, basins, and sub-surface trenches and pits, and other enclosed spaces/depressions associated with the project during construction. These investigations will be carried out in accordance (where applicable) with the Guideline for the Assessment and Management of Sites Impacted by Hazardous Ground Gases (NSW EPA 2012) and Assessing Risks Posed by Hazardous Ground Gases to Buildings Report (C665) (Wilson et al. 2007). This will include undertaking gas monitoring.	Contractor	Prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	SC11	Should the further investigations determine that gas concentrations remain elevated near the project footprint, gas monitoring will be carried out during construction within the construction footprint next to the SUEZ Kemps Creek Resource Recovery Park. If excavations are to be carried out within enclosed structures, gas accumulation monitoring will be carried out before and during construction. On site gas monitoring will be carried out in accordance with the NSW EPA (2016) Environmental Guidelines: Solid Waste Landfills.	Contractor	During construction
Air quality				
General air quality impacts during construction	AQ01	A construction air quality management plan (CAQMP) will be developed and implemented for the project to manage potential air quality impacts associated with construction. The CAQMP will identify activities that may results in air quality impacts and associated mitigation measures to avoid or minimise these impacts. The CAQMP will provide: • Measures to minimise dust generation associated with earthworks and other activities that disturb the ground surface, stockpiles, and haulage routes • Measures to minimise emissions from machinery and vehicles associated with the project • Procedures for inspection, monitoring and addressing any impacts where required. The CAQMP will be implemented for the duration of construction.	Contractor	Prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Dust impacts during construction	AQ02	Dust generation will be minimised during construction where possible. Where practicable, specific measures will include (but not be limited to): • Regularly watering exposed and disturbed areas including stockpiles, especially during inclement weather conditions • Adjusting the intensity of activities based on measured and observed dust levels, weather forecasts and the proximity of and direction of the works in relation to the nearest surrounding receivers • Ensuring loads are covered, and any loose materials/debris are removed before vehicles exit the site • Minimising the number of stockpiles and amount of material stockpiled where practicable • Positioning stockpiling areas as far as possible from surrounding receivers, including potentially ecologically sensitive receivers • Limiting stockpiling activities during conditions where winds are blowing strongly in the direction(s) from the stockpiling location to nearby receivers • Consultation with nearby developers to co-ordinate and plan activities where practicable to minimise the potential for cumulative dust-related impacts • The planning and undertaking of demolition activities, including the removal of hazardous building materials in a manner that minimises dust generation. This will also include the removal of hazardous building materials before the start of general demolition works.	Contractor	During construction
Odours during construction	AQ03	Odorous materials identified on site will be excavated in a staged process and exposed areas of odorous material will be kept to a minimum to reduce the total emissions from the site where feasible.	Contractor	During construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Health and safety				
General	HS01	A work health safety management plan (WHSMP) will be prepared for the project. The WHSMP will include: • Details of the hazards and risks associated with construction activities • Risk management measures • Procedures to comply with all legislative and industry standard requirements • Use of appropriate personal protective equipment • Contingency plans, as required • An incident response management plan • Training for all personnel (including subcontractors) including site inductions, the recognition and awareness of site hazards and the locations of relevant equipment to protect themselves and manage any spills. All staff would have the relevant training and certificates.	Contractor	Prior to construction
Bushfire	HS02	Measures to mitigate and manage bushfire risk will be developed and included as part of site-specific hazard and risk management measures within the WHSMP. Measures will include the maintenance of ancillary facilities in a tidy and orderly manner and the storage and management of dangerous goods and hazardous materials in a safe location.	Contractor	Prior to construction
Incident response	HS03	An incident response management plan will be developed and implemented. The response to incidents within the road will be managed in accordance with the memorandum of understanding between TfNSW and the NSW Police Service, NSW Rural Fire Service, NSW Fire Brigade and other emergency services.	Contractor	Prior to construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Storage of dangerous goods and hazardous substances	HS04	Storage, handling and use of dangerous goods and hazardous substances would be in accordance with the *Work Health and Safety Act 2011* and the *Storage and Handling of Dangerous Goods Code of Practice* (WorkCover NSW, 2005).	Contractor	During construction and operation
	HS05	Secure, bunded areas will be provided around storage areas for oils, fuels and other hazardous liquids.	Contractor	During construction
	HS06	Safety Data Sheets will be obtained for dangerous goods and hazardous substances stored onsite before their arrival.	Contractor	During construction
Contamination from transportation of hazardous good	HS07	All hazardous substances will be transported in accordance with relevant legislation and codes, including the Road and Rail Transport (Dangerous Goods) (Road) Regulation 1998 and the 'Australian Code for the Transport of Dangerous Goods by Road and Rail' (National Transport Commission, 2008).	Contractor	During construction
Sustainability				
Project sustainability outcomes	SU1	A sustainability management plan for the project will be developed and implemented during detailed design, to give effect to the sustainability strategy for the project. The management plan will detail measures to meet the sustainability objectives and targets and Infrastructure Sustainability rating tool credit requirements.	Contractor	Throughout detailed design, construction, and operation

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Waste				
Inappropriate handling and/or disposal of waste	W01	A construction waste and resource management plan (CWRMP) will be prepared for the project and outline appropriate management procedures. It will include, but not be limited to: • Identification of the waste types and volumes that are likely to be generated by the project • Adherence to the waste minimisation hierarchy principles of avoid/reduce/ reuse/recycle/dispose • Waste management procedures to manage the handling and disposal of waste, including unsuitable material or unexpected waste volumes • Identification of reporting requirements and procedures for tracking of waste types and quantities • A resource management strategy detailing the process to identify reuse options for surplus materials • A procurement strategy to minimise unnecessary consumption of materials and waste generation in accordance with relevant legislation and guidelines.	TfNSW / Contractor	Prior to construction
	W02	A spoil management plan will be prepared for the project as part of the CWRMP and in line with the CSWMP. The spoil management plan will outline appropriate management procedures for the generation and importation of spoil. It will include, but not be limited to: • Procedures for classification of spoil • Identification of spoil reuse measures • Spoil stockpile management procedures • Spoil haulage routes • Spoil disposal and reuse locations • Imported spoil sources and volumes.	Contractor	During construction
	W03	Wherever feasible and reasonable, construction material will be sourced from within the Sydney region.	TfNSW / Contractor	During construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Unexpected waste volumes and types during construction	W04	Suitable areas will be identified to allow for contingency management of unexpected waste materials, including contaminated materials. Suitable areas will be required to be hardstand or lined areas that are appropriately stabilised and bunded, with sufficient area for stockpile storage.	TfNSW / Contractor	During construction
Climate change and greenhouse gas				
Climate change risks	CC01	Detailed design will incorporate appropriate adaptation measures for all climate change risks with an original risk rating of moderate or above. These will include but not be limited to: • Consideration of the full range of potential temperature extremes on the project (particularly bridge structures) which may occur as a result of climate change and consider material capacity to withstand heat during material type selection to minimise the likelihood of infrastructure failures • Consideration of energy dissipation at culvert outlets when velocities exceed existing magnitudes • Consideration of the use of native species which are typically more fire tolerant and can more rapidly regenerate after fire events • Maintenance of fauna passage along main creek lines under bridges.	Contractor	Detailed design
	CC02	A climate change monitoring and adaptive management framework will be prepared and implemented for the project. The framework will incorporate performance monitoring criteria and measures, and the requirement for periodic review of the climate change risk assessment and framework against updated climate data to ensure currency.	TfNSW / Contractor	Detailed design and construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	CC03	An adaptive management approach will be applied to workplace health and safety planning during construction and operation in line with the WHSMP. This will include use of TfNSW Work Health and Safety Procedures.	TfNSW / Contractor	Prior to construction, during construction and during operation
GHG emissions	GG01	Targets to reduce GHG emissions during construction and operation will be included in the project's sustainability management plan.	TfNSW / Contractor	Detailed design and construction
	GG02	Updated GHG assessment based on the detailed design for the project and the final project when built will be carried out.	Contractor	Detailed design and construction
	GG03	Vegetation removal will be minimised where practicable.	Contractor	Detailed design and construction
	GG04	The procurement of goods and services will consider goods and services that: • Are from local suppliers • Make use of recycled materials or materials with a low embodied energy content. • Are energy efficient or have low embodied energy • Minimise the generation of waste	Contractor	Detailed design and construction
	GG05	Construction plant and equipment will be well maintained to maximise fuel efficiency.	Contractor	Construction
Cumulative impacts				
Cumulative impacts	CU01	Regular consultation will be carried out with nearby/adjoining projects and key stakeholders during the detailed design and construction phase to review potential cumulative impacts and integrate designs and construction methodologies (including traffic impacts and noise management), as far as practicable to minimise cumulative impacts.	TfNSW / Contractor	Detailed design and construction
	CU02	Communication strategies across relevant TfNSW projects will be managed to be consistent in their messaging to the community to avoid confusion.	TfNSW	Detailed design and construction

8. Conclusions

DPIE will, on behalf of the NSW Minister for Planning and Public Spaces, review the EIS, the EIS submissions report, the amendment report and this report for the project. Once DPIE has completed its assessment, a draft Environmental Assessment Report would be prepared for the Planning Secretary of DPIE, which may include recommended conditions of approval. The Environmental Assessment Report would then be provided to the NSW Minister for Planning and Public Spaces.

Similarly, the Department of Agriculture, Water and the Environment (DAWE) would, on behalf of the Commonwealth Minister for Environment, review the EIS, the EIS submissions report, the amendment report and this report for the project and provide a recommendation report to the Minister.

The NSW Minister for Planning and Public Spaces and the Commonwealth Minister for Environment would then decide whether or not to approve the project and identify any conditions of approval that would apply. The determination would be published on the DPIE Major Projects and DAWE websites.

Transport for NSW would continue to consult with community members, government agencies and other stakeholders during the construction of the project.

9. References

ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments. Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines

DECCW (Department of Environment, Climate Change and Water) (2010) Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW, Sydney.

DIPNR (Department of Infrastructure, Planning and Natural Resources) (2004) Guideline for the Preparation of Environmental Management Plans. Department of Infrastructure, Planning and Natural Resources: Sydney NSW

DPE (2018) Western Sydney Aerotropolis - Land Use and Infrastructure Implementation Plan. Stage 1: Initial Precincts

DPI (2012) Guidelines for instream works on waterfront land, s.l.: NSW Department of Primary Industries.

DPI (2013) Policy and guidelines for fish habitat conservation and management. Department of Primary Industries: Orange.

Fairfull, S. and Witheridge, G. (2003) Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings. NSW DPI: Cronulla.

NEPM (2013) National Environment Protection (Assessment of Site Contamination) Measure 1999 (as revised 2013)

NSW EPA (1995) Contaminated Sites: Sampling Design Guidelines

NSW EPA (2011) NSW Road Noise Policy (RNP)

Roads and Maritime (2015) Noise Criteria Guideline (NCG)

Roads and Maritime (2015a) Noise Mitigation Guideline

Roads and Maritime Services (October 2019) M12 Motorway Environmental impact statement. Roads and Maritime Services: Sydney.

RTA, (2011) Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects. Roads and Traffic Authority: Sydney

RTA (2003) Guideline for Construction Water Quality Monitoring. Roads and Traffic Authority of NSW: Sydney

JAJV (2020) M12 Motorway: Former Cecil Park Historical Complex Historical Archaeological Salvage Research Design and Methodology. Report prepared for Roads and Maritime Services by Jacobs Arcadis Joint Venture: Sydney NSW

WaterNSW (2020) NSW groundwater data. available at:

https://realtimedata.waternsw.com.au/water.stm, accessed 2020

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