M12 Motorway

State Significant Infrastructure Assessment

SSI 9364
March 2021

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Title: M12 Motorway

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Cover image: Artist impression of the M12 Motorway interchange with the M7 Motorway (Transport for NSW, 2020)

Glossary

Abbreviation	Definition
BAR	Biodiversity Assessment Report
BC Act	*Biodiversity Conservation Act 2016*
CEMP	Construction Environmental Management Plan
Crown Lands	Crown Lands, DPIE
CSSI	Critical State Significant Infrastructure
DAWE	Department of Agriculture, Water and the Environment (Commonwealth)
Department	Department of Planning, Industry and Environment
DPI	Department of Primary Industries
EES	Environment, Energy and Science Group
EIS	Environmental Impact Statement
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPL	Environment Protection Licence
ESD	Ecologically Sustainable Development
Heritage NSW	Heritage NSW, Department of Premier and Cabinet
KFH	Key Fish Habitat
LALC	Local Aboriginal Land Council
LCZ	Landscape character zone
Minister	Minister for Planning and Public Spaces
MNES	Matter of National Environmental Significance
NCA	Noise Catchment Area
Planning Secretary	Secretary of the Department of Planning, Industry and Environment
Relevant councils	Fairfield City, Liverpool City and Penrith City

Abbreviation	Definition
SEPP	State Environmental Planning Policy
South West Growth Area	The South West Growth Area includes the suburbs of Oran Park, Turner Road, East Leppington, Austral, Leppington North, Edmondson Park and Catherine Fields
SSI	State Significant Infrastructure
TfNSW	Transport for NSW (the Proponent)
TSC Act	*Threatened Species Conservation Act 1995*
Western Sydney Aerotropolis	As defined in the Western Sydney Aerotropolis Stage 1 Plan, the Aerotropolis surrounds the Western Sydney Airport site at Badgerys Creek and will comprise industrial, commercial and residential development.
Western Sydney Airport	Western Sydney International (Nancy-Bird Walton) Airport
WSPT	Western Sydney Parklands Trust

Executive Summary

The Western Sydney Airport at Badgerys Creek, and associated development at Western Sydney Aerotropolis, employment lands and the South West Growth Centre, is expected to drive population growth in Western Sydney. To facilitate and cater for this growth, Transport for New South Wales (TfNSW) (the Proponent) proposes to construct a 16 kilometre motorway (the M12) linking the M7 Motorway at Cecil Hills to the Northern Road at Luddenham. The M12 Motorway is a critical infrastructure component for the development of these centres and would provide direct access between the future Airport and Sydney's motorway network, and additional road capacity for predicted traffic growth in the region.

The project is located within the Penrith, Fairfield and Liverpool local government areas, and is an integral part of the NSW Government's transport infrastructure strategy to build new infrastructure and improve road travel reliability to the Western Sydney Airport and surrounding development.

The project complies with the objects of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and is consistent with the Government's key priorities and transport planning framework including the *2020 Infrastructure Priority List, Future Transport Strategy 2056, Greater Sydney Regional Plan, Western Sydney Infrastructure Plan* and the *Western Sydney Aerotropolis Land Use and Infrastructure Implementation Plan.* The project is State significant infrastructure (SSI) and was declared critical State significant infrastructure (CSSI) on 27 September 2019. The Minister for Planning and Public Spaces is the approval authority.

The environmental impacts of construction and operation are considered acceptable, subject to implementation of appropriate mitigation and management measures. The Department considers the project is in the public interest and should be approved, subject to conditions.

Engagement with the community

The Environmental Impact Statement (EIS) was publicly exhibited from 16 October 2019 until 18 November 2019 (34 days) and received 51 submissions, including seven objections. Of the submissions, 25 were from 24 community members, 14 were from NSW Government agencies, three were from councils and nine were from interest groups and organisations.

The key issues raised by the community were traffic, access and noise impacts during construction, visual impacts, land fragmentation and operational noise and traffic impacts.

Following the EIS exhibition, the Proponent prepared an Amendment Report, which was publicly exhibited from 21 October 2020 to 4 November 2020 (14 days). A total of 41 submissions were received – three from local councils, 14 from NSW Government agencies, 17 from community members and seven from interest groups and organisations.

Key assessment issues

The Department identified the key issues associated with the construction and operation of the project as noise and vibration, biodiversity, flooding, urban design and landscaping, traffic and transport, Aboriginal and non-Aboriginal heritage, property, land use and social and economic considerations.

Noise and vibration

The project will result in construction and operational noise impacts to residential and other receivers. Night-time construction noise impacts are unavoidable due to constraints in building bridges across existing roads and works within road corridors. The Proponent has identified a range of measures that will assist in mitigating noise and vibration impacts. In addition, the Department has recommended conditions that require the Proponent to proactively manage works to minimise construction noise impacts. This includes the provision of respite periods and implementation of additional mitigation for consecutive nights of noisy work.

The Proponent has committed to providing at-property architectural treatments to reduce impacts to properties where noise would exceed operational noise criteria. The Department supports this measure and has recommended an Operational Noise Review to confirm noise levels and properties eligible for at-property architectural treatment. Further, an Operational Noise Compliance Report is recommended to assess actual operational noise levels against operational noise criteria. The monitoring to inform the report must be undertaken within the first 12 months of the motorway opening.

Biodiversity

The project will have direct and indirect impacts to threatened ecological communities and threatened species listed under the *Threatened Species Conservation Act 1995* (TSC Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). However, there is the potential for impacts to be reduced during detailed design through refinements to construction boundaries. The Proponent has committed to implementing a number of mitigation measures, including re-establishing native vegetation at the end of construction, weed management and provision of supplementary fauna habitat such as nest boxes.

Impacts to biodiversity values will be offset under the *NSW Biodiversity Offsets Policy for Major Projects*, including the acquisition and retirement of ecological and species credits, or establishing offset sites through a Biodiversity Stewardship site agreement. The Department has recommended conditions which require the Proponent to minimise the clearing of and disturbance to native vegetation; specify the required ecosystem and species credits; and the implementation of a Flora and Fauna Management Sub-plan to manage construction impacts on biodiversity.

Urban design, landscaping and visual amenity

The existing landscape along the motorway corridor is mainly rural residential lands with interspersed pockets of native vegetation, except in the east where the landscape comprises residential developments and the M7 Motorway. The project will impact on the landscape character and visual amenity. However, in most instances, the level of impact is assessed as being low to moderate. In addition, the landscape character will be significantly influenced by the development of the Western Sydney Aerotropolis, which will result in substantial land use changes.

The project includes a comprehensive urban design framework which will facilitate good design, improved active transport connectivity and comprehensive landscaping outcomes. The design has been informed through engagement with the community and Connection to Country, with key interpretive themes linking Aboriginal cultural heritage and place to be embedded in the project through the use of integrated art and plant selection.

Impacts to Western Sydney Parklands have been reduced through design development, including moving the alignment north to reduce parkland fragmentation. There will be a loss to the parklands and direct impacts on existing infrastructure including the Wylde Mountain Bike Trail. To offset these impacts, the Trail will be relocated before impact, and a dedicated shared user path will be provided along the length of the alignment west of the Parklands.

The project will result in the loss of approximately 1,000 trees (not covered by biodiversity offset requirements) and the Proponent has committed to replacing these to achieve a net increase in trees. Replanting also provides an opportunity to improve open space connections and to revegetate areas between remnant areas of Cumberland Plain Woodland to re-link them.

Traffic and transport

The M12 Motorway will provide regional traffic benefits, including to and around the Western Sydney Airport and Aerotropolis. Operational modelling has shown the project will redistribute traffic from the Elizabeth Drive corridor, improving traffic flows on the M7 Motorway and Elizabeth Drive.

Local traffic impacts are predicted to occur during construction. These impacts are temporary and are associated with the generation of additional traffic (heavy and light construction vehicles and construction worker vehicles), new or modified intersections to allow entry and exit to construction ancillary facilities and construction zones, and traffic management to allow safe entry and exit to construction zones. The Department has recommended conditions to address potential construction impacts on the road network, including the implementation of a Construction Traffic and Transport Management Sub-plan.

Socio-economic, land use and property considerations

The project will have social and economic impacts that cannot be entirely mitigated, and property acquisitions will be required. Several large landholdings will be divided by the motorway route resulting in land fragmentation. However, the project is consistent with future land use change, and the Department notes that disruption to social and community networks in the area will be primarily driven by the acquisition of properties for the Western Sydney Airport as well as future urban development of the Western Sydney Aerotropolis.

Land use and access impacts during construction and operation would be minimal and most businesses affected by the project will be able to continue to operate.

Non-Aboriginal heritage

Through the design of the project, the Proponent has limited potential heritage impacts to one locally listed heritage item (McGarvie Smith Farm) and items that are not listed on heritage registers. No National or State listed items, including the Upper Canal System, will be directly impacted by the construction and operation of the project.

The Department is satisfied that recommended conditions which include archival recordings and preparation of a Heritage Interpretation Plan, along with the Proponent's proposed heritage management and mitigation measures, would limit heritage impacts.

Aboriginal heritage

Aboriginal objects are distributed continuously across the landscape. The Proponent's assessment concluded that the project would directly impact on 19 Aboriginal heritage sites including isolated artefacts and artefact scatters. Of these sites, 11 sites would be partially harmed and eight would be totally harmed by construction of the project.

Registered Aboriginal Parties identified three areas of high Aboriginal cultural heritage significance as they demonstrate tangible evidence of use of the area by Aboriginal people.

The Proponent has committed to preparing a detailed Aboriginal Cultural Salvage Strategy and will carry out salvage excavation at known sites. In addition, the Department has recommended conditions requiring archival recording of heritage items and the preparation of a Heritage Interpretation Plan. The Department considers that the Proponent's commitments for managing and reducing heritage impacts, in association with the Department's recommended conditions, ensure that heritage impacts are appropriately managed and minimised to the greatest extent practicable.

Flooding

The project has sought to alleviate flooding impacts through design to minimise additional flood impacts outside of the existing flood footprint. Minor, localised increases in flood levels would occur in a few locations immediately adjacent to project.

The Department has recommended a series of flood management objectives aimed at minimising flood impacts. The Proponent has committed to undertaking further flood modelling during detailed design to ensure that the project meets these objectives and verify the extent of flood impacts so that appropriate management measures are implemented.

The impacts of climate change (increased rainfall intensity and frequency) and consequent impacts on flooding were considered and accommodated in the project design and will be further reviewed during detailed design.

Contents

1 Introduction

Transport for NSW (TfNSW) (the Proponent) is seeking approval to construct and operate the M12 Motorway (the project). The project comprises a 16-kilometre long, dual carriageway which will link the M7 at Cecil Hills in the east with The Northern Road at Luddenham in the west and provide access to the future Western Sydney Airport. **Figure 1** shows the alignment in the local context.

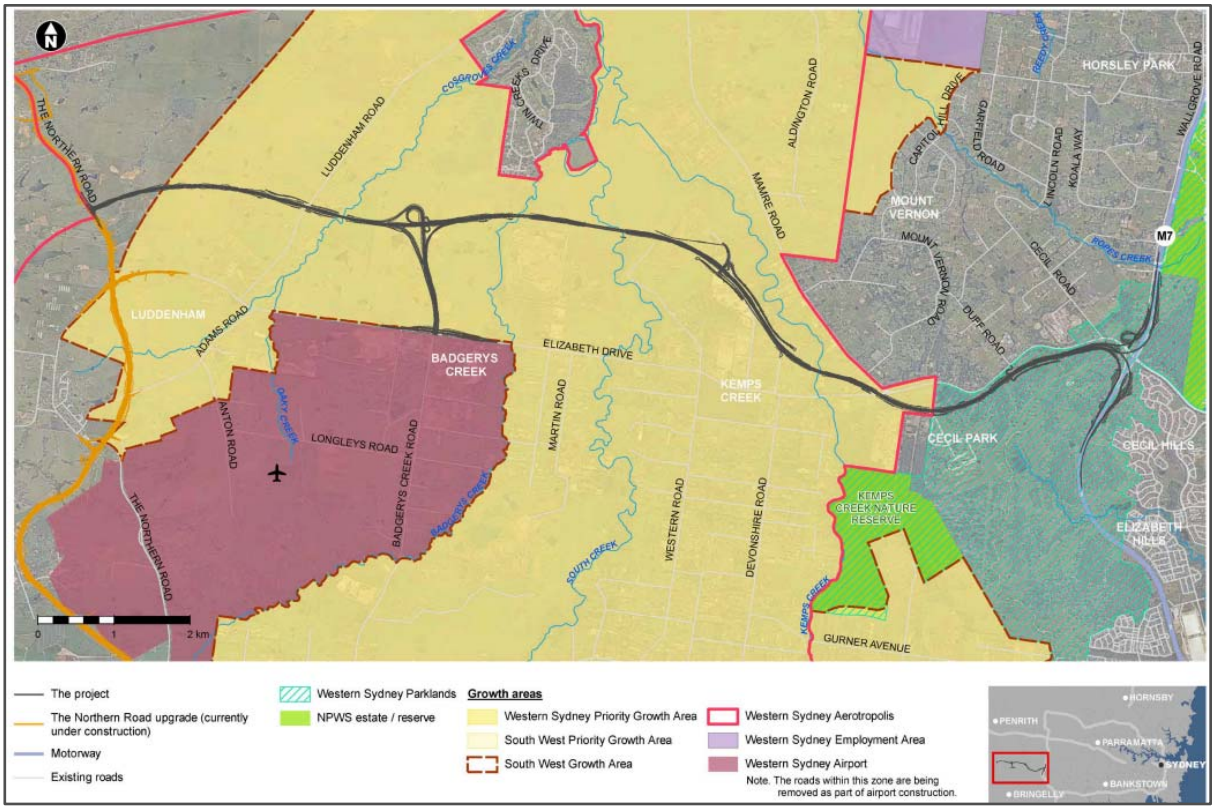


Figure 1 | Project location (Source: EIS)

The project is located within the local government areas of Penrith (to the north), Fairfield (to the east) and Liverpool (to the south). The project would also pass through the Western Sydney Parklands at its eastern extent. The existing land uses of the area include:

- rural and agricultural uses, including land used for grazing, intensive horticulture and animal production, and rural residential uses;
- urban land uses, including commercial and industrial uses, resource and waste facilities, community uses such as educational facilities and places of worship, recreation and parkland areas, and residential uses;
- environmental uses, including conservation areas and watercourses, and water infrastructure such as the Sydney Water Upper Canal at Cecil Park; and
- existing road corridors.

The area is undergoing major rezoning as part of the Western Sydney Aerotropolis and is proposed to become an economic hub delivering new jobs, homes, infrastructure and services in the heart of Western Sydney. The initial precincts within the Western Sydney Aerotropolis are the Aerotropolis Core, Northern Gateway, Badgerys Creek, South Creek and Mamre Road Precincts (see **Figure 2**).

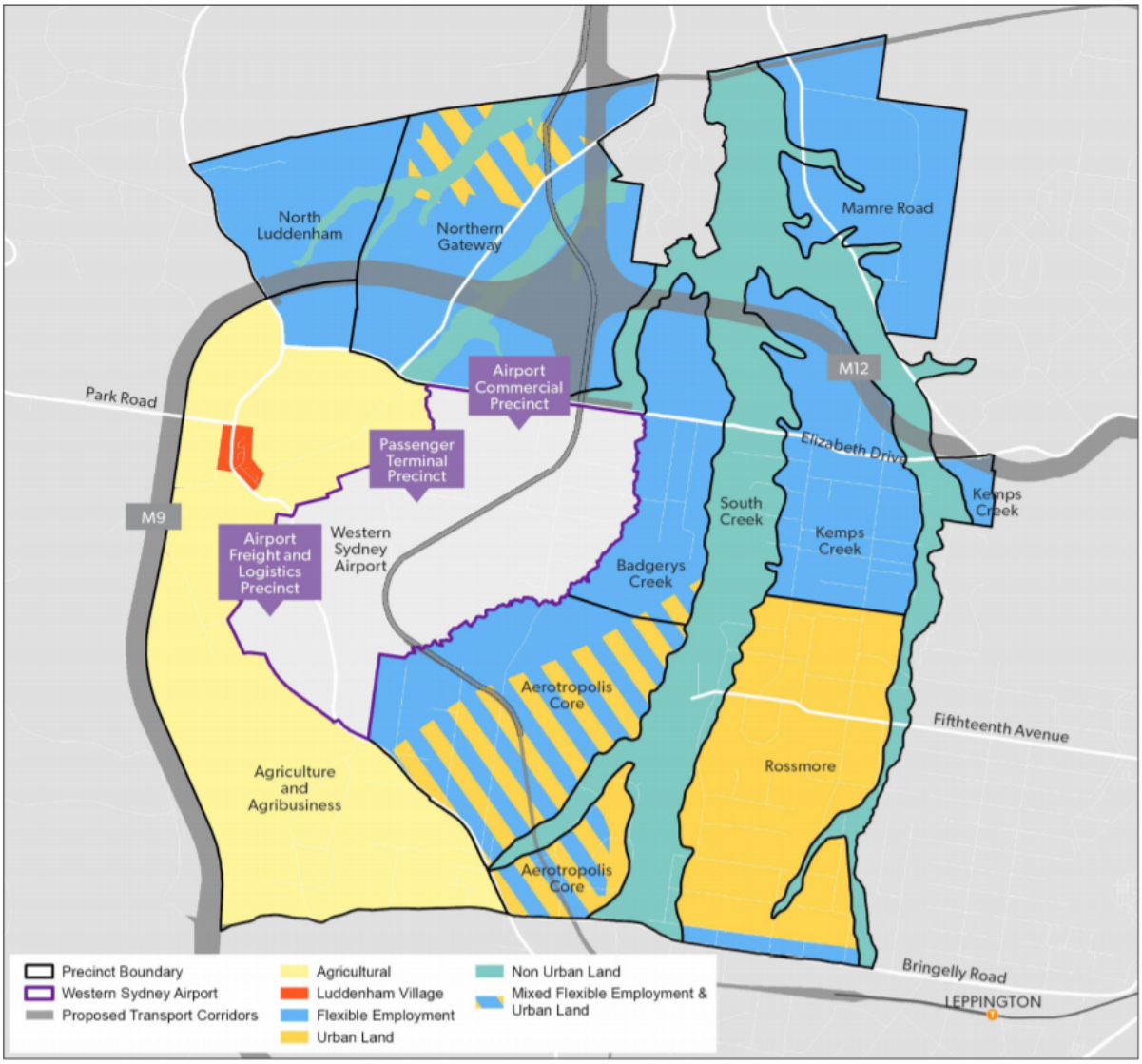


Figure 2 | Western Sydney Aerotropolis (Source: EIS)

The project is required to support the opening of the Western Sydney Airport by connecting Sydney's motorway network and providing freight access to the airport. The motorway would also facilitate growth and development within the Western Sydney Aerotropolis and the South West Growth Area by increasing road capacity.

2 Project

2.1 Physical layout and design

The M12 Motorway comprises an approximately 16 kilometre dual-carriageway roadway between the M7 Motorway at Cecil Hills and The Northern Road at Luddenham. The proposed motorway will comprise two lanes in each direction, with a central median allowing for future expansion to three lanes in each direction. The project includes the following interchanges / intersections:

- motorway-to-motorway interchange at the M7 Motorway, extending approximately four kilometres within the existing M7 Motorway corridor (this includes two kilometres to the north and south either side of Elizabeth Drive);
- grade separated interchange referred to as the Western Sydney Airport interchange, including a dual-carriageway four-lane airport access road (two lanes in each direction; about 1.5 kilometres in length) connecting with the Western Sydney Airport Main Access Road; and
- signalised intersection at The Northern Road with provision for grade separation in the future.

In regard to the motorway-to-motorway interchange at the M7, further design of the project led to two options for the interchange:

- Option 1: Without Elizabeth Drive connection
    - interchange provides entry and exit ramps between the M12 and M7 Motorways and it would maintain the existing connection from the M7 Motorway to Elizabeth Drive with new entry and exit ramps; and
- Option 2: With Elizabeth Drive connection:
    - interchange as per Option 1 with entry and exit ramps between the M12 and Elizabeth Drive, Cecil Road and Wallgrove Road.

The Proponent has advised that it will proceed with Option 2 and seeks approval for the Elizabeth Drive Connection as well. Option 2 was selected on the basis that it would provide improved traffic and intersection performance. Option 2 is supported by the three local councils – Penrith City, Fairfield City and Liverpool City.

The project includes a number of bridge structures to allow for the M12 Motorway to cross several creeks and provide grade separation from local and arterial roads along the corridor.

An overview of the project is shown in **Figure 3**, **Figure 4** and **Figure 5**. The main project components are described in **Table 2**.

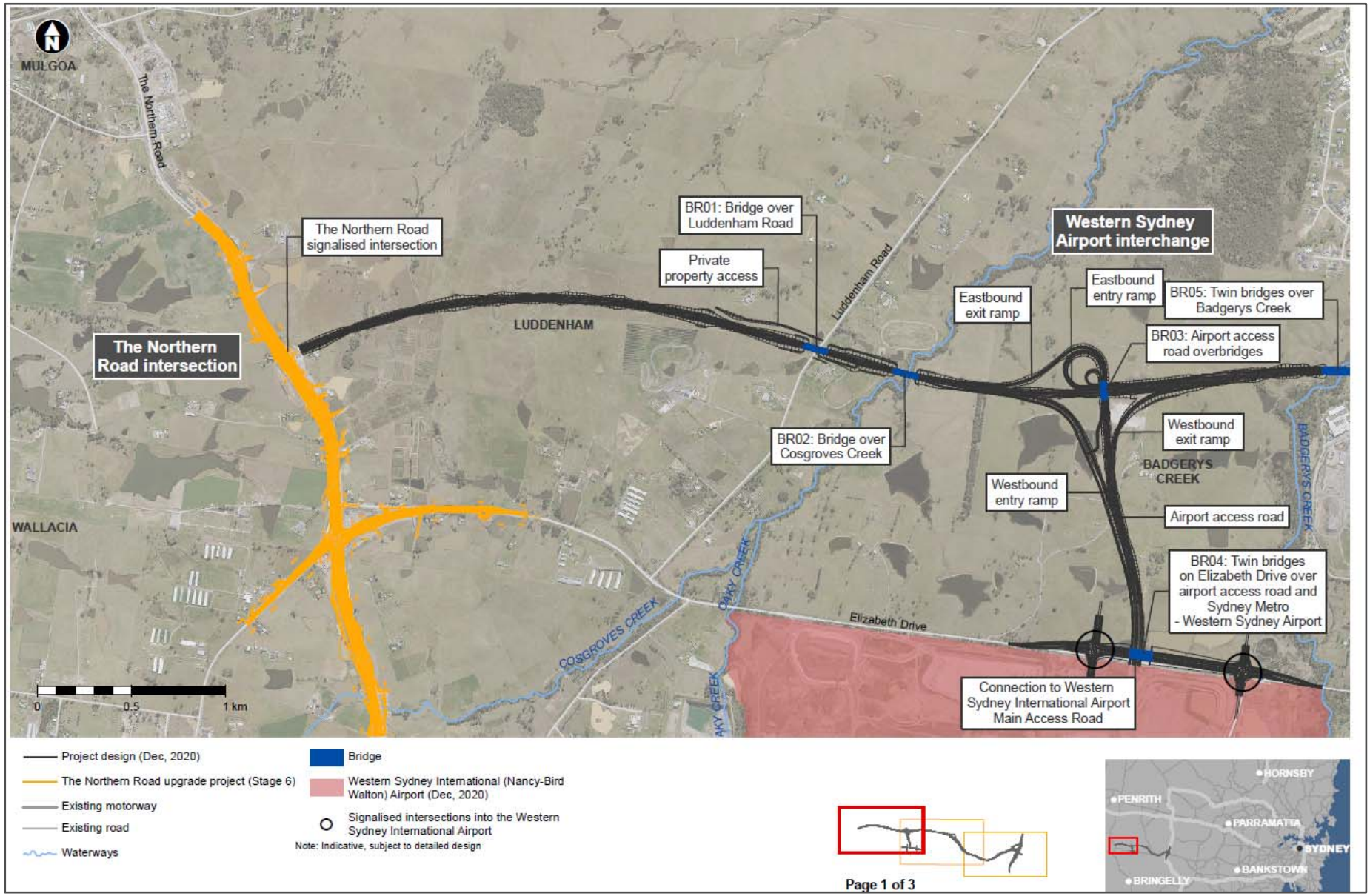


Figure 3 | Project overview – western section (Source: Amendment Report)

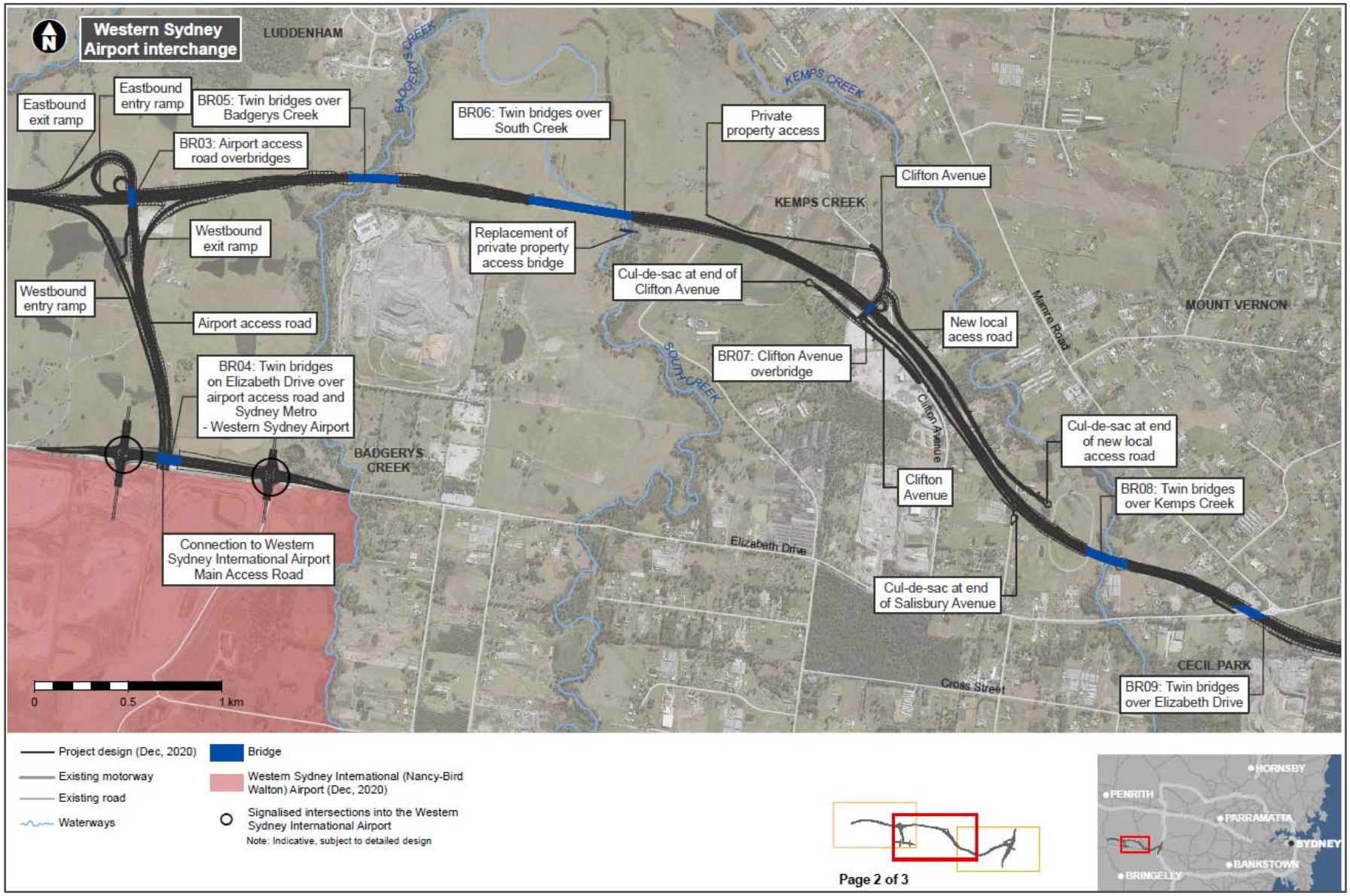


Figure 4 | Project overview - central section (Source: Amendment Report)

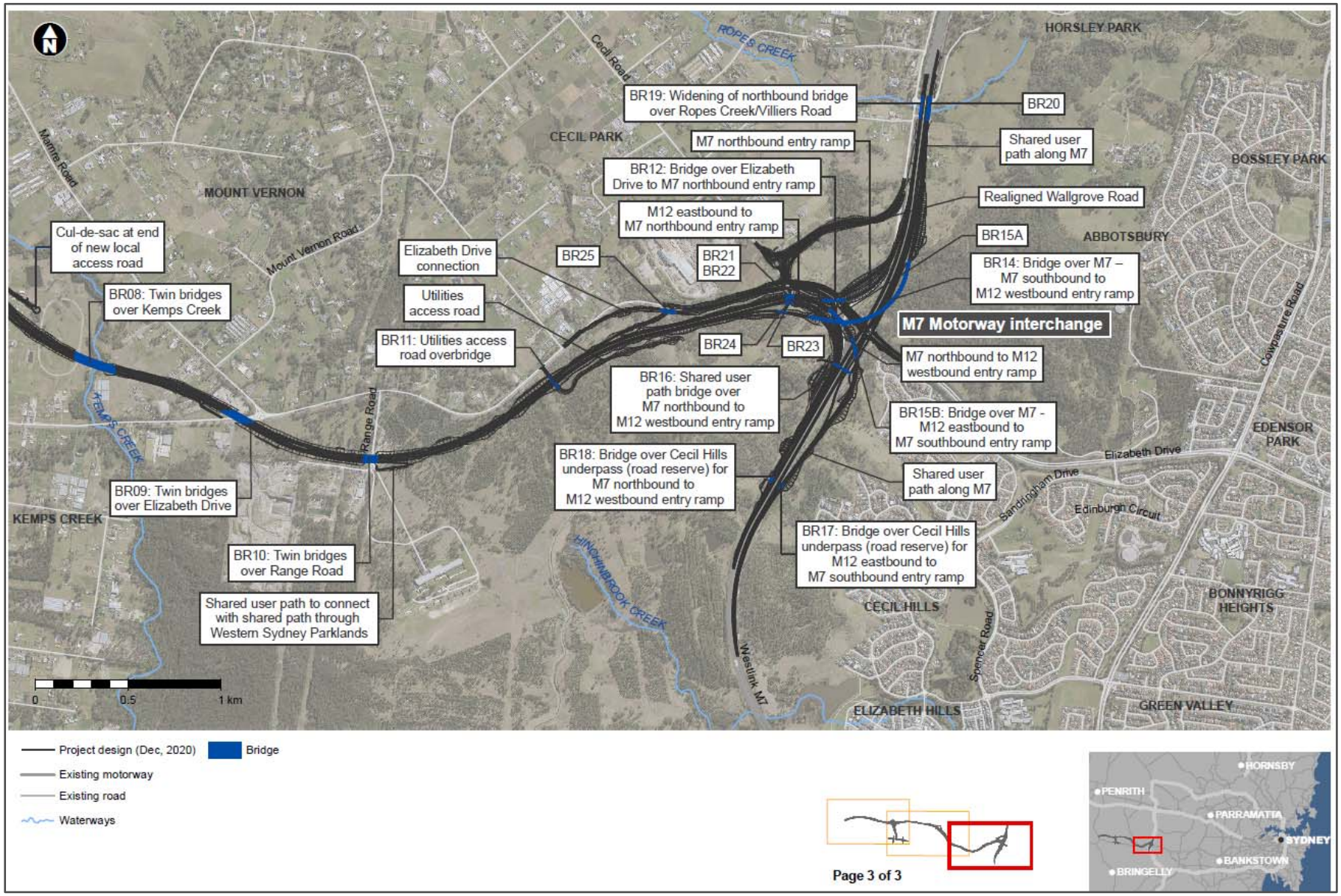


Figure 5 | Project overview - eastern section (Source: Amendment Report)

Table 1 | Main components of the project

Aspect	Description
Interchanges / intersections	• Interchange with the M7 Motorway (extending approximately four kilometres within the existing M7 Motorway corridor) with connection between the M12 Motorway and Elizabeth Drive • Grade-separated Western Sydney Airport interchange, including a dual-carriageway, four-lane airport access road (two lanes in each direction; extending approximately 1.5 km) connecting to the Western Sydney Airport Main Access Road • Signalised intersection at The Northern Road with provision for grade separation in the future • Two signalised intersections on Elizabeth Drive into the Western Sydney Airport, with provision for future connection to potential developments north of the airport
Bridges	• New bridge structures across Ropes Creek, Kemps Creek, South Creek, Badgerys Creek and Cosgroves Creek • New bridge across the M12 Motorway into Western Sydney Parklands to maintain access to the existing water tower and mobile telephone / other service towers 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 local roads to maintain local access and connectivity • New pedestrian / cycle bridges
Local road network modifications	• Realignment of Elizabeth Drive at the Western Sydney Airport Interchange, with Elizabeth Drive bridging over the airport access road and future Metro Greater West rail line to the airport • 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 • Widening of Elizabeth Drive under the M7 Motorway and approaches • Realignment of Wallgrove Road to connect to Cecil Road and a connection between Elizabeth Drive and Wallgrove Road via Cecil Road with a signalised intersection with Elizabeth Drive • Property adjustments and property access refinements as required
Pedestrian and cyclist infrastructure	• Four-metre wide off-road shared user path alongside the M12 Motorway including grade-separated crossings at all road crossings and floodplains, including connection to existing and future shared user path networks • Replacement of Wylde Mountain Bike Trail in Western Sydney Parklands
Ancillary operational Infrastructure	• Ancillary facilities to support motorway operations, smart motorways operation in the future and the existing M7 operations, including gantries, electronic signage, heavy vehicle stopping bays, emergency crossovers and ramp metering • Water quality basins

2.2 Construction works

The key construction works are summarised in **Table 2**.

Table 2 | Key construction works

Aspect	Description
Site establishment and enabling works	• Utility works including adjustment, protection and augmentation • Site establishment including fencing and hoarding, construction ancillary facilities, vegetation clearing
Earthworks	• Excavation and removal of approximately 1,396,000 cubic metres of spoil • Importation of approximately 1,732,000 cubic metres of clean fill
Bridges and overpasses	• Piling • On-site assembly of pre-cast segments • In-situ cast concreting • Lifting of pre-cast segments into place using a crane or launching gantry
Local road network modifications	• Preparatory works • New, and adjustments to, drainage and other utilities • New pavement, kerbs and gutters
Ancillary facilities	• Establishment and use of temporary ancillary facilities, access tracks and haul roads, laydown areas
Other aspects	• Protection or relocation of utilities • Adjustments of waterways where required, including Kemps Creek, South Creek and Badgerys Creek • Temporary water quality management measures including swales and basins • Drainage infrastructure • Temporary and permanent property adjustments and property access refinements as required.
Finishing works	• Line marking and safety barriers • Landscaping works • Demobilisation and rehabilitation of construction ancillary facilities • Installation of directional signage, roadside furniture and lighting

Construction of the project includes the establishment and operation of 18 construction ancillary facilities. Their proposed location and uses are detailed in **Table 3**.

Most construction activities would be carried out during the standard working hours of Monday to Friday 7:00 am to 6:00 pm and Saturday 8:00 am to 1:00 pm. No work would be undertaken on

Sunday and public holidays. The Proponent has requested extending construction hours on Monday to Friday from 6:00 am to 7:00 pm and on Saturdays from 8:00 am to 5:00 pm. The extended hours are predicted to reduce the overall construction period by approximately eight months (or about 23 per cent of the total duration). The Department's consideration of this request is addressed in **Section 6.1**.

The Proponent is proposing to operate four construction ancillary facilities 24 hours a day, seven days a week. Out-of-hours works at these ancillary facilities would predominantly involve stockpiling and deliveries of concrete and large prefabricated material. However, concrete and asphalt batching would also be required at times.

2.3 Timing

Construction of the M12 is expected to commence early in 2022 and conclude in 2025, as shown in the indicative construction program in **Table 4**. The construction sequence is likely to be in three phases:

- site establishment and enabling works;
- bulk earthworks, drainage and structures, bridge construction, pavement works; and
- finishing works.

The construction workforce is anticipated to be between 600 and 800 workers across the three years of construction.

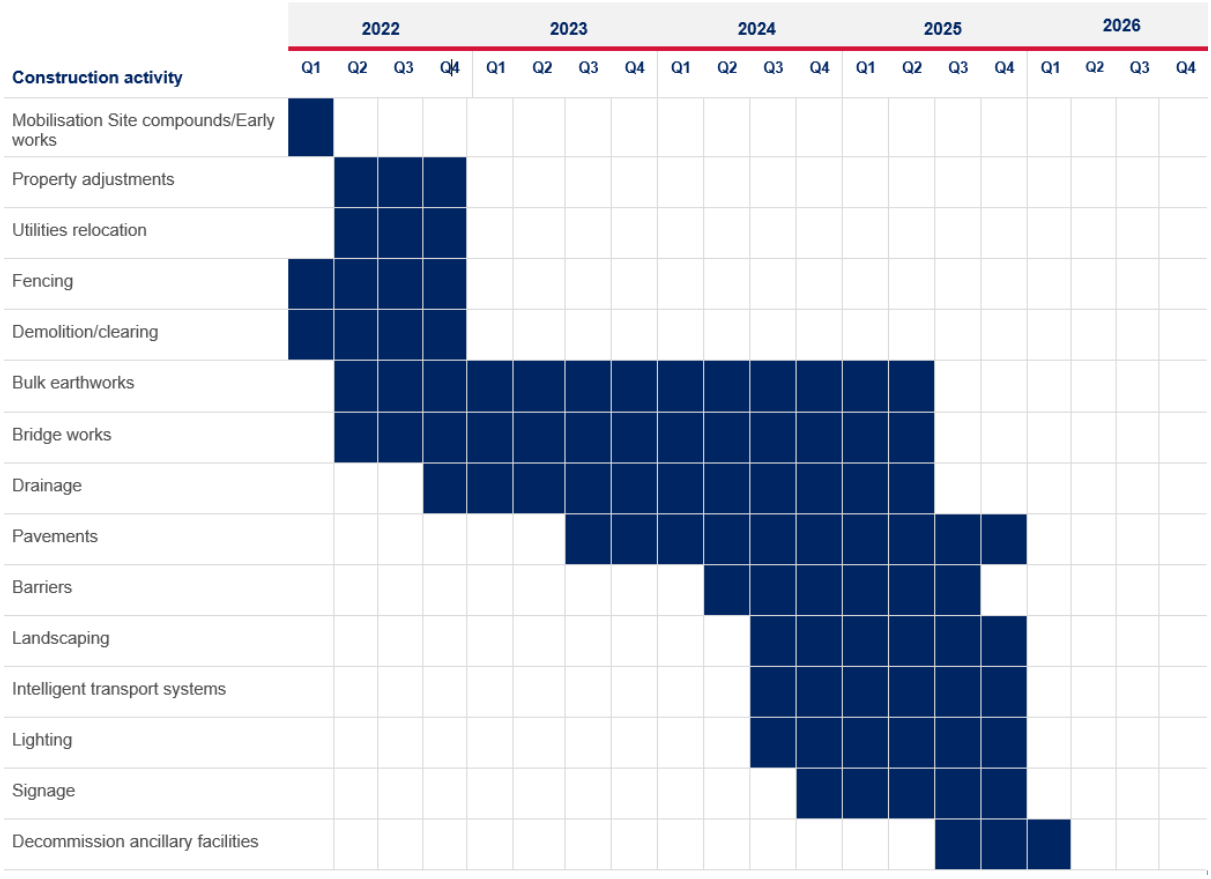
The project may be delivered in stages, with the priority being to deliver the connection between the M7 Motorway and the Western Sydney Airport prior to the Airport opening in 2026.

Table 3 | Indicative construction ancillary facility locations and uses

Ancillary facility	Location	Concrete and/or asphalt batching plants	Material and earthworks stockpile	Bridge construction support	Main project offices	Plant servicing workshop	Double-handling laydown	Site offices	Material crushing and screening	Amenities	Vehicular access and car park
AF 1	East of The Northern Road		■	■		■	■	■	■	■	■
AF 2	North of Elizabeth Drive opposite the Elizabeth Drive/Badgerys Creek Road Intersection		■		■	■			■	■	■
AF 3	North of Elizabeth Drive between proposed Airport Access Road and Sydney Metro Greater West	■	■	■		■	■	■			
AF 4	West of Clifton Avenue	■	■			■		■		■	■
AF 5	West of Mamre Road, north of Elizabeth Drive		■	■		■	■	■			
AF 6	South of Elizabeth Drive opposite Duff Road		■	■		■	■	■			
AF 7	West of the M7, North east corner of Western Sydney Parklands		■	■		■	■	■			
AF 8	East of the M7, south of Elizabeth Drive		■	■		■	■	■			
AF 9	East of the M7 Motorway		■					■		■	■

Ancillary facility	Location	Concrete and/or asphalt batching plants	Material and earthworks stockpile	Bridge construction support	Main project offices	Plant servicing workshop	Double-handling laydown	Site offices	Material crushing and screening	Amenities	Vehicular access and car park
AF 10	East of The Northern Road, South of Gates Road. Existing ancillary facility for construction of Stages 5 and 6 of The Northern Road	■	■					■	■	■	■
AF 11	East of Luddenham Road		■					■		■	■
AF 12	West of Clifton Avenue		■							■	■
AF 13	East of Salisbury Avenue		■					■		■	■
AF 14	West of Salisbury Avenue		■								■
AF 15	South of the intersection of Elizabeth Drive and Mamre Road		■					■		■	■
AF 16	Within the carpark of Wylde Mountain Bike Trail		■					■		■	■
AF 17	West of the M7 Motorway		■							■	■
AF 18	West of the M7 Motorway		■					■		■	■

Table 4 | Indicative construction program (Source: Amendment Report)



3 Strategic context

3.1 Project Justification

The project has been informed by NSW Government strategic plans and policies and would assist in achieving the following NSW Priorities (NSW Government, 2015):

- building infrastructure – by constructing a new motorway;
- reducing road fatalities – by reducing the potential for traffic incidents through the provision of a controlled access motorway; and
- improving road travel reliability – by providing a new motorway that would increase capacity between The Northern Road and the M7 Motorway to accommodate future traffic demand, reduce areas of congestion, improve travel times, and build extra road capacity.

The project is identified in the *Future Transport Strategy 2056* as a committed initiative for the next 0–10 years as part of the Western Sydney Infrastructure Plan, providing a key road link to the new Western Sydney Airport.

The project is consistent with the Commonwealth and NSW strategic planning policy framework, including:

- *Australian Infrastructure Priority List* (Infrastructure Australia, 2019) – which identifies Western Sydney Airport as a high priority project that addresses a major problem or opportunity of national significance. The M12 Motorway would directly support this high priority project by creating a motorway link to the airport. The List also includes the Western Sydney Infrastructure Plan as a priority initiative and the M12 is listed as part of this initiative;
- *Greater Sydney Regional Plan* (Greater Sydney Commission, 2018) – the project would directly address and support Objective 20 of the Greater Sydney Regional Plan, by connecting the Western Parkland City to the Greater Sydney motorway network;
- *Western City District Plan* (Greater Sydney Commission, 2018) – the project would directly support planning priorities through the provision of infrastructure which aligns with forecast growth and providing transport links that would service employment areas in Western Sydney;
- *Western Sydney Aerotropolis Land Use and Infrastructure Implementation Plan* (Department of Planning and Environment, 2018) – the project 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;
- *Western Sydney Infrastructure Plan* (Roads and Maritime Services, 2016) – the project forms a key part of the plan through the delivery of new major road infrastructure to support an integrated transport solution for the western Sydney region that will improve connections. It will also benefit the region's growing population by increasing travel reliability and reducing travel times; and
- *Western Sydney Parklands Plan of Management 2030* (Western Sydney Parklands Trust, 2018) – the project supports objectives of the Plan by improving access to the Parklands.

3.2 Project development and alternatives

The *Western Sydney Infrastructure Plan* sets out a number of objectives that are relevant to the project including supporting future development in Western Sydney and providing connectivity to Western Sydney Airport. In addition, the Proponent has developed a series of project-specific objectives. Four alternatives for meeting these objectives were considered during project development as outlined below.

Alternative 1 – 'do nothing'

This alternative would involve providing no additional transport capacity in the project area outside of planned local road upgrades. This would not meet the objectives of the *Western Sydney Infrastructure Plan* or project objectives and would not provide adequate road access to the Western Sydney Airport or contribute to supporting planned land use changes around the airport.

Alternative 2 – 'do minimum'

This alternative would involve limited upgrades to the existing Elizabeth Drive from a two-lane undivided road to a dual carriageway (two lanes in each direction) arterial road. While this alternative would meet some of the *Western Sydney Infrastructure Plan* objectives, it would not provide resilient transport connections to the Western Sydney Airport or the project objective of providing a high-standard connection to the Western Sydney Airport.

Alternative 3 – rail as an alternative mode of transport

This alternative would involve the construction of a rail line to provide access to the Western Sydney Airport. The *Future Transport Strategy 2056* identifies current government initiatives to expand existing rail infrastructure in Western Sydney, in particular the North South Rail link in the Western Parkland City: St Marys – Western Sydney Airport Aerotropolis (Stage 1) (Sydney Metro Western Sydney Airport). This rail project is considered complementary transport infrastructure and will provide a commuter connection to the Western Sydney Airport. However, it does not meet the freight-related objectives of the *Western Sydney Infrastructure Plan*.

Alternative 4 – Motorway (the project)

The construction of a new motorway would best meet the *Western Sydney Infrastructure Plan* and project objectives as it would cater for projected traffic demands and improve connections to the Western Sydney Airport and other planned developments. Constructing a new motorway would improve transport connections to other road transport corridors, including The Northern Road, and meet freight-related objectives by providing a high capacity integrated road network.

Corridor Alternatives

Various alternative corridor options were considered, and a short list of options (refer to **Figure 6**) was put to community consultation. The corridor options were evaluated against the results of environmental investigations, community feedback and preliminary costings. The modified orange option was identified as the preferred corridor alignment for the project.

Several options were considered for the M7 Motorway Interchange and the Western Sydney Airport Interchange. The interchanges presented as part of the project were chosen based on evaluation against key criteria such as function, environment and socio-economic considerations.

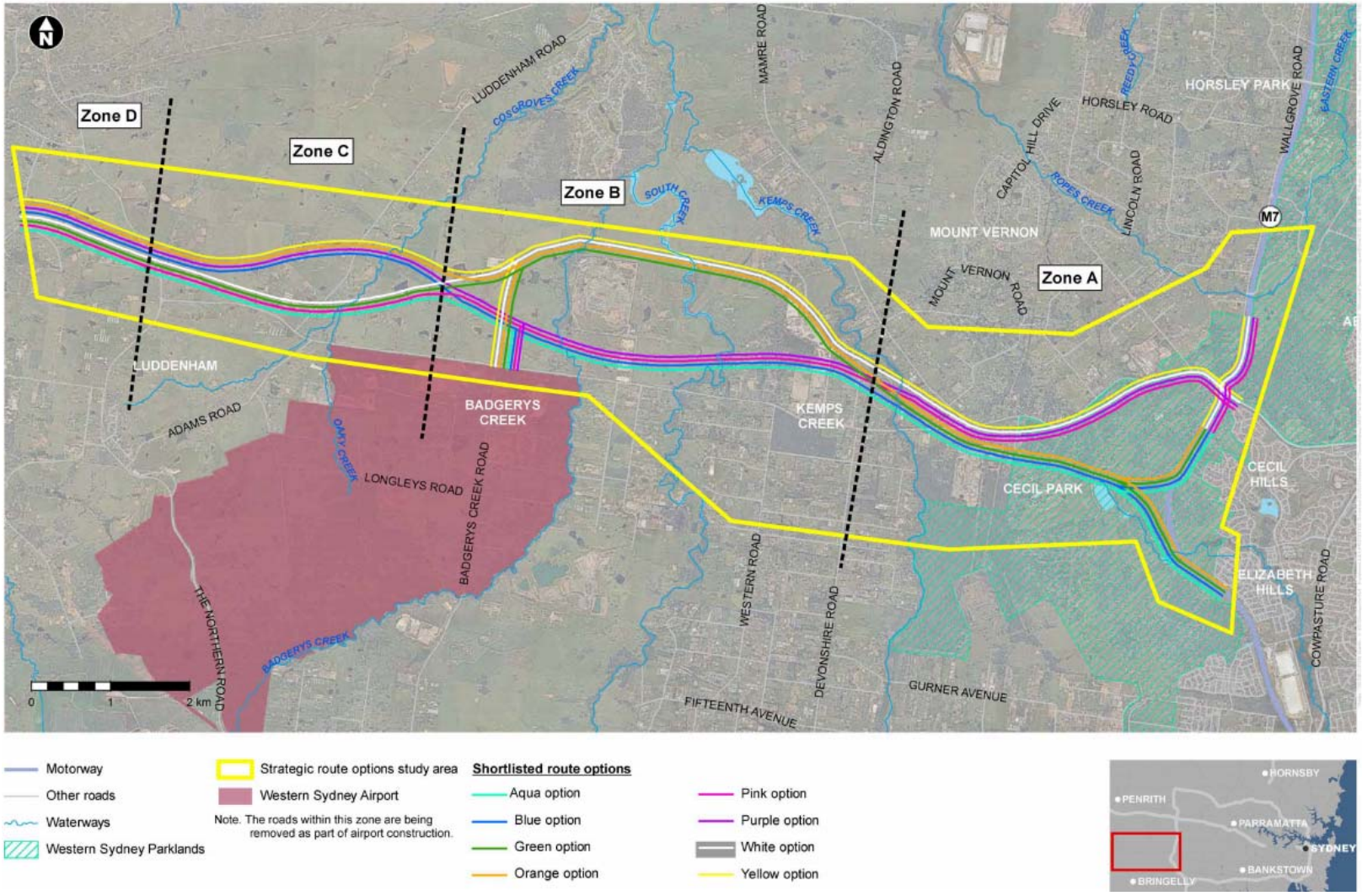


Figure 6 | Alternative project route options (Source: EIS)

4 Statutory Context

4.1 State significance

The M12 Motorway project has been declared critical State significant infrastructure (SSI) under section 5.13 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Minister for Planning and Public Spaces is the approval authority.

4.2 Permissibility

The proposal is for the purpose of a road or road infrastructure facilities and is characterised as development permitted without consent, in accordance with clause 94 of the State Environment Planning Policy (Infrastructure) 2007 (the Infrastructure SEPP).

4.3 Other approvals

4.3.1 State approvals and legislation

In accordance with section 5.22(2) of the EP&A Act, the only environmental planning instruments that apply to the project are State Environmental Planning Policy (Infrastructure) 2007 (as it relates to the declaration of development that does not require consent) and State Environmental Planning Policy (State and Regional Development) 2011 as it relates to the declaration of infrastructure as SSI. There are no other environmental planning instruments that govern carrying out of the project.

The construction of the project will be subject to an environment protection licence (EPL) issued by the Environment Protection Authority (EPA) under the *Protection of the Environment Operations Act 1997*.

Other legislation that applies to the project includes *Land Acquisition (Just Terms Compensation) Act 1991* and the *Contaminated Land Management Act 1997*.

4.3.2 Commonwealth approvals and legislation

On 19 October 2018, the Commonwealth Department of Agriculture, Water and the Environment (DAWE) determined the project to be a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), as it was considered likely that the project could have a significant impact on listed threatened species and communities.

Following this notification from the Commonwealth, the Department confirmed that the project would be assessed under Schedule 1 to the NSW Assessment Bilateral Agreement (February 2015). Under this agreement, the Commonwealth accredited the NSW assessment process under the EP&A Act for the purposes of the EPBC Act, enabling a single assessment of the project. Accordingly, NSW has assessed the potential impacts to the Matters of National Environmental Significance (MNES) in accordance with the requirements of the bilateral agreement.

The relevant controlling provision of the EPBC Act is threatened species and ecological communities. The assessment of MNES is provided in **Section 6.2** and includes sufficient detail such that the Commonwealth decision-maker may consider those impacts when determining whether to approve the project. Additionally, this Report makes a recommendation and proposes conditions to the Commonwealth Minister for the Environment in relation to an approval decision.

4.4 Mandatory matters for consideration

4.4.1 Objects of the *Environmental Planning and Assessment Act 1979*

The determination must have regard to the objects of the EP&A Act. The Department has had regard to the objects of the EP&A Act including:

- how the project would impact on management, development and conservation of the area, including heritage, traffic, noise and vibration, water hydrology, biodiversity, urban design, amenity and socioeconomic issues (**Section 6**);
- the justification of the project, in terms of the orderly and economic use and development of land, and how it would affect traffic and access (**Section 6**);
- protection of the environment, by assessing the effectiveness of proposed environmental management and mitigation measures (**Section 6**);
- sustainable management of built and cultural heritage, including Aboriginal cultural heritage (**Section 6**);
- ecologically sustainable development (**Section 4.4.2** and **Section 6**)
- social and economic welfare (**Section 6**);
- good design and amenity of the built environment (**Section 6**);
- sharing the responsibility for environmental planning and assessment between the different levels of government (**Section 5**); and
- community participation in the assessment of the project (**Section 5**).

4.4.2 Ecologically Sustainable Development

The EP&A Act adopts the definition of ecologically sustainable development (ESD) found in the *Protection of the Environment Administration Act 1991*. Section 6(2) of that Act states that ESD requires the effective integration of economic and environmental consideration in decision-making process and that ESD be achieved through the implementation of:

- the precautionary principle;
- inter-generational equity;
- conservation of biological diversity and ecological integrity; and
- improved valuation, pricing and incentive mechanisms.

Project objectives which guide the delivery and operation of the M12 Motorway contribute to the sustainability of the project and meeting ESD principles. In addition to the objectives, the Proponent addressed the above principles directly in the EIS and identified a broad range of mitigation measures to manage impacts associated with these issues. This includes sustainable procurement practices, minimising water use during construction and considering opportunities for water reuse, using endemic species in landscaping and offsetting of biodiversity impacts.

The Department has recommended conditions of approval requiring the:

- project achieve a minimum “Excellent” ‘Design’ and ‘As built’ rating under the Infrastructure Sustainability Council of Australia infrastructure rating tool; and
- preparation of a Sustainability Strategy that will be implemented throughout the design, construction and operation of the project.

The precautionary principle is applied throughout the EIS and Amendment Report, and the Department considers the range of mitigation measures adequately adopt the principles. The Department is also satisfied that the valuation and pricing of the environmental resources associated with the project have been adequately undertaken and internalised through the project design and mitigation measures.

4.5 Biodiversity Development Assessment Report

Under section 1.7 of the EP&A Act, the provisions of the *Biodiversity Conservation Act 2016* (BC Act) apply to the assessment of SSI applications. The *Biodiversity Conservation (Savings and Transitional) Regulation 2017* sets out provisions relating to biodiversity assessment and approvals under the EP&A Act. In accordance with the Regulation, since substantial environmental assessment was undertaken prior to the commencement of the BC Act, the project has been assessed under the repealed *Threatened Species Conservation Act 1995* (TSC Act) and in accordance with the NSW Biodiversity Offsets Policy for Major Projects which is underpinned by the *Framework for Biodiversity Assessment* (2014).

5 Engagement

5.1 Department's engagement

Under section 5.28(1)(c) of the EP&A Act, the Planning Secretary is required to make the EIS publicly available. The EIS was made publicly available from 16 October 2019 until 18 November 2019 (34 days) on the Department's website and electronically at NSW Service Centres. The EIS was exhibited at the following locations:

- Nature Conservation Council: Level 14, 338 Pitt Street, Sydney;
- Fairfield City Council: 86 Avoca Road, Wakeley;
- Liverpool City Council: Ground Floor Shop R1, 33 Moor Street, Penrith;
- Penrith City Council: Civic Centre, Penrith;
- Camden Council: 70 Central Avenue, Oran Park;
- Transport for NSW – 20-44 Ennis Road, Milsons Point;
- Western Sydney Airport Visitor Centre: Eaton Road, Luddenham;
- St Clair Library: 12 Bennett Road and Endeavour Avenue, St Clair;
- Wetherill Park Library: 561-583 Polding Street, Wetherill Park; and
- Carnes Hill Library: 600 Kurrajong Road, Carnes Hill.

The Department advertised the public exhibition in newspapers - The Australian, Sydney Morning Herald, The Daily Telegraph, Fairfield Advance, Fairfield City Champion, Liverpool City Champion, Liverpool Leader, Penrith Press and Penrith Western Weekender. The Department notified State and local government authorities of the exhibition.

The Department undertook site inspections of the proposed alignment on 5 August 2019 and 18 November 2020 to obtain a comprehensive understanding of the surrounding environment, its sensitivities and issues raised in submissions.

Representatives from the Department attended multiple community information sessions held by the Proponent during the EIS exhibition period to provide information on the planning process and attended local council briefings by TfNSW.

5.2 Summary of EIS submissions

The Department received 51 submissions on the project, comprising 25 public submissions from 24 submitters, nine interest groups and organisation submissions,14 agency submissions, and three council submissions (Fairfield, Liverpool and Penrith Councils). Most community submissions commented on the project, four submissions supported the project and seven submissions objected. No council objected to the project.

5.2.1 Key issues – State government agencies

Environment Protection Authority (EPA) indicated that the construction noise impact methodology should be expressed as per the *Interim Construction Noise Guideline* (ICNG) and that additional information is required on the duration and extent of construction noise impacts. EPA requested confirmation that the accuracy of the operational noise model would not result in residents that qualify for mitigation not receiving treatment. The EPA also advised that a discharge impact assessment will be required to inform licensing conditions. In addition, the EPA indicated that the Proponent must prepare a Contaminated Land Management Plan and engage an EPA accredited site auditor.

(DPIE) Environment, Energy and Science Group (EES including former OEH) advised that the Biodiversity Assessment Report (BAR) adequately assesses the biodiversity impacts of the project in accordance with the *Framework for Biodiversity Assessment* (OEH, 2014) and the Matters of National Environmental Significance in accordance with the EPBC Act (Commonwealth requirements). In relation to Aboriginal cultural heritage, EES advised that the assessment and proposed mitigation and avoidance measures are adequate and that the measures should be required as conditions of approval.

Heritage Council of NSW recommended specific conditions to manage impacts to the heritage items Upper Canal System, McGarvie Smith Farm, McMaster Field Station and Fleurs Radio Telescope Site, including minimising impacts to the items, preparation of a Cultural Heritage Management Plan and a Heritage Interpretation Plan, and Archival Photographic Digital Recording.

DPIE Water and Natural Resources Access Regulator recommended updating the project's 'water balance' to include estimated groundwater take and operational monitoring of groundwater for a minimum of 24 months. It also indicated that any stream adjustments on second order and above streams need to be aligned with the *Guidelines for Controlled Activities on Waterfront Land* (Natural Resource Regulator, 2018) and that all stream diversions should be rehabilitated after adjustment in accordance with *A Rehabilitation Manual for Australian Streams* or similar. Further, flow models should be compared with actual flows after three years post-construction, and the comparison should include a large rain event.

Population Health, South-Western Sydney Local Health District acknowledged the excellent provisions made for pedestrians and cyclists. It requested to review the draft Construction Environmental Management Plan (CEMP) for the project to ensure mitigation strategies adequately address issues relating to air and water quality and noise and vibration. The district health unit believed more detailed assessment of the cumulative impact from the ongoing construction of other projects, including The Northern Road upgrade and the Western Sydney Airport, should be undertaken.

WaterNSW noted that the project will cross the Upper Canal water supply tunnel. The Upper Canal is a critical component of Sydney's bulk water supply infrastructure and is a State Heritage listed item. WaterNSW indicated that the project must not impact on the structural integrity of the canal and that it must always remain safe and serviceable. WaterNSW acknowledged its ongoing consultation with the Proponent and requested that it be consulted during detailed design on works near the canal corridor and on the CEMP.

Department of Primary Industries (DPI) advised that creek adjustments/ realignments should be avoided, and where there is not possible, for DPI to be consulted and its requirements met.

(DPIE) Division of Resources and Geoscience advised that one exploration licence (EL8429) overlaps the project corridor and four extractive resource areas (quarries and/or landfill sites) are adjacent to the project corridor. The Division requested to be consulted on the proposed location of any biodiversity offset areas or any supplementary biodiversity measures, to ensure that these do not have an unintended impact to prospective land for mineral exploration.

Western Sydney Parklands Trust (WSPT) noted that the project will have a direct impact on the Parklands, including bushland, the M7 West Biobank Site, walking trails, the Wylde Mountain Bike Trail and associated infrastructure, and vehicle access to the Sydney International Shooting Centre. The WSPT made several recommendations to ensure positive visitor experiences and continued access to the Parklands.

Western Sydney Planning Partnership raised concern over potential land isolation around the approach to the future airport site created as a result of both the project and the proposed Sydney Metro Greater West, offsetting of removed trees, and cumulative flooding impacts from potential future projects in the area. It also questioned the integration of the proposed active transport corridor within the broader active transport network.

NSW Rural Fire Service indicated support for the proposed measures for managing potential bush fire risk and recommended that they be included in the CEMP.

Sydney Water outlined its requirements for any adjustment, protection or relocation of its assets. It also indicated that any adjustments or relocations must not impact on the delivery of its services.

Crown Lands and the **NSW Resource Regulator** indicated that they had no comments on the project.

5.2.2 Key issues – local councils

Fairfield City Council raised concern that the project does not consider the impact on the Fairfield / Penrith Urban Investigation Area and proposed future population of the area. It considered the traffic modelling to be inadequate and that there would be unacceptable traffic noise impacts to Cecil Park and Horsley Park residents.

Liverpool City Council indicated support for the project but was concerned that the motorway does not include connections to Elizabeth Drive. The council made a number of recommendations regarding traffic modelling, integration of the proposed active transport route, reducing operational traffic noise and increasing tree canopy. The council also raised concern over the scope of the biodiversity assessment and need to develop an economic impact strategy.

Penrith City Council raised the need for the project to consider additional connections / interchanges to link to future developments and meet the strategic needs of the *Land Use and Infrastructure Implementation Plan Stages 1 and 2*. Council also raised concern over potential biodiversity impacts as well as the impact of the project on water quality, hydrology and flooding, and Aboriginal and Non-Aboriginal heritage.

5.2.3 Key issues – community, special interest groups and organisations

The Department received 25 community submissions (from 24 submitters) and nine submissions from community interest groups / organisations.

Key issues raised by individual community members include:

Traffic

- Traffic impacts on the surrounding road network during construction and operation
- Consideration of constructing the motorway with three lanes in each direction
- Safety concerns around the proposed M12 intersection with The Northern Road
- Location of the M12 / The Northern Road intersection
- Validity of the traffic modelling.

Noise

- Operational traffic noise impacts to residents from traffic on the ramps onto the M7
- Construction noise.

Visual amenity

- Visual impacts to residents from the ramps onto the M7 and lighting impacts
- Request for visual shielding to be provided in the form of tree planting.

Other

- Project should be built as an upgrade to Elizabeth Drive on the Elizabeth Drive alignment
- Ramps should be constructed at additional locations including Mamre Road, Wallgrove Road and Elizabeth Drive
- Impacts to property values
- Land fragmentation.

Key issues raised by interest groups / organisations include:

Traffic

- Construction traffic impacts from multiple projects being constructed concurrently
- Consideration of additional interchanges / connections to cater for growth in the area including in the vicinity of Mamre Road and Devonshire Road and Elizabeth Drive.

Land fragmentation and access

- Fragmentation of future employment lands and the need for new access roads to be built to provide access to isolated parcels of land
- Acquisition impacts and the acquisition process
- Access impacts during construction.

Other

- Consideration should be given to all intended strategic objectives for the new airport, the Western Sydney Employment Area land and the Western Sydney Aerotropolis as well as all existing and current planning and development proposals that are under assessment or determined
- Request for separation of cycling and walking facilities on the shared user path
- Provision of direct active transport connections to the airport terminals for workers
- Potential Aboriginal cultural heritage impacts.

5.3 Response to submissions raised during EIS exhibition

Following completion of the public exhibition period, the Department directed the Proponent to prepare a response to the submissions received. The Proponent's Response to Submissions report (**Appendix D**) was made publicly available on the Department's major projects website on 21 October 2020. The Response to Submissions report was forwarded to the relevant agencies for comment. The agencies combined their comments on the Submissions Report with those on the Amendment Report (see **Section 5.4**).

5.4 Amendment Report

In response to the issues raised in the submissions, and continued development of the project, the Proponent made amendments to the design. The amended design was documented in an Amendment Report (**Appendix E**) and included:

- changes to the motorway-to-motorway interchange at the M7 with connection between the M12 Motorway and Elizabeth Drive;
- widening of Elizabeth Drive under the M7 Motorway and approaches;
- two new signalised intersections into Western Sydney Airport, with provisions for future connections to potential developments north of the airport;
- realignment of Wallgrove Road to connect to Cecil Road, including a connection between Elizabeth Drive and Wallgrove Road via Cecil Road; and
- additional construction ancillary facilities.

The Amendment Report was publicly exhibited from 21 October 2020 to 4 November 2020 (15 days) on the Department's website to enable the community to comment on the amended design. The Department advertised the exhibition in The Australian, Sydney Morning Herald, Daily Telegraph, Penrith Western Weekender, Liverpool City Champion and Fairfield City Champion.

The Department received 41 submissions on the amended project, including 17 public submissions, seven community/interest group submissions and 17 agency submissions, including submissions from Fairfield, Liverpool and Penrith councils.

5.4.1 Key issues – government agencies

EPA noted the high potential for encountering asbestos and historical uncontrolled fill between the airport interchange and Western Sydney Parklands. It did not agree with the limited scope of the proposed site audit and recommended conditions relating to the management of contamination. EPA recommended that the Water Pollution Impact Assessment consider the detailed site contamination investigations and Remedial Action Plan to inform design of appropriate water pollution controls given the risk of contamination associated with construction stage stormwater.

EPA also recommended the Proponent consider options to avoid discharges from groundwater inflow. The EPA indicated that strong justification for 24/7 use of ancillary facilities has not been provided and that all feasible and reasonable mitigation should be implemented to minimise out-of-hours works.

Heritage Council of NSW indicated that no further archaeological excavation would be required. It recommended conditions for archival recordings, preparation of a Cultural Heritage Management Plan, and specific conditions in relation to the Upper Canal System, Fleurs Radio Telescope Site and McMaster Field Station.

Population Health, South-Western Sydney Local Health District acknowledged that residential areas in Mount Vernon and Kemps Creek will be highly affected by construction noise and that extended construction hours have the potential to cause sleep disturbances to affected residents. It recommended further assessment be undertaken to determine the potential impacts associated with concurrent construction work in the area to reduce the human health effects resulting from possible noise disturbances, air quality impacts and water quality (surface water and groundwater sources).

Western Sydney Planning Partnership suggested that the proposed Urban Design and Landscape Plan demonstrate how the tree management strategy will enable an overall increase in tree canopy cover.

Western Sydney Parklands Trust noted the impacts of the project on the Western Sydney Parklands including bushland, the M7 West Biobank Site, walking trails, the Wylde Mountain Bike Trail and associated infrastructure, and access to the Sydney International Shooting Centre. The Trust noted that it continues to consult with the Proponent on the project.

WaterNSW noted that the amended design increases the risk exposure to the Upper Canal System and that a revised assessment is required to clearly demonstrate the impacts and changes as they relate to WaterNSW infrastructure. WaterNSW requested the opportunity to comment on the CEMP and recommended conditions in relation to the Upper Canal area and CEMP.

DPIE Water, DPIE Agriculture, DPI Fisheries Crown Lands and **NSW Resources Regulator** provided no further comments on the project.

Heritage NSW (Aboriginal cultural heritage) noted that the proposed amendments would have a negligible increase of harm to Aboriginal cultural heritage.

Sydney Water requested close consultation with the Proponent during detailed design, construction and operation to minimise impacts to Sydney Water assets.

5.4.2 Key issues – local councils

Penrith City Council raised concern that there is no interchange ability for drivers using the M12 Motorway to access the Western Sydney Aerotropolis. However, it is supportive of the addition of two intersections near the airport at Elizabeth Drive and notes that an Elizabeth Drive Connection is preferred to enable toll-free connection for residents travelling along Elizabeth Drive, east of the M7. Council raised concern on the delivery of the Proponent's landscape design objectives due to wildlife strike. Council also raised concern in relation to route selection with consideration to Aboriginal heritage sites, non-Aboriginal heritage, and biodiversity. Council recommended conditions should impact to McGarvie Smith Farm be unavoidable.

Fairfield City Council requested further investigations into traffic management, biodiversity, flooding and acoustic impacts. Council indicated a preference for the Elizabeth Drive Connection as it presents the greatest scope or road network improvements to the broader community. Council requested additional flooding assessment, particularly for the proposed Wallgrove Road realignment. Council

also requested that the Proponent continue consulting with council on potential biodiversity offsets within the Fairfield local government area and noise mitigation in the vicinity of Cecil Park.

Liverpool City Council noted its support for the Elizabeth Drive Connection and requested ongoing consultation with it and affected landowners on noise and visual impacts (particularly at Cecil Hills), landscaping, flooding, land acquisition and pedestrian/cycle ways. Council requested that an interim construction treatment be proposed at the existing Elizabeth Drive and Devonshire Road intersection to improve safety during construction. Council also requested that the Proponent prepare a Construction Traffic Management Plan and a detailed Landscaping Plan (providing large canopy trees).

5.4.3 Key issues – community, special interest groups and organisations

The following is a list of the key issues raised by the community, special interest groups, private organisations and corporations.

Noise

- Sleep disturbance from construction and operation of the project
- Location of proposed motorway close to residents
- Night-time noise disturbance
- Low-frequency noise from trucks
- Request for installation of noise barriers to reduce operational traffic noise impacts
- Compression breaking from heavy vehicles during operation of the project
- Noise impact associated with widening of Elizabeth Drive
- Increased noise due to rerouting of Wallgrove Road onto Cecil Road

Traffic and transport

- Lack of connectivity between precincts (including Northern Gateway, Badgerys Creek and Kemps Creek)
- Lack of connectivity north of Elizabeth Drive to Fleurs property
- Concern that logistics vehicles will be delayed to/from employment lands in the Northern Gateway and increased congestion within the Airport
- Traffic congestion associated with rerouting Wallgrove Road onto Cecil Road
- Lack of access ramps from Elizabeth Drive onto the M12 around the airport and related congestion within airport lands

Urban design and visual impacts

- Visual impact of M12 to M7 (southbound) off ramp
- Light pollution impacts to residents once the project is operational

Social/economic impacts and property acquisition

- Lack of community consultation
- Concern for property prices
- Stress to residents and property owners
- Concern that proposed design has not accommodated future land uses in the area
- Fragmentation and sterilisation of land
- Impacts to future land uses and precinct planning
- Insufficient details on access to sites severed by the proposed project

Stormwater, drainage and flooding

- Located in an area that already floods
- Inadequate details on stormwater and drainage
- Water quality impacts to surrounding agriculture
- Drainage issues near proposed Wallgrove Road realignment

Biodiversity

- Destruction of flora and fauna during construction
- Impacts on creeks and bushland during construction

Air quality

- Increased air pollution from vehicles

5.5 Response to Submissions raised during Amendment Report exhibition

Following completion of the Amendment Report exhibition, the Department directed the Proponent to prepare a response to the submissions received. The Proponent's Response to Submissions report (**Appendix G**) was made publicly available on the Department's major projects website on 18 December 2020 and forwarded to the relevant agencies for comment.

Following exhibition of the Amendment Report, the Proponent made two design refinements:

- refined design of the Wallgrove Road realignment; and
- minor adjustments to the project operational and construction footprints to accommodate drainage and water quality infrastructure and maintenance access requirements and minimise property acquisition, particularly within the Western Sydney Parklands.

6 Assessment

The Department has considered the Proponent's EIS, Amendment Report, Response to Submissions reports and community submissions received on the project as part of its assessment. Based on this consideration, the Department has identified the key issues for the assessment are:

- noise and vibration (**Section 6.1**);
- biodiversity (**Section 6.2**);
- urban design, landscape character and visual amenity (**Section 6.3**);
- traffic and transport (**Section 6.4**);
- socio-economic, land use and property (**Section 6.5**);
- non-Aboriginal cultural heritage (**Section 6.6**);
- Aboriginal heritage (**Section 6.7**); and
- flooding (**Section 6.8**).

Other issues are discussed in **Section 6.9**.

6.1 Noise and vibration

The project will result in construction and operational noise impacts to residential and other receivers. Night-time construction noise impacts are unavoidable due to constraints in building bridges across existing roads and works within road corridors which can only be undertaken during full or partial road closures. These closures would occur of an evening and night time to avoid disruption to traffic. The Department has recommended conditions that require the Proponent to proactively manage works to manage potential construction fatigue and amenity impacts.

The Department is confident that noise and vibration impacts can be minimised and managed through the implementation of Proponent commitments, mitigation measures and recommended conditions.

Issue

The existing noise environment varies with land use along the alignment. The noise environment in suburban and small lot rural areas such as Cecil Hills, Abbotsbury, Cecil Park and Mount Vernon is dominated by road traffic noise from the M7 Motorway and Elizabeth Drive. Noise in rural areas such as Kemps Creek, Badgerys Creek and Luddenham is primarily influenced by environmental noise such as wind and insects.

The construction of the project will exceed noise management levels (NMLs), which is expected for large infrastructure projects. This is particularly at residences and other receivers near the works. Exceedances of these levels is the trigger for implementing noise mitigation measures, and the Proponent has proposed a range of mitigation and management measures consistent with a project of this type and scale.

The noise environment will change substantially in the coming years with the Western Sydney Airport expected to open in 2026, and large land rezonings and development underway which will transition the area from rural / rural-residential to predominately commercial and industrial uses.

Out-of-hours works are proposed due to constrained environments and construction noise will impact sensitive receivers

Construction works are required outside of the standard hours of construction to minimise road traffic impacts and safety concerns. To support these works, four construction ancillary facilities will operate 24 hours a day, seven days per week (AF 2, AF6, AF 7 and AF 9). Out-of-hours works at these ancillary facilities will mainly involve stockpiling and deliveries of concrete and large prefabricated material. Concrete batching may also occur to support night-time construction activities.

Fourteen residents are predicted to be 'highly noise affected' during utilities and drainage, clearing, earthworks and road work activities, with noise levels in excess of 20 dB above the NML. These impacts will be concentrated in areas along the eastern and central portions of the project in NCA02, NCA04, NCA06 and NCA07 (**Figure 7**). Noise modelling is considered to be conservative as it assumes all equipment at a given site is operating simultaneously, with a worst-case intensity and orientation. The worst-case noise scenario would not typically occur, with actual noise levels expected to be lower than predicted.

The sleep disturbance screening criterion is likely to be exceeded at residences when night works occur near residents. Sleep disturbances are likely during some ancillary facility operation/stockpiling, bridge works, road work and tie-in works in most noise catchment areas. Night-time works are likely to result in the greatest sleep disturbance to residents in NCA02 during tie-in works, with 714 residences likely to experience levels up to and in excess of 20 dB above the sleep disturbance criterion.

Noise impacts at other sensitive receivers (places of worship, childcare centres, and sporting and recreation facilities) are generally predicted to be minor with exceedances up 10 dB; however, high impacts (>20 dB) are predicted at Irfan College during worst-case scenarios.

Construction vibration may cause limited property damage

Vibration intensive equipment and activities such as vibratory rollers and rock-breakers have the potential to cause cosmetic damage and/or impact human comfort when undertaken close to residences, other sensitive land uses or structures. Twenty-one structures are within the minimum working distance (**Figure 8** and **Figure 9**) where vibration generating activities may cause cosmetic damage to structures depending on the construction method used. This includes non-Aboriginal heritage items, which would be inspected prior to commencement of vibration intensive works and a dilapidation survey carried out to determine its sensitivity to vibration. Utility infrastructure, such as the Upper Canal System and gas pipelines, are also located within the minimum working distances.

Operation of the project will increase noise levels and require mitigation

While the project will result in negligible changes to traffic noise levels along existing major roads such as the M7 Motorway, Elizabeth Drive and The Northern Road, it introduces a new road traffic noise source in some locations. The impacts without mitigation include an increase in:

- daytime and night-time noise levels greater than 15 dB for receivers in NCA04, NCA06, NCA07 and NCA09; and
- daytime and night-time noise levels up 13 dB for receivers in NCA01, NCA03 and NCA10.

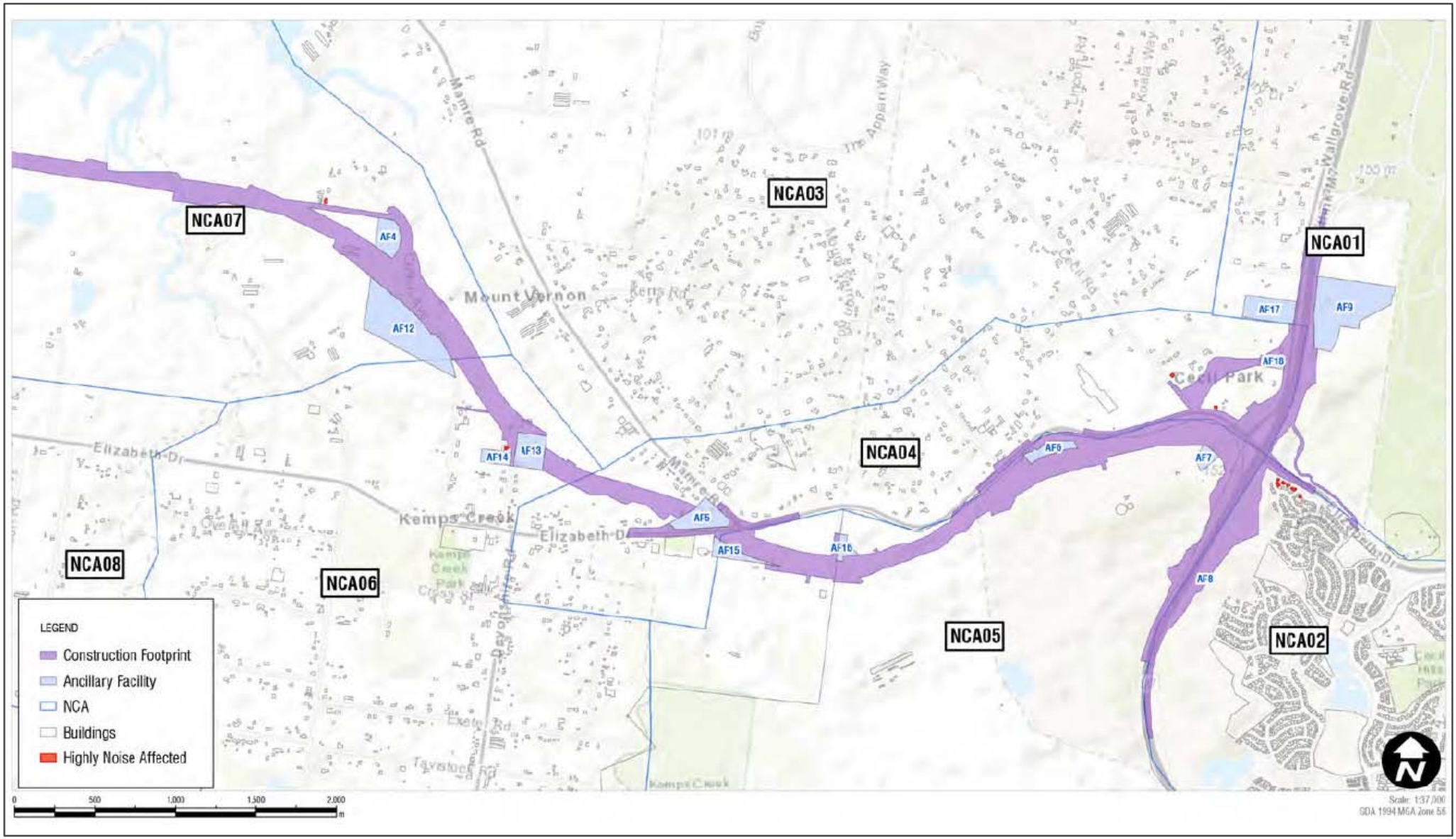


Figure 7 | Highly noise affected residents (Source: Amendment Report)

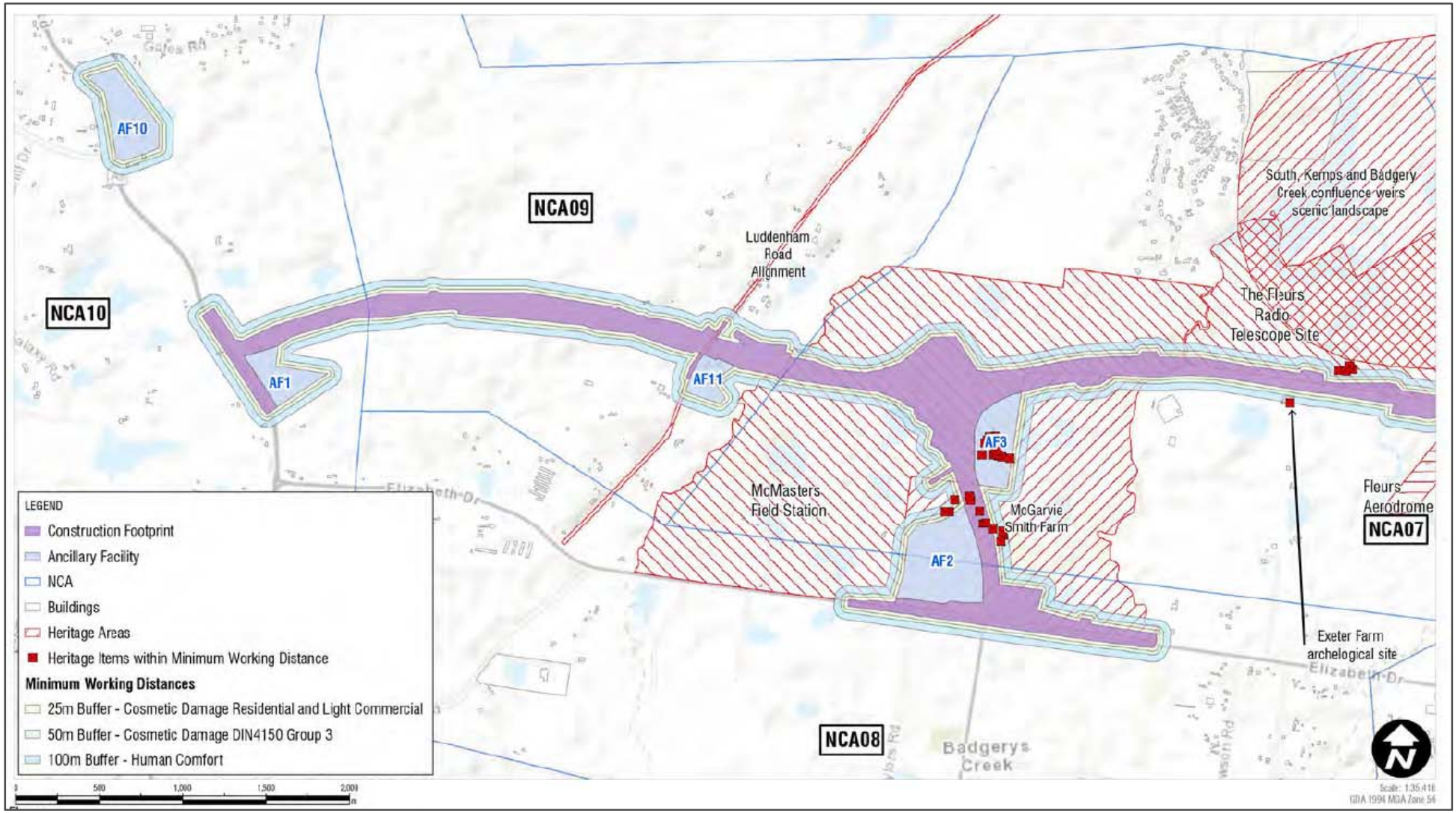


Figure 8 | Indicative minimum working distances for vibration intensive equipment (Source: Amendment Report)

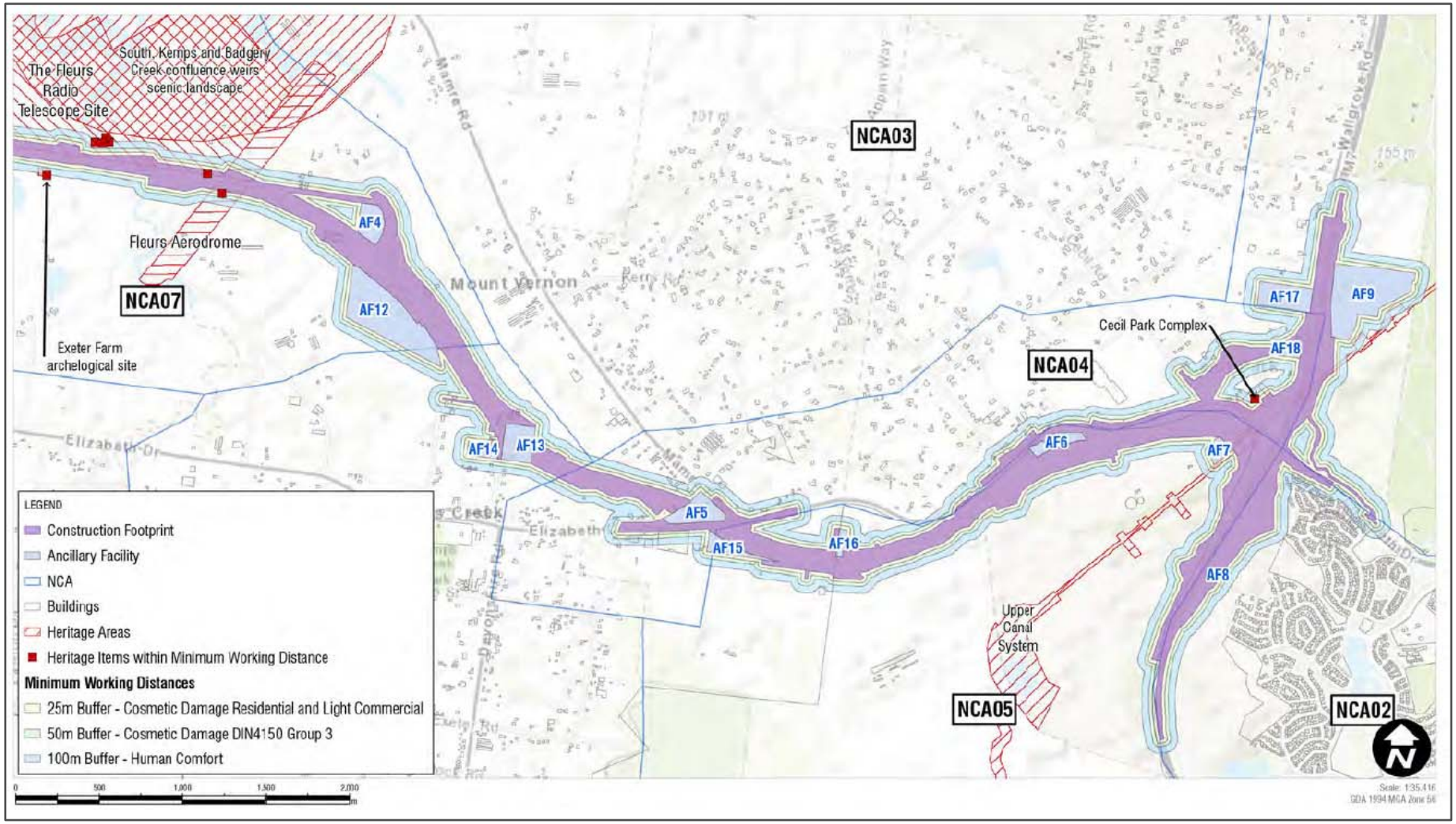


Figure 9 | Indicative minimum working distances for vibration intensive equipment (Source: Amendment Report)

Two hundred and twenty residences were identified as eligible for consideration of additional noise mitigation due to predicted increases in road traffic noise. The Proponent has indicated that the preferred noise mitigation option (low noise pavement, noise barriers, architectural treatments) will be determined during detailed design, with a preference to measures that reduce outdoor noise levels.

Submissions

Community, special interest group and organisation submissions

Community members raised concerns about construction and operational noise, including:

- operational traffic noise impacts to residents from traffic on the ramps onto the M7;
- construction noise including night-time noise and sleep disturbance;
- low frequency noise and compression breaking from heavy vehicles;
- need for installation of noise barriers; and
- increased noise due to re-routing Wallgrove Road onto Cecil Road.

Council and government agency submissions

EPA noted concrete crushing and other ancillary operations may have a high impact on several noise catchment areas and that clear justification is needed to support works outside of standard construction hours. The EPA does not consider that adequate justification has been provided to support the need for crushing activities outside standard construction hours.

Population Health, South-Western Sydney Local Health District noted that the residential areas of Mount Vernon and Kemps Creek will be highly affected by construction noise and extended construction hours have the potential to cause sleep disturbances to affected residences. It recommended that further assessment be undertaken to determine the potential noise impacts associated with concurrent construction work in the area.

Fairfield City Council requested the Proponent update Council in relation to noise mitigation measures, particularly around Cecil Park.

Liverpool City Council recommended the Proponent investigate ways to reduce operational traffic noise and continue to consult Council during detailed design, particularly on noise impacts to Cecil Hills residents.

Water NSW noted that the project would impact on the Upper Canal corridor and that construction vibration poses a potential risk to the asset.

Consideration

Out-of-hours works are required due to operational and safety constraints and provide flexibility to work scheduling

There is a need to provide flexibility in construction hours as some works need to be completed outside of standard hours due to operational and safety constraints associated with the bridge construction over existing roads including Luddenham Road, Elizabeth Drive, Range Road and M7 Motorway. While onsite concrete and asphalt batching facilities may be required to support these out-of-hours works, no crushing or grinding activities are proposed outside of standard construction hours. Most out-of-hours activities will be regulated through an Environment Protection Licence.

As the community is likely to be subjected to regular out-of-hours works, a proactive approach to the management and mitigation of noise impacts including regular consultation with affected stakeholders and coordination and scheduling of works with other projects is necessary to minimise impacts. To support this, the Department has recommended conditions that require the Proponent engage with the community on out-of-hours activities and respite periods, and coordinate utility works to maximise respite periods.

Some residents will be exposed to prolonged NML exceedance. The Department supports the Proponent's commitment to offer at-property acoustic treatments early in the construction phase at residences identified as needing it for operational noise. This commitment is reinforced with the Department recommending that at-property operational noise mitigation be installed at eligible residences within six months of the commencement of construction within the vicinity of impacted residences, where residents are identified as being exposed to prolonged NML exceedances. Where this is not possible, temporary acoustic treatments must be provided.

Construction traffic is not likely to cause a perceptible increase in traffic noise

Community submissions raised concern over construction traffic noise, including compression breaking and low frequency noise. The Proponent's assessment concludes that construction traffic is unlikely to result in noticeable increases in noise levels during either the day or night time (i.e. an increase of more than 2 dB) due to the high volume of existing traffic along the proposed construction routes. The Proponent has committed to the following measures to mitigate residual impacts:

- 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 (noting that some movements may be required out-of-hours for work which can only be undertaken outside of standard construction hours for operational and safety reasons); and
- instructing workers on the operation of heavy vehicles when entering and existing the site to minimise noise.

Construction methods to be further investigated during detail design to minimise potential vibration impacts

Construction of bridge support piles over the M7 Motorway, excavation for M12 Motorway ramps and vibratory rolling within the vicinity of the Upper Canal System have the potential to impact this asset. In particular, rock-breaking and vibratory rolling equipment is likely to exceed the recommended vibration criteria. The Proponent has committed to working with WaterNSW as asset owner to develop appropriate vibration criteria, will carry out monitoring to confirm vibration levels, and implement adaptive mitigation measures if exceedances are identified.

Vibration intensive works may also exceed the recommended criteria for gas pipelines and heritage items in the project area. The Proponent has committed to:

- consulting the relevant pipeline asset owner to determine sensitivity to vibration and any management protocols required to protect the pipelines;
- undertaking attended vibration measurements prior to start of work, to determine the risk of exceeding the vibration objectives; and
- undertaking detailed surveys for each heritage item prior to works commencing, to determine appropriate vibration criteria.

To reinforce these commitments, the Department has recommended that the Proponent consult with relevant utility service providers and pipeline operators when preparing the Construction Noise and Vibration Management Plan. It also recommends vibration testing during construction and the preparation of Noise and Vibration Impact Statements for works that may exceed noise and vibration criteria. Further, the recommended conditions require the Proponent to offer and undertake pre- and post-condition surveys of structures and assets and where damage has occurred as a result of construction of the project, to carry out rectification works.

Coordination with other major projects will be required, to minimise cumulative construction impacts

Cumulative construction impacts associated with concurrent construction of The Northern Road Upgrade and the Western Sydney Airport could result in noise level increases up to 3 dB at 13 residences. Residents near Luddenham at the M12/The Northern Road intersection and Badgerys Creek at the M12 interchange with Western Sydney Airport are most likely to be affected. Construction fatigue is also an issue for residents in these locations as construction has been ongoing now for several years. In addition, future construction of the Sydney Metro - Western Sydney Airport will cross over with works around the Western Sydney Airport and M12 Motorway.

The Proponent has committed to reviewing cumulative and consecutive noise impacts and coordinating works with nearby projects to ensure adequate respite periods are provided to affected receivers. The Department supports this commitment and has recommended that the Proponent be required to consider all other significant developments which may cause cumulative and/or consecutive noise impacts to residents when providing respite.

Operational traffic noise impacts will be negligible along existing major roads, and noise mitigation will be confirmed during detail design

Road traffic noise is predicted to increase across most of the alignment. Negligible increases (<2 dB) are expected to residents adjacent to existing major roads such as the M7 Motorway, Elizabeth Drive and The Northern Road (**Figure 10** and **Figure 11**)**.** The greatest changes would occur in areas where the project is close to residences that have not previously been affected by road traffic noise or currently experience low traffic noise. In these areas, without mitigation, residents are expected to experience increases of up to 21 dB during the daytime and 23 dB during the night-time period in 2036. In total, 220 residences and other receivers would be eligible for noise mitigation due to predicted increases in road traffic noise (**Figure 12** and **Figure 13**).

The noise assessment investigated the feasibility of providing noise barriers along the alignment to reduce operational traffic noise. The assessment considered other factors such as current and changing land use zoning and cumulative noise impacts from operation of the airport. No noise barrier locations were found to be reasonable to achieve the required noise attenuation benefit or reduce the need for at-property treatments at any triggered receivers.

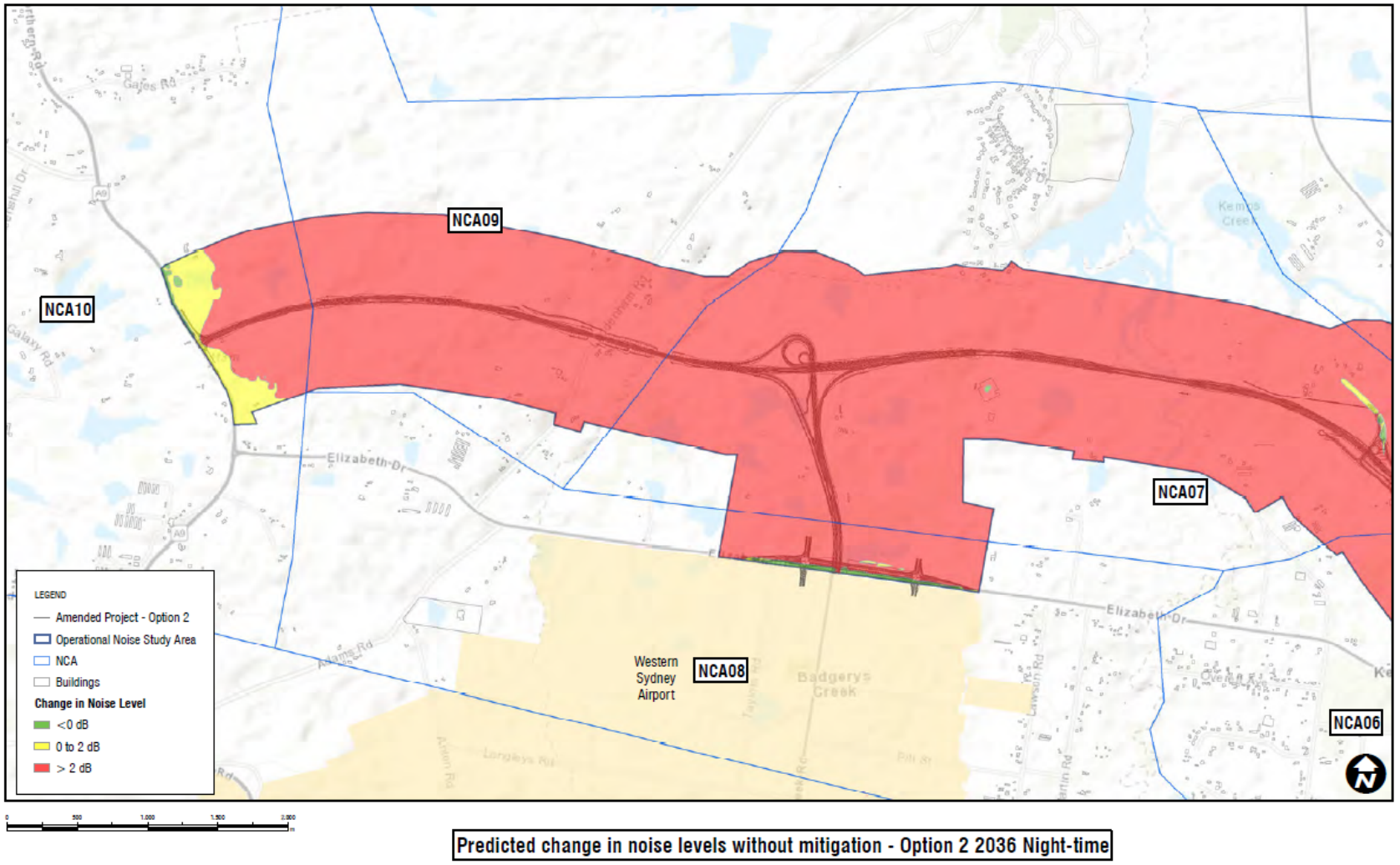


Figure 10 | Predicted change in night-time operational noise levels (without mitigation) – 2036 (Source: Amendment Report)

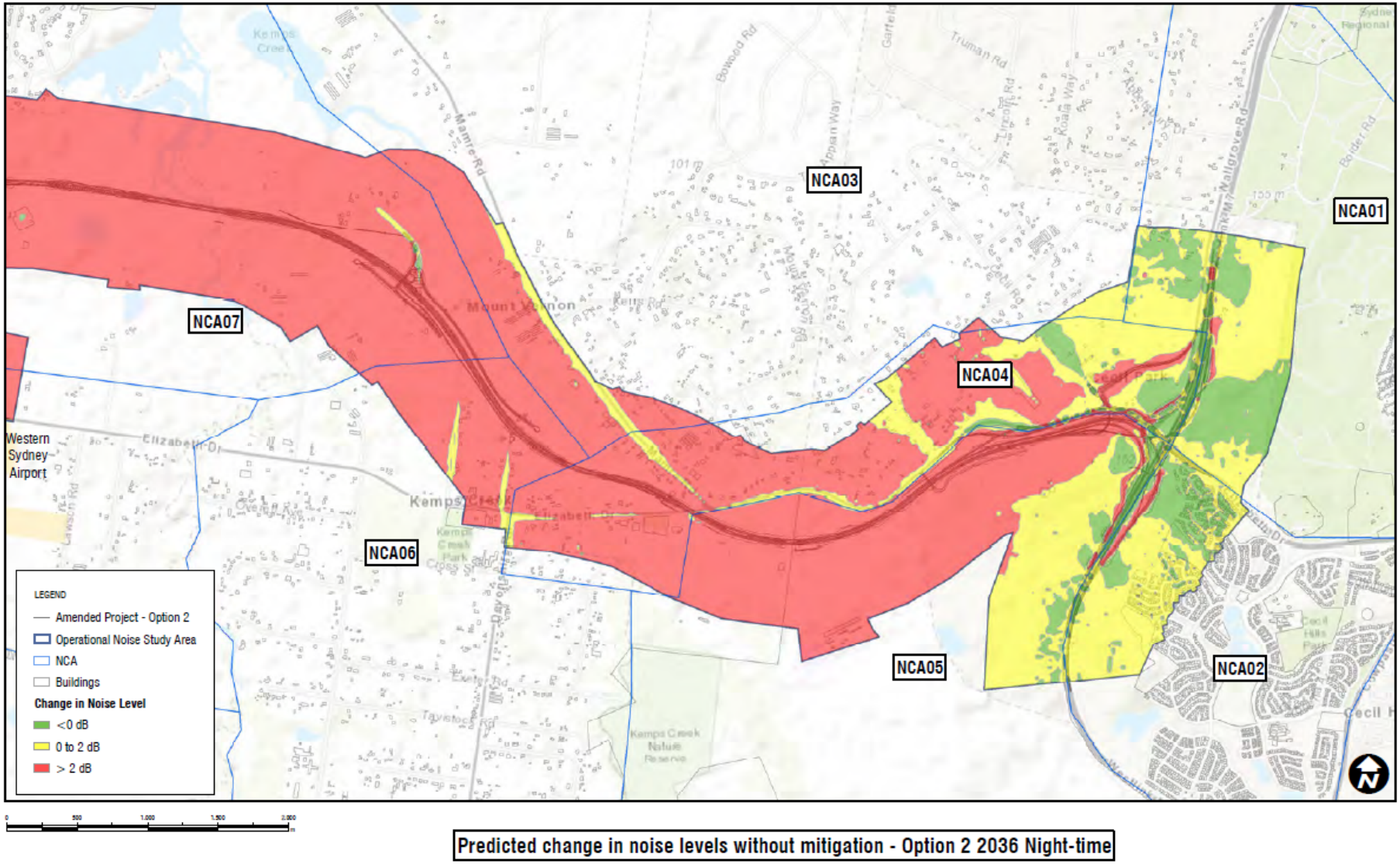


Figure 11 | Predicted change in night-time operational noise levels (without mitigation) – 2036 (Source: Amendment Report)

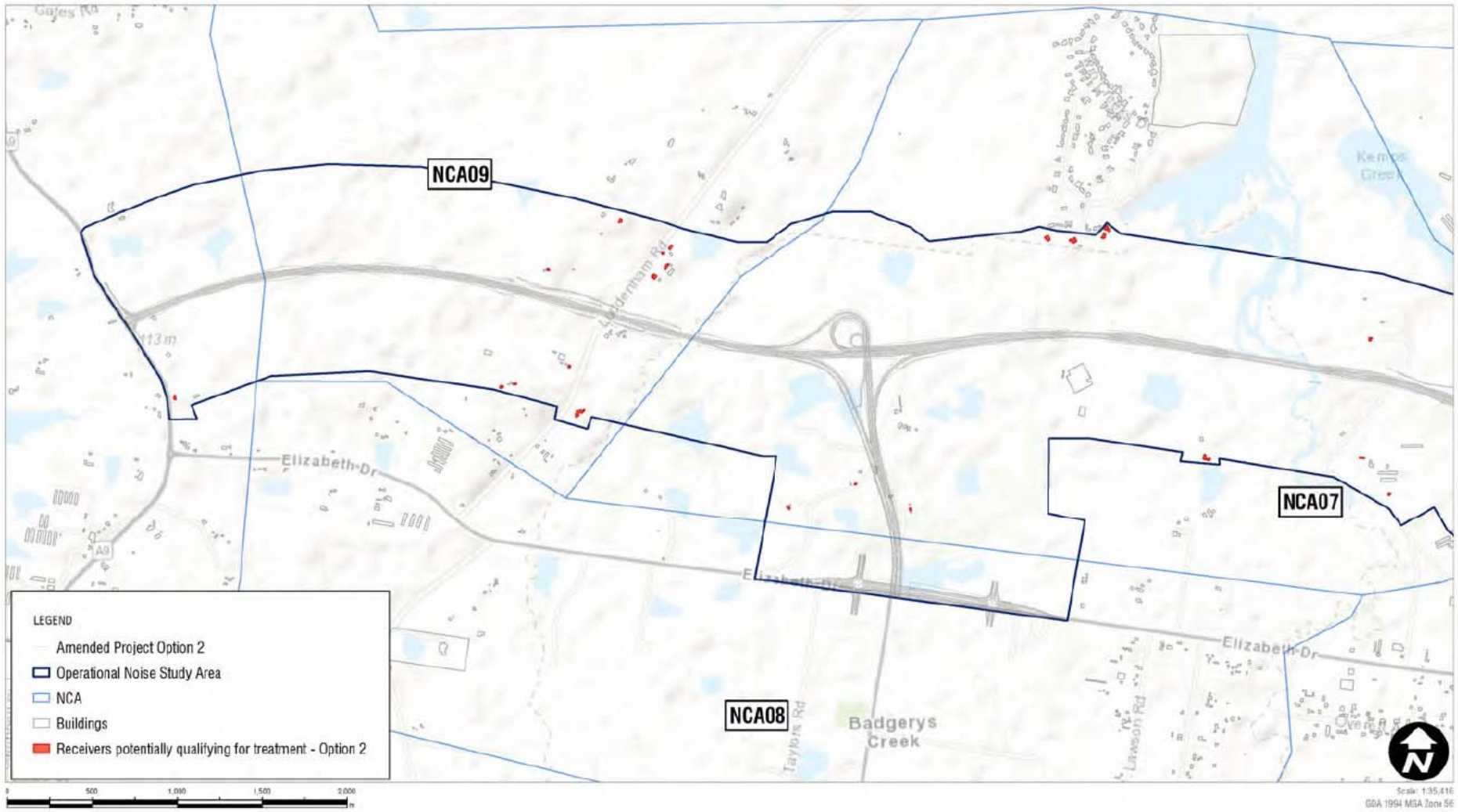


Figure 12 | Residential and other properties identified as eligible for additional mitigation (Source: Amendment Report)

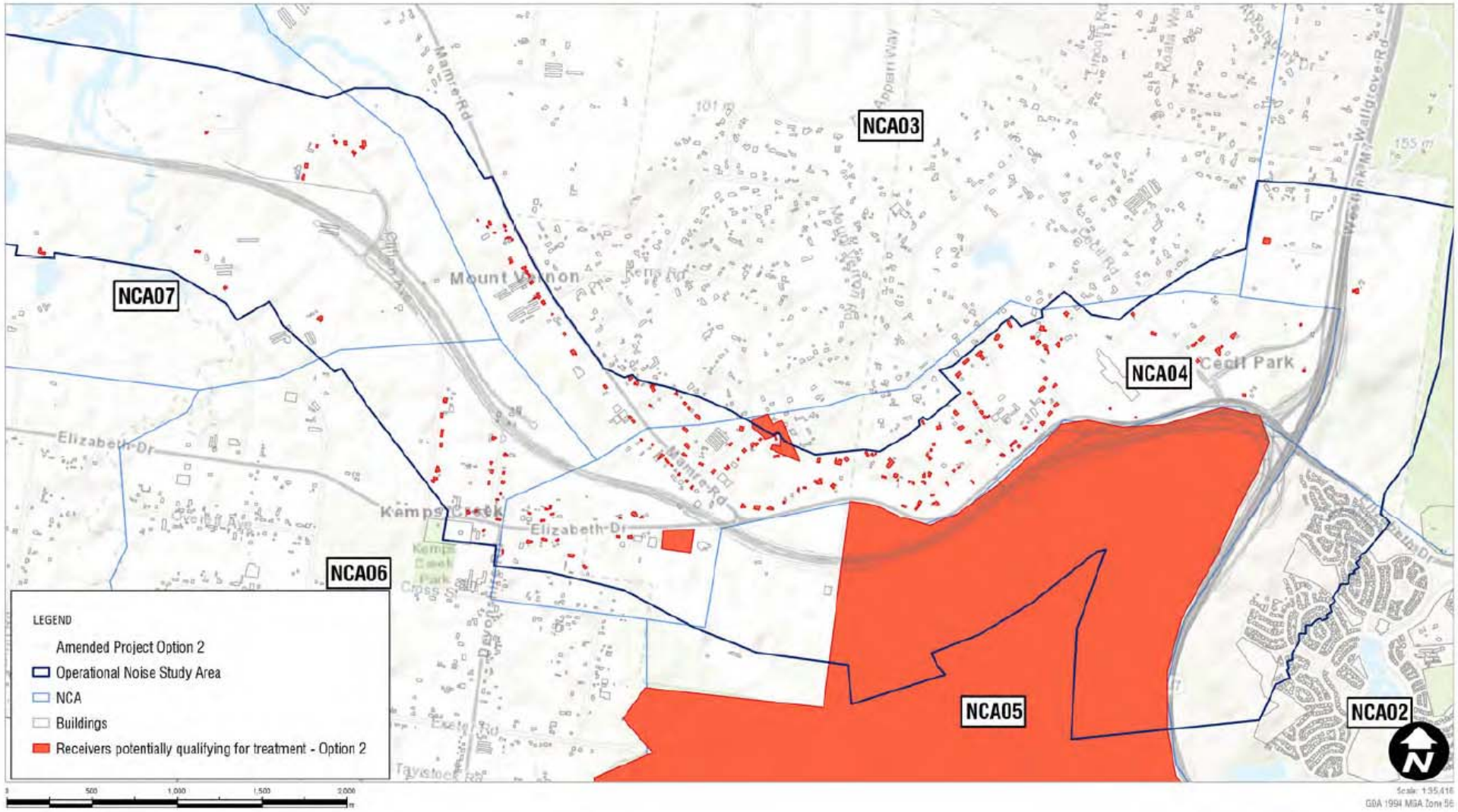


Figure 13 | Residential and other properties identified as eligible for additional mitigation (Source: Amendment Report)

The Proponent has indicated diamond grind concrete pavement will be used as the pavement type for the main alignment to reduce the overall noise levels across the study area by up to 3 dB, a similar performance to dense graded asphalt. The Proponent has committed to reviewing the operational road traffic noise mitigation measures as detailed design progresses. Preference will be given to noise mitigation that reduces outdoor noise levels. The Department has recommended that the Proponent undertake further operational noise modelling and prepare an Operational Noise Review to determine the final noise mitigation measures. In addition, all operational noise treatment must be installed prior to opening of the M12 Motorway. Once the project is operational, noise monitoring must be undertaken to assess compliance with the predicted operational noise levels and noise goals. This will determine whether additional mitigation may be required.

6.2 Biodiversity[1]

The project will have direct and indirect impacts to threatened ecological communities and threatened species listed under the *Threatened Species Conservation Act 1995* (TSC Act) and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). However, these can be reduced during the detailed design of the project. In addition, the Proponent has committed to implementing mitigation measures aimed at reducing impacts, including managing the vegetation clearing process, re-establishing native vegetation at the end of construction, weed management and provision of nest boxes as supplementary fauna habitat.

Impacts to biodiversity values will be offset under the *NSW Biodiversity Offsets Policy for Major Projects*, including the acquisition and retirement of ecological and species credits, or establishing offset sites through a Biodiversity Stewardship Site Agreement. The Department has recommended conditions which specify the ecosystem and species credits required for the project, require additional surveys of a threatened flora species, and implementation of a Flora and Fauna Management Sub-plan, to manage impacts on biodiversity during the construction of the project.

Issue

The project is located within the Cumberland sub-region of the Sydney Basin Interim Biogeographic Regionalisation for Australia (IBRA) bioregion. The Cumberland sub-region is situated between the Blue Mountains and the east coast, stretching to Kurrajong in the north and Bargo to the south, on low rolling hills and valleys in the project area. Remnant or regenerating native vegetation occurs throughout the study area (an area of about 10 kilometre radius from the project), interspersed with non-native pasture and exotic weeds.

On 25 August 2017, the *Biodiversity Conservation Act 2016* (the BC Act) repealed the TSC Act. The M12 project is a pending planning application under the *Biodiversity Conservation (Savings and Transitional) Regulation 2017.* Clause 28 of this Regulation states that the former planning provisions continue to apply (and Part 7 of the BC Act does not apply) to the determination of a pending or interim planning application. As all threatened species, ecological communities and their habitats are now listed under the BC Act, the biodiversity assessment and report for the project refers to these listings. However, the assessment has been undertaken as per the requirements of the Planning Secretary's Environmental Assessment Requirements (SEARs), which references the TSC Act.

[1] References to sections of the EIS, Amendment Report, Amendment Report - Submissions Report and the recommended conditions of approval have been included in this section to satisfy the Commonwealth's assessment requirements.

In accordance with the TSC Act, the biodiversity values of the study area were assessed under the *Framework for Biodiversity Assessment* (OEH, 2014). The Proponent prepared a Biodiversity Assessment Report (BAR) of the concept design, updated for the amended project. Impacts to the biodiversity values from the amended project area were updated in the *M12 Motorway Amendment Report - Submissions Report* (December, 2020) following further refinement to the construction footprint (referred to as the refined construction footprint).

The project is a controlled action under the EPBC Act.

Bilateral Agreement and Framework for Biodiversity Assessment

The Bilateral Agreement (dated 2015) between the Commonwealth and the State of NSW for the assessment of environmental approvals under the EPBC Act, endorsed the *Framework for Biodiversity Assessment* and *NSW Biodiversity Offsets Policy for Major Projects* as the basis for assessing biodiversity values under the EPBC Act. The BAR includes an assessment of the impacts of the project on Matters of National Environmental Significance (MNES).

The Proponent has addressed the Commonwealth requirements and assessed the impacts on MNES. Sections of the EIS relevant to MNES include:

- Chapter 4 – Project development and alternatives;
- Chapter 6 – Consultation;
- Chapter 7.1 – Biodiversity;
- Chapter 9 – Summary of environmental management measures;
- Chapter 11 – Project justification and conclusion;
- Appendix D – Schedule 4 of the Environment Protection and Biodiversity Conservation Regulations 2000 (Commonwealth) checklist; and
- Appendix E – Biodiversity assessment report.

Sections of the Amendment Report relevant to MNES include:

- Chapter 3 – Proposed design changes;
- Chapter 6.1 – Additional assessment - Biodiversity;
- Chapter 7 – Revised environmental management measures; and
- Appendix A – Biodiversity supplementary technical report.

Sections of the M12 Motorway Amendment Report Submissions Report relevant to MNES include:

- Chapter 5 – Clarifications;
- Chapter 6.2 – Biodiversity;
- Chapter 7 – Revised environmental management measures; and
- M12 Motorway Amendment Report - Submissions Report – Amendment (dated 8 March 2021).

Commonwealth listed species and communities to be impacted

The Commonwealth Department of the Environment and Energy (now Department of Agriculture, Water and the Environment (DAWE)) found in its assessment of the controlled action referral (EPBC 2018/8286) that the proposed action is likely to have a significant impact on the following controlling provisions of the EPBC Act:

- Listed threatened species and communities (section 18 and section 18A).

The Commonwealth considered the proposed action is likely to have a significant impact on the following MNES:

- Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest – critically endangered;
- Sydney Bush-pea (*Pultenaea parviflora*) – vulnerable;
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – vulnerable;
- Koala (*Phascolarctos cinereus*) (combined populations of Queensland, NSW and ACT) – vulnerable; and
- Swift Parrot (*Lathamus discolor*) - critically endangered.

*Clearing native vegetation will impact threatened ecological communitie*s

The project would directly impact approximately 91.40 hectares of native vegetation, across seven Plant Community Types (PCT) and 15 vegetation zones. The project intersects the north eastern corner of the South West Growth Centre under *State Environmental Planning Policy (Sydney Region Growth Centres)* 2006 (Growth Centres SEPP). In December 2007, an order granting biodiversity certification on the Growth Centres SEPP was made by the then Minister Assisting the Minister for Climate Change, Environment and Water (Environment). Under the Biodiversity Certification Order, any development within certified areas does not need to assess impacts to threatened species, populations ecological communities, or their habitats. Development within non-certified areas of the Growth Centres SEPP, however, does require an assessment of biodiversity impacts.

The project impacts both certified and non-certified areas under the Growth Centres SEPP. The certified areas within the project area consist of a linear corridor adjoining Elizabeth Drive as well as land south of Elizabeth Drive and west of Range Road, of which 10.62 hectares comprise native vegetation, consisting of the following PCTs:

- Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion (PCT 849) – 0.66 hectares;
- Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion (PCT 850) – 9.95 hectares (includes 0.12 hectares of revegetation); and
- Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter Valley (PCT 1800) – 0.01 hectares.

Table 5 provides details of the impacted PCTs, their general condition, conservation status, regional extent cleared, and area impacted (excluding certified areas). In total, the project directly impacts 80.78 hectares of native vegetation which requires assessment under the *Framework for Biodiversity Assessment* (FBA).

Table 5 | Direct Impacts to native vegetation (excluding certified areas)

Plant Community Type (PCT)	Condition	TEC under the TSC Act?	TEC under the EPBC Act?	Area [1] (ha)
724 - Broad-leaved Ironbark – Grey Box - Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion	Moderate/Good - High Moderate/Good – Medium Moderate/Good - Poor	Yes, Shale Gravel Transition Forest in the Sydney Basin Bioregion (Endangered)	Yes, Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (Critically Endangered)	6.91
830 - Forest Red Gum - Grey Box shrubby woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	Moderate/Good - Poor	Yes, Moist Shale Woodland in the Sydney Basin Bioregion (Endangered)	Yes, Western Sydney Dry Rainforest and Moist Woodland on Shale (Critically Endangered)	0.44
835 - Forest Red Gum – Rough barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Moderate/Good - Poor	Yes, River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (Endangered)	No	3.18
849 - Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Moderate/Good - Medium Moderate/Good – Poor Moderate/Good – Other (Derived shrubland)	Yes, Cumberland Plain Woodland in the Sydney Basin Bioregion (Critically Endangered)	Yes, Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (Critically Endangered)	6.34
850 - Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	Moderate/Good - High Moderate/Good – Medium Moderate/Good – Other (Revegetation Moderate/Good – Poor Low	Yes, Cumberland Plain Woodland in the Sydney Basin Bioregion (Critically Endangered)	Yes, Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (Critically Endangered)	60.52
883 - Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin Bioregion	Poor	No	No	0.57
1800 - Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter valley	Moderate/Good - Poor	Yes, Swamp oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions (Endangered)	No	2.82

Note 1: Area within refined construction footprint (December 2020) excluding certified areas.

PCTs 849 and 850 are TECs under the TSC Act and the EPBC Act, and PCT 1800 is a TEC under the TSC Act. The area of EPBC TEC within the certified areas totals 8.31 hectares (0.5 hectares of PCT 849 and 7.81 hectares of PCT 850). Offsets within the certified areas of the Growth Centres SEPP are calculated on the basis of 1:1 and will be delivered by the draft *Cumberland Plain Conservation Plan* which is being developed by the Department.

In 2011, the Commonwealth Minister for the Environment endorsed the Sydney Growth Centres Program which builds on the Biodiversity Certification Order for the Growth Centres SEPP by providing additional measures for MNES. Therefore, no further assessment of native vegetation in the certified areas is required. The non-certified areas of the Growth Centres SEPP are primarily located in the Western Sydney Parklands and an assessment of the impacts of the project are discussed in this section.

The project would directly impact five threatened ecological communities (TEC) listed under the TSC Act, amounting to 80.21 hectares of the 80.78 hectares of native vegetation directly impacted. The largest impact is to the *Cumberland Plain Woodland in the Sydney Basin Bioregion* TEC, amounting to 66.86 hectares. This includes about 24.58 hectares of revegetation and about 18.07 hectares of derived native grassland in Low condition.

Four PCTs impacted are classified as TECs under the EPBC Act. The impacted TECs are the *Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest* comprising PCTs 724, 849 and 850, totalling 42.89 hectares (which includes 22.05 hectares of revegetation within the Western Sydney Parklands to the south of Elizabeth Drive) and 0.44 hectares of *Western Sydney Dry Rainforest and Moist Woodland on Shale* (PCT 830). The BAR also identified indirect impacts, based on edge effects in vegetation within 30 metres of the construction footprint, to TECs in the Western Sydney Parklands and east of Clifton Avenue.

Construction of the project would remove habitat (grasslands, riparian forest, woodlands and watercourses) for locally occurring threatened fauna species. This includes the loss of potential breeding (hollow bearing trees) and foraging habitat.

The Proponent has committed to providing ecosystem credits for direct impacts to 80.21 hectares of TECs (TSC Act and EPBC Act) and indirect impacts to 13.30 hectares of TSC Act and EPBC listed TECs (12.85 hectares within the Western Sydney Parklands, and 0.45 hectares on land to the east of Clifton Avenue), in accordance with the *NSW Biodiversity Offsets Policy for Major Projects*. Indirect impacts to EPBC listed TECs totals 12.74 hectares.

Threatened flora species would be impacted by construction

Targeted field surveys confirmed that two of the 12 threatened flora species considered to have a moderate to high likelihood of occurrence in the study area would be directly impacted by the project:

- *Dillwynia tenuifolia* - 244 individuals within the construction footprint (Vulnerable TSC Act)
- *Pultenaea parviflora* (Sydney Bush-pea) - 100 individuals within the construction footprint (Endangered TSC Act, Vulnerable EPBC Act).

Two threatened flora species were identified within (or immediately adjacent to) the study area - *Grevillea juniperina subsp. juniperina* and *Marsdenia viridiflora subsp. viridiflora* in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith Local Government Areas. However, as these species were not recorded as being present within the construction footprint, they would not be likely to be impacted by the project.

In relation to *Pimelea spicata,* a threatened flora species listed under the EPBC Act, surveys undertaken in January 2020 of land added to the construction footprint did not record the species, however further surveys of this species will be undertaken.

The BAR states that impacts to threatened flora species would be offset in accordance with the *NSW Biodiversity Offsets Policy for Major Projects* and that impacts to *Pultenaea parviflora* and *Pimelea spicata* (if present) will be managed under the Flora and Fauna Management Sub-plan.

Vegetation clearing will impact a limited number of threatened fauna species

Targeted field surveys recorded seven of the 32 threatened fauna species considered to have a moderate to high likelihood of occurrence in the study area:

- Eastern Coastal Free-tailed Bat (formerly Eastern Freetail-bat) (Vulnerable TSC Act);
- Greater Broad-nosed Bat (Vulnerable TSC Act);
- Grey-headed Flying-fox (Vulnerable TSC Act, Vulnerable EPBC Act);
- Large Bent-winged Bat (formerly Eastern Bentwing-bat) (Vulnerable TSC Act);
- Little Bent-winged Bat (formerly Little Bentwing-bat) (Vulnerable TSC Act);
- White-bellied Sea-eagle (Vulnerable TSC Act); and.
- Yellow-bellied Sheathtail-bat (Vulnerable TSC Act).

Three threatened fauna species were assumed to be present based on the presence of suitable habitat and nearby recent records:

- Cumberland Plain Land Snail (Endangered TSC Act);
- Eastern False Pipistrelle (Vulnerable TSC Act); and
- Southern Myotis (Vulnerable TSC Act).

Targeted surveys of the amended construction footprint recorded one Cumberland Plain Land Snail in Woodland habitat northwest of the M7 Motorway interchange.

The Grey-headed Flying-fox was recorded in the study area, and an assessment of riparian communities as potential breeding habitat was undertaken. The assessment considered the study area did not support suitable roosting or breeding habitat for the Grey-headed Flying-fox, and no camps were recorded during the targeted surveys.

The biodiversity assessment found a low overall likelihood of EPBC Act migratory species in the study area, with no ‘important habitat’ or species recorded during targeted surveys.

The fauna surveys identified 58 hollow-bearing trees within the refined construction footprint likely to provide roosting habitat for four of the seven threatened microbat species recorded or assumed to be present in the construction footprint (Eastern Coastal Free-tailed Bat, Eastern False Pipistrelle, Greater Broad-nosed Bat and Yellow-bellied Sheathtail-bat).

Species credits are required for the Cumberland Plain Land Snail and Southern Myotis, and these would be provided in accordance with the *NSW Biodiversity Offsets Policy for Major Projects*. The provision of ecosystem credits would address the loss of potential foraging, breeding and roosting habitat for other threatened fauna species recorded in the study area. Hollows directly impacted by the clearing of hollow-bearing trees would be replaced with nest boxes, re-use of salvaged hollows, and replacement of woody debris and bush rock.

Construction will result in minor impacts to aquatic habitat and threatened species

The aquatic habitat assessment was undertaken at 14 waterway locations, either within the construction footprint or a sensitive receiving environment further downstream. None contain mapped habitat for threatened fish listed under the *Fisheries Management Act 1994*. Seven of the waterways are mapped as 'Key Fish Habitat' (KFH) by DPI Fisheries and/or meet the definition of KFH under the *Policy and Guidelines for Fish Habitat Conservation and Management* (DPI, 2013).

The BAR considered that impacts to threatened species under the *Fisheries Management Act 1994* are unlikely and therefore do not require offsets. Under the DPI (2013) Guideline, impacts to KFH require offsets by compensatory works to ensure no net loss. The project crosses four waterways (Badgerys Creek, Cosgroves Creek, South Creek and Kemps Creek) that meet the definition of KFH. Bridge works at these four waterways will result in the loss of KFH. The Proponent will compensate the loss based on a 2:1 offset ratio in accordance with the DPI (2013) Guidelines.

Impacts to groundwater dependent ecosystems would be minimal

Four moderate to high potential groundwater dependent ecosystems have been mapped in the Bureau of Meteorology's *Groundwater Dependent Ecosystem Atlas* within and surrounding the project boundary:

- PCT 835 - Forest Red Gum – Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion (Badgerys Creek);
- PCT 849 - Grey Box – Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion (eastern extent of the alignment, near the intersection with the M7 Motorway);
- PCT 850 - Grey-Box – Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin (eastern extent of the alignment, near the intersection with the M7 Motorway); and
- PCT 1800 - Swamp Oak open forests on riverflats of the Cumberland Plain and Hunter Valley (Cosgroves Creek and Kemps Creek).

Impacts to native riparian vegetation have been assessed and appropriate biodiversity credits identified to offsets such impacts.

The project will involve cutting and filling activities, with the largest cut in the far western portion of the project area which is expected to be excavated below the water table. The maximum drawdown to groundwater is predicted to be approximately 1.6 metres, with the area of influence about 60 metres from the base of the cut. The closest groundwater dependent ecosystem is approximately 240 metres from the western extent of the cut (four times further than the area of influence), therefore the risk of impacts to groundwater dependent ecosystems is considered to be minimal.

Biosecurity risks from weeds, pests and pathogens can be managed

Invasive exotic plant species are widespread throughout the study area with seventy-three exotic species identified. Eleven of these species are declared as priority weeds for the Greater Sydney region under the *Biosecurity Act 2015*. Of these, nine are included on the Commonwealth list of 32 Weeds of National Significance. Nineteen additional exotic species recorded in the study area are considered by EES to be high threat weeds.

Vegetation clearing and fragmentation of small patches of native vegetation are unlikely to establish predator pest species such as the European Red Fox and Cat. However, increased vegetation fragmentation could increase the abundance of the noisy miner and bell miner, and exacerbate the key threatening process of aggressive exclusion of birds from potential woodland and forest habitat. This could result in an increase in the abundance and severity of Bell Miner Associated Dieback, currently evident on Grey Box in the north eastern extent of the project area, as Bell Miners exclude psyllid feeding species from their territories.

There is also risk of dispersal of Phytophthora and Myrtle rust (which threaten native vegetation) through earthworks and the movement of construction vehicles and plant across the project alignment.

Submissions

Community and interest group submissions

Community submissions raised concerns over impacts to local species, wildlife, creeks and bushland from construction of the project. One submission requested that the proposed fauna passage at Cosgroves Creek be suitable for livestock access in the short to medium term.

Council and government agency submissions

Fairfield City Council commented that the EIS only contains broad details on a number of biodiversity impacts and does not include additional information or direction for further biodiversity assessment, including mitigation measures and offsets under the BC Act. Council requested referral of reports for review and comment. It noted the western re-alignment of Wallgrove Road would impact additional areas of Cumberland Plain Woodland and native vegetation where Cumberland Plain Land Snails were found. Council recommended it be consulted on biodiversity management measures in the Fairfield local government area.

Liverpool City Council raised a number of biodiversity concerns including the:

- limited fauna survey effort within the Western Sydney Parklands portion directly to the south of Elizabeth Drive;
- assumptions on the potential habitat for the threatened Cumberland Plain Land Snail;
- assumptions that suitable habitat for threatened woodland birds, owls and diurnal raptors is not present within the study area, and recommended further justification be given to these species;
- inconsistent assessment and reporting of the impacts to the threatened *Pultenaea parviflora*;
- limited details on the likely biodiversity impacts to the corridor near the M7 and proposed measures to minimise vehicle strikes and maintain or improve connectivity.

Penrith City Council recommended that security or retirement of all offset credits should occur prior to determination of the application. Further, all biodiversity survey works should be undertaken as part of the EIS rather than further surveys being undertaken during detailed design. It also recommended the preparation of a relocation plan should an existing Sea Eagle nest need to be relocated. Key concerns raised by the Council included the impact to fauna passages, impact of light pollution on fauna, and potential smothering of aquatic organisms from increased sedimentation. Council also indicated that there is a need to demonstrate how the strategic intention of the Cumberland Plain Conservation Plan (currently being developed) is being addressed in the design of the project.

EES advised that the BAR adequately assessed the proposal in accordance with State and Commonwealth legislation/requirements. It indicated that pre-clearance surveys for threatened species will be required on properties not accessed due to private property restrictions and, depending on the results, the number of species credits required to be offset may need to be recalculated. EES recommended that any approval require a biodiversity offset package to address any additional offset requirements, and any supplementary measures if required credits cannot be retired.

In its submission on the Amendment Report, EES recommended that further surveys in *Pimelea spicata* habitat be undertaken in areas added to the construction footprint. It queried the basis on which vegetation was selected for the Cumberland Plain Land Snail polygon. EES encouraged the reuse of native trees for rehabilitation, maintenance of fauna connectivity at bridge crossings, minimisation of creek diversions and establishing processes for dewatering of farm dams.

Division of Resources and Geoscience requested it be consulted on the proposed location of any biodiversity offset areas or any supplementary biodiversity measures to ensure there is no consequential reduction in access to prospective land for mineral exploration, or potential for sterilisation of mineral or extractive resources.

DPI Fisheries advised creek adjustment/realignment should be avoided and requested it be consulted on works occurring within and crossing waterways. The agency suggested that creek banks and beds be planted with native vegetation to stabilise sediments and provide habitat and shading of waterways. It advised snag removal is a key threatening process under the *Fisheries Management Act 1994* and requires DPI approval.

Western Sydney Parkland Trust acknowledged that the project would have direct impacts on the physical environment, native fauna and native vegetation within the Parklands, including bushland and the M7 Biobank site. Issues raised included:

- widths of wildlife corridors are not adequate to provide for connectivity and safe movement of species/wildlife;
- need for further details on wildlife movement through the region to key corridors and habitat, and how the M12 corridor would facilitate this movement;
- ensuring the minimum amount of Parklands is impacted by the project, including consideration of narrow construction and acquisition corridors, and the retention and management of as many existing mature, old growth trees as possible;
- replacement planting to include forest tree canopy;
- potential edge effects on native vegetation in the Parklands; and
- that the CEMP specifically address works within the Western Sydney Parklands and be prepared in collaboration with and endorsed by the Trust.

Western Sydney Planning Partnership acknowledged that the project would remove approximately 960 trees with new tree planting resulting in a net increase in trees. However, it stated that it was unclear how this would be achieved as an indicative figure of new tree plantings was not provided.

Consideration

The assessment adequately considers Matters of National Environmental Significance (MNES)

The BAR considered potential MNES under sections 18 and 18A EPBC Act known to occur or potentially occurred in the project area. A summary of MNES assessed as potentially occurring in the study area is shown in **Table 6**.

Table 6 | Summary of MNES potentially occurring in the study area

MNES under the EPBC Act	Number recorded or likely to occur within 10 km of the study area as described in the EIS	Number requiring detailed assessment as described in the EIS BAR	Number impacted or potentially impacted by the refined construction footprint
TECs	Eight listed TECs	Four EPBC Act listed TECs were assessed against condition, composition and area of coverage criteria in the BAR	Two – Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest and Western Sydney Dry Rainforest and Moist Woodland on Shale
Threatened Flora	26 species	Eight species	One – *Pultenaea parviflora* There is potential habitat for *Pimelea spicata*, which would be confirmed following targeted surveys
Threatened fauna	21 species	Six species	One – Grey-headed Flying-fox is present within the amended construction footprint (foraging habitat only)

Two of the eight EPBC Act listed TECs that the Protected Matters Search Tool identified as potentially occurring in the study area met the condition and extent criteria required to be listed as a TEC under the EPBC Act: *Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest* community and *Western Sydney Dry Rainforest and Moist Woodland on Shale* community. Components of two other TECs, *Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland* and *Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Region Bioregion (*PCTs 1800 and 883, respectively), are present but do not meet the diagnostic criteria (such as patch size, proportion of native species in a sample plot, proportion perennial understorey vegetation is native species or contiguous with a native vegetation remnant) to be considered part of an EPBC listed TEC.

Targeted surveys identified two EPBC listed threatened flora species: Sydney bush-pea (*Pultenaea parviflora*) and Spiked rice-flower (*Pimelea spicata*) within the study area. Only *Pultenaea parviflora* would be directly impacted by the project, as *Pimelea spicata* was recorded about 70 metres to the east of the EIS construction boundary. Targeted surveys of approximately seven hectares of land added to the project area did not record any threatened flora species.

The assessment of threatened flora species listed under the EPBC Act is summarised in **Table 7**.

Table 7 | Summary of MNES flora species predicted to occur in the study area

Threatened flora species listed under the EPBC Act	BAR assessment
Pultenaea parviflora	Recorded in Shale Gravel Transition Forest in the study area, in areas adjoining Clifton Avenue, and also in the Western Sydney Parklands.
Pimelea spicata	A population of *Pimelea spicata* was recorded about 15 metres outside the study area. Habitat for the species is present in the Cumberland Plain Woodland vegetation and the Moist Shale Woodland vegetation, however targeted searches did not identify any further populations. Potential for the species to occur in land in the eastern extent added to the project. Surveys will be undertaken to confirm presence of the species.
Acacia pubescens	*Acacia pubescens* was considered to have a high likelihood of occurrence in the study area, given suitable potential habitat in Shale/Gravel Transition Forest and on the fringes of Cumberland Plain Woodland, and the presence of previous nearby records (most 2017). The species was not detected during targeted surveys, therefore the likelihood of it occurring is considered to be low to moderate.
Acacia bynoeana	*Acacia bynoeana* is considered to have a moderate likelihood of occurrence in the study area. Although there is only marginal potential habitat present in Shale/Gravel Transition Forest (PCT 724), the species is known to occur in disturbed ground and road edges. There are no records of this species in the locality, with the closest records over 11 kilometres to the southeast. *Acacia bynoeana* was not detected in the study area during targeted surveys.
Allocasuarina glareicola	*Allocasuarina glareicola* is considered to have a low likelihood of occurrence in the study area, given the lack of records in the locality – the closest is an isolated individual about 11 kilometres north of the study area, and the core population of the species is in the Castlereagh area in north-west Sydney, about 18 kilometres north of the study area. There is potential marginal habitat for the species in Shale Gravel Transition Forest (PCT 724) in the study area.
Cynanchum elegans	*Cynanchum elegans* is considered to have a moderate likelihood of occurrence in the study area. While there are no recent records of this species in the locality (the most recent is dated from 1993), the species could occur in the Moist Shale Woodland that is present in the study area. *Cynanchum elegans* was not detected in targeted surveys.
Grevillea parviflora subsp. *parviflora*	*Grevillea parviflora* subsp. *parviflora* is considered to have a moderate likelihood of occurrence in the study area. There are multiple records of this species in close proximity to the study area, and suitable habitat is present within the Shale Gravel Transition Forest (PCT 724). The species was not detected in the study area during targeted surveys.
Persoonia nutans	*Persoonia nutans* was considered to have a high likelihood of occurrence in the study area, given suitable potential habitat in Shale/Gravel Transition Forest (PCT 724) and the presence of previous nearby records (2013 record about 500 metres outside the study area). *Persoonia nutans* was not detected in the study area during targeted surveys, therefore the likelihood of it occurring is reduced to low to moderate.

The BAR confirmed direct impacts to *Pultenaea parviflora* and potential impacts to *Pimelea spicata* habitat.

Of the six threatened fauna species identified in the Protected Matters Search Tool report, only one, the Grey-headed Flying-fox, was recorded foraging during nocturnal surveys in the project area. No Grey-headed Flying-fox camps were recorded in the project area. The nearest camps are located about 7-15 kilometres to the east, south-east and north of the project area. The BAR considered the project would not have a significant impact on this species. Regardless, 62.71 hectares of Grey-

headed Flying-fox foraging habitat will be offset through purchase of ecosystem credits for impacts to PCTs that comprise the species foraging habitat (PCTs 724, 830, 849, 850, 883 and 1800).

In declaring the project to be a controlled action, DAWE considered that there were likely to be significant impacts to the:

- Koala (*Phascolarctos cinereus* (combined populations of Qld, NSW and the ACT)); and
- Swift Parrot (*Lathamus discolor*).

The controlled action decision noted that the project may significantly impact:

- Regent Honeyeater (*Anthochaera phrygia*);
- Green and Golden Bell Frog (*Utoria aurea*); and
- Large-eared Pied Bat (*Chalinolobus dwyeri*).

The BAR noted that targeted surveys undertaken in 2017, 2018 and January 2020 did not record any of the above species. The assessment of these species is summarised in **Table 8**.

Table 8 | Summary of MNES fauna records predicted to occur in the study area

Threatened fauna species listed under the EPBC Act	Number recorded within 10 km of the study area	BAR assessment
Koala	15	The most recent record is from 2018. Targeted surveys included the SAT method which was undertaken at 14 sites, and nocturnal surveys. The BAR considered that the low number of records from the immediate surrounds of the study area indicates that the Koala is only an occasional nomadic occurrence and the project would have a no significant impact on the species.
Swift Parrot	26	The most recent record is from 2014. The woodland and riparian forest habitats in the study area were considered to provide potential foraging habitat for the Swift Parrot. The BAR considered that the low number of records from the immediate surrounds of the study area indicates that the Swift Parrot is only an occasional nomadic occurrence and the project would have no significant impact on the species.
Regent Honeyeater	Five	Four of the records are more than 30 years old. The most recent record from 2009 recorded the species about seven kilometres south-east of the study area. The BAR considered that the low number of records from the immediate surrounds of the study area indicates that the Regent Honeyeater is only an occasional nomadic occurrence and the project would have no significant impact on the species.
Green and Golden Bell Frog	23	Most of the records are more than 20 years old with the most recent record from 1999. Farm dams may provide potential habitat for the species. Seven of the 20 farm dams in the study area were considered to meet the criteria established by Pyke and White (1996) at sites that support both breeding and non-breeding populations of Green and Golden Bell Frog. Targeted surveys did not record the species and the BAR considered the species is unlikely to occur in the study area.
Large-eared Pied Bat	Six	The most recent record is from 2008. The BAR considered the targeted survey results and habitat assessment and determined that the study area does not provide suitable habitat for the Large-eared Pied Bat.

The Department is satisfied with the updated BAR's conclusions on impacts to MNES, and recommends the Commonwealth Minister for the Environment:

- notes the Department's assessment of MNES in this report;
- considers the Bilateral assessment in **Appendix I**;
- considers additional EPBC Act considerations, including the Commonwealth's international obligations and the consideration of relevant approved conservation advices, recovery plans, and threat abatement plans in **Appendix J;** and
- adopts conditions A24, C4, C5, C8, C9, C10, E2, E3, E4, E5, E6, E7, E8, E9, E10 and E15 in the recommended instrument of approval (**Appendix K**).

Impacts to threatened ecological communities are unavoidable and *measures will be implemented to limit the degree of impact*

Through its design process, the Proponent has avoided and minimised potential impacts to threatened species habitats. However, there will be a need to clear native vegetation with loss of hollow bearing trees and removal of dead wood, dead trees and bush rock in the construction footprint. There will also be unavoidable indirect impacts to biodiversity outside the construction footprint.

The Proponent will address potential construction impacts on threatened ecological communities and threatened species through a range of mitigation measures including undertaking pre-clearing surveys, reducing impacts to riparian vegetation by the placement of bridge piers and abutments outside watercourse channels, implementing unexpected species finds procedures, and delineation of sensitive areas and retained vegetation.

Construction of the project will directly impact 66.86 hectares (excluding certified areas) of *Cumberland Plain Woodland in the Sydney Basin Bioregion* (PCTs 849 and 850), a critically endangered ecological community (CEEC) under the TSC Act. Approximately two thirds (about 45 hectares) of the TEC was assessed as in Moderate/Good condition, with a considerable proportion (about 36 hectares) being located in the Western Sydney Parklands (which includes 24.58 hectares of revegetation). The balance of the TEC comprises vegetation in Low condition and primarily consists of 18.97 hectares of derived natural grasslands in the west of the project area.

The EPBC Act lists *Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest* (comprising PCTs 749, 849 and 850) as a critically endangered TEC. The total area of TEC meeting the EPBC listing criteria is approximately 42.89 hectares (which includes 22.05 hectares of revegetation). There is some overlap of the EPBC listed TEC with the State TSC Act listed Cumberland Plain Woodland.

Much of the CEEC in the refined construction footprint is currently fragmented from historical clearing, and rural residential and industrial development. The larger patches of the community in the study area are situated in the Western Sydney Parklands, which is largely regrowth or revegetation from historical agricultural land uses. New edge effects would be created which would likely lead to increased runoff and the establishment and spread of weeds. Construction of the project would remove about 10 per cent of the TEC that is in Moderate/Good condition within a 1,000 hectare buffer and about one per cent within a 10,000 hectare buffer.

The Proponent would provide offsets for direct and indirect impacts in accordance with the *NSW Biodiversity Offsets Policy for Major Projects*, allowing conservation of an alternative area of Cumberland Plain Woodland. The Department accepts that impacts to the CEEC are unavoidable and that much of the vegetation of Moderate/Good condition is located in the Western Sydney Parklands. The remainder of the TEC is highly fragmented patches in Low condition.

Measures will be implemented to compensate for the impacts to the existing Biobank site in Western Sydney Parklands

The project impacts a Biobank site (No. 119) in Western Sydney Parklands, located to the south-west of the M7 Motorway/Elizabeth Drive intersection. The Biobank site was established to offset impacts from the M7 Motorway (formerly known as the Western Sydney Orbital). Approximately 1.85 hectares of the Biobank site would be acquired for the project, comprising a strip of land along the eastern boundary ranging from 10 metres to 80 metres in width. The vegetation impacts to the Biobank site are included in the total native vegetation assessment undertaken in the BAR. The impacted vegetation in the Biobank site comprises Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion (PCT 850), a component of the TSC and EPBC listed TEC Cumberland Plain Woodland. The BAR assessed that 82 ecosystem credits are required for impacts to PCTs in the Biobank site, and these have been included in the total number of biodiversity credits required for the project. Indirect impacts, largely edge effects, have been assessed and ecosystem credits will be purchased to offset these impacts.

The Proponent will work with the Western Sydney Parklands Trust to finalise the location and replacement area (on the basis of 1:1 ratio) to compensate the loss of that part of the Biobank site impacted by the project, and complete the biodiversity stewardship site agreement amendment for impacts to the Biobank site. To ensure the timely provision of compensatory measures, the Department has recommended a condition (Condition E10) that requires the Proponent demonstrate it has implemented measures, agreed with the Western Sydney Parklands Trust, to compensate the acquisition of part of the Biobank site.

Impacts on threatened flora and fauna species cannot be avoided and will be offset

Construction of the project will impact 5.10 hectares of Cumberland Plain Land Snail habitat and 1.05 hectares of Southern Myotis breeding habitat, which will need to be offset.

The project will not impact Grey-headed Flying-fox camps, so no species credits are required for this species. Impacts to Woodland and Riparian forest habitat which is considered to provide suitable foraging habitat for the Grey-headed Flying-fox and seven threatened bat species would be offset by acquiring and retiring ecosystem credits.

The White-bellied Sea-Eagle was recorded in the study area. A breeding pair was observed at an active nest (approximately 40 metres to the south of the refined construction boundary) and opportunistically observed flying over several sites within the study area. The BAR notes that the species has a large home range which includes large dams and natural water bodies. Nests are likely to be abandoned if disturbed. The White-bellied Sea-Eagle is an ecosystem credit species and known and potential habitat for the species (wetlands and waterways) is assumed as ecosystem credits.

The Proponent has committed to avoiding direct impacts to the nest. The BAR assessed noise and vibration, dust and lighting impacts on surrounding biodiversity during the construction and operation of the project. The BAR noted that fauna species that utilise resources within the study area would likely have become accustomed to background noise, light and vibration associated with existing

roads, residential and industrial uses in the study area. The White-bellied Sea-Eagle nest is close to the SUEZ Elizabeth Drive Landfill and existing industrial noise generated by its operation.

The Department has recommended that the Proponent provide details of vegetation pre-clearing measures in the Flora and Fauna Management Sub-plan. The Sub-plan will need to include measures to ensure that the White-belled Sea-Eagle nest is protected during construction.

Refinements to the construction footprint have increased the area of land required for the realignment of Wallgrove Road at the eastern extent of the project area. EES noted that surveys for *Pimelea spicata* were not carried out in these areas. The Department has recommended conditions requiring the Proponent to undertake surveys for the threatened flora species and to offset impacts if the project directly impacts the species (Conditions E8 and E9).

The Department has reinforced the Proponent's commitment to manage construction impacts on threatened ecological communities and species by requiring as conditions of approval:

- development and implementation of a Flora and Fauna Management Sub-plan, to manage construction impacts on biodiversity values;
- pre-clearing measures for Cumberland Plain Land Snail known and potential habitat, and protection of the White-bellied Sea-Eagle nest;
- a Habitat Compensation Plan, which includes measures to replace hollows impacted by the project; and
- measures to minimise impacts to threatened species, including during early works and low impact works.

Biodiversity offsets will be required for direct impacts to threatened communities and species

The direct impacts to threatened communities and threatened species habitats will require offsetting, through securing of ecosystem credits to address impacts to plant community types and species credits for impacts to threatened species. The biodiversity credits required to offset impacts is shown in **Table 9**, **Table 10** and **Table 11**.

The biodiversity values of the project area will be reviewed during detailed design and construction of the project, to reduce impacts where practicable. This process is common to the design and construction of large infrastructure projects. The Department supports this approach and has recommended a condition which enables the Proponent to review and update the ecosystem and species credit requirements to reflect the final construction impact of the project (Condition E4).

A Biodiversity Offset Strategy has been prepared as part of the EIS and provides information on the residual biodiversity impacts which must be offset, in this case by the retirement of biodiversity credits. The Biodiversity Offset Strategy does not apply to certified areas under the Growth Centres SEPP which have been assessed and impacts offset in accordance with the Biodiversity Certification Order made under the SEPP.

Table 9 | Ecosystem credits for direct impacts to PCTs (excluding certified areas)

Ecosystem Credits		
Plant Community Type (PCT) ID and name	***Refined construction footprint (hectares)***	***Number of Credits***
724: Broad-leaved Ironbark – Grey Box - Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion	6.91	372
830: Forest Red Gum - Grey Box shrubby woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	0.44	15
835: Forest Red Gum – Rough barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	3.18	105
849: Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	6.34	210
850: Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	60.52	1908
1800: Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter Valley	2.82	75
TOTAL ECOSYSTEM CREDITS	**80.21**	**2685**

Table 10 | Ecosystem credits required for indirect impacts to PCTs (excluding certified areas)

Ecosystem Credits		
Plant Community Type (PCT) ID and name	***Refined construction footprint (hectares)***	***Number of Credits***
724: Broad-leaved Ironbark – Grey Box - Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion	0.45	6
830: Forest Red Gum - Grey Box shrubby woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	0.61	6
849: Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	0.57	6
850: Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	11.67	133
TOTAL ECOSYSTEM CREDITS	**13.30**	**151**

Table 11 | Species credits required (excluding certified areas)

Species	Loss of habitat or individuals	Number of Credits
Dillwynia tenuifolia	244 individuals	4392
Pultenaea parviflora Sydney Bush-pea	Up to 100 individuals	1500
Meridolum corneovirens Cumberland Plain Land Snail	5.10 ha	66
Myotis macropus Southern Myotis	1.05 ha	23
TOTAL SPECIES CREDITS		**5981**

The Biodiversity Offset Strategy identifies options available under the *NSW Biodiversity Offsets Policy for Major Projects* to address the biodiversity offset obligations for the project. These are:

- purchase and retirement of like-for-like biodiversity credits;
- if the required like-for-like credit requirements cannot be sourced from the market, properties that contain potential like-for-like credit requirements would be investigated and if suitable, Biodiversity Stewardship Site Agreements would be established;
- if like-for-like biodiversity credits cannot be sourced, it may be possible to apply variation rules to locate appropriate offsets (variation rules cannot be used for residual impacts of EPBC MNES); and
- supplementary measures or application of the variation criteria if like-for-like biodiversity credits cannot be sourced.

The Proponent has commenced sourcing biodiversity credits in Western Sydney, including credits from the EES Biobanking register and seeking expressions of interest from the local community to source biodiversity credits. The Department is satisfied the Biodiversity Offset Strategy sets out a suitable process to retire the required biodiversity credits.

The Department's recommended condition requires the Proponent to secure and retire all biodiversity credits within 12 months of construction commencing (Condition E3). The retirement of credits must be consistent with the *NSW Biodiversity Offsets Policy for Major Projects*, and can include:

- retiring credits under the BC Act; and/or
- securing land for addition to the National Parks estate; and/or
- making payments into the Biodiversity Conservation Fund; or
- providing supplementary measures or applying the variation criteria where like-for-like credits cannot be sourced, in a Biodiversity Offset Strategy.

The project will not have significant impacts on riparian vegetation and aquatic fauna

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. However, the construction of temporary crossings and bridge abutments and realignment of waterways (Badgerys Creek, Cosgroves Creek, South Creek and Kemps Creek) will result in the loss of riparian and aquatic habitat, impact KFH and require the removal and/or relocation of snags. However, targeted surveys did not identify any threatened aquatic species, populations or communities in the waterways, nor are they expected to occur.

Construction impacts to aquatic communities and species would be addressed in the Flora and Fauna Management Sub-plan. The construction of appropriately designed fish friendly crossing structures, and the implementation of standard construction mitigation measures, such as erosion and sediment control, would minimise the potential for adverse impacts to watercourses and aquatic species.

KFH would be impacted by the construction works. The Proponent has advised that the degree of impact has been substantially reduced through detailed design of bridges (reduced the number of watercourse diversions and piers located in watercourse channels). The Proponent has committed to offset residual impacts to KFH by the provision of 2:1 habitat offset requirement, in accordance with the *Policy and Guidelines for Fish Habitat Conservation and Management* (DPI, 2013 update). The design of bridge crossings and provision of offsets for impacts to KFH will be undertaken in consultation with DPI Fisheries.

The Department has included the provision of offsets for impacts to KFH, and a requirement that fauna passage be provided beneath the proposed bridges to ensure fauna connectivity is maintained, as recommended conditions of approval.

Biosecurity risks need to be managed

The Proponent has identified risks to biodiversity from diseases, pathogens and weeds during the construction of the project and will develop protocols and implement measures to manage the risks in accordance with *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (Roads and Traffic Authority, 2011). In addition, the Proponent is required to manage weeds in accordance with the *Biosecurity Act 2015* both during construction and operation.

To minimise risks of transmitting weeds, disease and pathogens during construction, the Department has recommended the Proponent implement weed management measures and hygiene protocols as part of the Flora and Fauna Management Sub-plan. This would ensure that the transfer of weeds (and seeds), disease and pathogens, in particular *Phytophthora cinnamomic,* is minimised through the movement of construction personnel, machinery and vehicles.

Fragmentation of habitat can increase activities from exotic (European Red Fox and Cat) and native (Noisy Miner and Bell Miner) pest species already established in the study area as a result of existing disturbance to vegetation patches from agricultural uses and urban land uses.

The Department has recommended that the Flora and Fauna Management Sub-plan include measures to address the spread of weeds, pests and pathogens, in particular measures to minimise the spread of *Phytophthora cinnamomic* which is a threat to native vegetation.

6.3 Urban design, landscape character and visual amenity

The project has a range of place impacts. However, these are relatively minor for a project of this scale and can be mitigated or offset or will be influenced through the development of the Western Sydney Aerotropolis which will result in substantial land use change. The project includes a comprehensive urban design framework to facilitate good design, improve active transport connectivity and with comprehensive landscaping outcomes. The design was informed through engagement with the community and has considered the Aboriginal history of the local area and today's Aboriginal community that connects with the area. The design will be refined during detailed design through design review and community engagement.

Impacts to Western Sydney Parklands have been reduced through design development, including moving the alignment north to reduce parkland fragmentation, however there will be a loss of Parklands and direct impacts on existing infrastructure including the Wylde Mountain Bike Trail. To offset these impacts, the Trail will be relocated prior to impact and the project includes a dedicated shared user path along the length of the alignment west of the Parklands.

The project will result in the loss of approximately 1,000 trees (not covered by biodiversity offset requirements), and the Proponent has committed to replacing these so that a net increase in trees is achieved. This replanting provides an opportunity to improve open space connections and revegetate areas between remnant areas of Cumberland Plain Woodland to re-link them.

Issue

The Proponent undertook a landscape character and visual impact assessment, which considered existing and future land uses. During construction, the impacts on landscape character would vary from moderate-low to high within the eight location character zones (LCZs) in the study area. Five LCZs have a high sensitivity to change and are expected to experience impacts from construction activities. These impacts are temporary and would apply for the duration of construction of the project.

The visual impact assessment considered 36 viewpoints, with six of these having a potential high impact. Key visual receptors with potential high visual impacts include:

- residential viewers within close proximity to the project (often in elevated locations), such as those in Luddenham Hills and Kemps Creek;
- motorists travelling along scenic roads such as Luddenham Road; and
- recreational viewers within Western Sydney Parklands.

However, the majority of adjoining lands are subject to extensive re-zoning and development as part the *Western Sydney Aerotropolis - Land Use Infrastructure and Implementation Plan* (Department of Planning and Environment, 2018). This will create broad changes to the existing landscape character/s as development occurs.

Impacts to Western Sydney Parklands have been reduced through the relocation of the project, resulting in less fragmentation and a replacement for the Wylde Mountain Bike Trail

The Western Sydney Parklands (the Parklands) is located at the eastern end of the project. The Parklands is the largest urban park in Australia, covering around 5,280 hectares and stretching approximately 27 kilometres from Quakers Hill in the north to Leppington in the south. The Parklands incorporates a range of formal and informal sport, recreation and leisure uses including playgrounds, picnic facilities, sports facilities, bike tracks, nature trails and entertainment facilities. Major recreation facilities located within the Parklands include the Sydney International Shooting Centre, Sydney International Equestrian Centre and Wylde Mountain Bike Trail.

The project impacts two of the Parklands zones, these being the:

- Northern Slopes – vegetation slopes to Elizabeth Drive and provides a buffer to adjoining infrastructure and includes the Wylde Mountain Bike Trail; and
- Scenic Hills – an area proposed to be developed as lifestyle tourism and day facilities on the south facing slopes overlooking potential future water bodies.

During the design process, and in consultation with the Department, Western Sydney Parklands Trust and other agencies, alternative route options were assessed, eventually moving the project alignment north closer to Elizabeth Drive, minimising impact and fragmentation of the Parklands and its vision for the future. However, the project would directly impact about 90 hectares of Parklands land, including bushland, walking trails, the Wylde Mountain Bike Trail and associated infrastructure, and vehicle access to the International Shooting Centre.

The Wylde Mountain Bike Trail (the Trail) opened in 2014, and is a purpose-built facility providing a variety of trails for intermediate, competent and advanced mountain bike riders. The Trail would be directly impacted, and the Proponent is working with the Western Sydney Parklands Trust and Bicycle NSW to plan, design, and deliver a replacement trail that integrates with existing facilities and future plans for the Parklands to minimise long-term impacts for mountain bike users. Redesign and relocation of the Trail would occur before the start of construction, allowing access to the trails and other facilities to be maintained during construction and helping to reduce disruptions for users.

While the project intersects major north-south green grid opportunities, it has been designed to maintain accessibility and improve riparian areas along waterways

The *Sydney Green Grid* (Government Architect NSW, 2017) identifies the importance of opportunities associated with this project as part of the South West District. It recognises the M12 Motorway as a key east-west connector that intersects with a number of major north-south green grid opportunities. The continuity of these north south green grid corridors is noted in *Sydney Green Grid* as critical to the success and long-term effectiveness of the open space network for Western Sydney.

Creek lines that cross the study area provide a basis for potential future north/south parklands and bridging structures allow for a range of connections across the project. The continuity of the future open space network has been, and will continue to be, considered during the project's design process, with a focus on active transport, landscaping and waterway health.

The project will significantly enhance active transport infrastructure and connectivity

A shared user path about four metres wide would be provided along the M12 Motorway, from The Northern Road at the western end to Range Road in the Western Sydney Parklands (**Figure 14**). The shared user path would complete a connection between the existing M7 Motorway cycleway and the shared user path adjacent to The Northern Road that will be built as part of The Northern Road upgrade. TfNSW has agreed with Western Sydney Parkland Trust to deliver the shared user path connection between Range Road and the M7 Motorway through Western Sydney Parklands before the M12 opening.

The shared user path will be grade separated but also connect to the local roads that it crosses. The path will also allow future connection to major creek line amenity areas once they are established.

Figure 14 | Artists impression of proposed shared path (Source: EIS)

By connecting two major regional cycling facilities some 14 kilometres apart, the project substantially improves cycling and walking connectivity through the wider area. The project would also provide access from the adjacent cycleway to the following roads:

- Western Sydney Parklands Gate G access road
- Elizabeth Drive at Duff Road
- Range Road and Wylde Mountain Bike Trail
- Elizabeth Drive at Mamre Road
- Salisbury Avenue
- Clifton Avenue
- Elizabeth Drive at the Western Sydney Airport
- Luddenham Road
- The Northern Road.

This level of pedestrian and cycle connectivity would be a transformative addition to the regional active transport network in the area, allowing pedestrians and cyclists to access currently poorly accessible streets and properties on Elizabeth Drive and adjacent cross-streets.

Submissions

Community and interest group submissions

Key issues raised in the submissions from the community and interest groups were:

- visual impacts from entry and exit ramps onto the M7 Motorway from surrounding residents;
- screen road elements through vegetation screening/landscape mounds;
- need to retain the ridgeline as a visual barrier; and
- request for the community to be consulted on measures for mitigating visual impacts.

Federal Member for Werriwa, Anne Stanley MP expressed concerns on behalf of a constituent regarding the location of the southbound exit ramp onto the M7 Motorway ramp exposing residents to unbearable amounts of light.

Council and government agency submissions

Penrith City Council recommended further view corridor analysis for South Creek, Kemps Creek, Badgerys Creek and Thompson Creek and provided recommendations relating to landscaping and the inclusion of water bodies throughout the project corridor.

Liverpool City Council expressed concerns regarding the visual impacts of the proposed exit ramp from the M12 onto the M7 on Cecil Hills residents. It also suggested increasing the tree canopy and amount of landscaped areas to cover the length of the project to avoid heat from large paved areas.

DPIE - Environment, Energy and Science Group suggested that landscaping be undertaken using local provenance native species and requested details on the proposed tree replacement strategy.

NSW Health – South Western Sydney Local Health District recommended trees, shading, water bubblers, lighting, high quality smooth surfaces, bike repair/pump stations, bins, signage, wayfinding and rest stops be included along the 16-kilometre span of the shared user path. It also noted the cultural story of the Darug People and places of significance could be told along the shared user path.

Western Sydney Parkland Trust (WSPT) noted management of impacts along the edge of the Parklands during construction is required. It requested to endorse the urban design and landscape plan and tree management strategy to assist the Proponent and Government in meeting the 40 per cent tree canopy target within the area.

Western Sydney Planning Partnership (WSPP) noted the removal of 960 trees as a result of the project, but that the indicative number of trees to be replanted has not been provided. It requested that any approval be subject to the preparation of an Urban Design and Landscape Plan.

Consideration

Visual impacts will be minimised through design review, and implementation of a comprehensive landscaping package

The Department acknowledges concerns raised about visual impacts including proximity of parts of the project to residences and the loss of vegetation. It is considered that these impacts can be reduced during detailed design, and through the implementation of a comprehensive landscaping strategy.

The Proponent has committed to preparing an Urban Design and Landscape Plan (UDLP) which will be informed by the design principles in the Urban Design Framework developed for the project. In addition, the design will be reviewed by an Urban Design Review Panel. The UDLP will address a range of design issues including landscaping and revegetation, use of landscaping to soften the appearance of structural elements such as bridges and the shared path, and to provide screening from light spill and glare, which the Proponent has committed to minimising.

The Department has reinforced the Proponent's commitment by requiring the preparation of a Place, Design and Landscape Plan. Recommended conditions also require the Proponent to consult relevant councils, Western Sydney Parklands Trust, Heritage NSW and the community when preparing the Plan. Place making, design and landscape outcomes must be informed by input and review from independent practitioners who are specialists in landscape architecture, heritage, active transport and public art.

The project will achieve a net increase in trees and facilitate improvements to open space connectivity

The project will result in the loss of approximately 1,000 trees not covered by biodiversity offset requirements. The Department notes the Proponent committed to offset this loss so that a net increase in trees is achieved. The Proponent has also committed to reducing landscape impacts by retaining and protecting trees and vegetation not required to be cleared for the project, and consulting with landowners to restore disturbed areas. Further, the Proponent has commenced a native local seed collection program for the project to satisfy the EES Group's recommendation for native plants to be grown from local provenance seeds.

Careful consideration will need to be given to the location and species of replacement trees so as not to attract wildlife to areas around the airport. When determining where trees will be planted, the Proponent must take into consideration the land use requirements of the *National Airports Safeguarding Framework* (National Airports Safeguarding Advisory Group, n.d.) to minimise the risk of wildlife strikes at the Western Sydney Airport.

The Proponent has committed to planting native vegetation in areas that would be disturbed to re-stablish connectivity, and the Department considers this opportunity can be improved to further reinforce future parkland and open space connections adjacent to (and intersecting) the project. The Department considers that the project should maximise revegetation in disturbed areas and revegetate areas between remnant areas of Cumberland Plain Woodland to re-link them. Consequently, the Department has recommended a condition to this effect.

The Department has also recommended that revegetation and the provision of replacement trees be informed by a Tree Survey to identify the number, type and location of any trees to be removed.

The shared user path will provide an off-road active transport link for pedestrians and cyclists that will connect to existing and future paths

The project includes a dedicated shared user path to the west of the Parklands along the project alignment. Following the creek lines, the shared user path would connect cyclists and pedestrians to future parklands and become a resource for commuters and as recreation and leisure for the community. The path would include accessible entry and exit points, lighting throughout the length of the path, provision for emergency access, heritage interpretation and Aboriginal storytelling.

Opportunities to enhance user experience such as rest stops and activity nodes have been considered, and the Proponent has committed to providing a baseline level of amenity for the shared user path route. To ensure that an appropriate level of amenity is achieved, the Department has recommended the Proponent consult relevant councils and agencies, including the Western Sydney Parklands Trust, as part of the development of the Place, Design and Landscape Plan, to determine appropriate amenities and locations along the shared user path.

The Proponent is continuing discussions with the Western Sydney Parklands Trust about the delivery of a shared path through the Parklands and has committed to delivering the shared path outside the Parklands if it is determined it cannot be located in the Parklands. While the Department supports ongoing design refinement, it considers that this section of the shared path should be completed prior to operation of the project and has recommended a condition to this effect.

The design has considered Connection to Country and will continue to be informed in consultation with the Aboriginal community

The project will be on the land of the Mulgoa, Cabrogal and Cannemegal of the Darug (Dharug, Daruk) language group. It would pass through Deerubbin Local Aboriginal Land Council (LALC) area and the northern boundary of Gandangara LALC. The project study area is traditionally the cornerstone of the three cultural groups from the area; Darug, Dharawal and Gandangara, and was a place where these groups would come together for ceremony.

The project has considered Country and Aboriginal perspectives on the landscape. The design has been developed through a process of consultation which identifies how the study area and broader area is considered by Aboriginal people. Of key relevance is the fact that the area is heavily interspersed with creek systems. These creeks are a key Aboriginal theme of the area, as freshwater places are associated with local learning, and feature in local stories. The four major creek crossings along the project and the woodlands have inspired the design and will continue to provide ideas and opportunities during detailed design.

The design also reflects on the six-season calendar of the Dharawal people (and accepted by the Darug people) and consideration has been given to colour and form used in planting throughout the project footprint. Key themes and opportunities have been developed and will inform the detailed design process, including Local Totems, Dreaming Stories, Red Silcrete and other natural resources.

The Proponent is entering into an agreement with the Western Sydney Parklands Trust for minimising and offsetting impacts to the Parklands

The Department acknowledges the works undertaken within the Parklands are significant and have the potential to impact the amenity of the Parklands and its users. The Proponent has demonstrated ongoing consultation with the WSPT and has committed to ongoing consultation throughout detailed design and construction stages of the project, to minimise potential impacts.

An interface agreement between the Proponent and the WSPT is being prepared which sets out the Proponent's obligations to minimise and offset impacts to the Parklands. The obligations address (among other matters) revegetation works, landscape plantings, replacement of the Wylde Mountain Bike Trail, and realignment of the Mirror Dam Shared Path. The Department supports the proposed agreement as it provides the terms of service between both parties to better manage and offset impacts to the Parklands.

6.4 Traffic and transport

The M12 Motorway will provide regional traffic benefits, including to and around the future Western Sydney Airport and Aerotropolis. Operational modelling has shown the project will redistribute traffic from the Elizabeth Drive corridor, with resulting improvements to traffic flows on the M7 Motorway and Elizabeth Drive. The adoption of Option 2 with full connectivity between the project and Elizabeth Drive at the eastern end results in better operational performance of the local road network.

Local temporary traffic impacts are predicted to occur during construction due to the generation of additional traffic (heavy and light construction vehicles and construction worker vehicles), new or modified intersections to allow entry and exit to construction ancillary facilities and construction zones, and traffic management to allow safe entry and exit to construction zones. The Department has

recommended conditions to address potential construction impacts on the road network, including the implementation of a Construction Traffic and Transport Management Sub-plan.

Issue

Use of public roads for construction vehicles is unavoidable

Construction vehicles will access construction sites and construction ancillary facilities via a combination of arterial and local roads. The proposed routes are three B-double approved roads (Elizabeth Drive, The Northern Road and Mamre Road) and five local roads (Luddenham Road, Clifton Avenue, Range Road, Wallgrove Road and Salisbury Avenue). The Proponent's traffic impact assessment concluded that these roads are suitable for use by construction vehicles.

Total daily heavy vehicles entering and leaving each construction ancillary facility (eighteen in total) are estimated to be between 8 and 20 vehicles during the morning (7:30 am to 8:30 am) and afternoon (5:30 pm to 6:30 pm) peak periods. Light vehicles generated during both peak periods are estimated to total 93 vehicles. Total heavy vehicles generated by the construction ancillary facilities are estimated to be between 80 and 200 daily, depending on the activities undertaken at the facilities.

Peak construction traffic generation is expected to occur in 2024. A comparison of the 2017 base case, and 2024 "do minimum" traffic volumes noted there is likely to be significant growth on most roads in the area, consistent with anticipated land use changes in broader Western Sydney. In the 2024 "do minimum" scenario, the Elizabeth Drive and Devonshire Road intersection would perform poorly at Level of Service (LOS) F during the morning and evening peaks. This is a result of lengthy delays for vehicles turning out of Devonshire Road, which is a priority-controlled intersection. All other intersections perform satisfactorily (LOS A or B) except the M7 Motorway northbound and southbound ramps to and from Elizabeth Drive which would perform at a LOS C in both peak periods.

An assessment of the performance of key intersections in the area with construction vehicle movements from construction sites and ancillary facilities during both peak periods was undertaken (2024 "do minimum" and 2024 "with project"). The assessment predicted that the performance at the Elizabeth Drive and Badgerys Creek Road intersection would change from LOS D to LOS F during the morning peak period. In the afternoon peak, there would be a minor decrease in performance from LOS A to B and an increase in delay from 13 to 19 seconds. The recent installation of a roundabout at this intersection by Western Sydney Airport Co for Western Sydney International Airport construction is expected to improve its LOS performance. Additional delays are expected to be experienced by vehicles waiting for a gap in traffic when turning left or right onto Elizabeth Drive from priority-controlled intersections. A summary of the performance of key intersections used by construction vehicles is shown in **Table 12**.

Haulage from construction ancillary facilities to work sites would take place within the construction footprint, reducing the use of public roads by construction vehicles. Temporary creek crossings would be provided across Cosgroves Creek, Badgerys Creek, South Creek, and Kemps Creek to enable haulage along the construction footprint.

Table 12 | Performance of key intersections (Source: Amendment Report - Submissions Report)

Intersection	Morning peak - 2024 "do minimum"		Morning peak - 2024 "with project"		Evening peak - 2024 "do minimum"		Evening peak - 2024 "with project"	
	LOS	*Average delay (secs)*	*LOS*	*Average delay (secs)*	*LOS*	*Average delay (secs)*	*LOS*	*Average delay (secs)*
Elizabeth Drive/M7 Motorway southbound ramps	C	31	C	34	C	37	C	42
Elizabeth Drive/M7 Motorway northbound ramps/ Wallgrove Road	C	35	C	41	C	40	D	51
Elizabeth Drive/Cecil Road	B	18	B	23	A	7	A	14
Elizabeth Drive/Mamre Road	B	19	B	23	A	13	B	18
Elizabeth Drive/Range Road	A	10	C	35	B	20	D	45
Elizabeth Drive/Devonshire Road	F	311	F	368	F	113	F	771
Elizabeth Drive/Clifton Avenue	A	14	B	20	A	5	B	21
Elizabeth Drive/Badgerys Creek Road	D	55	F	124	A	13	B	19
Elizabeth Drive/Luddenham Road	A	12	B	17	A	8	B	17
Elizabeth Drive/The Northern Road	C	41	C	41	C	41	C	41

Roads in the study area generally do not have or permit on-street parking. Construction worker parking would be provided at construction ancillary facilities.

Access changes will result from temporary road closures and detours

There will be a number of road closures, detours and temporary traffic management during construction to allow safe construction adjacent to or over live traffic. These include:

- bridge installation – construction of bridges over Elizabeth Drive and Luddenham Road and new ramps connecting to the M7 Motorway will involve construction near existing traffic lanes and bridgeworks over live traffic. Road closures with detours will be required for works over live traffic. The works will not require the full closure of the M7 Motorway, but may require lane closures;
- The Northern Road tie-in – the project intersects with The Northern Road at a signalised intersection. The existing capacity would be maintained throughout construction and traffic switches and lane closures would occur outside of peak periods; and
- Clifton Avenue and Wallgrove Road realignment – the new realigned section would be built off-line to maintain current connectivity for properties along the roads.

Road closures would generally occur outside of peak periods, at night or on weekends when traffic volumes are lower. Access arrangements to properties may change on a temporary or permanent basis, and traffic management measures would be implemented, such as speed reductions.

Travel times will vary during construction

Travel times in the surrounding road network are predicted to increase during construction as a result of increased construction vehicles and forecast increase in traffic demand. As shown in **Table 12**, the most notable delays are predicted at the intersection of Elizabeth Drive/Devonshire Road (increase in average delay in 2024 “do minimum” of 113 seconds to 2024 “with project” of 771 seconds in the afternoon peak), and the Elizabeth Drive/M7 Motorway/Wallgrove Road interchange (minor increases of 5 to 11 seconds delay as a result of the construction of the project).

Cumulative traffic impacts could also potentially occur with overlap of construction of the Western Sydney International Airport and Sydney Metro Greater West.

The project will deliver broad improvements to the local and regional road network

Operational traffic modelling was undertaken to estimate the current and future levels of travel demand and the impact of the project on the transport network. Operational scenarios included impacts with and without the project for the years 2026 and 2036.

The operational modelling predicted that traffic volumes would decrease on local roads, in particular on Elizabeth Drive. Travel times would decrease, and the average delay at key intersections would improve, compared to current and forecast traffic conditions. This is due to the increase in east-west capacity provided by the project.

In relation to the Motorway network, there would be increased north-south flows across the study area in the morning and afternoon peak periods. The new M7 Motorway/M12 Motorway interchange would allow free-flow movements for traffic travelling to and from the Western Sydney International Airport via the M12 Motorway instead of through the existing Elizabeth Drive/M7 Motorway interchange, which is predicted to reach capacity by 2026 without the project. By 2036, the project would allow a greater volume of traffic to travel along the M7 Motorway.

Submissions

Community and interest group submissions

Community and public interest group submissions raised concerns about:

- the construction and operational traffic impacts;
- impacts on traffic from the construction of multiple projects concurrently;
- safety of the proposed intersection with The Northern Road;
- validity of the operational traffic modelling;
- additional interchanges and connections to cater for growth in the area including in the vicinity of Mamre Road and Devonshire Road and Elizabeth Drive; and
- future proofing by providing three lanes in each direction.

Council and Government agency submissions

Fairfield City Council requested that consultation be undertaken with affected property owners on access impacted by construction of the project. Council considered the traffic modelling to be inadequate.

Council's submission on the Amendment Report supported Option 2 and requested that further investigation be undertaken on traffic management and the realignment of Wallgrove Road.

Liverpool City Council indicated support for the project but was concerned that the motorway did not include connections to Elizabeth Drive and recommended that traffic modelling include the latest land use and infrastructure assumptions of the Western Sydney Aerotropolis.

Council's submission on the Amendment Report noted its support for Option 2 and requested that an interim construction treatment be provided at the existing Elizabeth Drive and Devonshire Road intersection to improve safety during construction. It also requested that the Proponent prepare a Construction Traffic Management Plan to manage construction traffic impacts.

Penrith City Council considered the EIS sufficiently addressed construction traffic issues and foreshadowed the need for refinement of mitigation measures during the detailed design stage. Council raised the need for the project to consider additional connections/interchanges to link to future development.

Council's submission on the Amendment Report raised concern that there is no ability for drivers to access the Western Sydney Aerotropolis from the project. Council is supportive of the addition of two intersections near the airport at Elizabeth Drive and noted that Option 2 would enable toll-free connection to the motorway for residents travelling along Elizabeth Drive, east of the M7 Motorway.

Consideration

Impacts from construction traffic movements can be managed

Construction of the project will generate additional traffic on the roads in the project area, in particular those that provide access to construction ancillary facilities and work sites. The analysis of the performance of key intersections, summarised in **Table 12**, indicated there would be increases in delays at several intersections. The Department acknowledges that the addition of construction vehicles from the project would exacerbate traffic impacts on the key roads, particularly during the project's peak traffic generation period. However, these impacts are temporary, largely related to movements from priority-controlled intersections waiting for breaks in traffic to complete movements, particularly where there is strong east-west traffic along Elizabeth Drive. Traffic impacts are likely to be greatest before the internal haul roads committed to by the Proponent are established. Haulage through the construction footprint would be subject to construction scheduling of the bridges spanning local roads such as Luddenham Road, Elizabeth Drive and Range Road. Before the completion of bridge works, at-grade or alternative haulage routes along public roads would be used.

The Proponent has committed to preparing a Construction Traffic and Transport Management Sub-plan to manage impacts to traffic and transport, and detail measures to be implemented to maintain access, safety and manage construction traffic interfaces with other nearby projects under concurrent construction. The commitments include investigating and developing an appropriate traffic solution to manage expected traffic delays during construction near Devonshire Road. The Department is satisfied that this approach would adequately manage traffic impacts around construction sites and

the broader road network and has recommended a condition to require the Proponent prepare and implement a Construction Traffic and Transport Management Sub-plan.

Cumulative construction traffic impacts can be managed through coordination

There is the potential for construction to overlap with a number of major projects under construction or proposed near the M12 Motorway. The timeframes for these projects are linked to the planned opening of Stage 1 of the Western Sydney International Airport in 2026. The Department notes that bulk earthworks for the Western Sydney Airport runway and terminal pads are expected to be undertaken prior to peak construction of the M12 in 2024.

The Proponent has committed to implementing a Construction Traffic and Transport Management Sub-plan to include measures to manage activities and minimise overlapping road and lane closures with adjacent projects. The Department acknowledges the timing of construction of other major projects and other development in the area is currently unknown, so construction proposed or underway may overlap. There is potential for increased and prolonged traffic impacts from the concurrent construction of projects, and the Construction Traffic and Transport Management Sub-plan is the most appropriate mechanism to address these cumulative impacts. The Sub-plan would outline staging and planning of works, safe haulage routes, traffic control plans, access arrangements and interfaces with other major projects to assist in addressing cumulative construction traffic impacts.

Operation of the project will redistribute traffic along the Elizabeth Drive corridor

The project will not substantially affect traffic volumes on the Sydney motorway network, with changes in traffic volumes being more localised as a result of the redistribution of traffic from Elizabeth Drive to the M12 Motorway. Operational traffic modelling indicates an increase in north-south flows across the study area and, in relation to the M7 Motorway, there would be an improvement in its capacity by traffic using a direct access to and from the M12 instead of the Elizabeth Drive interchange. The reduction in right-turning traffic from the M7 Motorway to Elizabeth Drive would allow more traffic to travel east-west along Elizabeth Drive at the M7 Motorway interchange.

The modelling predicted that up to 60 per cent of the traffic that would travel along Elizabeth Drive in the “do minimum” scenario would transfer to the M12 Motorway. This would provide additional capacity along Elizabeth Drive.

An analysis of the future network performance (between 2017 base year and 2036 “with project”) indicates that the motorway would substantially improve traffic conditions in the study area. Total travel time is predicted to decrease by seven per cent in the morning peak and eight per cent in the afternoon peak, with travel speeds increasing from 46 km/hour to 50 km/hour in the morning peak and from 46 km/hour to 49 km/hour in the afternoon peak.

The performance of key intersections will be improved

An assessment of the performance of 12 intersections along Elizabeth Drive (The Northern Road to the M7 Motorway) was undertaken for the morning and afternoon peaks in 2026 and 2036. In 2026, the project would result in unchanged or improved intersection performance. In 2036, for both peak periods, all intersections performed at a LOS B or C except for The Northern Road intersection which was predicted to perform at LOS D during the afternoon peak with a delay of up to 46 seconds. Overall, the redirection of traffic from the Elizabeth Drive corridor to the M12 Motorway would improve performance of intersections along the corridor.

6.5 Socio-economic, land use and property

The socio-economic impacts of the project are relatively minor for a project of its scale and reflects the Proponent's commitment to minimising these impacts through engagement with the community in project development. Land use and property impacts during construction and operation would not be significant and most businesses affected by the project can continue to operate.

Social impacts of the project are relatively minor and can be able to be managed with established mitigation and management measures. The project is consistent with future land use changes, and the Department notes that disruption to social and community networks in the area will be primarily through acquisition of properties for the Western Sydney Airport and future urban development around the Western Sydney Aerotropolis.

Issue

The project would generate long-term beneficial impacts for local and regional communities, business and industry. These benefits are realised through improved regional connections and links to key population and employment growth areas in Western Sydney. At a local level, the project would improve access and connectivity for motorists, as well as pedestrians and cyclists via the shared user path, to areas and facilities surrounding the project, including Western Sydney Parklands. Elizabeth Road will continue to provide access for local communities at Cecil Park, Mount Vernon and Kemps Creek.

As with all projects, there will be some direct impacts on individuals, particularly those associated with land acquisition. However, the project is unlikely to have any highly significant impacts. One issue that had the potential to have a high significance was related to the fragmentation of land within Western Sydney Parklands. However, the significance of this issue was reduced by moving the alignment further north (see **Section 6.3**).

Impacts on residences, social networks and community relationships have been minimised by locating the project primarily on rural land

The project is located on large-property rural and grazing land, intensive agricultural land, rural residential, commercial and parkland areas and part of the Western Sydney Airport site.

The project has been located to minimise direct impacts on residences (and hence social networks and community relationships) through locating the project on land primarily used for general rural and grazing use. To ensure that residual land holdings remain viable for their existing use and to minimise fragmentation, the project has been located along property boundaries where possible. Of the approximately 441 hectares of land affected by construction, 253 hectares is rural and agricultural land, with another 73 hectares on existing road infrastructure. The larger property rural uses adjusted around the project and would continue to operate.

The acquisition of large rural properties may be felt more acutely where properties have been held in the same family over several generations and the Proponent has committed to considering the specific needs of these property owners.

A considerable proportion of the rural and agricultural lands adjacent to the project have been identified for future growth and development as part of the Western Sydney Aerotropolis. Although impacts on agricultural lands will occur consequent to the project, these must be viewed in terms of

the wider impacts that are being driven across the region by acquisition of properties for future urban development.

The project is consistent with and supports future land use development

The project would be located within the Western Sydney Aerotropolis, in the areas covered by the Northern Gateway, North Luddenham, South Creek and the northern extents of the Badgerys Creek and Kemps Creek precincts. The project was considered under the connectivity framework for the *Western Sydney Aerotropolis - Land Use Infrastructure and Implementation Plan* (Department of Planning and Environment, 2018) and would positively impact the Western Sydney Aerotropolis by providing access to this growth area, as well as the South West Growth Area and the Western Sydney Employment Area.

A number of major development sites have been approved in the study area considered for the project. The project would not directly impact on these sites in relation to their development capacity. Once operational, the project would have benefits for these development sites by providing improved access and connectivity.

Property infrastructure and access will be protected or relocated prior to impact

The project would directly impact 49 properties either by property acquisition or temporary lease. The larger-property rural uses surrounding the project would continue to operate. Some properties will require farm infrastructure to be relocated, but this will be done prior to impact and in consultation with the landowners.

The project's design has minimised fragmentation and severance of agricultural properties by primarily locating it along property boundaries. Where this has not been able to occur, access has been maintained primarily through bridging. Access to other commercial/industrial, rural living and community uses at Luddenham, Kemps Creek, Mt Vernon and Cecil Park would be maintained through local roads and road interchanges.

As part of the project's construction phase, some utilities including electricity transmission lines, communications infrastructure, and water and gas pipelines, would be modified, protected or relocated. The project alignment would also require local access changes to major utilities located in the Western Sydney Parklands, including the Cecil Hills water reservoir and radio and mobile communications towers. Access to these facilities would be maintained via a new access overpass at the intersection of Elizabeth Drive and Duff Road.

Operation of the project is not expected to impact on infrastructure and utilities.

Most businesses affected by the project will continue to operate

Construction of the project will have a direct impact on 10 business types:

- recreation-based businesses, such as Sydney International Shooting Centre;
- primary production businesses, including vegetable growers and intensive animal keeping;
- construction related businesses, such as Vac Group Australia and Western Safety Fences; and
- commercial offices of Hi-Quality Group.

In most cases, these impacts are minimal or manageable due to the size of the impact (e.g. strip acquisition) or amenity and access management measures. However, a small number of businesses

will, or will likely, cease operations. This includes a quarry, a waste management and resource recovery facility located on land for the airport interchange, and horse training stables.

During operation, the project would have positive impacts on regional and national business and industry through improved access and connectivity to growth areas in Western Sydney and the Greater Sydney area. In particular, the project would provide access to the Western Sydney Airport and associated Western Sydney Aerotropolis, catering for future transport needs and creating high capacity traffic and freight links to service future growth of Western Sydney and the South West Growth Area.

However, some businesses are expected to be adversely impacted from the project's operation due to a potential loss of passing trade, in particular along Elizabeth Drive. Three retail and auto services along Elizabeth Drive indicated that about 25-50 per cent of their business was from passing trade and service stations, retail and farm businesses along Elizabeth Drive also indicated that passing trade accounted from between 50-75 per cent of their business.

Parks and landscaping are important features for the local community

The social impact assessment noted that the important features for the community are quality of life and wellbeing, including physical elements such as parks, landscapes and pedestrian connectivity and intangible qualities such as sense of place, amenity and community cohesion. The community characteristics and local features are highly valued.

Submissions

Community and interest group submissions

Key issues raised in the submissions from the community and interest groups include:

- the need to maintain access to landholdings throughout construction and provide alternative access arrangements to landholding if needed;
- request for access to McMasters Field Station, McGarvie Smith Farm and Fleurs Radio Telescope Site;
- reduce the extent of private landholdings to be acquired and removed from construction footprint;
- the project would result in fragmented and sterilised landholdings which would impact future development on nearby landholdings;
- further refinement and clarification on land to be acquired and leased for the project;
- concerns regarding project impacting businesses and future development; and
- redesign bridges over landholdings to improve access to landholdings by accommodating B-Double vehicles for improved access.

Council and Government agency submissions

Fairfield City Council noted that the project fails to consider the impacts on the Fairfield/Penrith Urban Investigation Area and proposed future population of the area, and recommended the Proponent consult with property owners regarding any impacts on access arrangements as a result of construction activities.

Penrith City Council noted impacts on landowners should be minimised and any impacts on on-site sewage management systems be considered by the Proponent and the Department in its assessment.

Liverpool City Council is concerned that impacts to small businesses in the area have not been addressed, and an economic impact strategy should be developed to assist businesses that may be affected during construction and operation.

Division of Resources and Geoscience requested the Proponent consult with the exploration licence holder and operators of the extractive resource sites, and that it be consulted regarding the proposed location of any biodiversity offset area, or any supplementary biodiversity measures regarding access to prospective land for mineral exploration, or potential for sterilisation of mineral or extractive resources.

Department of Primary Industries requested disruptions to agricultural enterprises are minimised, and alternative infrastructure or access to affected landowners is provided during and post construction.

WaterNSW raised concerns regarding obstruction of access for the operation and maintenance of the Upper Canal system, and recommended that a condition be included to that WaterNSW plant and personnel have 24 hour a day, seven days a week access to the Upper Canal corridor.

Western Sydney Parklands Trust (WSPT) provided comments on the proposed access and entry connections to various access points at the Parklands, including Duff Road and Range Road, and recommended ways to improve the proposed access and entry connections. The Trust requested that access to vegetated areas is maintained to the Parklands and that there is minimal disruption, which should be addressed in the CEMP.

Western Sydney Planning Partnership expressed concern regarding potential land isolation surrounding the Western Sydney Airport site due to the project and other projects and recommended that the approach to affected land will need to be rectified as investigations for the Airport progress.

Consideration

Construction and operation of the project will require land acquisition

The Department notes that the Proponent has commenced consultation with potentially affected property owners regarding property acquisition and potential adjustments required for the project.

The Proponent has committed to land use and property measures including carrying out partial and full acquisitions, and associated property adjustments, in accordance with requirements of the *Land Acquisition (Just Terms Compensation) Act 1991* in consultation with landowners.

The Proponent has considered ensuring residual land holdings remain viable for their existing land use, noting that the project will fragment some larger landholdings. The Department notes that the Proponent has committed to working with property owners on their adjustment plans and access arrangements during detailed design. This includes the engagement of a Personal Manager - Acquisition (PMA), who will be appointed to assist landowners. The PMA will provide ongoing support for relocated persons, including dispute resolution and counselling, and provision of contact information for relevant services. The Department is supportive of these measures.

The project would deliver broad economic benefits

The Department expects that the project would have beneficial impacts on employment through the creation of direct employment opportunities, including jobs in construction, professional and administrative services, and technical and trade services such as plant and machinery operators, transport and skilled labour.

Access to Elizabeth Drive and Mamre Road would be maintained during construction and it is predicted that passing trade for local businesses is likely to increase during construction of the project consequent to the influx of construction workers.

There will be loss of local employment from the acquisition of commercial and rural properties and relocation of businesses during operation. However, the Proponent has committed to ongoing consultation with local business owners in accordance with its community communication strategy. Businesses surveyed indicated that the project would have a neutral effect on turnover and passing trade as most customers would frequent the businesses anyway and most customers come from advertising and “word of mouth” rather than passing trade.

The development of the Western Sydney Airport and Aerotropolis is likely to result in changes to the types of businesses in the region over time. This is likely to stimulate economic activity that currently does not exist and is likely to offset any changes in passing trade.

Overall, the project is expected to support and improve access and connectivity to employment areas in Western Sydney, including the Western Sydney Priority Growth Area and Western Sydney Airport. By improving access, regional and national businesses and industry would benefit. The project would also cater for future transport needs and create high capacity traffic and freight links to service future growth.

Social impacts of the project are minor compared with the broader impacts associated with the development of the Western Sydney Aerotropolis

The project will have minor indirect impacts to social infrastructure, primarily associated with construction, and in some circumstances increases in road noise due to the operation of the project. These impacts will be appropriately managed through established practices such as noise mitigation, traffic management and dust control.

Access would be maintained to individual properties near the project alignment, including at Elizabeth Drive, Mamre Road, Clifton Avenue and The Northern Road. Some permanent changes would be required to some access roads, including the realignment or closure of some local roads either side of the proposed road corridor. This may change access routes for some property owners and visitors, potentially increasing travel distances to individual properties by up to approximately 550 metres. The Department considers that this relatively minor increase is acceptable and would generally be offset by improvements made to travel times on the broader road network.

Given the small number of dwellings required to be demolished for the project (10 dwellings), impacts on social networks and community relationships within the wider study area from resident relocation is expected to be minor. However, the disruption to social and community networks in the area will be primarily driven by the acquisition of properties for the Western Sydney Airport as well as future urban development of the Western Sydney Aerotropolis.

6.6 Non-Aboriginal Heritage

Through the design of the project, the Proponent has limited direct heritage impacts to items that are not currently listed on heritage registers and to one locally listed item – McGarvie Smith Farm. No currently listed National or State listed items will be directly impacted, including the State listed Upper Canal System. While direct impacts to heritage items are irreversible, management and mitigation measures provide the opportunity to learn new information about the history of the items.

The Department is satisfied that the recommended conditions of approval, which include archival recordings, preparation of a Heritage Interpretation Plan and limits on incursions, along with the Proponent's proposed heritage management and mitigation measures, would limit heritage impacts.

Issue

The study area traverses regions associated with the agricultural practices of early settlers to the west of Sydney. The assessment identified 13 registered or potential heritage items within or adjacent to the study area. Of these, nine were assessed as having either local, State or National heritage significance (**Table 13**). One item (Upper Canal System) is a State listed heritage item, and three items are listed as being of local significance in the Penrith LEP: McGarvie Smith Farm, Fleurs Radio Telescope and Luddenham Road Alignment.

Table 13 | Impacts on heritage items assessed as having heritage significance

Impacted Heritage Item	Heritage Listing	Type of Impact
McGarvie Smith Farm	Penrith Local Environmental Plan (LEP), assessed as State significant	Major – demolition of buildings, sheds and a silo.
The Fleurs Radio Telescope Site	Penrith LEP, assessed as State and potentially Nationally significant	Minor – demolition of Shain Cross.
Luddenham Road Alignment	Penrith LEP	Negligible – installation of underground utilities, new property access points and culverts.
Upper Canal System	State Heritage Register (SHR) and Liverpool LEP 2008	Negligible – widening of Elizabeth Drive would not disturb the Canal.
McMaster Field Station/McMaster Farm	Not currently listed, but assessed as State significant	Major – dual carriageway and interchange would be located within the property and bisect the landscape. Construction laydown area may be used for construction offices and facilities.
Fleurs Aerodrome	Not currently listed, but assessed as locally significant	Major – bisects the previous runway.
Former Cecil Park School, Post Office and Church site	Not currently listed, but assessed as locally significant	Major – physical disturbance of area of archaeological potential due to earthworks.
Exeter Farm Archaeological Site	Not currently listed, but assessed as locally significant	Negligible – no direct impact.
South, Kemps and Badgerys Creek Confluence Weirs Scenic Landscape	Not currently listed, but assessed as locally significant	Negligible – minor visual and hydrological impacts.

Most heritage items impacted by the project are not listed

Construction of the project will impact the following items assessed as having heritage significance:

- major impact to McGarvie Smith Farm (local listing Penrith LEP - assessed as having State significance);
- major impact to McMaster Field Station (not listed - assessed as having State significance);
- major impact to Fleurs Aerodrome (not listed - assessed as having local significance);
- major impact to Cecil Park School, Post Office and Church Site (not listed - assessed as having local significance); and
- minor impact to the Fleurs Radio Telescope Site (local listing Penrith LEP - assessed as having State significance).

The State listed Upper Canal System would not be impacted by the project, subject to the implementation of protective management measures

There is potential for accidental damage to the Tunnel Shaft 4 of the State listed Upper Canal System from road construction machinery, vehicles or other activities. There is also potential for vibration impacts on the Upper Canal System from construction works in the vicinity. However, proposed works within the heritage curtilage of the Upper Canal System are not planned to physically impact the heritage item, as the motorway in this location is a raised structure, and potential impacts can be prevented through implementation of protective measures. The Proponent has revised its commitments to specifically identify these measures.

Cumulative impacts from other major developments in Western Sydney, such as the Western Sydney Airport, the Northern Road Upgrade, Western Sydney Aerotropolis and South West Growth Area, would result in changes to the historical heritage values and historically rural nature of the region.

Submissions

Council and Government agency submissions

Penrith City Council recommended conditions if impacts to McGarvie Smith Farm are unavoidable, including archaeological salvage and preparation of an interpretation plan.

Heritage Council of NSW noted that no further archaeological excavations would be required. It recommended the preparation of specific plans and methodologies for heritage management including archival recordings, unexpected finds procedures and preparation of a Construction Cultural Heritage Management Plan. Specific conditions were also recommended in relation to the Upper Canal System, Fleurs Radio Telescope Site and McMaster Field Station.

WaterNSW requested consultation with the Proponent during the preparation of the Construction Cultural Heritage Management Plan in relation to potential heritage impacts to the Upper Canal.

Consideration

Heritage values will be conserved and celebrated through a Heritage Interpretation Plan

The Proponent has committed to a range of heritage management practices including:

- avoiding or minimising heritage items where reasonable and feasible;
- photographic archival recordings, heritage interpretations and archaeological investigations and salvage (where possible);
- minimising the potential visual impacts to heritage items, landscapes and vistas in accordance with an urban design and landscape plan; and
- liaison with local museums and/or historical societies to arrange long-term artefact repository.

However even with implementation of the above measures, there will be direct impacts to five heritage items. In particular, the project will have major impacts on McMaster Field Station; Fleurs Aerodrome; former Cecil Park School, Post Office and Church Site; and McGarvie Smith Farm as construction will involve demolition of buildings and structures, destruction of areas of archaeological potential and will bisect the landscape of these sites.

The Department notes that the project was designed through an iterative process that identified and assessed several potential alignments based on a range of considerations. The proposed alignment represented the best balance of impacts. While impacts to heritage items are irreversible, proposed mitigation measures provide the opportunity to obtain new information about the history of the sites.

The Proponent has committed to engaging a suitably qualified heritage specialist to prepare a heritage interpretation framework to guide the development of the detailed urban design of the project. This would enable the project to contribute to communicating the history of the area, and heritage items, and inclusion of interpretative elements into the design. The Department strongly supports this commitment and has reinforced it in recommended conditions, including the preparation of a Heritage Interpretation Plan and for this plan to inform the Place, Design and Landscape Plan.

The Proponent has undertaken a study into agricultural research stations to reduce the overall impact on this type of heritage item

The Proponent's assessment identified that undertaking a thematic study into agricultural research stations would be important in identifying other potential heritage items in NSW that would demonstrate the same or similar significance as the McGarvie Smith Farm and McMaster Field Station, thereby reducing the overall impact on this type of heritage item.

The Proponent has prepared a thematic heritage study for the project which included a 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 included 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 NSW and Australia.

Impacts to heritage items are unavoidable, but can be minimised and managed through implementing management measures

The Heritage Council of NSW, Penrith City Council and WaterNSW recommended specific conditions relating to the Upper Canal System, Fleurs Radio Telescope Site, McMaster Field Station and McGarvie Smith Farm, including preparation of archival recordings, establishment of safe working distances and preparation of dilapidation surveys.

The Department considers that the Proponent's proposed management and mitigation measures are consistent with the conditions recommended by the public authorities. The Department has recommended conditions requiring the Proponent prepare a Construction Heritage Management Sub-plan and Heritage Report, which documents all archival recordings. The Department is satisfied that these recommended conditions, along with the Proponent's proposed management and mitigation measures, would prevent further impact to non-Aboriginal heritage.

As majority of impacts are to non-listed heritage items assessed as having potential State significance, and noting the potential historical significance of these items, the Department has recommended that construction and operation of the project should not diminish the potential of the following heritage items for nomination to the State Heritage Register: McGarvie Smith Farm, McMaster Field Station and Fleurs Radio Telescope Site.

6.7 Aboriginal heritage

Impacts to Aboriginal heritage are unavoidable due to the continuous distribution of Aboriginal objects across the landscape. Notwithstanding, the design of the project limits significant impacts to the greatest extent practicable. The Proponent has committed to mitigation measures to manage residual impacts on heritage items such as protection and salvage and a procedure for unexpected finds. Aboriginal cultural heritage values will be captured in heritage interpretation and reflected in design elements.

Issue

A total of 20 Aboriginal sites are located within the construction footprint and predominantly comprise stone artefacts and flakes. The project would impact 19 of the sites as well as places of cultural heritage significance to Aboriginal people of the Cumberland Plain, from ground disturbance from construction of the project. The project is on the country of the Darug people and administrative boundaries of the Deerubin and Gandangara Local Aboriginal Land Councils (LALCs).

The Proponent's assessment concluded that the project would directly impact on 19 heritage sites, including isolated artefacts and artefact scatters. Of these sites, 11 sites would be partially harmed and eight would be totally harmed by construction of the project.

Registered Aboriginal Parties (RAPs) identified three areas of high Aboriginal cultural heritage significance, as they demonstrate tangible evidence of use of the area by Aboriginal people. These include:

- a small knoll immediately to the west of Badgerys Creek (site BCW);
- a large area on a rise and floodplain between Badgerys Creek and South Creek (sites BCE, SCW T1, SCW T2 and SCE); and
- a prominent ridgeline overlooking the M7 Motorway (site CHRP).

Submissions

Community and interest group submissions

Submissions from the community and special interest groups raised concern over potential impacts to items of Aboriginal cultural significance.

Council and Government agency submissions

Heritage NSW (Aboriginal Cultural Heritage) noted that the proposed mitigation measures are proportionate to the degree of cultural harm by the project to Aboriginal cultural heritage values.

Liverpool City Council questioned the survey area provided in the EIS and the Proponent's commitments to undertake additional assessment of Aboriginal cultural heritage following approval.

Penrith City Council commented on how the route selection considered impacts to Aboriginal cultural heritage.

Consideration

The design of the project avoids significant impacts to Aboriginal heritage values

The Department notes there will be impacts to three areas identified by RAPs as having high cultural significance as they provide tangible evidence of the use of the area by Aboriginal people. While the Proponent considered different route alignments as part of the strategic options analysis, all potential alignments would impact on Aboriginal heritage values. Previous archaeological investigations confirmed continuous distribution of Aboriginal objects across the landscape. Therefore, it is unlikely that alternative routes would avoid all impacts to Aboriginal heritage. The Department recognises the Proponent's efforts to minimise impacts to Aboriginal heritage values by avoiding undisturbed areas along key waterways where possible and locating ancillary facilities on already disturbed parcels of land.

The Proponent has committed to mitigation measures to manage residual impacts on heritage items such as protection and salvage and a procedure for unexpected finds. The Proponent has committed to investigating the feasibility of retaining cultural deposits between the pylons of bridges and options to minimise impacts to sites of high cultural significance. All site-specific measures will be included in a Construction Cultural Heritage Management Plan.

As discussed in **Section 6.3**, Aboriginal cultural heritage values will be captured in heritage interpretation and reflected in design elements. In addition, the recommended conditions require the preparation of a Heritage Interpretation Plan and an Unexpected Heritage Finds and Human Remains Procedure, and for the Proponent to undertake archival recordings.

The Department considers that the Proponent has adequately assessed those impacts that cannot be avoided, and notes that Heritage NSW considers that the proposed mitigation measures are proportionate to the degree of impact.

6.8 Flooding

The project sought to not exacerbate flooding impacts to most areas, and no significant flooding impacts are predicted to properties. In addition, there will be no additional flood impacts outside of the existing flood footprint and only minor increases in flood afflux levels.

The Department engaged Bewsher Consulting to undertake an independent and expert peer review of the flooding assessment (**Appendix L**). Based on the Department's review, and advice from the independent reviewer, the Department has recommended flood management objectives aimed at minimising flood impacts, beyond those proposed by the Proponent. The Proponent has committed to undertaking further flood modelling during detailed design to verify the nature and extent of flood impacts and ensure that the project meets flood management objectives.

Issue

The M12 Motorway corridor covers relatively flat and predominately low-lying agricultural land and crosses the South Creek sub-catchment and Lower Nepean River Management Zone of the Hawkesbury-Nepean surface water catchment, and the Georges River catchment. The project crosses Cosgroves Creek, Badgerys Creek, Kemps Creek, South Creek and Ropes Creek, along with several minor ephemeral drainage lines.

Parts of the motorway corridor and surrounding catchments are subject to existing flooding. The project has the potential to alter the flooding and drainage characteristics of the area during construction and operation through flood constriction, raising surface levels and loss of storage.

The project design includes transverse drainage and flood mitigation (drainage infrastructure and piped drainage channels) to manage flows. The potential for scour and erosion of waterways during operation would be managed by additional scour protection.

Submissions

Community and interest group submissions

One community submission raised the issue of flooding, requesting that the impacts of future development within the Western Sydney Airport be included in the modelling and assessment of the cumulative impacts. The submitter expressed concern over potential increased flows along various drainage lines and that runoff from the project should not adversely affect future development potential of private landholdings.

Council and Government agency submissions

Liverpool City Council requested that the design be further refined to minimise flooding impacts. It recommended that all private properties to be impacted by flooding be identified and that consultation be undertaken with affected landowners and their written consent obtained stating their understanding of the flood impacts.

Fairfield City Council requested the Proponent undertake further investigations into the impact of the realignment of Wallgrove Rd on flooding, both upstream and downstream of the location. It also requested that the results of the additional flood modelling to be undertaken during detailed design be referred to Council.

Penrith City Council requested imaging of bridge cross sections to identify the impact of various flood events and the implications of the project in flood events beyond the 1 in 100-year flood (including the Probable Maximum Flood). Council raised concerns regarding the impacts of surcharges on land particularly around the Aerotropolis, increase in flood levels for urban areas, ability for bridges to span the 100-year ARI flood extent, and upgrade of the culverts under Luddenham Road.

WaterNSW advised that the majority of the key impact areas reported by WaterNSW have been considered in the EIS, submissions reports and Amendment Report. The agency believes impacts can be effectively managed through the construction environmental management planning process and requested the opportunity to review the plans.

EES Group indicated that there is a need to validate the flood model against the Infrastructure NSW Base Case scenario for existing flood risk and that the flood assessment needs to consider flood emergency management issues for rarer flood events.

Consideration

Construction flood impacts will be managed through ancillary facility site placement

Thirteen of the 18 proposed ancillary facilities would be located outside of the major floodplains to avoid or minimise impacts from project earthworks on flow behaviour in the floodplains. The other five ancillary facilities would be partially impacted by the 100-year ARI flood extents. On these sites, stockpiling and plant and machinery would be placed outside the flood hazard.

The Proponent has committed to prepare a Flood Management Plan to detail the processes for flood preparedness, materials management, weather monitoring and flood incident management. The Department considers the proposed management measures are appropriate to manage potential flooding impacts.

Updated flood modelling will be undertaken to verify potential flooding impacts

The Department's independent flood expert noted that flood modelling had been based on the 1987 *Australian Rainfall and Runoff* (GeoScience Australia) rather than the updated 2019 edition. The Proponent advises additional modelling for detailed design of the project is being undertaken based on the 2019 edition procedures. A condition has been recommended requiring additional modelling to be based on the 2019 edition, to ensure this occurs. The modelling outcomes must then be considered and reviewed against the flood assessments undertaken as part of the EIS and Amendment Report, to verify flooding impacts and inform the design and proposed flood management measures.

Flood management objectives have been recommended to guide the design of the project

The Proponent has recommended flood management objectives to guide the design of the project. These objectives set out flood levels, velocities and durations for residences and urban, commercial, recreational and agricultural areas. Objectives include an increase of up to 50 mm at residences and urban and commercial areas for the 100-year ARI flood event.

The Department considers that it is unreasonable to allow inundation of floor levels which are currently not inundated, and has included a recommendation to this effect and recommended a maximum increase of 100 mm inundation to land zoned as rural, to minimise impacts to farmland, instead of adopting the Proponent's objective of 250 mm with localised increases of up to 400 mm in the 100 year ARI flood event (unless otherwise agreed with the landowner).

The project has been designed to minimise impacts on existing flood behaviour

Flood modelling predicts minimal changes in inundation durations up to and including the 100-year ARI event. Further, the project is not predicted to result in any additional flood impact outside of the existing flooding footprint in areas beyond the project's operational boundary. Minimal increases in

flood levels are predicted along main creeks. However, there would be minor, localised increases in flow volumes and rates along minor drainage lines which could potentially impact surrounding land uses. The Proponent intends to manage these impacts through mitigation measures such as detention basins and scour protection.

The Department supports the Proponent's commitment to undertake further modelling during the project's detailed design to verify the project's impacts on minor drainage lines, and confirm the adequacy of the proposed mitigation strategies. These strategies would be subject to negotiation and agreement with individual affected property owners, especially where they have the potential to impact on farm dams.

The Proponent has addressed Penrith City Council's concerns on bridge spans and culverts in its Amendment Report. Bridges have been sized based on clearing flows in the 100-year ARI flood event and culverts designed to the 100-year ARI. In addition, bridge heights and capacities have been designed with additional capacity for higher flows, as hydrology of the surrounding catchments is likely to change as surrounding land uses change and urban development in the area intensifies.

Elizabeth Drive, near Badgerys Creek and Western Sydney Airport, is only immune up to the 5-year ARI event. During a 20-year ARI event, the road would be flooded between 160 to 350 mm above the carriageway. In addition, the proposed raising and widening of Elizabeth Drive would result in a 50 mm increase in the build-up of floodwaters to the south of the road during the 100-year ARI flood event. The Proponent has committed to refining the design of Elizabeth Drive to minimise its flood affectation, and the Department has recommended that the project must not preclude the future raising of Elizabeth Drive.

The impact of climate change on future flooding has been considered

A climate change assessment was carried out for the project by analysing the 2000-year ARI flow rates. The vertical alignment of the M12 Motorway main carriageway would be above the 2000-year ARI flood levels and it is predicted that future climate change will have minimal impact on flooding in relation to the project.

Cumulative impacts will continue to be reviewed during detailed design

Changes in flooding behaviour are likely to occur in the future due to the surrounding development including Western Sydney Airport and Aerotropolis. The Department considers that while a cumulative flood study of the airport and aerotropolis area is beyond the scope of project, as limited detailed design is publicly available on these developments, Infrastructure NSW is currently undertaking a flood study to address the cumulative impacts of development in the catchment.

The Proponent will include all relevant recent data from regional studies or nearby developments as part of the additional hydrological and hydraulic modelling undertaken during detailed design. The Department considers this approach acceptable for updating cumulative impacts and has recommended a condition to this effect.

6.9 Other issues

The Proponent assessed the potential impacts of the project in relation to air quality, climate change, groundwater, soils and contamination, surface waters, sustainability and waste management. The Department considers that the Proponent has adequately assessed these issues and they can be

managed through the Proponent's environmental management measures and recommended conditions of approval. **Table 14** summarises the Department's consideration of these issues and recommended conditions of approval.

Table 14 | Department consideration of other issues

Issue	Findings	Recommendations
Air Quality	During construction, there will be localised dust impacts from activities, particularly during clearing and demolition, excavation, materials handling, stockpiling and compaction activities. Dust generation from these activities is common with large linear infrastructure projects and can be managed using industry standard measures such using water carts or other dust suppressants covering truck loads and limiting stockpiling activities during adverse wind conditions. During operation, concentrations of carbon monoxide (CO), nitrogen dioxide (NO_2) and volatile organic compounds (VOCs) are predicted to increase by 17 per cent near the new Motorway. However, there are no predicted exceedances of EPA impact assessment criteria.	A condition has been recommended requiring the Proponent to prepare and implement a Construction Air Quality Management Sub-plan.
Climate change	The Proponent has considered the potential risk of flooding, severe heat, and impact of severe storm events during construction when determining the location of construction ancillary facilities. An adaptive management approach is proposed for the management of bushfires involving training in safe work practices, bushfire response and emergency communications. The Proponent has considered the full range of potential temperature and storm events during operation when selecting materials and designing stormwater infrastructure, as well as impacts on receiving waters. In addition, the design maintains fauna passage along main creek lines and under structures to reduce the likelihood of fauna moving onto the motorway during bushfires. Variable message signs will be used to warn drivers in changes in weather conditions and bushfire events. The Department has considered the Proponent's proposed mitigation and adaptation measures and accepts that these address the risks of climate change.	

Issue	Findings	Recommendations
Groundwater	Construction of the project may intersect the water table in three locations. Estimated inflow rates are predicted to be low with the maximum predicted change in groundwater level being about four metres. The maximum areal drawdown extent is predicted to extend from around 23 metres to 220 metres from the cuts. There are no licensed groundwater bores or groundwater dependent ecosystems within the area of the estimated maximum drawdown extent. The Proponent has committed to monitor groundwater monthly for at least six months before construction, throughout construction and for at least six months once the project is operational.	The Department has adopted DPIE Water's recommendations and requires groundwater monitoring during both construction and operation. In addition, the Proponent must prepare a Construction Environmental Management sub-plan to address groundwater management.
Soils and Contamination	There is potential for contaminated soils in the project area due to former land uses including areas of potential fill and former and existing waste management facilities.	Conditions have been recommended requiring the Proponent to undertake detailed site investigations. Should remediation be required, the Proponent must prepare a Remediation Action Plan. In addition, the Proponent must submit to the Planning Secretary a Section A Audit Statement and Site Audit Report stating that the land is suitable for the intended uses.
Surface water	Waterways within the project area include South Creek, Badgerys Creek, Kemps Creek and Ropes Creek all of which are highly disturbed and of low to moderate sensitivity. All waterways have the potential to be impacted by increased sedimentation and spills. The Proponent has committed to implementing a range of established mitigation measures to reduce potential impacts. The EPA raised concern over the potential discharge of pollutants to waterways and advised that construction water discharges will be regulated through an Environment Protection Licence (EPL) under the Protection of the Environment Operations Act 1997 (POEO Act). The EPA advised that the Proponent requires a water pollution impact assessment when applying for an EPL.	The Department has recommended that the project be constructed and operated to maintain the NSW Water Quality Objectives where they are currently being achieved or contribute toward their achievement where they are not being achieved. In addition, a condition has been included that requires erosion and sediment controls to be implemented taking into consideration *Managing Urban Stormwater, Soils and Construction* ("The Blue Book") (Landcom, 2004). A note has been included in the Instrument of Approval advising of EPA's requirement for a water pollution impact assessment.
Sustainability	The Proponent intends to meet the Infrastructure Sustainability Council of Australia's (ISCA) Infrastructure Sustainability (IS) Rating of 'excellent.' This would be achieved through a Sustainability Management Plan which outlines specific initiatives to be implemented. The Department considers this measure appropriate.	A condition has been recommended for the preparation of a Sustainability Strategy to achieve a minimum excellent 'Design' and "As built' rating under the ISCA rating tool.

Issue	Findings	Recommendations
Waste	Waste generated during construction would be predominantly from clearing, stripping, demolition of structures, earthworks and construction of road carriageways. Construction would require a greater quantity of fill than the quantity of excavation material generated. Excavated material that cannot be used on site would be sent to disposal sites in accordance with the conditions of approval and EPL(s) governing the sites. All waste created by the project would be managed in accordance with relevant waste provisions within POEO Act. The Department considers that waste generation and management can be adequately managed through the Proponent's proposed mitigation measures, including standard waste management practices of reduce, reuse and recycle and recommended conditions.	Recommended conditions have been included for the handling, reuse and disposal of waste.

7 Evaluation

The Department considers that the project is in the public interest and should be approved subject to conditions, as it will support the growth associated with the Western Sydney Aerotropolis and provide access to the Western Sydney Airport. The project has an estimated capital investment value of $1,800 million and would contribute around 600 full time jobs during peak construction to the economy.

The Department has reviewed the EIS, Amendment Report and Response to Submissions reports for the EIS and Amendment Report and assessed the key issues arising from the construction and operation of the project. This included consideration of:

- advice from relevant State government agencies, Fairfield City Council, Liverpool City Council and Penrith City Council;
- strategic NSW Government policies and plans;
- relevant matters and objects of the *Environmental Planning and Assessment Act 1979*;
- principles of ecologically sustainable development; and
- Matters of National Environmental Significance under the *Environment Protection and Biodiversity Conservation Act 1999*.

The project is consistent with NSW strategic planning policies and frameworks including:

- *Future Transport Strategy 2056* (Transport for NSW, 2018);
- *Australian Infrastructure Priority List* (Infrastructure Australia, 2019);
- *Greater Sydney Regional Plan* (Greater Sydney Commission, 2018);
- *Western City District Plan* (Greater Sydney Commission, 2018);
- *Western Sydney Aerotropolis Land Use and Infrastructure Implementation Plan* (Department of Planning and Environment, 2018);
- *Western Sydney Infrastructure Plan* (Roads and Maritime Services, 2016); and
- *Western Sydney Parklands Plan of Management 2030* (Western Sydney Parklands Trust, 2018).

Key benefits provided by the project include:

- provision of a high standard connection to Western Sydney Airport with capacity to meet future freight and passenger needs;
- improvements in the road network efficiency across Western Sydney resulting in lower delays and improved travel times;
- support to the freight and commercial transport task by providing connections for the distribution of goods and services across Greater Sydney; and
- facilitation of the Greater Sydney Regional Plan's goal of delivering a 30-minute city through providing reliable access to jobs within 30 minutes of people's homes in western Sydney.

The Department is satisfied that the issues raised in submissions have been appropriately considered and responded to by the Proponent. The Proponent has identified and committed to implementing a range of environmental management measures to address identified environmental impacts. The Department has recommended conditions of approval to reinforce these commitments and address outstanding impacts. The Department considers that impacts can be mitigated, managed or offset through the implementation of the recommended conditions and the Proponent's commitments.

8 Recommendation

It is recommended that the Minister for Planning and Public Spaces:

- **considers** the findings and recommendations of this report;
- **accepts and adopts** all the findings and recommendations in this report as the reasons for making the decision to approve the application
- **agrees** with the key reasons for approval listed in the notice of decision;
- **grants approval** for the application in respect of SSI 9364, subject to the conditions in the attached project approval; and
- **signs** the attached project approval and recommended conditions of approval.

Recommended by:

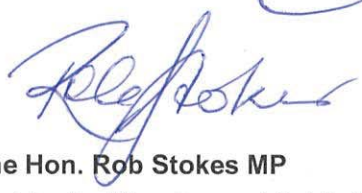
Lauren Rose
Senior Planner
Transport Assessments

Recommended by:

Glenn Snow
Director
Transport Assessments

9 Determination

The recommendation is **Adopted** / **Not adopted** by:



The Hon. Rob Stokes MP
Minister for Planning and Public Spaces

Appendices

Appendix A – List of referenced documents

Department of Planning and Environment, 2018. *Western Sydney Aerotropolis Land Use and Infrastructure Implementation Plan*

Government Architect NSW, 2017. *Sydney Green Grid.*

Greater Sydney Commission, 2018. *Greater Sydney Regional Plan.*

Greater Sydney Commission, 2018. *Western City District Plan.*

Infrastructure Australia, 2019. *Australian Infrastructure Priority List.*

Office of Environment and Heritage, 2014. *NSW Biodiversity Offsets Policy for Major Projects.*

Roads and Maritime Services, 2016. *Western Sydney Infrastructure Plan.*

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

Transport for NSW, 2018. *Future Transport Strategy 2056.*

Transport for NSW, 2019. *M12 Motorway Environmental Impact Statement.*

Transport for NSW, 2020. *M12 Motorway Submissions Report.*

Transport for NSW, 2020. *M12 Motorway Amendment Report – Submissions Report.*

Western Sydney Parklands Trust, 2018. *Western Sydney Parklands Plan of Management 2030.*

Appendix B – Environmental Impact Statement

https://www.planningportal.nsw.gov.au/major-projects/project/10226

Appendix C – Submissions

https://www.planningportal.nsw.gov.au/major-projects/project/10226

Appendix D – Submissions Report

https://www.planningportal.nsw.gov.au/major-projects/project/10226

Appendix E – Amendment Report

https://www.planningportal.nsw.gov.au/major-projects/project/10226

Appendix F – Submissions on Amendment Report

https://www.planningportal.nsw.gov.au/major-projects/project/10226

Appendix G – Amendment Report-Submissions Report

https://www.planningportal.nsw.gov.au/major-projects/project/10226

Appendix H – Community Views

Issue	Consideration
Traffic and transport • Traffic impacts during construction and operation • The motorway should be constructed with three lanes in each direction • Safety concerns around the proposed M12 intersection with The Northern Road • Construction traffic impacts from multiple projects being constructed concurrently • Lack of connectivity between precincts (including Northern Gateway, Badgerys Creek and Kemps Creek) • Concern that logistics vehicles will be delayed to/from employment lands in the Northern Gateway and increased congestion within the Western Sydney Airport • Traffic congestion associated with rerouting Wallgrove Road onto Cecil Road	*Assessment* • There will be traffic impacts during construction, however these impacts can be mitigated by implementing established management measures. • Local traffic impacts are predicted during construction due to construction traffic, new or modified intersections and measures to allow safe entry and exit to construction zones. • Operation of the project is expected to improve traffic flows on the M7 Motorway and Elizabeth Drive. • The project is focused on delivery of a key road link from the Western Sydney International Airport to Sydney's Motorway network. This will require adjustment to some existing local roads. *Recommended Conditions/Response* • Construction impacts will be managed proactively by implementing traffic management measures. • The Proponent must seek approval for construction heavy vehicles to use local roads not identified for use in the EIS, Amendment Report and Response to Submissions Reports. • Requirements are recommended for road dilapidation surveys and repairs, if required. • A Construction Traffic and Transport Management Sub-plan, including consultation with relevant Councils, must be prepared to ensure that construction traffic impacts are managed.
Noise and vibration • Operational traffic noise impacts to residents around Cecil Hills from traffic on the ramps onto the M7 Motorway • Sleep disturbance from construction and operation of the project • Request for installation of noise barriers to reduce operational traffic noise impacts • Noise impact associated with widening of Elizabeth Drive	*Assessment* • Construction noise and vibration impacts are unavoidable for a project of this magnitude. The impacts will be managed using industry best practice underpinned by a robust community consultation strategy. • Building bridges across existing roads, and road and utility works within road corridors, necessitate night-time work for personnel and public safety. • Operational traffic noise impacts of up to 21 dB during the daytime and 23 dB during the night time are predicted in 2036. Two hundred and twenty residents would be eligible for noise mitigation. *Recommended Conditions/Response* • Out-of-hours work that cannot be undertaken during standard construction hours would be approved and regulated through an Environment Protection Licence or Out-of-Hours Work Protocol. • Engagement with the community on out-of-hours activities and suitable respite periods must be undertaken, and utility works coordinated with construction activities to maximise periods of respite. • Additional mitigation such as temporary alternative accommodation or other agreed mitigation measures must be considered for high noise intrusive out-of-hours work planned for more than two nights over a seven-day rolling period.

Issue	Consideration
	• At-property operational noise mitigation must be provided within six months of the commencement of construction, at residences identified as eligible for receiving treatment and which would experience construction noise impacts at levels above specified noise management levels. Where this is not possible, temporary at-property acoustic treatments must be provided. • Operational noise mitigation measures will be reviewed and subject to compliance monitoring to ensure their effectiveness.
Urban design and visual amenity • Visual impacts to residents from the ramps onto the M7 Motorway and lighting impacts • Request for visual shielding to be provided in the form of tree planting • Light pollution impacts to residents once the project is operational	*Assessment* • The project will have a high impact on some viewpoints however the majority of adjoining lands are subject to extensive rezoning and development as part of the *Western Sydney Aerotropolis – Land Use Infrastructure and Implementation Plan* which will change the existing landscape over time. • Impacts to Western Sydney Parklands have been reduced through design development, but will still directly impact 90 hectares, including the Wylde Mountain Bike Trail. • A shared user path will be provided along the M12 Motorway from The Northern Road to the Western Sydney Parklands, completing a connection between the M7 Motorway cycleway and The Northern Road. *Recommended Conditions/Response* • Visual impacts can be reduced during detailed design. • The Proponent must prepare a Place, Design and Landscape Plan informed by input and review from independent practitioners experienced in public art, heritage, landscape architecture and active transport. • An interface agreement between the Proponent and the Western Sydney Parklands Trust is being developed which sets out the Proponent's obligations to minimise and offset impacts to the Parklands. • The project will achieve a net increase in trees. • The project must be constructed and operated to minimise light spillage to surrounding properties.
Social/economic impacts and property acquisition • Acquisition impacts and the acquisition process • Access impacts during construction • Lack of community consultation • Concern for property prices • Stress to residents and property owners • Fragmentation and sterilisation of land • Impacts to future land uses and precinct planning	*Assessment* • The project would generate long-term benefits for local and regional communities, businesses and industry from improved regional connections, and links to key population and employment growth areas in western Sydney. • Impacts to residential properties have been minimised by constructing the project on rural land. However, this has meant that some rural properties will be fragmented. • Access would be maintained to individual properties near the project alignment. *Recommended Conditions/Response* • The Proponent must reinstate affected property access. • The project must minimise intrusion and disruption to agricultural operations/activities in surrounding properties.

Issue	Consideration
	• The Proponent must employ a suitably qualified and experienced independent agricultural expert to assist in identifying management measures, to address any impacts that may affect the viability of existing agricultural operations.

Appendix I – Assessment of EPBC Act listed threatened species and communities

1. 1. Identifying matters of national environmental significance (MNES)

(a) ***Confirm*** *whether all the EPBC Act-listed threatened species and communities that occur on the project site, or in the vicinity are identified in the EIS. Note which species and/or communities have not been identified.*

The Commonwealth has provided NSW with referral documentation which includes a possible list of MNES recorded on and within the vicinity of the project site generated from the Environmental Reporting Tool (ERT Report).

All eight EPBC-listed TECs identified by Protected Matters Search Tool (PMST) discussed in Chapter 5, esp. Table 5-1. Only two EPBC-listed TECs were identified within the study area - *Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest* and *Western Sydney Dry Rainforest and Moist Woodland on Shale*.

- 26 EPBC-listed threatened species identified by PMST. Surveys and habitat assessment (Annexure B) reduced this to seven species addressed in Table 5-2. Only two were detected in the study area – *Pimelea spicata* and *Pultenaea parviflora*. Only the latter will be directly impacted by the proposal but further surveys for *Pimelea spicata* will be undertaken.
- 21 EPBC-listed fauna species identified by PMST. Surveys and habitat assessment (Annexure B) reduced this to six species addressed in Table 5-3. Grey-headed Flying-foxes were detected foraging in the study area. No GHFF camps were recorded in the project area.
- 16 EPBC-listed migratory species identified by PMST. Field survey and habitat assessment concluded that all had a low likelihood of occurrence.

(b) ***Comment*** *on whether the Framework for Biodiversity Assessment (FBA) or Biodiversity Assessment Method (BAM) has been applied to all EPBC Act-listed threatened species and communities that occur on the project site or in the vicinity.*

The FBA has been applied to all the EPBC-listed threatened species and TECs identified as likely to be impacted.

(c) In the circumstance where there are EPBC Act-listed species that are not addressed by the FBA or BAM (i.e. migratory species) ***comment*** *on whether these species have been assessed in accordance with the SEARs and provide references to where the assessment information is detailed in the EIS.*

N/A

(*d)* ***Verify*** *that the proponent has expressed a statement about the potential impact i.e. likely significant, low risk of impact, not occurring, for each listed threatened species and community protected by the EPBC Act referred to in 1(a). Note which species and/or communities have not been addressed in this manner.*

Verified.

*(e) I****dentify*** *where further information from the proponent is critical to the assessment of MNES particularly in relation to mapping (Table 1 (B) and Table 2 (D)), analysis of impacts (Table 1 (F) and Table 2 (F)), avoidance, minimisation/mitigation and offsetting, and 6. DPE would like to be made aware of this as soon as practicably possible – a phone call will do.*

No additional information required.

2. Assessment of the relevant impacts

All EPBC Act-listed species and/or communities that the Commonwealth consider would be significantly impacted (as noted in the referral documentation) should be assessed and offset. These are referred to as relevant impacts. If you do not have the Commonwealth's referral brief contact the DP&E assessment officer.

(a) **Verify** [by ticking the following box]:

X the nature and extent of all the relevant impacts has been described

Cumberland Plain Woodlands and Shale-Gravel Transition Forest, *Pultenaea parviflora*, Grey-headed Flying-fox, Koala and Swift Parrot are all considered by the Commonwealth as likely to be significantly impacted. 13 other species and TECs, including *Pimelea spicata* and Western Sydney Dry Rainforest and Moist Woodland on Shale were all assessed by the Commonwealth, which concluded that the project may have a significant effect.

All these species and TECs are assessed in the BAR and offsets are provided for those that will be impacted by the proposal.

(b) ***Note*** *if the nature and extent of impacts has not been provided for any relevant EPBC Act-listed species and communities.*

N/A

(c) *There may be EPBC Act-listed threatened species and communities for which the proponent will claim that the impact will* ***not*** *be significant in accordance with the EPBC Act Significant Impact Guidelines. Please* ***provide*** *advice for cases where OEH disagrees with this finding. Note that generally the Commonwealth will not accept that a species determined to be significantly impacted at the referral decision stage is not likely to be significantly impacted unless strong evidence can be provided.*

The BAR found only two EPBC-listed entities - Cumberland Plain Woodlands and Shale-Gravel Transition Forest and *Pultenaea parviflora* - were likely to be significantly impacted. Surveys undertaken in January 2020 for *Pimelea spicata* on land added to the project area did not record its presence. The Proponent has committed to undertaking additional targeted surveys for the species.

OEH (EES) does not disagree with this finding.

(d) Provide references to where specific lists or tables are detailed in the EIS or appendices e.g. List of EPBC Act-listed TECs Appendix J Table 4 pg 65

Annexure E – Protected Matters Search Tool result
Chapter 5 – MNES
Table 5-1 Potentially occurring TECs assessed against EPBC TEC criteria
Table 5-2 EPBC listed flora species identified by EPBC in Attachment A of SEARS
Table 5-3 EPBC listed fauna species identified by EPBC in Attachment A of SEARS

Table 1 | Impact Summary Relevant EPBC Act–listed Threatened Ecological Communities (refer to Section 3)

A	B	C	D	E		F	G
EPBC Act -listed TEC	**Y/N**	**PCTs**	**Y/N/comment**	**Ha (Direct + Indirect)**	**Credits (Direct + Indirect)**	**Comment**	**Figures taken from Amendment Report Response to Submissions Report**
Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest	Y	Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion (PCT 850)	Y	36.42 + 11.11	1659 + 127	Analysis of indirect and direct impacts appears to be appropriate and accurate. No further information required.	Table 6.13 (direct impacts) and 6.14 (indirect impacts)
		Broad-leaved Ironbark - Grey Box - Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion (PCT 724)	Y	4.87 +0.45	276 + 6		
		Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion (PCT 849)	Y	1.60 + 0.57	65 + 6		
Western Sydney Dry Rainforest and Moist Woodland on Shale	Y	Forest Red Gum - Grey Box shrubby woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion (PCT 830)	Y	0.44 + 0.61	15 + 6	Analysis of indirect and direct impacts appears to be appropriate and accurate. No further information required.	Table 6.13 (direct impacts) and 6.14 (indirect impacts)
Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion	Y	Hard-leaved Scribbly Gum -Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin Bioregion	Y	0	0	No instances of this PCT in the study area met the EPBC listing criteria.	Table 6.13 (direct impacts) and 6.14 (indirect impacts)
Coastal Swamp Oak (Casuarina glauca) forest of South-east Queensland and New South Wales	Y	Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter valley	Y	0	0	No instances of this PCT in the study area met the EPBC listing criteria.	Table 6.13 (direct impacts) and 6.14 (indirect impacts)

(A) **List** the relevant EPBC Act-listed threatened ecological communities that will be significantly impacted in accordance with the referral documentation.

(B) **Verify** that there is evidence in the EIS that the listed TEC has been mapped in accordance with relevant listing guidelines (Yes/No).
Proponents are required by the SEARs to ensure that EPBC Act-listed communities are mapped in accordance with EPBC Act listing criteria. It is important that any derived native grassland components of an EPBC Act-listed TEC are included in the mapping of native vegetation extent.

(C) **List** the Plant Community Types (PCTs) associated with the threatened ecological communities in accordance with Chapter 5 of the FBA or BAM.

(D) **Confirm** that the identification of PCTs has been correct (Yes/No) and comment if not correct.

(E) **Record** the area of impact (ha) and credits required.

(F) **Comment** on the analysis of the impacts in relation to the nature and extent of the impact and whether or not the EIS includes an analysis of the direct and indirect impacts to the TEC. Note whether further information might be required.

(G) **Cite** relevant page numbers for details provided in the EIS and appendices for each TEC.

Table 2 | Impact Summary Relevant EPBC Act–listed Species (refer to Section 4)

A	B	C	D	E		F	G
Threatened species (listed under the EPBC Act)	**Credit Type (SC/EC)**	**Record PCTs associated with ecosystem credits**	**Y/N/Comment**	**Hectares (ha) (total species habitat)**	**Credits (total species habitat)**	**Comment**	**Figures taken from Amendment Report Response to Submissions Report and relevant page numbers in the EIS and appendices**
Pultenaea parviflora	SC	N/A	Location of individuals identified, not a species polygon	1.65 ha. Up to 100 individuals	150	Up to 100 individuals within footprint	Table 6.12
Grey-headed Flying-fox	EC/SC	850 724 849 830 883 1800	No species polygons as no camps impacted	62.71	0	No species credits required as no camps present.	Table 6.12
Koala	SC/EC	724 830 835 849 850 1800	No species polygons	0	0	Not detected during surveys	5.4.2 & 8.4.2
Swift Parrot	SC/EC	724 830 835 849 850 1800	No species polygons	0	0	Not detected during surveys	5.4.2 & 8.4.2
Pimelea spicata	SC	N/A	Location of individuals records, not a species polygon	0	0	Not detected within footprint. Further surveys to be undertaken	Table 6.12
Regent Honeyeater	SC/EC	724	No species polygons	0	0	Not detected during surveys	

A	B	C	D	E		F	G
Threatened species (listed under the EPBC Act)	**Credit Type (SC/EC)**	**Record PCTs associated with ecosystem credits**	**Y/N/Comment**	**Hectares (ha) (total species habitat)**	**Credits (total species habitat)**	**Comment**	**Figures taken from Amendment Report Response to Submissions Report and relevant page numbers in the EIS and appendices**
		830 835 849 850 1800					5.4.2 & 8.4.2
Green and Golden Bell Frog	SC	N/A	No species polygons	0	0	Only marginal habitat. Not detected during surveys	5.4.2 & 8.4.2
Large-eared Pied Bat	SC	N/A	No species polygons	0	0	No species credits required	5.4.2 & 8.4.2
Acacia pubescens	SC	N/A	No species polygons	0	0	Not detected during surveys	5.4.2 & 8.4.1
Acacia bynoeana	SC	N/A	No species polygons	0	0	Not detected during surveys	5.4.2 & 8.4.1
Allocasuarina glareicola	SC	N/A	No species polygons	0	0	Not detected during surveys	5.4.2 & 8.4.1
Cynanchum elegans	SC	N/A	No species polygons	0	0	Not detected during surveys	5.4.2 & 8.4.1
Grevillea parviflora subsp. *parviflora*	SC	N/A	No species polygons	0	0	Not detected during surveys	5.4.2 & 8.4.1
Persoonia nutans	SC	N/A	No species polygons	0	0	Not detected during surveys	5.4.2 & 8.4.1

(A) **List** the relevant threatened species that will be significantly impacted in accordance with the referral documentation.
(B) **Record** whether the relevant threatened species is classified as “species credit species” or “ecosystem credit species” for the purposes of the FBA or BAM.
(C) **List** the PCTs associated with the ecosystem credit species.
(D) **Verify** that the habitat polygons for MNES have been mapped appropriately representing the foraging and/or breeding habitat for the species that will be impacted by the development.
(E) **Record** the area of impact (ha) and credits required. For impacts associated with ecosystem credit species identify the total credit requirements associated with the cleared PCTs identified as habitat for the species. Note: where the PCTs identified as habitat are also TECs, there will be overlap in the credit requirements between Tables 1 and 2. Where the same credits are referenced more than once they should not be considered to be cumulative.
(F) **Comment** on the adequacy of the analysis of the impacts in relation to the nature and extent of the impact and whether or not the EIS includes an analysis of the direct and indirect impacts to the species. Note if further information is required.
(G) **Cite** relevant page numbers for details provided in the EIS and appendices for each threatened species

3. Avoid and minimise/mitigate

(a) **Verify** [by ticking the following box]:

X measures to avoid and minimise/mitigate[2] have been described

(b) ***Comment*** *on whether or not the EIS identifies measures to avoid and minimise/mitigate impacts on the relevant EPBC Act-listed threatened species and communities. Section 8 of the FBA and sections 8 and 9 of the BAM require that proponents detail these efforts and commitments in the BAR/BDAR. Identify gaps in the discussion on measures to avoid and minimise/mitigate impacts on Commonwealth matters. Provide references to sections and page numbers in the EIS and appendices.*

All relevant EPBC-listed threatened species and communities are also listed under the BC Act. The project underwent a Strategic Route Options Analysis that considered 15 route options. Biodiversity values, among a number of other criteria, were considered in determining the most appropriate route. There are limited alternatives. Apart from the revegetated areas in Western Sydney Parklands, the route appears to have avoided most of the most significant local vegetation. Only four of the vegetation zones had a SVS of 50 or higher. The proposal has avoided the population of *Pimelea spicata* found nearby. Additional surveys for this species are to be undertaken on land added by the Amendment Report.

Details about the route options development and preferred option are summarised in Section 4.2 and Chapter 5 of the Environmental Impact Statement. Further assessment of avoidance and minimisation is provided in Chapter 7 of the BAR.

(c*) Comment* *on the adequacy and feasibility of measures to avoid and minimise/mitigate impacts. Identify inadequacies where further efforts could be made to avoid and minimise/mitigate impacts on Commonwealth matters. Provide references to sections and page numbers in the EIS and appendices that discuss avoidance and minimisation/mitigation measures relevant to EPBC Act-listed species and communities.*

It is not considered that further efforts could have been made to avoid and minimise/mitigate impacts.

4. Offsetting

*(a) **Verify** [by ticking the following boxes] that the offsets proposed to address impacts to EPBC Act-listed threatened species and communities are in accordance with the requirements under the EPBC Act.*

X *An appropriate offset for any residual adverse significant impact has been determined*

X *Proposed offsets for TECs provide a like-for-like outcome i.e. proponents have identified PCTs attributed to the specific threatened ecological community being impacted*

X *Proposed offsets for threatened species provide a like-for-like outcome*

X *Proposed offsets have been determined using the FBA or BAM*

If offsets have not been determined in accordance with the FBA or BAM, DPIE is required to discuss the proposed approach with the Commonwealth as soon as possible.

5. Resources

(a) Comment *on whether the information and data relied upon for the assessment have been appropriately referenced in the EIS. Comment on the validity of the sources of information and robustness of the evidence.*

There are no significant sources of information and data which have not been used.

[2] Note: whilst sections 8 and 9 of the BAM deal with minimisation and mitigation measures separately (respectively), section 8 of the FBA deals with both but labels them all as minimisation measures.

Table 3| Summary of Offset Requirements

A	B	C	D	E	F
Threatened species or TEC (listed under the EPBC Act)	**Credits required as calculated by the FBA or BAM**	**Credits generated from offsets in remnant vegetation**	**Credits generated from offsets proposed by other means**	**Comment on the proposed offsets**	**Figures taken from Amendment Report Response to Submissions Report and EIS**
Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest	2139	1982	TBD	1982 credits purchased, but none for PCT 724 (one potential site).	Tables 6.13 & 6.14 and BAR Chapter 11, Annexure D
Western Sydney Dry Rainforest and Moist Woodland on Shale	21	20	TBD	30 credits purchased	Tables 6.13 & 6.14 and BAR Chapter 11, Annexure D
Pultenaea parviflora	1500	0	TBD	0 credits purchased. One potential site.	Table 6.15 and BAR Chapter 11, Annexure D

(A) **List** the relevant threatened species or threatened ecological communities that are proposed to be offset (these are the listed species and communities that will be significantly impacted in accordance with the *EPBC Act Significant Impact Guidelines 1.1, i.e. the list provided by the Commonwealth in the referral documentation*.). Identify any relevant species or ecological communities which have not been proposed for offsetting.
(B) **List** the total credit requirement identified by the FBA or BAM for impacted EPBC Act-listed threatened species and threatened ecological communities. For TECs and ecosystem credit species this is the sum of the credits required for the PCTs associated with those TECs or ecosystem credit species.
(C) **Identify** the total number of required credits which are proposed to be retired through conserving and managing remnant / mature vegetation.
(D) **Identify** the number of credits proposed to be met through other methods allowable under the FBA or BAM, such as ecological rehabilitation of mined land, funding biodiversity conservation actions or payment into the Biodiversity Conservation Fund.
(E) **Comment** on the adequacy of the proposed offset in meeting requirements of the FBA or BAM and the EPBC Act. In particular is there a reasonable argument for a shortfall in credits required for MNES and/or non-compliance with like-for like? Are the offsets proposed by means other than protection of remnant vegetation adequate?
(F) **Reference** the relevant page numbers from the EIS and appendices for each threatened species and community.

The Proponent is attempting to source further credits to meet the shortfalls by:

- investigating existing EOI site;
- releasing EOIs in local newspapers;
- engaging with existing biodiversity credit holders who may have suitable habitat for *Pultenaea parviflora* to discuss undertaking additional species credit surveys; and
- undertaking desktop assessment of potential offset sites and, where feasible, conducting surveys of potential offset sites for species credits. Progress stewardship site agreements on suitable sites.

Appendix J – Assessment of Matters of National Environmental Significance

In accordance with the bilateral agreement between the Commonwealth and NSW Governments, the Department provides the following additional information required by the Commonwealth Minister for the Environment (the Minister), in deciding whether or not to approve a controlled activity under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Department considers that all threatened species and ecological communities protected under Part 3 of the EPBC Act have been adequately assessed and documented in the M12 Motorway Environmental Impact Statement (EIS), M12 Motorway Amendment Report (October, 2020) and M12 Motorway Amendment Report - Submissions Report (December, 2020). This assessment has been prepared based on the information contained in: Chapter 7.1 – Biodiversity and Appendix E – Biodiversity assessment report of the EIS; Chapter 6.1 Additional assessment – biodiversity and Appendix A - Biodiversity supplementary technical report of the Amendment Report; and Chapter 6.2 – Biodiversity in the Amendment Report - Submissions Report; any supplementary information provided during the assessment process; and advice provided by the Department's Environment, Energy and Science Group (EES).

This Appendix is supplementary to and should be read in conjunction with the assessment included in **Section 6.2** of the assessment report which includes the Department's consideration of impacts to listed threatened species and communities, mitigation and offsetting measures for threatened species, including for matters of national environmental significance (MNES).

M.1 REQUIREMENTS FOR DECISIONS ABOUT THREATENED SPECIES AND ENDANGERED ECOLOGICAL COMMUNITIES

In accordance with Section 136 of the EPBC Act, in deciding whether or not to approve the taking of an action and what conditions to attach to an approval, the Minister must consider matters relevant to any matter protected by a provision of Part 3 that the Minister has decided is a controlling provision for the action. These matters are addressed in Table 1 of this report on MNES.

In accordance with section 139 of the EPBC Act, in deciding whether or not to approve, for the purposes of section 18 or section 18A of the EPBC Act, the taking of an action and what conditions to attach to such an approval, the Minister must not act inconsistently with certain international environmental obligations, Recovery Plans or Threat Abatement Plans. The Minister must also have regard to relevant approved Conservation Advices.

Australia's International Obligations

Australia's obligations under the *Convention on Biological Diversity* (Biodiversity Convention) include the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.

The recommendations of the Biodiversity Assessment Report (BAR) (as updated by the BAR in the Amendment Report and the Amendment Report Submissions Report dated December 2020) and this assessment report are not inconsistent with the Biodiversity Convention, which promotes environmental impact assessment (such as this process) to avoid and minimise adverse impacts on biological diversity. The recommended approval requires avoidance, mitigation and management measures, and offsetting for the listed threatened species and communities. In addition, all information related to the proposed action is required to be publicly available to ensure equitable sharing of information and improved knowledge relating to biodiversity.

Australia's obligations under the *Convention on Conservation of Nature in the South Pacific* (Apia Convention) include encouraging the creation of protected areas which together with existing protected areas will safeguard representative samples of the natural ecosystems occurring therein (particular attention being given to endangered species), as well as superlative scenery, striking geological formations and regions. Additional obligations include using their best endeavours to protect such fauna and flora (special attention being given to migratory species) so as to safeguard them from unwise

exploitation and other threats that may lead to their extinction. The APIA Convention was suspended with effect from 13 September 2006. While this Convention has been suspended, Australia's obligations under the APIA Convention have been taken into consideration. The recommendations are not inconsistent with the APIA Convention which has the general aim of conservation of biodiversity.

The *Convention on International Trade in Endangered Species of Wild Fauna and Flora* (CITES) is an international agreement between governments which seeks to ensure that international trade in specimens of wild animals and plants does not threaten their survival. The recommendations are not inconsistent with CITES as the proposed action does not involve international trade in specimens of wild animals and plants.

Recovery Plans and Approved Conservation Advices
There are Approved Conservation Advices for: Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest; Western Sydney Dry Rainforest and Moist Woodland on Shale; and Pultenaea parviflora. However, there are no Recovery Plans for these communities and species.

There is no Conservation Advice and Recovery Plan for *Pteropus poliocephalus* **(**Grey-headed Flying-fox).

There is an approved Conservation Advice and Recovery Plan for *Pimelea spicata* (Spiked rice flower).

- **Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest**

The conservation advice was approved on 17 November 2009. The Cumberland subregion stretches from Killara in the east up to Pacific Park and Colo in the north across to Glenbrook in the west and down to Bargo in the south. The ecological community is concentrated in the Western Sydney region with clusters in Liverpool, Oran Park, Penrith Windsor and Luddenham. The main and ongoing threat to this ecological community is clearing for urban development, the fragmentation of native vegetation remnants, inappropriate grazing and fire regimes, weed invasion and the low level of protection in reserves. The main potential threat to the community is climate change, which could influence the species composition and possibly influence the future distribution and extent of the ecological community. The proposal directly impacts 42.89 ha of the ecological community, which includes 22.05 ha of revegetation. Indirect impacts such as edge effects are likely to affect 12.13 ha of the ecological community, primarily in the Western Sydney Parklands, the largest area of the ecological community in the Bioregion. The Proponent has committed to obtain biodiversity credits in accordance with the *NSW Biodiversity Offsets Policy for Major Projects* to offset the direct and indirect impacts of the proposal on the ecological community.

- **Western Sydney Dry Rainforest and Moist Woodland on Shale**

The conservation advice was approved on 13 November 2012. The Western Sydney Dry Rainforest and Moist Woodland on Shale ecological community has a highly restricted distribution in the Sydney Basin Bioregion. The ecological community is confined to sheltered slopes and gullies on steeply sloping, rugged topography mostly in the Cumberland subregion. The majority of remnants of the ecological community are found in the Wollondilly local government area (LGA) but remnants are also known to occur in the Camden, Campbelltown, Holroyd, Fairfield, Liverpool, Penrith, Hawkesbury and The Hills LGAs. The main threat is ongoing clearing, particularly for urban development in Western Sydney, and the resultant fragmentation of smaller remnant patches. Other threats include weed invasion, inappropriate grazing, increased fire frequency and impacts associated with close proximity to development such as dumping of rubbish into remnants, recreational vehicle use, and trampling of sites. Climate change is projected to be a future threat with predicted temperature rises, increased fire frequency, reduced rainfall and generally drier conditions, potentially influencing the future distribution of the ecological community. The proposal directly impacts 0.44 ha of the ecological community which the BAR has assessed as Moderate/Good – Poor condition. The indirect impacts total 0.61 ha. The Proponent has committed to provide offsets for direct and indirect impacts to the ecological community.

- ***Pultenaea parviflora* (Sydney Bush-pea)**

The conservation advice was approved on 26 March 2008. The threatened flora species is known chiefly from Penrith, Windsor and Blacktown and there are outlier populations in Liverpool. The main threats are

ongoing urban and rural development, particularly habitat clearing and fragmentation, uncontrolled vehicular access, inappropriate fire regimes, fill and rubbish dumping and weed invasion. The proposal directly impacts up to 100 individuals within the refined construction footprint. The Proponent has committed to provide species credits in accordance with the *NSW Biodiversity Offsets Policy for Major Projects* to offset impacts to this species.

- ***Pimelea spicata*** **(Spiked rice flower)**

The conservation advice was approved on 15 July 2015. *Pimelea spicata* is likely to be located in the Cumberland Plain area of Western Sydney; and the coastal areas of the Illawarra Region between Mount Warrigal and Gerroa. Threats to the species include habitat loss and fragmentation from land clearing, habitat degradation, weed invasion, livestock grazing and herbicide exposure. The proposal impacts potential *Pimelea spicata* habitat and the Proponent has committed to undertake additional targeted surveys. Direct impacts to the species would be addressed through the retirement of species credits.

A recovery plan for *Pimelea spicata* was made on 10 November 2006. Objectives of this recovery plan include: conserving the species through both land use and conservation planning mechanisms; minimising the operation of threats where the species occurs; developing, planning and implementing a survey and monitoring program that will provide information on the extent and viability of the species, both providing information to the community and raising awareness that assists in conserving the species; and conducting research that will assist future management decisions.

The recovery plan notes previous recovery actions for the species, in particular amelioration from road construction related to the M7 Motorway, which the proposal ties into. The construction of the M7 Motorway resulted in the loss of three of the known 30 extant populations.

Measures to offset these impacts were:

- development of a long-term management plan for remaining *Pimelea spicata;*
- funding of the ongoing management of the remaining *Pimelea spicata* plants; and
- funding for research on *Pimelea spicata.*

The proposal does not directly impact known populations of *Pimelea spicata*. However, the proposal does impact potential habitat for the species, which would be confirmed following additional targeted surveys. The recommended conditions of approval require additional surveys of *Pimelea spicata* to be undertaken, direct impacts to individual plants to be offset in accordance with the *NSW Biodiversity Offsets Policy for Major Projects* and measures to be implemented in the Construction Flora and Fauna Management Sub-plan to minimise impacts to the species during the construction of the project. The Department considers these requirements are appropriate to address impacts to the species should surveys confirm its presence in the construction footprint.

Threat Abatement Plans

The Threat Abatement Plan (TAP) relevant to this action, disease in natural ecosystems is discussed below and is available at http://www.environment.gov.au/biodiversity/threatened/threat-abatement-plans/approved.

The Threatened Species Scientific Committee in March 2013 recommended the then Minister for Sustainability, Environment, Water, Population and Communities list as a key threatening process the "aggressive exclusion of birds from potential woodland and forest habitat by over-abundant noisy miners (*Manorina melanocephala*)." The Committee also recommended that a Threat Abatement Plan is not considered a feasible, efficient, or effective way to abate the process (at this time). The BAR noted the proposal is likely to increase edge effects through fragmentation of patches of retained vegetation which potentially increases habitat for the Noisy Miner. However, the Noisy Miner is an established native pest species in the study area as a result of fragmentation of vegetation by existing urban and rural development.

- **Threat abatement plan for disease in natural ecosystems caused by *Phytophthora cinnamomi***

Phytophthora dieback is a destructive disease caused by the pathogen *Phytophthora cinnamomi* and other *Phytophthora* species and represents a significant threat to Australian native species. The disease places important plant species at risk of death, local extirpation or even extinction, potentially resulting in major declines in some insect, bird and animal species due to the loss of shelter, nesting sites and food sources. Phytophthora dieback can cause permanent damage to ecosystems and is a key threatening process under the EPBC Act. Once an area is infested with the pathogen, eradication is usually impossible.

The Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest and Western Sydney Dry Rainforest and Moist Woodland on Shale ecological communities are susceptible to Phytophthora dieback.

The TAP recognises that any activity that moves soil, organic material or water into susceptible native vegetation areas has the potential to introduce and spread soil pathogens. The limited management options available focus on modifying human activities through education, restricting access to certain sites and when access is necessary, deploying and enforcing strict hygiene controls.

The Proponent has identified Phytophthora dieback as a significant construction risk particularly through earthworks and movement of people and vehicles and plant along the project alignment. The Proponent has committed to implement hygiene protocols to minimise the spread of *Phytophthora cinnamomic.* To ensure that risks of Phytophthora dieback are managed the Department has recommended a condition of approval which requires the Proponent to prepare and implement a Flora and Fauna Management Sub-plan to manage construction impacts on flora and fauna, including specific measures to manage the spread of diseases and pathogens. The Department considers that this would address the TAP for Phytophthora disease in natural systems.

M.2 REQUIREMENTS FOR DECISIONS ABOUT WORLD HERITAGE PROPERTIES

The Commonwealth determined that the action is not a controlled action for the controlling provision of World Heritage (Section 12 and Section 15A of the PBC Act) and therefore further consideration is not required.

M.3 REQUIREMENTS FOR DECISIONS ABOUT NATIONAL HERITAGE PLACES

The Commonwealth determined that the action is not a controlled action for the controlling provision of National Heritage (Section 15B and Section 15C of the EPBC Act) and therefore further consideration is not required.

M.4 ADDITIONAL EPBC ACT CONSIDERATIONS

Table 1 contains the additional mandatory considerations, factors to be taken into account and factors to have regard under the EPBC Act, additional to those already discussed, which the Commonwealth Minister must consider in determining the proposed action.

Table 1 | Additional considerations for the Commonwealth Minister under the EPBC Act

EPBC Act section	Considerations	Conclusion
Mandatory considerations		
136(1)(b)	Social and economic matters are discussed in Section 6.5 of the assessment report.	The Department considers that the project would result in a range of benefits to State and regional economy through improvements in the efficiency of the inter- and intra-state road freight network.
Factors to be taken into account		
3A, 391(2)	Principles of ecologically sustainable development (ESD), including the precautionary principle, have been taken into account, particularly: • the long-term and short-term economic, environmental, social and equitable considerations that are relevant to this decision; • conditions that restrict environmental impacts and impose monitoring and adaptive management reduce any lack of certainty related to the potential impacts of the project; • conditions requiring the project to be delivered and operate in a sustainable way to protect the environment for future generations and conserving the relevant matters of national environmental significance; • advice provided within this report reflects the importance of conserving biological diversity and ecological integrity in relation to the controlling provisions for the project; and • mitigation measures to be implemented which minimise potential impacts of the project on biodiversity within the project area.	The Department considers that the project, if undertaken in accordance with the recommended conditions of approval, would be consistent with the principles of ESD. **Section 4.4.2** of the assessment report addresses the proposal in regard to ESD principles.
136(2)(e)	Other information on the relevant impacts of the proposed action – the Department is not aware of any relevant information not addressed in this assessment report.	The Department considers that all information relevant to the impacts of the project have been taken into account in this assessment. The Department's consideration on key issues is presented in Section 6 of the assessment report.
Factors to have regard to		
176(5)	Bioregional plans	There is no relevant bioregional plan.
Considerations on deciding on conditions		
134(4)	Must consider: • information provided by the person proposing to take the action or by the designated proponent of the action; and • the desirability of ensuring as far as practicable that the condition(s) is a cost-effective means for the Commonwealth and a person taking the action to achieve the object of the condition.	All project related documentation is available at the Department's website www.majorprojects.planning.nsw.gov.au. The Department considers that the recommended conditions at **Appendix K** are a cost-effective means of achieving their purpose.

M.5 CONCLUSIONS ON CONTROLLING PROVISIONS

Threatened species (Sections 18 and 18A of the Act)

For the reasons set out in **Section 6.2** and this Appendix, the Department recommends that the impacts of the action on threatened species will be acceptable, subject to the implementation of the avoidance and mitigation measures described in the EIS, Amendment Report, and Amendment Report Submissions Report and the requirements of the recommended conditions.

M.6 OTHER PROTECTED MATTERS

The Commonwealth DAWE determined that other matters under the EPBC Act are not controlling provisions with respect to the proposed action. These include listed migratory species, RAMSAR wetlands, Commonwealth marine environment, world heritage properties, national heritage places, nuclear action, Great Barrier Reef Marine Park and a water resource associated with a large coal mining or coal seam development.

Appendix K – Recommended Instrument of Approval

Appendix L – Specialist Independent Flood Assessment