

The Northern Road Upgrade – Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park

Consistency assessment report

Concrete batch plant at location C16 for
Stage 5

Roads and Maritime Services | March 2019

Revision	Date	Prepared by	Reviewed by
Draft A	12 Nov 2018	J Coates, SNC-Lavalin	S Pathammavong, SNC-Lavalin
Draft B	15 Nov 2018	J Coates, SNC-Lavalin	T Doczy, CPB Contractors
Draft C	1 May 2019	B Rice, EMM Consulting	C McAleer, CPB Contractors
Final version	20 May 2019	C McAleer, CPB Contractors	C McAleer, CPB Contractors

Contents

Contents.....	i
1. Introduction.....	3
1.1 Background.....	3
1.2 Purpose of consistency assessment	4
2. Proposed change.....	5
2.1 Description of proposed change.....	5
2.2 Need	7
3. Environmental assessment.....	8
3.1 Overview.....	8
3.2 Noise	14
4. Consistency assessment – the Division 5.2 Approval	16
4.1 Minister’s Conditions of Approval	16
4.2 Statement of Commitments / environmental management measures.....	19
4.3 Project objectives.....	27
4.4 Consistency questions – the Division 5.2 Approval	28
5. Consistency assessment – EPBC Approval	30
5.1 Commonwealth Minister’s Conditions of Approval.....	30
5.2 EPBC Approval consistency questions	30
6. Conclusion	31
7. Certification.....	32

Tables

Table 3-1: Environmental assessment of the proposed change.....	8
Table 4-1: Consistency against relevant Minister’s conditions of approval for the project	16
Table 4-2: Consistency against relevant Statement of Commitments / environmental management measures	19
Table 4-3: Division 5.2 Approval consistency questions.....	28
Table 5-1: Consistency against relevant Commonwealth Minister’s conditions of approval for the project..	30
Table 5-2: EPBC Approval consistency questions	30

Appendices

Appendix A	The Northern Road Upgrade Stage 5 and Ancillary Facility C16 location context
Appendix B	C16 site office and batch plant layout
Appendix C	Construction Noise Impact Statement for Concrete Batch Plant at C16 (Jacobs)
Appendix D	Flora and Fauna Assessment (Narla Environmental)

Glossary/ Abbreviations

Term	Expanded text
AFMP	Ancillary Facilities Management Plan
Ancillary Facility	<p>A temporary facility for construction of the project including an office and amenities compound, construction compound, material crushing and screening plant, materials storage compound, maintenance workshop, testing laboratory and material stockpile area</p> <p>Where an approved CEMP contains a stockpile management protocol, a material stockpile area located within the construction footprint is not considered to be an ancillary facility</p>
CEMP	Construction Environmental Management Plan
CNVG	Construction Noise and Vibration Guidelines
CoA	Condition of approval
CSSI	Critical State Significant Infrastructure
DECC	NSW Department of Environment and Climate Change (former)
Division 5.2 Approval	The Approval issued by the NSW Minister for Planning for The Northern Road Upgrade Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park
DoEE	Commonwealth Department of the Environment and Energy
DP&E	NSW Department of Planning and Environment
EIS	Environmental Impact Statement
Environmental Representative (ER)	A suitably qualified and experienced person independent of project design and construction personnel employed for the duration of construction. The principal point of advice in relation to all questions and complaints concerning environmental performance.
EPA	NSW Environment Protection Authority
EP&A Act	<i>NSW Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Commonwealth Environmental Protection and Biodiversity Conservation Act 1999</i>
ESCP	Erosion and Sediment Control Plan
EWMS	Environmental Work Method Statements
Federal-CoA	Commonwealth Department of the Environment and Energy Condition of Approval

Term	Expanded text
Heritage item	A place, building, work, relic, archaeological site, tree, movable object or precinct of heritage significance, that is listed or may be eligible to be listed under one or more of the following registers: the State Heritage Register under the <i>Heritage Act 1977</i> (NSW), a state agency heritage and conservation register under section 170 of the <i>Heritage Act 1977</i> (NSW), a Local Environmental Plan under the EP&A Act, the World, National or Commonwealth Heritage lists under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth), and an Aboriginal object or Aboriginal place as defined in section 5 of the <i>National Parks and Wildlife Act 1974</i> (NSW)
ICNG	NSW EPA Interim Construction Noise Guideline
NML	Noise Management Level
NSW-CoA	Condition of the NSW Infrastructure Approval
OACEMP	Overarching Construction Environmental Management Plan
OEH	NSW Office of Environment and Heritage
Principal, the	NSW Roads and Maritime Services
Project, the	The Northern Road Upgrade – Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park
REMM	Revised Environmental Management Measure
Roads and Maritime	NSW Roads and Maritime Services
SEARs	Secretary's Environmental Assessment Requirements
Secretary	Secretary of the NSW Department of Planning and Environment (or nominee) whether nominated before or after the date on which the Infrastructure approval was granted
SPIR	Submissions and Preferred Infrastructure Report

1. Introduction

1.1 Background

Roads and Maritime Services (Roads and Maritime) completed an environmental impact statement for The Northern Road Upgrade – Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park (the EIS) in December 2017. The EIS identified a range of environmental, social and planning issues associated with the construction and operation of The Northern Road Upgrade – Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park (the project) and proposed measures to mitigate and manage potential impacts. The EIS responds to issues raised during the public exhibition of the draft EIS (June to August 2017) and describes and assessed proposed changes and design refinements to the project, which were included in the Submissions and Preferred Infrastructure Report (SPIR) prepared in December 2017.

The NSW Minister for Planning approved the project under Section 5.19 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) on 30 May 2018 (Infrastructure Approval SSI 7127). The project must be carried out in accordance with the Division 5.2 Approval and all procedures, commitments, preventative actions, performance criteria and mitigation measures set out in the EIS as amended by the SPIR and documented in the final EIS.

For the purposes of this consistency assessment, the Approval issued by the NSW Minister for Planning for The Northern Road Upgrade Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park is referred to as the Division 5.2 Approval.

The project was referred to the Australian Government Minister for the Environment and Energy under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as the project has the potential to significantly impact on MNES including EPBC listed Cumberland Plain Shale Woodlands and Shale-Gravel transition Forest. The project would also significantly impact upon areas of Commonwealth Land associated with the Defence Establishment Orchard Hills (DEOH) and land purchased by the Australian Government for the Western Sydney Airport. The draft and final EIS incorporated the assessment requirements under the EPBC Act.

The Australian Government Minister's approval was received on 15 June 2018 subject to a number of conditions being met (EPBC 2016/7696). For the purposes of this consistency assessment, the approval issued by the Australian Government Minister for the Environment and Energy for The Northern Road Upgrade Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park is referred to as the EPBC Approval.

As identified in section 5.5 of the EIS, the project is to be delivered in three stages:

- Stage 4 – between Mersey Road, Bringelly and Eaton Road, Luddenham
- Stage 5 – between Littlefields Road, Luddenham and Glenmore Parkway, Glenmore Park
- Stage 6 – between Eaton Road, Luddenham, and Littlefields Road, Luddenham.

CPB Contractors will construct Stages 5 and 6 of the project. The C16 compound site has been constructed as part of The Northern Road Stage 5 (see Appendix A).

1.2 Purpose of consistency assessment

The purpose of this consistency assessment is to:

- Describe the proposed change relative to the Division 5.2 Approval and the EPBC Approval.
- Assess the environmental impacts associated with the proposed change relative to the Division 5.2 Approval and the EPBC Approval.
- Determine if the proposed change is consistent with the Division 5.2 Approval or whether further approval is required either for a modification application or a new project.
- Determine if the proposed change is consistent with the EPBC Approval or whether a variation to the conditions of approval / a conditioned action management plan or a new referral is required.

2. Proposed change

2.1 Description of proposed change

Temporary ancillary facility C16 is approximately 11 hectares in size and is located along The Northern Road at Littlefields Road, Mulgoa (see Appendix A). The facility was approved through the EIS process for:

- Offices and vehicle parking for personnel working on the project.
- Storage of concrete pits, pipes and culverts.
- Stockpiling topsoil, mulch and drainage backfill materials.

CPB Contractors are proposing to establish and operate a wet concrete batching plant within the approved ancillary facility location C16. The proposed concrete batch plant will be situated to the north of the site offices (see Appendix B) and contained entirely within the approved area for ancillary facility C16. The concrete batch plant will have a maximum footprint of about 200m x 100m. The Batch Plant includes –

- Four (4) contained stockpiles for aggregate (coarse and fine). Dimensions have been approximated at 25 m (L) x 12 m (W) x 2 m height.
- Two super tanks (approx. 100 t each) and mixer. Hopper will include dust controls to minimise air quality impact
- a concrete wash out basin
- a sediment basin for the capture of dirty water run-off from the batch plant area

Water supply will be from the Sydney Water network, approximately 3.8 km north of the Batch Plant location and will utilise a High Density Polyethylene (HDPE) pipeline to traverse to the Batch Plant site. The pipeline will be installed along the ground surface within the project alignment and entirely within the 'The Northern Road' Mersey Rd to Glenmore Parkway Project Boundary.

No additional access will be required from public roads. Access to the concrete batch plant will be via the approved C16 access directly off The Northern Road. This access road will be available for construction purposes only and not accessible to the general public. The heavy vehicle trafficable area will be sealed. Stabilisation will be limited to critical truck turning areas. This stabilisation consists of pre-batched heavily bound base (HBB) from a nearby supplier. Storage areas for clean product sands and gravels will not be sealed.

Average truck movements per shift (i.e. 7am to 6pm Monday to Friday and 8am to 1pm Saturdays) will be approximately 50 truck movements. This may increase to approximately 80 truck movements for a short period of time (i.e. two weeks) to fulfil specific construction timelines. The plant will operate intermittently over the duration of the project

No additional vegetation clearing will be required to establish the plant. Erosion and sediment controls will be installed to minimise risk of sediment laden water run-off from the site and will form part of the broader controls for the approved C16 compound site. Stockpile sites will be located and constructed consistent with the CEMP and the approved stockpile management plan (Appendix A of the SWMP).

Site-specific mitigation measures, where they are necessary to further reduce impacts, will be detailed on the ESCP. Mitigation measures for each stockpile site will include as a minimum:

- an Erosion and Sediment Control Plan including:
 - delineation of the perimeter of the stockpile with a bund, fencing or barrier
 - erosion and sedimentation controls to be erected between the stockpile site and any drainage lines or down-slope areas
 - any temporary sediment basins (if required)
 - covers, or other erosion protections for stockpiles that will be in place for more than 20 days as well as any temporary stockpiles that are susceptible to wind or water erosion, within 5 days of forming each stockpile (if applicable)
 - diversion of stockpile run-off through sediment traps and into pits and the stormwater drainage system
 - water diversion bunds
- dust management measures (including for vehicle movements associated with stockpiling activities) will be implemented in accordance with the requirements of the Construction Air Quality Management Plan. This will include water sprays for dust suppression.
- monitoring of odours and odour control measures
- notification of residents within 200 m of stockpiles, the potential impact from constructing the stockpile (including visual and odour impacts) and proposed mitigation measures. If residents are dissatisfied with the proposed mitigation measures, the stockpile location or associated mitigation measures will be reviewed
- exit points from stockpile areas will be stabilised and include rumble pads to prevent mud tracking
- provide large, clearly legible signs placed and maintained on each stockpile, stating contents and date of stockpiling
- avoid locating stockpile weed contaminated topsoil or other contaminated materials adjacent to areas of native vegetation.

2.1.1 Cementitious Water Management

Cementitious water will be captured and treated separately to other dirty water run-off in the C16 site area. The cementitious water will be addressed as detailed in the first flush treatment below. The wash out basin will be constructed to contain any spills and cementitious materials from truck washout processes and will be collected in a concrete lined pond.

The wash basin will be routinely inspected and emptied.

A first flush system will be installed to collect runoff from the areas at risk of generating cementitious run off, with a capacity based upon a 10mm rainfall event, as per the standard adopted by Cement Concrete & Aggregates Australia (CCAA) for “pollutants easily mobilised, such as soluble materials, fine dust and silts” (CCAA “First flush and water management systems: guide and principals”). The required capacity for the first flush for a 193m² area with 10mm rainfall event is 1,930 litres. The proposed basin to be constructed will have a capacity of 4,500 litres. The estimated storage volume exceeds minimum storage by more than 100% in recognition that the areas always contain some free-standing water.

This catchment area will be concreted and direct all flows to the tapered wedge pits that will collect truck washout and mixer clean down at end of day.

The concrete wash out areas make up part of the total concrete area subject to first flush determination. Concrete washout areas will utilise a series of settling tanks to remove solids, and water used in the concrete wash process will be re-used where possible. If re-use of the concrete wash water is not feasible, the water will be managed in accordance with the approved project Soil and Water management plan, or dispose of off-site to a licenced waste disposal facility.

2.1.2 Dirty Water Management

The non-cementitious water generated from the runoff of the site will be collected and directed to the batch plant settling pond, which will be designed and established in accordance with the Blue Book guidelines. Management of this water will be in accordance with the established project Soil and Water Management Plan.

Minor earthworks will be undertaken to construct the sediment basin and associated flow path drainage lines. The sediment basin will be routinely inspected and emptied in accordance with the site SWMP. Sediment within the sediment basin will be allowed to settle out and water will be reused for dust control where routine water quality monitoring confirms its applicability for reuse on the site.

2.2 Need

The need for the Batch Plant is to ensure that a reliable supply of concrete is available for Stages 5 and 6 of The Northern Road Upgrade Project that conforms to Roads and Maritime specifications. Without the Batch Plant, the project is at risk of not being completed in the required timeframe. Advice provided to CPB Contractors by the concrete industry suppliers confirmed that the supply of conforming concrete from established concrete plants in Western Sydney could not be guaranteed due to the extensive haulage distance and delivery time constraints associated with product quality. Therefore, the construction of the Batch Plant ensures viability and availability of appropriate concrete construction materials for the Project.

A review of all approved ancillary sites found that C16 is the largest and most suitably located ancillary facility to establish the concrete batching plant. The site location has been chosen to limit impact on sensitive receivers, based on a comparative analysis against other potential locations. The nearest sensitive receiver is approximately 150 m from the Batch Plant location.

3. Environmental assessment

3.1 Overview

An assessment has been undertaken to compare the potential environmental impacts of the proposed change relative to the potential environmental impacts identified as part of the project subject to the Division 5.2 Approval and the EPBC Approval. The assessment focuses only on the environmental issues and impacts relevant to the proposed change. Consultation specifically regarding the proposed batch plant has been completed with nearby residents, records of consultation managed and actioned in accordance with the approved project Community Involvement plan.

Table 3-1: Environmental assessment of the proposed change

Environmental issue	Consideration of the relative environmental impacts of the proposed modification compared to the Division 5.2 Approval and EPBC Approval
Biodiversity	<p>The location of the proposed concrete batch plant is within the project's approved ancillary facility C16. The area contains a number of trees which would require removal to establish the batch plant. These trees were identified for removal in the EIS for the establishment of the ancillary facility.</p> <p>The construction of the C16 facility, including the proposed Batch Plant, will require the wholesale removal of approximately 1.48ha of Cumberland Plain Woodland Derived Native Grassland.</p> <p>The potential for significant impact upon CPW was assessed against under the '7-Part Test Assessment of Significance' criteria. It was deemed that the proposed works will have no significant impact such that a local viable population of a species will be placed at risk of extinction.</p> <p>Therefore, no additional impact assessment, EPBC Act Referral to Commonwealth are required for the proposed development.</p> <p>No impacts are anticipated to threatened flora and fauna as a result of the proposed Batch Plant.</p> <p>The works will involve disturbance/modification to two (2) Category 1 watercourses that occur within the C16 site. Given these streams are likely to be intersected by the proposed works, mitigation measures proposed in the existing SWMP and other sub-plans. A Flora and Fauna Assessment for the compound site (including the construction of the Batch Plant) has been attached as Appendix D.</p>
Hydrology	<p>It is unlikely that the establishment of the concrete batch plant will impact on the hydrology or flooding characteristics of the area in excess of that already assessed as part of the approved ancillary facility. There has been no change to drainage design as a result of the proposed Batch Plant. Minor changes to flows will result from the construction of the sediment dam capturing water from the Batch Plant however this is unlikely to affect regional hydrology.</p> <p>No further assessment is required.</p>

Environmental issue	Consideration of the relative environmental impacts of the proposed modification compared to the Division 5.2 Approval and EPBC Approval
Geology and soils	<p>The activities associated with the establishment of the proposed concrete batch plant described in this consistency review will require some ground disturbance to establish a level pad, as well as the establishment of the sediment basin and wash basin. The sediment basin and wash basin will be constructed from site soils and imported gravels or aggregates for spillways and drainage lines, where required.</p> <p>Stockpiles of aggregate materials (including sand, slag, flyash and gravels) will be contained and managed within the Batch Plant location as described in Section 2.1.</p> <p>Potential for soil erosion exists but is considered low as the approach to erosion and sediment controls proposed for the ancillary facility and for the batch plant would be sufficient to manage potential impacts from construction of the concrete batch plant. The wash basin, sediment basin and stockpiled materials will be incorporated into the Progressive Erosion and Sediment Control Plans (PESCPs) for the site, which will be managed in accordance with the existing Soil and Water Management Plan. Controls will be installed, inspected and maintained throughout the life of the project as required.</p> <p>Following construction of a level pad, the heavy vehicle trafficable area will be stabilised as hardstand which will reduce erosion during utilisation of the C16 compound.</p> <p>No further assessment is required.</p>
Water quality	<p>The activities associated with the establishment of the proposed concrete batch plant described in this consistency review may pose a risk to water quality if adequate controls are not in place. Controls included as part of Batch Plant design include a wash basin and a sediment basin, both of these structures are designed to contain spills / dirty water run-off and drop out minimise sediment run-off therefore manage potential risk to offsite water quality as a result of the construction and operation of the Batch Plant. These structures, as well as sediment control structures for stockpiled materials, will be managed in accordance with the TNR 5 Soil and Water Management Plan the PESCPs for the site.</p> <p>Stormwater management practices will be implemented upon commencement of works to ensure no impact on water quality occurs. These will be in accordance with <i>Managing Urban Stormwater: Soils and Construction</i> (Landcom, 2004) and the Roads and Maritime <i>G38 Soil and Water Management Technical Guidelines</i>. For example:</p> <ul style="list-style-type: none"> • Clean water diversions constructed around the batch plant site • An PESCPs will be implemented • All oils, fuels, lubricants, liquids and chemicals are to be stored in appropriately bunded areas • Spill kits would be appropriately stocked and maintained and the crew will be trained in their use. <p>No further assessment is required.</p>

Environmental issue	Consideration of the relative environmental impacts of the proposed modification compared to the Division 5.2 Approval and EPBC Approval
Traffic and transport	<p>With the establishment of a concrete batching plant, an increase of heavy vehicle movements is expected to and from the compound site. Average truck movements per shift will be approximately 50 truck movements. This may increase to approximately 80 truck movements for a short period of time (i.e. two weeks) to fulfil construction time frames. The localised increase in truck movements during operation of the plant will be balanced with removal of similar numbers of truck movements from commercial concrete batching plants located within the Western Sydney area. An improvement to traffic conditions on the broader The Northern Road may occur as vehicle movements will be confined to The Northern Road project areas managed by CPB.</p> <p>No additional access will be required from public roads.</p> <p>Proposed noise impacts as a result of heavy vehicle traffic movement at the C16 compound is described in Concrete Batch Plant Noise Assessment included as Appendix C.</p>
Noise and vibration	<p>The concrete batch plant will operate in accordance with the approved construction hours (i.e. 7am to 6pm Monday to Friday and 8am to 1pm Saturday and not on Sunday's or Public Holidays). Any out of hours activities that may need to be undertaken at the batch plant will be subject to the approval processes specified in the EIS and will be undertaken in accordance with the relevant RMS requirements and EPL conditions. These will be managed at a site level by the site environmental management personnel.</p> <p>Jacobs (Australia) Pty Limited completed an assessment of potential noise impacts associated with modified operations planned at the C16 compound site involving the installation of a concrete batch plant. A review of noise impacts was completed by updating the site noise model to reflect the planned changes, and assessing the resulting noise levels at nearby receiver locations based on noise objectives already established for the project.</p> <p>This review identified that project NMLs were able to be met at all receivers, with the exception of 2594 The Northern Road.</p> <p>A 5m barrier was recommended along the southern site boundary to reduce these noise impacts. This bund would reduce noise levels at this property to within 2dB of site NMLs, however levels would remain above noise goals. Further noise mitigation measures will be investigated to reduce noise at this site from the site driveway entrance.</p> <p>Based on these findings, it was concluded that perimeter noise barriers or bunding at other locations would not be necessary, however where excess fill is available would provide a good means of reducing noise levels further below the project NMLs.</p> <p>Existing standard measures already developed for the compound site in the CNVMP and associated documentation should be adopted, and the facility should only operate during standard hours.</p> <p>More detail is included in the Jacobs 'Concrete Batch Plant Noise Assessment' included as Appendix C.</p>

Environmental issue	Consideration of the relative environmental impacts of the proposed modification compared to the Division 5.2 Approval and EPBC Approval
Aboriginal heritage	<p>The location of the proposed concrete batch plant is within the project's approved ancillary facility C16. The EIS included an assessment of potential disturbance to Aboriginal heritage.</p> <p>No further assessment is required.</p> <p>RMS' Standard Management Procedure: <i>Unexpected Heritage Items</i> (Roads and Maritime 2013) would be followed should any unexpected heritage items be uncovered during establishment of the proposed batch plant site.</p>
Non-Aboriginal heritage	<p>The location of the proposed concrete batch plant is within the project's approved ancillary facility C16. The EIS included an assessment of potential disturbance to non-Aboriginal heritage.</p> <p>No further assessment is required.</p> <p>RMS' Standard Management Procedure: <i>Unexpected Heritage Items</i> (Roads and Maritime 2013) would be followed should any unexpected heritage items be uncovered during establishment of the proposed batch plant site.</p>
Landscape character and Visual impacts	<p>The location of the proposed concrete batch plant is within the project's approved ancillary facility C16. The visual landscape of the area is predominately rural. However, temporary construction activities for The Northern Road upgrade are visible within this landscape. The concrete batch plant will have little further impact on the landscape character and visual landscape. It is a temporary feature required during construction and consistent with the EIS, will be decommissioned and the compound area will be rehabilitated on completion of construction. The visual impact to nearby sensitive receivers will be minimised as far as practicable. Boundary fencing around C16 will be undertaken in accordance with the requirements of A18 and A19 of the SSI approval, in order to minimise potential visual, noise and air quality impacts. Views of the batch plant are considered likely to be restricted to a one resident to the south of the C16 compound site. This resident has previously been assessed as having views to compound C16 and the proposed batch plant will not substantially change the view of the construction site from that proposed in the EIS. In addition, consultation is ongoing with this resident to determine additional mitigation measures required for the property.</p> <p>Therefore the Batch Plant is considered to have minimal visual impact. Consultation with nearby sensitive receivers will be undertaken throughout the project.</p> <p>No further assessment is required.</p>

Environmental issue	Consideration of the relative environmental impacts of the proposed modification compared to the Division 5.2 Approval and EPBC Approval
Hazard and risk	<p>The hazards and risk associated with the establishment of a concrete batch plant would be associated with the uncontrolled release of materials that form concrete. These include:</p> <ul style="list-style-type: none"> • Water through the wet batching process (non-dangerous good) • Dust from the handling and stockpiling of sand, aggregate, Fly ash, silica fume as well as the movement of this material throughout the Batch Plant process (non-dangerous goods) • Dust from handling of slag materials throughout the Batch Plant process <p>The handling of the above materials could result in uncontrolled discharges of excessive dust and sediment laden water from the C16 site, if not managed appropriately.</p> <p>As described in the sections above, erosion and sediment controls will be installed to minimise risk of water pollution from concrete wash or spills from the wet batching process. These controls include construction of dedicated basins for the batch plant and controls for stockpile areas in accordance with the site SWMP and PESCPs. Dust will also be managed through the installation of dust controls incorporated into the design of the hoppers and conveyors on the Batch Plant. A water cart will be utilised to minimise dust impacts from stockpiles and site areas on a routine basis. CPB's Project specific Pollution Incident Response Management Plan (PIRMP) would include specific details relating to the concrete batch plant.</p> <p>The storage, handling and use of the materials would be undertaken in accordance with the Work Health and Safety Act 2011 and the WorkCover guideline Storage and Handling of Dangerous Goods 2005. The handling of any bulk liquids or curing compounds will be managed within site sheds and will be included within self-bunded storages, if required due to potential for environmental risk.</p> <p>The potential for any residual land contamination will be assessed through the completion of Post Construction Land Condition Assessments (PCLCAs) following the completion of site activities, as required by RMS guidelines.</p> <p>No further assessment is required.</p>

Environmental issue	Consideration of the relative environmental impacts of the proposed modification compared to the Division 5.2 Approval and EPBC Approval
Waste	<p>The main waste streams generated by batching plants is waste concrete and waste water from the wet batching process. Waste minimisation is the preferred approach to dealing with this material.</p> <p>It may be possible to use waste concrete for construction purposes at the batching plant. If this is not possible, direct the waste concrete to a fully enclosed lined pit where it can be dried and collected. It should then be reused, or transported to a recycling facility or licensed landfill site. Water flows within the batch plant will be recycled and reused where possible in the batch plant process. Flows from concrete wash out activities will be directed to the sediment basin, therefore sediment within the basin is likely to include cementitious material which will be cleaned out as part of sediment dam maintenance and transported to an appropriately licenced offsite landfill facility.</p> <p>Management of surplus concrete is addressed in the EIS. The production of potential waste concrete and its management is in-line with this.</p> <p>No further assessment is required.</p>

3.2 Noise

3.2.1 EIS assessment of ancillary facilities

The EIS assessed 21 proposed ancillary facility sites as part of the delivery of The Northern Road Upgrade. Ancillary facility C16 is located within Stage 5 and was assessed in the EIS against the following criteria:

- (1) Located more than 50 m from a waterway unless an erosion and sediment control plan is prepared and implemented so as not to affect water quality in the waterway in accordance with Managing Urban Stormwater series
- (2) Within or adjacent to land where the critical state significant infrastructure is being carried out
- (3) With ready access to a road network
- (4) So as to avoid the need for heavy vehicles to travel on local streets or through residential areas in order to access the facility
- (5) On level land
- (6) So as to be in accordance with the Interim Construction Noise Guidelines (DECC, 2009) or as otherwise agreed in writing with affected landowners and occupiers
- (7) So as not to require vegetation clearing beyond the extent of clearing approved under other terms of this approval except as approved by the ER as minor clearing
- (8) So as not to have any impact on heritage items (including areas of archaeological sensitivity) beyond the impacts identified, assessed and approved under other terms of this approval
- (9) So as not to affect lawful uses of adjacent properties that are being carried out at the date upon which construction or establishment of the facility is to commence
- (10) To enable operation of the ancillary facility during flood events referred to in Section 8.1 and to avoid or minimise, to the greatest extent practicable, adverse flood impacts on the surrounding environment and other properties and infrastructure
- (11) So as to have sufficient area for the storage of raw materials to minimise, to the greatest extent practicable, the number of deliveries required outside standard construction hours.

The assessment identified that the C16 was compliant with all the above criteria with the exception of criterion six (6) in so far as there are sensitive residential receivers located within 200 m of the proposed construction compound and laydown area. Table 5.17 Volume 1: Main Report of the EIS outlined additional assessment of this criterion with regard to all 21 ancillary facilities, including C16. This assessment outlined the following key justification and proposed mitigation measures for establishment of ancillary facilities (including C16) at these proposed locations:

- Although residential receivers are located within 200 m of the proposed construction compound and laydown sites, due to the predominantly rural-residential nature of the project area, the number of affected receivers would be relatively low.
Issues associated with the proposed concrete batch plant are consistent with this.
- Typically, in most times, noise emissions from standard-sized compounds would be relatively low. However, any use of heavy vehicles and reversing beepers at stockpile, laydown or maintenance facilities may impact nearby receivers, particularly during night-time operations.

Noise impacts may be expected during loading operations at larger compounds during night-time work.

The proposed concrete batch plant will operate during standard hours. Some short term heavy vehicle movements may be more audible than at other ancillary sites. However C16 is over 400m from those receivers predicted to have some exceedances due to the operation of ancillary sites in noise catchment area 2 (NCA 2) associated with the approved project. Overall, issues associated with the proposed concrete batch plant are consistent with this justification statement included in the EIS.

- Predictions of construction noise impact considered each construction stage running concurrent with all 21 ancillary facilities operating simultaneously. Predicted worst case construction noise levels from daytime activities would comply with Noise Management Levels (NMLs) for most receivers within the study area. However, predicted worst case construction noise levels from out-of-hours work would exceed night time NMLs at most receivers within the study area at some time, including noise as a result of construction activity within ancillary facilities.

The proposed concrete batch plant will operate during standard hours. Noise will likely be more audible than at other sites when the plant is operating. Overall, issues associated with the proposed concrete batch plant are consistent with this point.

- The need for a batching plant or pug mill would be considered and assessed further once a construction contractor commences. An Ancillary Facilities Management Plan outlining management practices and procedures for the establishment and operation of all ancillary facilities would be prepared to the satisfaction of the Secretary of the DPE and Minister for the Department of Environment and Energy.

An Ancillary Facilities Management Plan has been prepared for the C16 compound and will be provided for review, consistent with this point.

A noise assessment completed for the concrete batch plant construction and operation has been provided as Appendix C.

4. Consistency assessment – the Division 5.2 Approval

4.1 Minister's Conditions of Approval

The proposed change has been assessed in Table 4-1 in relation to the relevant conditions of approval.

Table 4-1: Consistency against relevant Minister's conditions of approval for the project

No.	Condition of Approval	Discussion	Consistent
A1	The CSSI must be carried out in accordance with the terms of this approval and generally in accordance with the description of the CSSI in the EIS as amended by the SPIR.	The proposed change described in Section 2.1 of this report can be carried out in accordance with the terms of this approval and is in accordance with the description of the CSSI in the EIS as amended by the SPIR.	Yes
A2	The CSSI must be carried out generally in accordance with all procedures, commitments, preventative actions, performance criteria and mitigation measures set out in the EIS as amended by the SPIR unless otherwise specified in, or required under, this approval.	The proposed changes can be undertaken in accordance with all procedures, commitments, preventative actions, performance criteria and mitigation measures set out in the EIS as amended by the SPIR. No new mitigation measures are required as a result of the proposed changes.	Yes
A15	Ancillary facilities that are not identified by description and location in the documents listed in Condition A1 must meet the following criteria, unless otherwise approved by the Secretary:	Ancillary facility C16 has been identified by description and location and generally in accordance with the description of the CSSI in the EIS as amended by the SPIR.	Yes
(a)	the facility is development of a type that would, if it were not for the purpose of the CSSI, otherwise be exempt or complying development; or	The proposed batch plant is within ancillary facility C16 which is for the purpose of the CSSI.	Yes
(b)	the facility is located as follows:	See below for location requirements	Yes
i	at least 50 metres from any waterway unless an erosion and sediment control plan is prepared and implemented so as not to adversely affect water quality in the waterway in accordance with Managing Urban Stormwater series;	The proposed batch plant is within the footprint of ancillary facility C16, which meets this criterion.	Yes
ii	within or adjacent to land upon which the CSSI is being carried out;	The proposed batch plant is within the footprint of ancillary facility C16 which meets this criteria	Yes
iii	with ready access to a road network	The proposed batch plant is within the footprint of ancillary facility C16 which meets this criteria	Yes

No.	Condition of Approval	Discussion	Consistent
iv	to prevent heavy vehicles travelling on local streets or through residential areas in order to access the facility, except as identified in the documents listed in Condition A1	The proposed batch plant is within the footprint of ancillary facility C16 which meets this criteria	Yes
v	so as to be in accordance with the Interim Construction Noise Guideline (DECC 2009) or as otherwise agreed in writing with affected landowners and occupiers	noise modelling completed for the proposed Batch Plant predicts that noise levels will be within the NMLs described for the site with the exception of 2594 The Northern Road, which is known to be impacted from heavy vehicle movements entering the C16 compound and the construction of TNR5. Alternative options for mitigation measures at this property will be explored with the property owners, or negotiated agreement will be reached.	Yes
vi	so as not to require vegetation clearing beyond the extent of clearing approved under other terms of this approval except as approved by the ER as minor clearing;	The proposed batch plant is within the footprint of ancillary facility C16 which meets this criteria. Vegetation clearance for the C16 site compound has been determined to be of no significant impact to CPW DNG.	Yes
vii	so as not to have any impact on heritage items (including areas of archaeological sensitivity) beyond the impacts identified, assessed and approved under other terms of this approval;	The proposed batch plant is within the footprint of ancillary facility C16 which meets this criteria	Yes
viii	so as not to unreasonably interfere with lawful uses of adjacent properties that are being carried out at the date upon which construction or establishment of the facility is to commence;	The proposed batch plant is within the footprint of ancillary facility C16 which meets this criteria	Yes
ix	to enable operation of the ancillary facility during flood events and to avoid or minimise, to the greatest extent practicable, adverse flood impacts on the surrounding environment and other properties and infrastructure; and	The proposed batch plant is within the footprint of ancillary facility C16 which meets this criteria. No additional flood impacts are proposed as a result of the Batch Plant.	Yes
x	so as to have sufficient area for the storage of raw materials to minimise, to the greatest extent practicable, the number of deliveries required outside standard construction hours.	The proposed batch plant is within the footprint of ancillary facility C16 which meets this criteria	Yes
A18	Boundary fencing must be erected around all ancillary facilities that are adjacent to sensitive receivers for the duration of Construction unless otherwise agreed with the affected receivers(s).	The proposed batch plant is within the footprint of ancillary facility C16 which is fenced and meets this criteria	Yes
A19	Boundary fencing required under Condition A18 of this approval must minimise visual, noise and air quality impacts on adjacent sensitive receivers.	The proposed batch plant is within the footprint of ancillary facility C16 which is fenced utilising compliant fencing.	Yes

No.	Condition of Approval	Discussion	Consistent
A31	Construction must not commence until the Pre-Construction Compliance Report has been submitted for information to the Secretary.	Submitted as part of the OACEMP, CPB prepared a further report and submitted to RMS on 13/03/19	Yes

The proposed change can be accommodated within the conditions of approval.

4.2 Statement of Commitments / environmental management measures

The proposed change has been assessed in Table 4-2 in relation to the relevant commitments / environmental management measures in the context of the Division 5.2 Approval.

Table 4-2: Consistency against relevant Statement of Commitments / environmental management measures

No.	Statement of Commitment / mitigation measure	Discussion	Consistent
T-1	<p>A Construction Traffic Management Plan (CTMP) would be developed, approved, implemented and monitored as part of the project. The TMP would:</p> <ul style="list-style-type: none"> ensure the use of local roads by heavy vehicles to access temporary ancillary facilities would be limited as far as is reasonably practicable. 	<p>Designated access and haulage routes for construction vehicles entering and exiting ancillary facility C16 to access the concrete batch plant will be along The Northern Road and surrounding arterial network. Designated haulage and access routes will be utilised as per the EIS and the Construction Traffic Management Plan.</p> <p>The following mitigation measures would be implemented as a minimum:</p> <ul style="list-style-type: none"> Implement Vehicle Movement Plans to detail the proposed route and ensure that the minimum amount of movements are utilised for each task Site access and traffic controls would be developed in accordance with the RMS D&C G10 and other Project documents Site access points and vehicle movements will be routed as far from sensitive receivers as practical. <p>Mitigation and management measures would be implemented in accordance with Appendix B1 - Construction Traffic Management Plan.</p>	Yes

No.	Statement of Commitment / mitigation measure	Discussion	Consistent
B-1	<p>Flora and Fauna Management Plan (FFMP) would be developed for the project. The plan would include procedures for pre-clearance surveys that are consistent with the Roads and Maritime Biodiversity Guidelines (RTA, 2011). The FFMP would outline:</p> <ul style="list-style-type: none"> • exclusion zones and fencing or other means to demarcate vegetation to be retained (endangered ecological communities) in close proximity to the works • clearing of vegetation and removal of bush rock (Guide 7) including implementation of the pre-clearing process (Guide 1) and the associated staged habitat removal process where hollow-bearing trees, habitat trees or bush rock is to be removed 	<p>The location of the concrete batch plant is proposed within the Project's approved ancillary facility C16 which contains a number of trees. These are spread out where the concrete batch plant will be located as well as where the storage area would be situated. The trees will be required to be removed to facilitate the plant. The trees have been nominated for removal for the establishment of the ancillary facility. As per the Flora and Fauna Assessment, there will be no significant impacts to CPW as a result of the clearance activities associated with the temporary heavy vehicle access road or the C16 Site Compound.</p> <p>Mitigation and management measures would be implemented in accordance with Appendix B2 – Construction Flora and Fauna Management Plan.</p>	Yes
B-6	<p>Native vegetation would be re-established in accordance with Guide 3: Re-establishment of native vegetation of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (NSW Roads and Traffic Authority Ref # Environmental management measure Responsibility Timing 2011).</p>	<p>At the completion of the Project stage, ancillary facility C16 will be decommissioned including the concrete batch plant and any disturbed land rehabilitated and landscaped to a minimum standard of its pre-construction condition. Any disturbed areas including material storage, access roads) will be restored to a condition similar to that existing before disturbance, unless authorised otherwise by Roads and Maritime.</p> <p>Mitigation and management measures would be implemented in accordance with Appendix B2 – Construction Flora and Fauna Management Plan.</p>	Yes
SWC-1	<p>A Soil and Water Management Plan (SWMP) would be developed in accordance with the Roads and Maritime specification G38 – Soil and Water Management and the Blue Book – Soils and Construction – Managing Urban Stormwater Volume 1 (Landcom, 2004) and Volume 2D (DEC, 2008a). The SWMP would include but not be limited to:</p> <ul style="list-style-type: none"> • an erosion and sedimentation control plan and maintenance schedule for ongoing maintenance of temporary erosion and sediment controls • an incident emergency spill plan which would include measures to avoid spillages of fuels, chemicals and fluids onto any surfaces or into any nearby waterways 	<p>The concrete batch plant located within ancillary facility C16 will be included in the site-specific erosion and sediment control plan for ongoing maintenance of temporary erosion and sediment controls. A site-specific incident management plan will also be prepared to include the concrete batch plant.</p> <p>Mitigation and management measures would be implemented in accordance with Appendix B4 – Construction Soil and Water Management Plan.</p>	Yes

No.	Statement of Commitment / mitigation measure	Discussion	Consistent
SWC-6	Erosion and sediment controls would be implemented before construction starts in accordance with Blue Book requirements:	<p>The concrete batch plant located within ancillary facility C16 will be included in the site-specific erosion and sediment control plan prior to when construction starts in accordance with the Blue Book requirements.</p> <p>Mitigation and management measures would be implemented in accordance with Appendix B4 – Construction Soil and Water Management Plan.</p>	Yes
SWC-12	There would be no stockpiling of soil or construction materials within utility easement corridors	<p>There will be no stockpiling of soil or construction materials within utility easement corridors for the concrete batch plant located within ancillary facility C16.</p> <p>Mitigation and management measures would be implemented in accordance with Appendix B4 – Construction Soil and Water Management Plan.</p>	Yes
NV-1	Construction Noise and Vibration Management Plan (CNVMP) would be prepared during the detailed design stage of the project and applied to all construction processes throughout the project. The CNVMP would be prepared in accordance with the requirements in the ICNG and RMS CNVG.	<p>Construction noise and vibration will be managed in accordance with the requirements in the ICNG and RMS CNVG for the concrete batch plant located within ancillary facility C16.</p> <p>Mitigation and management measures would be implemented in accordance with Appendix B3 – Construction Noise and Vibration Management Plan.</p>	Yes

No.	Statement of Commitment / mitigation measure	Discussion	Consistent
NV-2	<p>Viable mitigation measures that would be expected to be deployed by the construction contractor once the final construction sequencing and scheduling is known include:</p> <ul style="list-style-type: none"> • minimising the annoyance from reversing alarms by either fitting closed circuit monitors or non-tonal reversing alarms (“quackers”) on vehicles or deploying ‘spotters’ to oversee reversing movement • haulage routes will be located as far away as possible from residential receivers, where this is reasonable and feasible • static noise sources, such as generators, pumps and lighting towers, will be located as far as possible from sensitive receivers • loading and unloading will be carried out away from sensitive receivers, where practicable • ensure all deliveries occur during standard construction hours where reasonable and feasible 	<p>The operation of the concrete batch plant will deploy noise mitigation measures to include:</p> <ul style="list-style-type: none"> • either fitting closed circuit monitors or non-tonal reversing alarms (“quackers”) on vehicles or deploying ‘spotters’ to oversee reversing movement • haulage routes will be located as far away as possible from residential receivers, where this is reasonable and feasible • static noise sources, such as generators, pumps and lighting towers, will be located as far as possible from sensitive receivers • loading and unloading will be carried out away from sensitive receivers, where practicable • ensure all deliveries occur during standard construction hours where reasonable and feasible <p>Mitigation and management measures would be implemented in accordance with Appendix B3 – Construction Noise and Vibration Management Plan.</p>	Yes
AH-1	<p>A Construction Cultural Heritage Management Plan (CHMP) would be prepared prior to construction and implemented as part of the CEMP. The CHMP would include details on:</p> <ul style="list-style-type: none"> • the erection of any temporary fencing for the protection of heritage sites being partially impacted • unexpected finds procedures 	<p>Appendix B5 - Construction Cultural Heritage Management Plan has been prepared to manage potential heritage impacts, and will be updated to include the concrete batch plant as adhering to these requirements.</p>	Yes
NAH-1	<p>A Construction Cultural Heritage Management Plan would be prepared as part of the CEMP prior to construction in consultation with the NSW Heritage Division of OEH. As a minimum, the plan would include the following:</p> <ul style="list-style-type: none"> • a list, plan and GIS layer showing the location of identified heritage items • provide protocols and procedures to be enacted during construction to ensure the protection of items of heritage significance • an unexpected finds procedure in the event that further sites are identified during works 	<p>Appendix B5 - Construction Cultural Heritage Management Plan has been prepared to manage potential heritage impacts, and will be updated to include the concrete batch plant as adhering to these requirements.</p>	Yes

No.	Statement of Commitment / mitigation measure	Discussion	Consistent
SE-2	Areas affected by construction would be reinstated and restored in accordance with the urban design and landscape strategy	Decommissioning and rehabilitation of ancillary facility C16 including the concrete batch plant will be undertaken progressively where practical. Ancillary facility sites will be rehabilitated to at least their pre-construction condition, including stabilisation and re-vegetation as per the Urban Design and Landscape Management Plan in order to minimise exposure of surfaces. Mitigation and management measures would be implemented in accordance with the Urban Design and Landscape Plan (Appendix A4 Section 2.3.6 and Annexure C).	Yes
SE-7	Undertake property adjustments and relocation of infrastructure (for example, fencing, dams, property access) in consultation with the property owner	Approved Property Adjustment Plan Consultation with property owners for the establishment of ancillary facility C16 has been undertaken. The establishment of the concrete batch plant will have no impact on property adjustments. Mitigation and management measures would be implemented in accordance with the Community Communication Strategy and the Contractor's CEMP.	Yes
SE-9	On-going consultation with local business owners, including owners of agricultural businesses, located close to construction works about the timing, duration and likely impact of construction activities on their business operations would be carried out.	Approved Property Adjustment Plan Consultation with property owners for the establishment of ancillary facility C16 has been undertaken. The establishment of the concrete batch plant will have no impact on property adjustments. Mitigation and management measures would be implemented in accordance with the Community Communication Strategy and the Contractor's CEMP.	Yes

No.	Statement of Commitment / mitigation measure	Discussion	Consistent
AQ-2	<p>Dust and emissions generation at compounds would be managed by:</p> <ul style="list-style-type: none"> • impose low speeds limits around compound sites to limit the generation of dust from vehicle movements • apply wheel-wash or rumble grid facilities at access points to limit the tracking of materials beyond the site boundary • ensure that compound area surfaces are well compacted or sealed to limit the potential for dust generation • regularly water stockpiles and limit the amount of materials stockpiled around the site • position stockpiling areas as far as possible from surrounding receivers • consultation would be carried out consistent with the Community Consultation Framework in relation to air quality near ancillary sites and relevant incident management process during construction 	<p>To control the spread of potentially dust-generating materials off site, CPB will install appropriate controls at ancillary facility access points to limit the tracking of materials beyond the site boundary. Inspections of vehicle tracks will be undertaken during weekly environmental inspections throughout construction of the Project to monitor the effectiveness of environmental controls.</p> <p>Mitigation and management measures would be implemented in accordance with:</p> <ul style="list-style-type: none"> • Appendix B4 – Construction Soil and Water Management Plan • Appendix B6 – Construction Air Quality Management Plan • Community Communication Strategy. <p>As discussed in Section 3.0, additional dust controls will be implemented at the Batch Plant site. Air quality control measures are also included in the design of the batch plant to minimise dust.</p>	Yes

No.	Statement of Commitment / mitigation measure	Discussion	Consistent
AQ-3	<p>Dust generation and emissions from construction activities and materials haulage would be managed by</p> <ul style="list-style-type: none"> install depositional dust gauges to quantify dust levels and determine whether control measures are adequate or whether further actions are required these gauges should be installed at regular intervals along the project alignment at representative receiver locations. Gauges should also be installed around major construction compound and stockpiling locations 	<p>To control the spread of potentially dust-generating materials off site, CPB will install appropriate controls at ancillary facility access points to limit the tracking of materials beyond the site boundary. Inspections of vehicle tracks will be undertaken during weekly environmental inspections throughout construction of the Project to monitor the effectiveness of environmental controls.</p> <p>Mitigation and management measures would be implemented in accordance with Appendix B6 – Construction Air Quality Management Plan and Air Quality Construction Monitoring Program.</p>	Yes
WR-1	<p>The waste minimisation hierarchy principles of avoid/reduce/reuse/recycle/dispose would be used</p>	<p>Appendix B7 - Construction Waste and Energy Management Plan has been prepared to manage waste impacts, and will be updated to include the concrete batch plant as adhering to these requirements.</p>	Yes

No.	Statement of Commitment / mitigation measure	Discussion	Consistent
WR-2	<p>A project-specific Construction Waste and Energy Management sub-plan (CWEMP) would be prepared before construction. The plan would adopt the Resources Management Hierarchy principles of the WARR Act and include:</p> <ul style="list-style-type: none"> • re-use and recycling practices to be implemented • measures to be applied where waste is required to be handled and stored onsite prior to onsite reuse or offsite recycling/disposal • specific measures to manage vegetation waste • procedures for the identification, handling and disposal of hazardous materials including potential asbestos waste 	Appendix B7 - Construction Waste and Energy Management Plan has been prepared to manage waste impacts, and will be updated to include the concrete batch plant as adhering to these requirements.	Yes
WR-3	All wastes, including contaminated wastes, would be identified and classified in accordance with the Waste Classification Guidelines: Part 1 Classifying Waste	Appendix B7 - Construction Waste and Energy Management Plan has been prepared to manage waste impacts, and will be updated to include the concrete batch plant as adhering to these requirements.	Yes
WR-4	Disposal of any non-recyclable waste would be in accordance with the POEO Act and Waste Classification Guidelines: Part 1 Classifying Waste	Appendix B7 - Construction Waste and Energy Management Plan has been prepared to manage waste impacts, and will be updated to include the concrete batch plant as adhering to these requirements.	Yes
UD-2	The design of temporary lighting must avoid unnecessary light spill on adjacent residents or sensitive receivers and be designed in accordance with AS 1158.1-1986.	Any lighting that may be required for the concrete batching plant will be designed in accordance with AS 1158.1-1986. This would be addressed in the specific Ancillary Facilities Management Plan.	Yes
UD-3	Consider the provision of barriers to screen views from visually sensitive nearby areas such as rural dwellings, residential and recreational areas	<p>The footprint of ancillary facility C16 including the concrete batch plant will include boundary fencing in accordance with NSW CoA A18.</p> <p>This would be addressed in the Ancillary Facilities Management Plan.</p>	Yes
UD-4	Contain construction activities within the construction works zone boundary and occupy the minimum area practicable for limiting impacts on adjoining areas, including the extent of native vegetation clearing	<p>The establishment of the concrete batch plant is located within the construction work zone of ancillary facility C16 and will not have further impacts.</p> <p>Mitigation and management measures would be implemented in accordance with the Contractor's CEMP.</p>	Yes

No.	Statement of Commitment / mitigation measure	Discussion	Consistent
HR-2	Storage of dangerous goods and hazardous materials would occur in accordance with suppliers' instructions and relevant Australian Standards and may include bulk storage tanks, chemical storage cabinets / containers or impervious bunds	Appendix B4 – Construction Soil and Water Management Plan has been prepared to manage any storage, handling and use of dangerous goods, and will be updated to include the concrete batch plant as adhering to these requirements. This would also be addressed in the project's Work, Health and Safety plans.	Yes
HR-3	Storage, handling and use of dangerous goods and hazardous substances would be in accordance with the <i>Work Health and Safety Act 2011</i> and the Storage and Handling of Dangerous Goods Code of Practice (WorkCover NSW, 2005).	Appendix B4 – Construction Soil and Water Management Plan has been prepared to manage any storage, handling and use of dangerous goods, and will be updated to include the concrete batch plant as adhering to these requirements. This would also be addressed in the project's Work, Health and Safety plans.	Yes
HR-4	Secure, bunded areas would be provided around storage areas for oils, fuels and other hazardous liquids	Appendix B4 – Construction Soil and Water Management Plan has been prepared to manage any storage, handling and use of dangerous goods, and will be updated to include the concrete batch plant as adhering to these requirements This would also be addressed in the project's Work, Health and Safety plans.	Yes

The proposed change is consistent with the revised environmental management measures incorporated as part of the Division 5.2 Approval.

4.3 Project objectives

The principal objectives of the Western Sydney Infrastructure Plan are detailed within Section 3.4 of the EIS/Draft EIS, were not altered for the SPIR/Final EIS, and include:

- Development and demand – support the Western Sydney Airport, land use change and residential growth; balancing functional, social, environmental and value for money considerations
- Connectivity to airport – provide a resilient connection to the Western Sydney Airport site for freight and people
- Integrated network – provide road improvements to support and integrate with the broader transport network
- Customer focus – provide meaningful engagement with customers and stakeholders throughout the program life.

The project specific objectives are outlined within Section 3.4 of the EIS and include:

- Realignment of The Northern Road around the Western Sydney Airport site to allow construction and facilitation of a Western Sydney Airport at Badgerys Creek

- Cater for future traffic demand to improve the flow of traffic to provide reliable journeys
- Improve transport connections to the Western Sydney Airport site and surrounding developments including the SWPGA (previously known as the South West Growth Centre) and WSPGA (previously known as the Broader Western Sydney Employment Area)
- Improve facilities for public and active transport to promote sustainable and efficient journeys.

The proposed change supports the project objectives. As such the proposed change is consistent with the program and project objectives.

4.4 Consistency questions – the Division 5.2 Approval

Table 4-3 presents a set of questions that assist Roads and Maritime to determine whether the proposed change can be considered consistent with the Division 5.2 Approval.

Table 4-3: Division 5.2 Approval consistency questions

Consistency question	Discussion	Consistent
1 Is the proposed change likely to result in changes to the scope and impacts of the project to an extent that would be considered a radical transformation of the project as a whole, as to be, in reality, an entirely new project?	No. The proposed change detailed in Section 2.1. of this report would not result in a significant change to the project as a whole. The impacts associated with the proposed changes would be managed in accordance with the management measures proposed in the SPIR.	Yes
2 Would any conditions of approval need to be amended in light of the change?	No. The proposed changes would not impact on the ability to comply with any of the conditions of approval. A review of the proposed changes against the conditions of approval is provided in Section 5.1.	Yes
3 Would the statement of commitments or environmental management measures need to change?	No. The proposed changes would not impact on the ability to comply with any of environmental management measures identified in the SPIR. A review of the proposed changes against the environmental management measures provided in Section 4.2.	Yes
4 Would the proposed change be 'generally in accordance with' the documents incorporated in Standard Condition A1 (or A2)?	Yes. As described in Table 4.1, the proposed change is considered generally in accordance with the documents incorporated in Condition A1	Yes

Consistency question	Discussion	Consistent
5 Would the environmental impacts of the project as a whole be altered by the proposed change to the extent that the proposed change would not be consistent with the Approval?	<p>No.</p> <p>The environmental assessment detailed in Chapter 4 has found that the impacts are consistent with those impacts identified in the SPIR. In addition, the impacts have been found to be negligible or minor in comparison to the impacts identified in the EIS/SPIR. These impacts can therefore be managed through safeguards identified in the SPIR.</p>	Yes
6 Considering the project as a whole, would the magnitude of the change be viewed as consistent with the project?	<p>Yes.</p> <p>The magnitude of the proposed change is negligible in comparison to the project as a whole. The proposed changes are consistent with the program and project objectives detailed in Section 4.3.</p>	Yes

5. Consistency assessment – EPBC Approval

5.1 Commonwealth Minister's Conditions of Approval

Table 5-1 below addresses those conditions of approval relevant to the proposed change in the context of the Commonwealth Approved Project.

Table 5-1: Consistency against relevant Commonwealth Minister's conditions of approval for the project

No.	Condition of Approval	Discussion	Consistent
1	The approval holder must undertake the action, including but not limited to those parts of the action that occur on Commonwealth Land, in accordance with all conditions in the NSW Infrastructure Approval .	The proposed change is consistent with the conditions in the NSW Development Consent as assessed in Section 4.1 of this report.	Yes

The proposed change can be accommodated within the EPBC conditions of approval.

5.2 EPBC Approval consistency questions

Table 5-2 presents a set of questions that assist Roads and Maritime to determine whether the proposed change can be considered consistent with an EPBC Approval.

Table 5-2: EPBC Approval consistency questions

Consistency question	Discussion	Consistent
1 Would any conditions of the EPBC Approval need to be varied in light of the change?	No. Conditions relevant to the proposed change are identified in Section 5.1. None of these conditions would need to be varied as a result of the proposed change.	Yes
2 Would an approved action management plan required by a condition of approval need to be varied as a result of the proposed change?	No. There is no approved action management plan required by the EPBC Approval	Yes
3 Would the proposed change constitute a 'new project' under the EPBC Act?	No. Chapter 3 of this report identifies the likely impacts associated with the proposed change. The proposed change would not impact on matters of national environmental significance or commonwealth land.	Yes

6. Conclusion

Based on the consistency assessment in this report, the proposed change is

- ☒ Consistent with the Division 5.2 Approval
- ☐ ~~Not consistent with the Division 5.2 Approval. A modification to the project approval must be prepared and submitted for approval by the Minister.~~
- ☒ Consistent with the EPBC Approval
- ☐ ~~Not consistent with the EPBC Approval. A written request to vary the condition/s of approval / approved action management plan must be prepared and submitted for approval by the Minister for the Environment / A new EPBC referral is required.~~
- ☐ ~~A radical transformation of the project and as such a new project should be developed with new and separate planning approvals obtained as necessary.~~

7. Certification

Author

This consistency assessment provides a true and fair review of the proposed change for The Northern Road Upgrade Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park project.

Name	Ciaran McAleer	Signature	McAleer, Ciaran
Position	Environmental Manager	Date	23/05/2019
Organisation	CPB Contractors		

Environmental Representative [ER review may be required by the conditions of approval or otherwise may be relevant. Delete if not required]



I have reviewed the information contained within this consistency assessment and based on the information provided I agree that the proposed change is/is not consistent with the Division 5.2 Approval and EPBC Approval.

Name	<i>Cameron Weller</i>	Signature	<i>Cameron Weller</i>
Position	<i>Environmental Representative</i>	Date	<i>24/5/2019</i>

Roads and Maritime

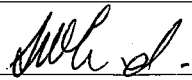
The proposed change, subject to the implementation of all the environmental requirements of the project, is consistent with the Division 5.2 Approval.


The proposed change, subject to the implementation of all the environmental requirements of the project, is consistent with the EPBC Approval.

Name	Owen Clark	Name	Mahendran Kandiah
Signature		Signature	
Position	Roads and Maritime Senior Environment Officer	Position	Roads and Maritime Project Manager
Date	24/05/19	Date	24/05/19

I have examined the proposed changes by reference to the Division 5.2 Approval in accordance with Section 5.25(2) of the EP&A Act and I have examined the proposed changes by reference to the EPBC Approval. I consider that the proposal is consistent / ~~is not consistent~~ with the Division 5.2 Approval and EPBC Approval.

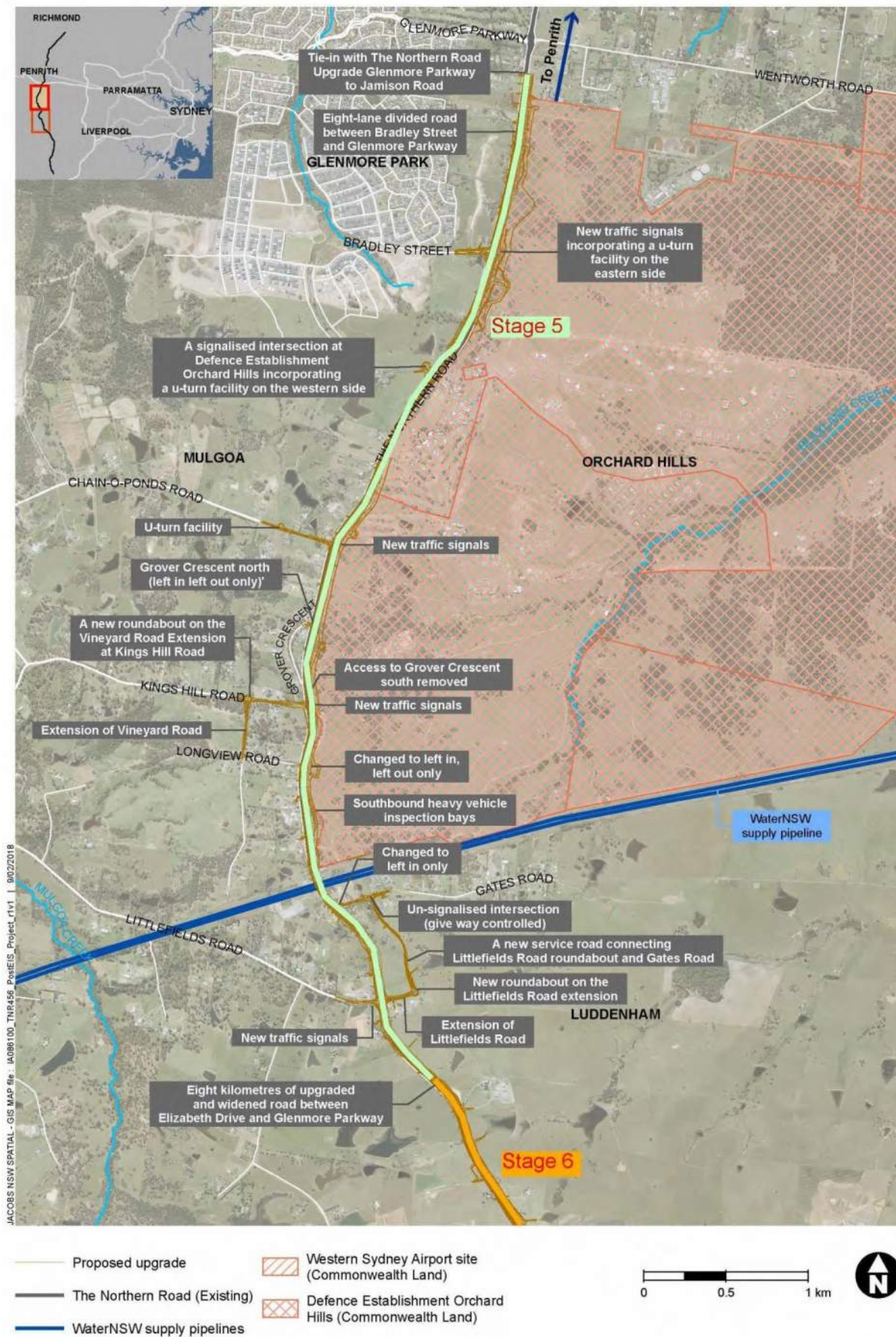
I agree / ~~do not agree~~ with the recommendations of the Roads and Maritime Senior Environment Officer and approve / ~~do not approve~~ of the carrying out the proposed change in accordance with those recommendations.

Name	Anthony Eland
Signature	
Position	Roads and Maritime Environment Manager Western Sydney Project Office
Date	24/5/19.

Name	Peter Williams
Signature	
Position	Roads and Maritime Director Western Sydney Project Office
Date	24/5/19.

Appendix A

The Northern Road Upgrade Stage 5 and 6 Ancillary Facility C16 location context



Source: Figure 2-1: Indicative extent of Project (northern section – Stages 5 and 6)
The Northern Road Upgrade – Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park - Staging Report (August 2018 Version 1)

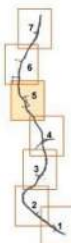


Legend

- EIS construction footprint
- Refined design construction footprint
- Construction compound sites
- Defence Establishment Orchard Hills (Commonwealth Land)
- Additional areas of construction footprint due to design refinements

JACOBS NSW SPATIAL - GIS MAP No: 1406702_TNR456_PosEISConstruction_EISConstFootprint | 18/10/2017 | DRAWN BY: AA

0 250 500 m
A3
1:7,500



The Northern Road upgrade -
Mersey Road to Glenmore Parkway
**Construction Boundary and
Compound Sites**

Figure 4-2 | Comparison of EIS and refined design construction footprints

JACOBS

NSW Spatial | ANZ Infrastructure and Environment | www.jacobs.com

Page 5 of 7

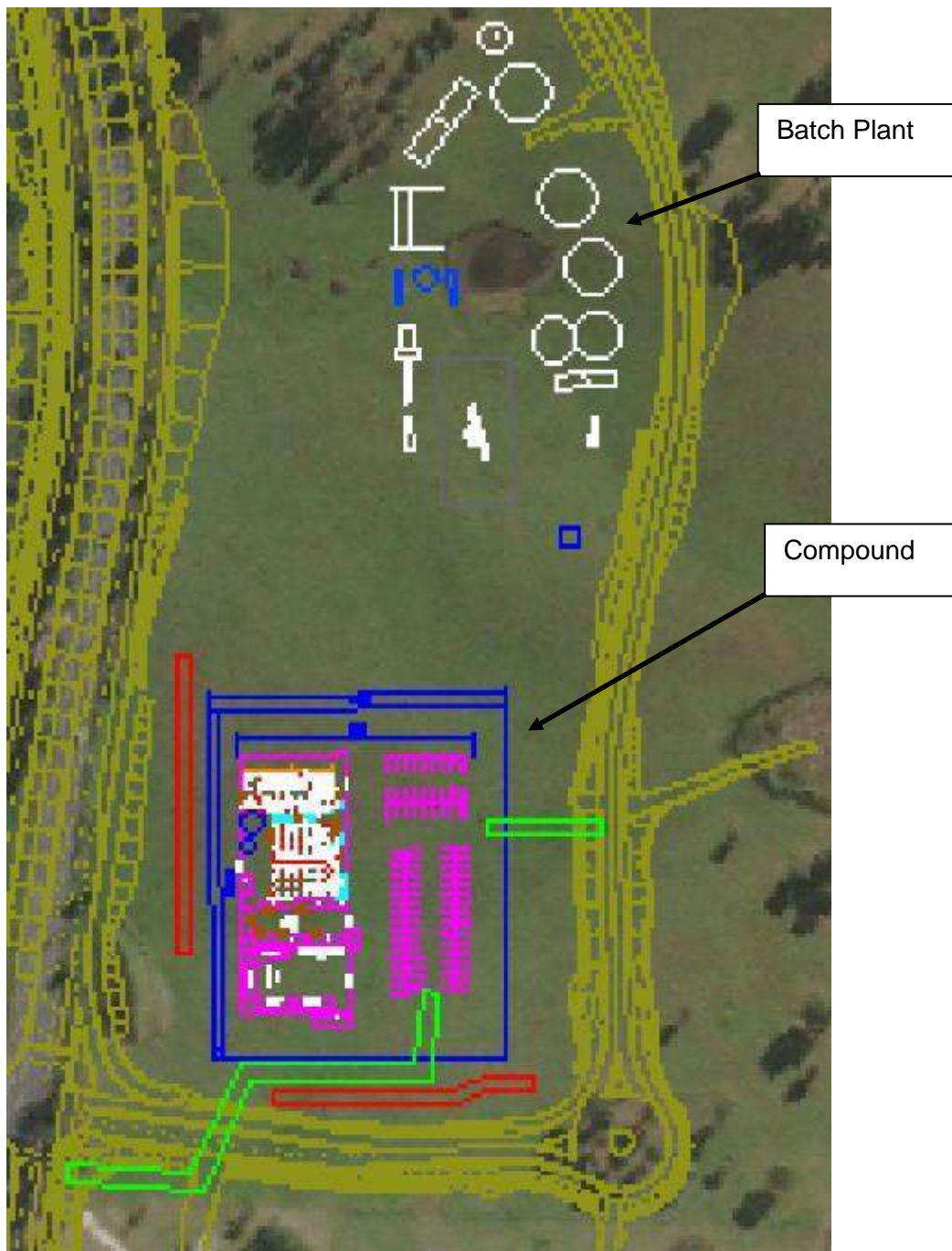
Source: Figure 4-2: Comparison of EIS and refined design construction footprints
The Northern Road Upgrade – Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park – Final Environmental Impact Statement (December 2017)

Appendix B

C16 site office and proposed batch plant layout

Appendix B

C16 site office and proposed batch plant layout



Appendix C

Noise Assessment (Jacobs)



The Northern Road Upgrade - Littlefields Road and Glenmore Parkway

CPB Contractors

Construction noise impact statement for
concrete batch plant at Compound 16

FINAL Draft | v0

18 March 2019



The Northern Road Upgrade - Littlefields Road and Glenmore Parkway

Project no:

Document title: Construction noise impact statement for concrete batch plant at C16

Document No.: FINAL Draft

Revision: V0

Date: 18 March 2019

Client name: CPB Contractors

Project manager: Ben Ison

Author: Ben Ison, Luke Spencer

File name: J:\IE\Admin\03_Southern\Acoustics\04_Projects\01_Eastern\2019\2019-03-13 - TNR5 Construction\9_Reporting\TNR_C16 Batch Plant_Noise Assessment_Final Draft.docx

Jacobs Australia Pty Limited

710 Hunter Street
Newcastle West NSW 2302 Australia
PO Box 2147 Dangar NSW 2309 Australia
T +61 2 4979 2600
F +61 2 4979 2666
www.jacobs.com

© Copyright 2015 Jacobs Australia Pty Limited. The concepts and information contained in this document are the property of Jacobs. Use or copying of this document in whole or in part without the written permission of Jacobs constitutes an infringement of copyright.

Limitation: This report has been prepared on behalf of, and for the exclusive use of Jacobs' Client, and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the Client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

Document history and status

Revision	Date	Description	By	Review	Approved
Draft A	15/03/2019	Practice review	B Ison	L Spencer	L Spencer
Final 0	18/03/2019	Final	B Ison	L Spencer	L Spencer

Contents

1.	Introduction.....	3
1.1	Purpose of this assessment	3
2.	Background.....	4
2.1	Summary of EIS.....	4
2.2	Description of proposed change	5
2.3	Need for the change.....	5
3.	Existing environment.....	7
3.1	Sensitive receivers	7
3.2	Background noise levels	7
4.	Project noise criteria.....	9
5.	Noise assessment.....	10
5.1	Modelling methodology	10
5.2	Noise emissions inventory.....	10
5.3	Predicted results	12
5.4	Barrier assessment	13
5.5	Cumulative noise assessment.....	14
5.6	Traffic considerations	14
6.	Other mitigation options.....	15
7.	Conclusion	16

1. Introduction

Roads and Maritime Services (Roads and Maritime) completed an Environmental Impact Statement for The Northern Road Upgrade – Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park (the EIS) in December 2017. The EIS identified a range of noise issues associated with the construction and operation of The Northern Road Upgrade – Mersey Road Bringelly to Glenmore Parkway, Glenmore Park (the project) and proposed measures to mitigate and manage potential impacts.

CPB Contractors will construct Stage 5 of the project. Stage 5 is the section between Littlefields Road, Luddenham and Glenmore Parkway, Glenmore Park.

CPB Contractors are proposing to establish and operate a concrete batching plant within the approved ancillary facility location C16. The proposed concrete batch plant will be situated to the north of the site offices (see Appendix B) and contained entirely within the approved area for ancillary facility C16.

1.1 Purpose of this assessment

The original EIS for the project did not include assessment of a concrete batching plant at this location and this report has been prepared to assess potential noise and vibration impacts as a result of this change. The aims of this assessment were to:

- Describe the original predicted noise impacts associated with construction activities in this area (Section 2)
- Describe the proposed change, including any aspects particularly relevant to noise and vibration (Section 2)
- Characterise key features of the surrounding environment including nearby sensitive receivers and existing background noise conditions (Section 3)
- Confirm criteria for review of potential impacts (Section 4)
- Assess the potential for noise and vibration impacts as well as evaluating potential cumulative considerations (Section 5.5)
- Consider noise mitigation options for reducing any predicted impacts (Section 5.4)
- Evaluate existing mitigation and management measures detailed in the CNVMP remain adequate (Section 6)

Owing to the separation distance between the nearest receiver locations from the C16 compound site, vibration is not expected to be an issue and has not been considered further in this assessment.

This assessment has been prepared in close reference to the EIS for the project and should be read in conjunction with this document.

2. Background

2.1 Summary of EIS

The EIS assessed construction noise cumulatively, including all ancillary sites, however excluding road construction noise. The sound power level (SWL) adopted for each item of plant and equipment in the modelling of construction noise from C16 in the EIS is indicated in Table 2 1.

Table 2 1: EIS modelled noise sources

Equipment	Sound Power Level db(A)
Front End Loader	112
Excavator	109
Road Truck	108
Compressor	109
Welding equipment	105
Light vehicles	88
Generator	101

The area surrounding C16 is described in the EIS as Noise Catchment Area (NCA) 2 (refer Figure 2.1). This catchment includes semi-rural properties located between Bradley Street, Glenmore Park and Elizabeth Drive, Luddenham.

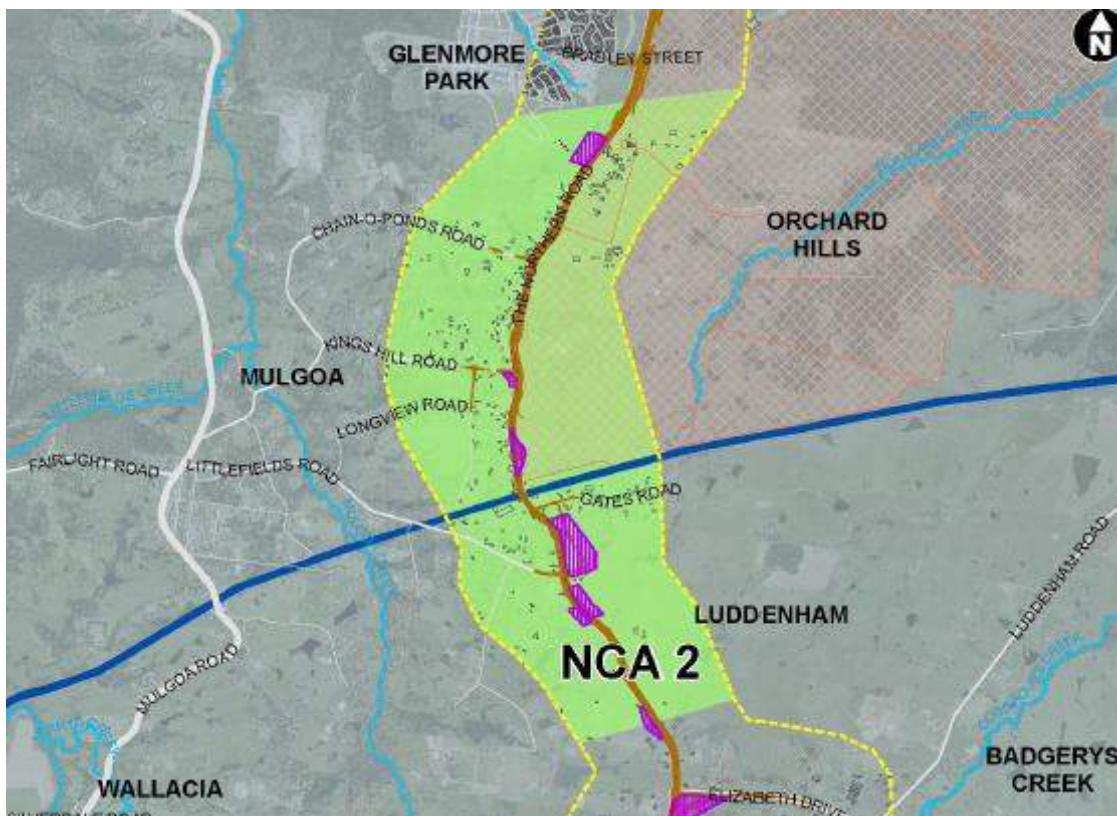


Figure 2.1: Noise catchment area (as described in the EIS)

The modelling of cumulative noise impacts showed that out of one hundred and thirty seven (137) receivers located in the vicinity of NCA 2, nine (9) residences were predicted to exceed the defined NML by between 0-10 dB(A). However, owing to the structure of the assessment it wasn't possible to tell if these exceedances are from activities at C16 or other nearby compounds.

The EIS stated that noise levels predicted from the operation of ancillary facilities would require acoustic hoarding to be applied to their entire perimeter to minimise noise impacts. These noise predictions presented in the EIS included the acoustic benefit of such hoarding; but indicated that exceedances of the NML would still occur at some receivers.

2.2 Description of proposed change

Temporary ancillary facility C16 is approximately 11 hectares in size and is located along The Northern Road at Littlefields Road, Mulgoa (see **Appendix A**). The facility was approved through the EIS process for:

- Offices and vehicle parking for personnel working on the project
- Storage of concrete pits, pipes and culverts
- Stockpiling topsoil, mulch and drainage backfill materials

CPB Contractors are proposing to establish and operate a concrete batching plant within the approved ancillary facility location C16. The proposed concrete batch plant will be situated to the north of the site offices (refer Figure 2.2) and contained entirely within the approved area for ancillary facility C16. The concrete batch plant will have a maximum footprint of about 200m x 100m. This includes contained stockpiles for aggregate and a small silo for cement storage.

No additional access will be required from public roads. Access to the concrete batch plant will be via the approved C16 access directly off The Northern Road. This access road will be available for construction purposes only and not accessible to the general public.

Average truck movements per shift (i.e. 7am to 6pm Monday to Friday and 8am to 1pm Saturdays) will be approximately 50 truck movements. This may increase to approximately 80 truck movements for a short period of time (i.e. two weeks) to fulfil specific construction timelines. The plant will operate intermittently over the duration of the project, but not continuously.

Operation of the batching plant will be consistent with the approved construction hours (i.e. 7am to 6pm Monday to Friday and 8am to 1pm Saturday. No construction on Sunday's or Public Holidays). Any Out of Hours activities that may need to be undertaken at the batch plant will be subject to the approval processes specified in the EIS.

2.3 Need for the change

The establishment of the proposed concrete batch plant located at ancillary site C16 is required to ensure there is sufficient RMS specification conforming concrete delivered to the TNR5 project. Advice provided to CPB Contractors by the concrete industry suppliers confirmed that the supply of conforming concrete from established concrete plants in Western Sydney was not guaranteed, due to the extensive haulage distance and delivery time constraints associated with product quality.

As the concrete works are critical to successful construction of the project, having the plant located in close proximity maximises the rate of supply to the paver, and reduces risk of supply interruptions and product quality.

A review of all approved ancillary sites found that C16 is the largest and most suitably located ancillary facility to establish the concrete batching plant.

Figure 2.2 shows the indicative location for the concrete batch plant.



Figure 2.2: Indicative location for concrete batch plant at C16

Construction operations at the main compound site presently occur during standard hours of construction (i.e. 7am to 6pm Monday to Friday; 8am to 1pm Saturdays; and no work Sundays or public holidays). No changes to these hours are intended as part of this modification.

3. Existing environment

3.1 Sensitive receivers

Operation of the concrete batch has the potential to affect noise levels at a small number of residential receivers around the compound site. The area surrounding compound C16 includes semi-rural properties, primarily located along Gates Road (north), Littlefields Road (west) and Queenshill Road (west). Isolated properties are spread out along The Northern Road. Background noise in this area is determined by traffic on The Northern Rd. These receivers are displayed in Figure 3.1.

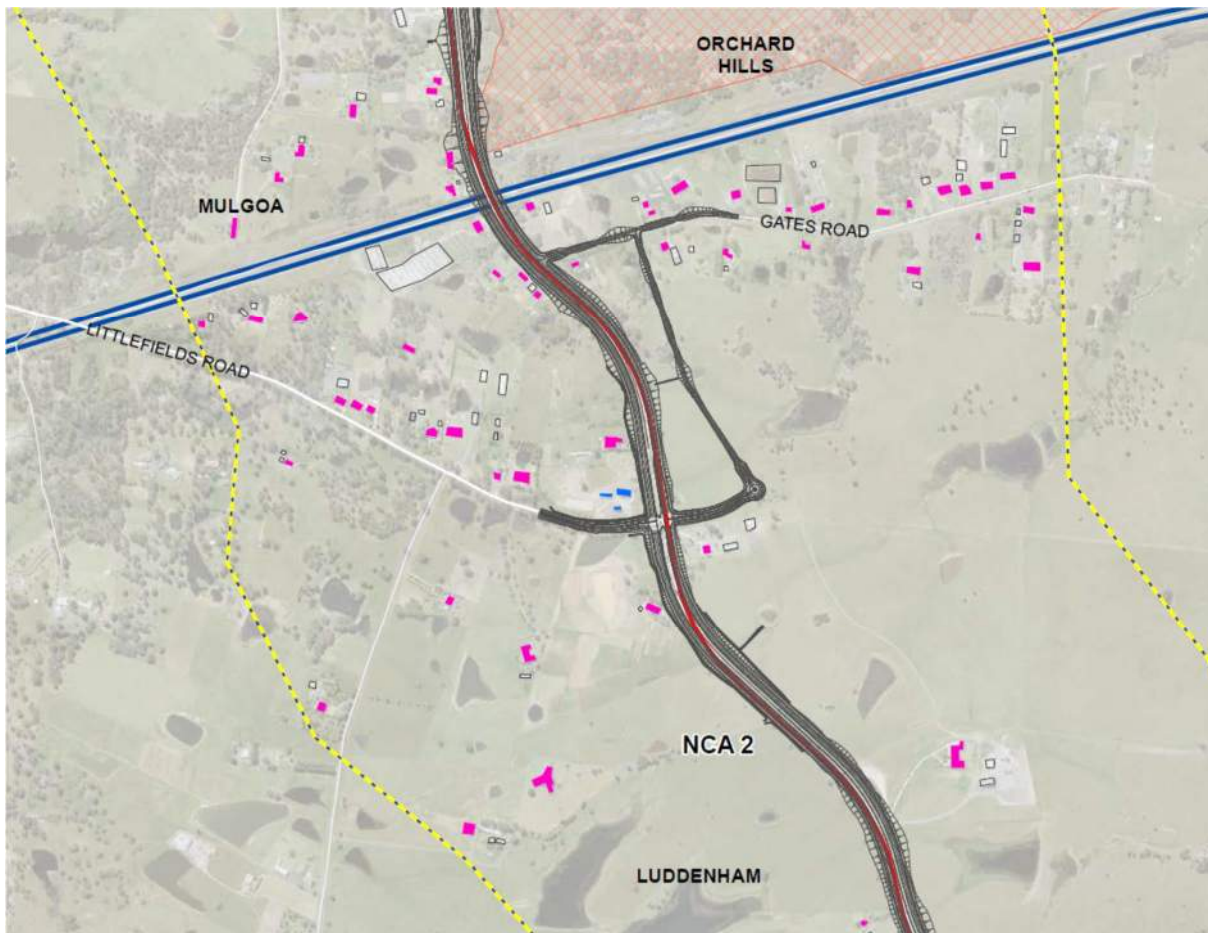


Figure 3.1: Noise sensitive receivers in the vicinity of C16

3.2 Background noise levels

As part of the EIS, Long-term, unattended noise surveys were undertaken along the study corridor to determine the existing level of background noise at all receivers potentially affected by the project.

Monitoring sites were selected according to the noise sources affecting the site (eg, traffic and/or other ambient sources), land access permission and equipment security.

Noise monitoring location N11 was located at 1 Grover Crescent Mulgoa and has been used in the EIS for the determination of background noise levels in NCA 2. The results of noise monitoring at this site are presented in Table 3 1:

Table 3 1: Summary of noise monitoring results from location N11

Location	Address	Monitored noise level dB(A)			Typical L _{Amax} noise levels from environmental noise sources dB(A)
		RBL	L _{Aeq}	L _{Amax}	
Daytime					
N11	1 Grover Crescent Mulgoa	47	55	69	Frequent heavy vehicles (55 - 60) Common light vehicles (50)
Evening					
N11	1 Grover Crescent Mulgoa	43	55	65	Frequent heavy vehicles (60 - 70) Occasional light vehicles (50 - 55) Infrequent residential noise (70)
Night time					
N11	1 Grover Crescent Mulgoa	36	50	61	Infrequent heavy vehicles (55 - 60)

4. Project noise criteria

A full description of construction noise and vibration legislation relevant to this project, and how noise objectives have been developed from the background noise levels monitored is presented the EIS. Noise objectives applicable to the receivers identified in Section 3.1 are listed for each time of day below in Table 4-1.

Table 4-1 Project-specific construction noise objectives

NCA	Standard hours 7am – 6pm Mon- Fri 8am – 1pm Sat		Extended hours 6am – 7am Mon- Fri 7am – 8am Sat		Extended hours 6pm – 7pm Mon- Fri 1pm – 4pm Sat		Night time (outside other hours)		Sleep disturbance (10pm to 6am)	
	RBL dB(A)	Noise objective $L_{Aeq}(15 \text{ min})$	RBL dB(A)	Noise objective $L_{Aeq}(15 \text{ min})$	RBL dB(A)	Noise objective $L_{Aeq}(15 \text{ min})$	RBL dB(A)	Noise objective $L_{Aeq}(15 \text{ min})$	RBL dB(A)	Noise objective $L_{A1}(1 \text{ min})$
NCA2	47	57	48	53	43	48	36	41	36	51

5. Noise assessment

5.1 Modelling methodology

Noise modelling was undertaken to evaluate the potential for noise impacts associated with the proposed change. This was undertaken by updating the TNR noise site model previously developed using the SoundPlan 8.0 acoustic software package. **Table 5-1** below summarises all aspects incorporated into the model:

Table 5-1 Key modelling features

Parameter	Notes
Facades	Standard +2.5dB(A) correction applied to account for façade reflection
Buildings	Footprints taken from aerial photography Heights determined from site inspections and Google Streetview.
Terrain	The TNR terrain data was derived from NSW Land Property Information (LPI) 1m resolution bare earth Digital Elevation Model (DEM). The DEM was produced from a standard LiDAR survey conducted by LPI. <i>Reference: NSW Land Property Information (LPI) LiDAR Product Specifications, Version 3.0, March 2013.</i>
Ground surface / absorption	Open grass areas: 75% ground factor
Source heights	The concrete batch plant has been modelled as constructed. Other equipment source heights have been assumed at 2m.
Receiver heights	Ground floor receivers have been modelled at a height above ground of 1.5m
Stockpile heights	5m (large) 4m (medium) 3m (small)

Impacts were predicted using the CONCAWE algorithm, as has been previously applied on the project.

5.2 Noise emissions inventory

With guidance from CPB Contractors, an inventory of plant and equipment expected to be used at C16 was developed. Overall sound power levels (SWLs) were predicted for the site operation with reference to the values presented in the NSW Roads and Maritime Services' *Construction Noise Estimator* (CNE) and other publicly available databases.

Usage factors were applied to plant and equipment which was only expected to be used for small portion of the time, during any 15-minute period.

Noise from other plant, equipment and vehicles typically in-use at the site was also considered, however construction activities at other compound sites and the road corridor were excluded. **Table 5-2** summarises the noise sources in-use during a typical 15-minute period at the site under the intended modified operations:

Table 5-2 Noise emissions inventory for proposed modifications at C16

Plant and equipment	Sound Power Level dB(A)
Concrete batch plant	
Conveyors	60 / m ²
Cement loading point	90
Mixing drum	79 / m ²
Aggregate drum	73 / m ²
Conveyor motor (x2)	95
Aggregate loading point	106
Aggregate loading (conveyor)	95
Other sources	
Concrete trucks (x5)	109
Delivery trucks	108
45T excavator	112
Front end loader	113
Light vehicles (x3)	103

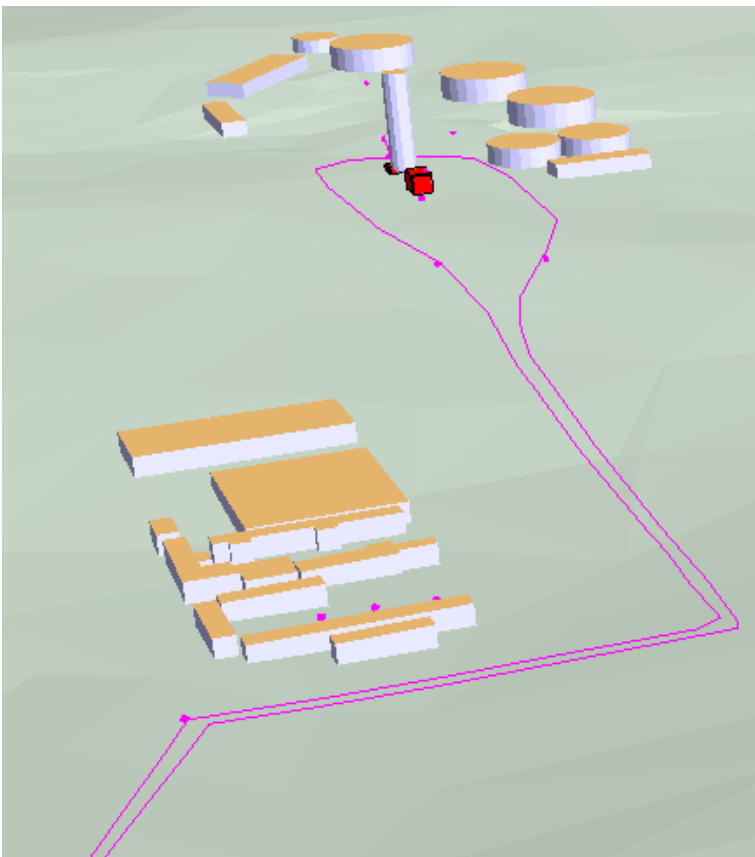


Figure 5.1: View of 3D model (from south, looking over site sheds towards batch plant)

5.3 Predicted results

Figure 5.2 displays unmitigated noise contours (ie with no 2.4m noise barrier around the compound perimeter) from the modified operations at the main compound site. The outer contour value displayed represents the daytime NML [ie 57dB(A) $L_{Aeq}(15 \text{ min})$]. This shows that compliance with the daytime NML is expected at all properties, with the exception of the residential premises located at 2594 The Northern Road. Operational noise levels at this property are predicted to be in the order of 64dB(A), that is 7dB above the NML for the project.

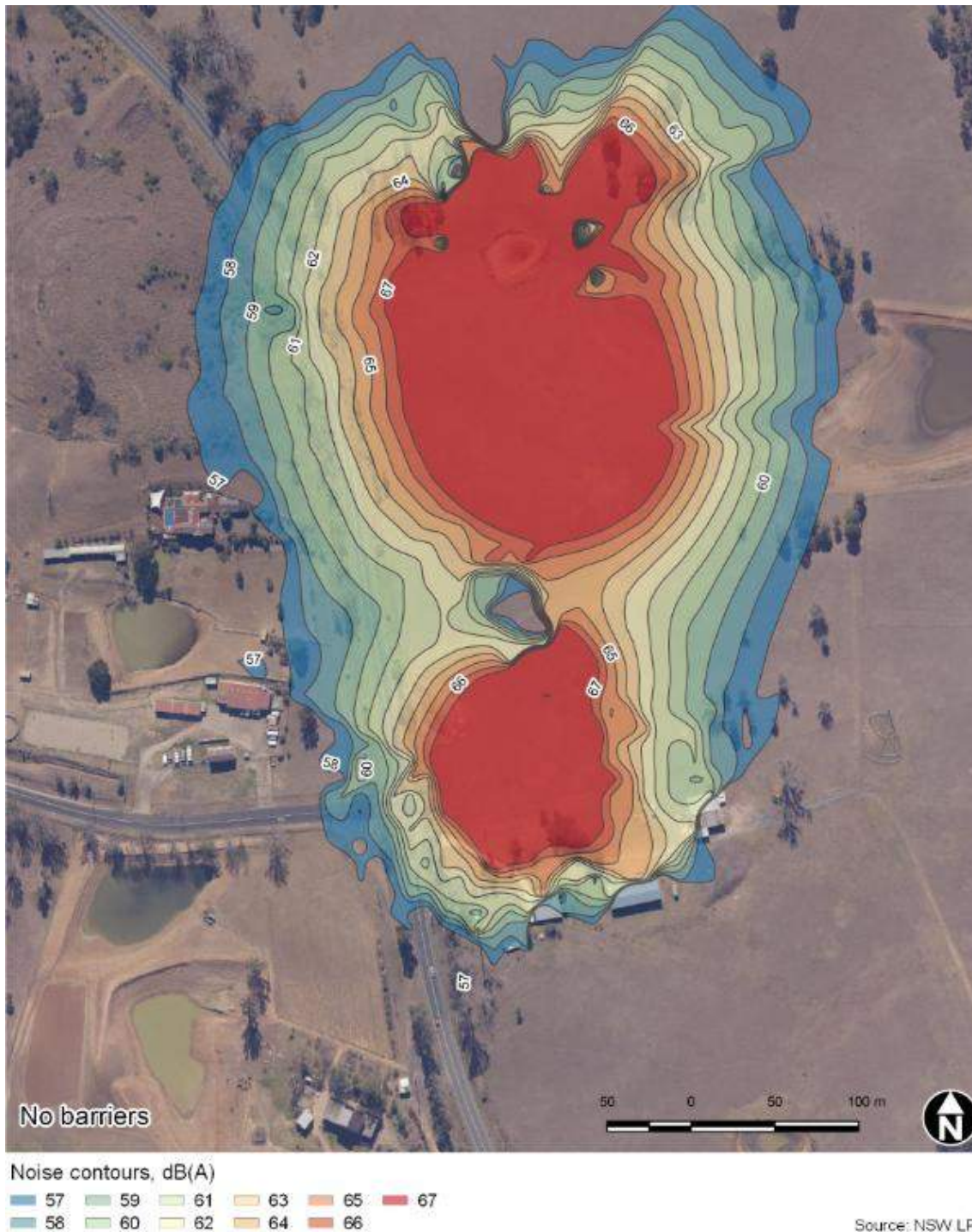


Figure 5.2: Predicted noise contours for C16 (unmitigated) LAeq (15 min)

5.4 Barrier assessment

As outlined above in Section 2.1, The noise assessment completed in the TNR EIS assumed a 2.4m noise barrier around each ancillary compound. **Figure 5.2** shows that an acoustic barrier installed along the perimeter of the site is not necessary in order to comply with site construction NMLs at most properties.

A study was carried out to determine the optimal height and extent of a noise barrier along the southern site boundary, shielding the direction to the residential premises located at 2594 The Northern Road where the exceedance was predicted. In accordance with RMS Construction Noise and Vibration Guidelines, sheds to the east of the living quarters have not been considered.

Unmitigated noise levels from the operation of the batch plant are likely to comply with project NMLs at these southern properties. However, noise impacts at the receivers at 2594 The Northern Road will occur as a result of truck movements at the southern site access gate and in the vicinity of the site sheds.

With a noise barrier of 5m running from The Northern Road entrance along the southern boundary, heavy vehicles entering the site from The Northern Road remain largely unscreened and have been found to generate noise in excess of project NMLs. However, such a barrier would provide a reduction in noise of approximately 5dB(A) for the nearest property and as such may still be considered as a means of noise reduction. Noise contours including this barrier are presented in

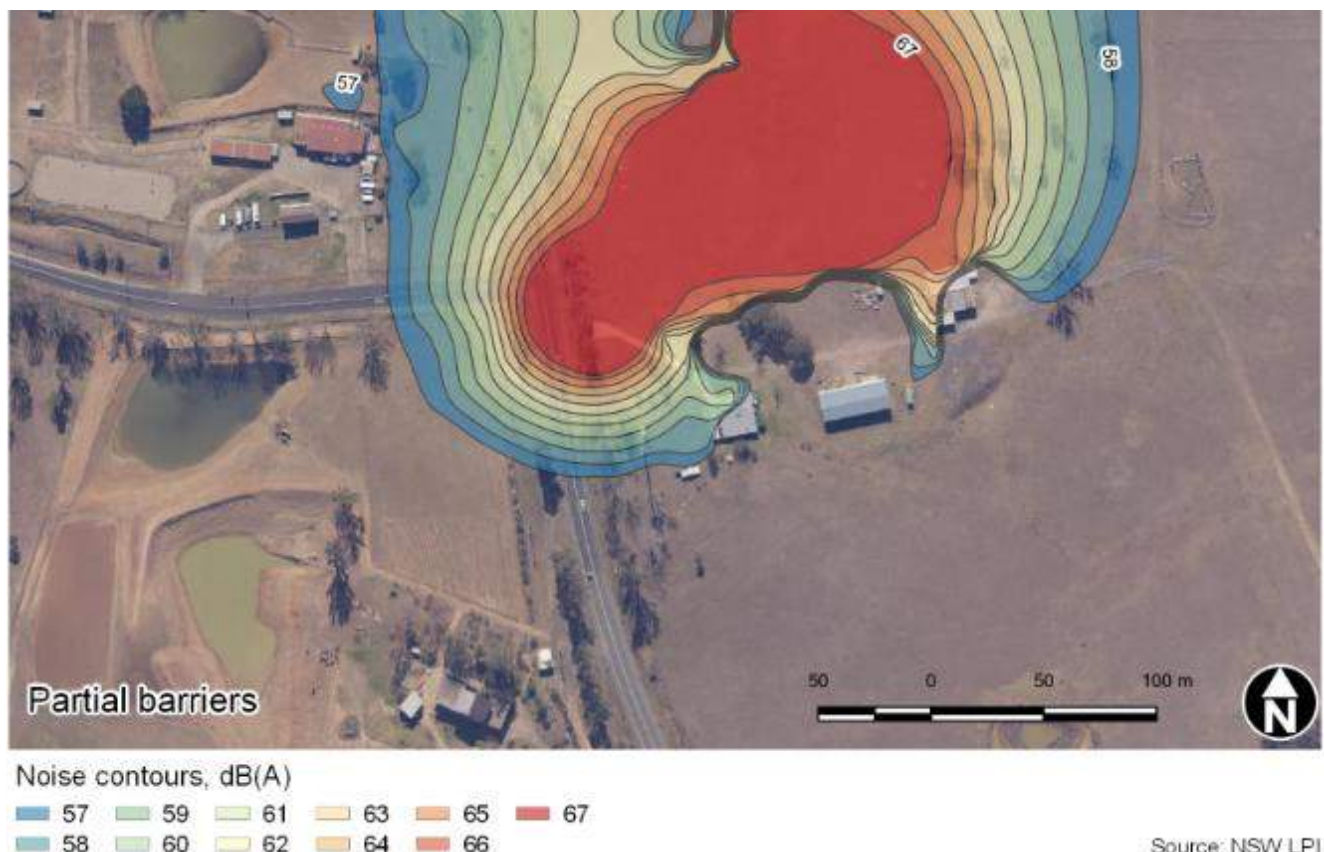


Figure 5.3: Predicted noise contours for 2594 The Northern Road (mitigated) LAeq (15 min)

Due to the proposed site layout and proximity of the receiver to the driveway, a noise bund is unlikely to reduce noise at the receivers at 2594 The Northern Road to within project NMLs however the barrier provides reasonable mitigation for the southern receiver reducing noise levels to within 2dB of the project NMLs. As such this barrier may be considered as an available option for reducing noise at this property.

Noise bunds are not required to reduce noise at other properties, however where excess fill is available would provide a good means of reducing noise levels further below the project NMLs and improving community relations.

5.5 Cumulative noise assessment

Where operations at C16 are undertaken at the same time as other nearby project-related activities, there is the potential for these receivers to be affected by both noise sources. As summarised in **Table 5-3**, results from these cumulative activities may be up to 3 dB(A) above the higher of the levels predicted, depending on the relative difference in the noise levels predicted from both sources.

Table 5-3 Additional noise increment at surrounding receivers as a result of cumulative activities

Difference in predicted sound level at receiver between concurrently planned activities	dB(A) to added to higher sound level
0 to 1	+3
2 to 3	+2
4 to 9	+1
10 and greater	0

5.6 Traffic considerations

Designated access and haulage routes for construction vehicles entering and exiting ancillary facility C16 to access the concrete batch plant will be along The Northern Road and surrounding arterial network. The use of local roads by heavy vehicles to access ancillary facility C16 will be limited as far as is reasonably practicable.

The following mitigation measures would be implemented as a minimum:

- Implement Vehicle Movement Plans to detail the proposed route and ensure that the minimum amount of movements are utilised for each task
- Site access and traffic controls would be developed in accordance with the RMS D&C G10 and other Project documents
- Site access points and vehicle movements will be routed as far from sensitive receivers as practical.

Mitigation and management measures would be implemented in accordance with the project Construction Traffic Management Plan.

Noise at 2594 The Northern Road is predominately impacted by noise from heavy vehicles entering and exiting the compound. Where this site entrance is moved further north, noise impacts would increase for 2627 The Northern Road, possibly to levels in excess of the project NMLs. As such this is not considered a preferable option.

In order to reduce noise impacts at the remaining property, alternative options should be considered.

6. Other mitigation options

Noise mitigation options agreed for the project include:

- either fitting closed circuit monitors or non-tonal reversing alarms (“quackers”) on vehicles or deploying ‘spotters’ to oversee reversing movement
- haulage routes will be located as far away as possible from residential receivers, where this is reasonable and feasible.
- static noise sources, such as generators, pumps and lighting towers, will be located as far as possible from sensitive receivers
- loading and unloading will be carried out away from sensitive receivers, where practicable
- ensure all deliveries occur during standard construction hours where reasonable and feasible.

Mitigation and management measures would be implemented in accordance with Appendix B3 – Construction Noise and Vibration Management Plan.

7. Conclusion

Jacobs has undertaken an assessment of potential noise impacts associated with modified operations planned at the C16 compound site involving the installation of a concrete batch plant. Review of noise impacts was completed by updating the site noise model to reflect the planned changes, and assessing the resulting noise levels at nearby receiver locations based on noise objectives already established for the project.

This review identified that project NMLs were able to be met at all receivers, with the exception of 2594 The Northern Road.

A 5m barrier was recommended along the southern site boundary to reduce these noise impacts. This bund would reduce noise levels at this property to within 2dB of site NMLs, however levels would remain above noise goals. Further noise mitigation measures will be investigated to reduce noise at this site from the site driveway entrance.

Based on these findings, it was concluded that perimeter noise barriers or bunding at other locations would not be necessary, however where excess fill is available would provide a good means of reducing noise levels further below the project NMLs.

Existing standard measures already developed for the compound site in the CNVMP and associated documentation should be adopted, and the facility should only operate during standard hours.

Appendix D

Flora and Fauna Assessment (Narla Environmental)



NARLA
environmental

Flora and Fauna Assessment

Site Compound, Batch Plant and preliminary Haul Road

22 Gates Road, Luddenham, NSW 2745

Report prepared for CPB Contactors

April 2019



NARLA

environmental

Report:	Flora and Fauna Assessment –Site Compound, Batch Plant and preliminary Haul Road
Prepared for:	CPB Contractors
Prepared by:	Narla Environmental Pty Ltd
Project no:	CPBC1
Date:	April 2019
Version:	Final v3

© Narla Environmental Pty Ltd

The document may only be used for the purposes for which it was commissioned and in accordance with the Terms of the Engagement for the commission.

This report and all information contained within is rendered void if any information herein is altered or reproduced without the permission of Narla Environmental. Unauthorised use of this document in any form whatsoever is prohibited. This report is invalid for submission to any regulatory authorities while it is in draft stage. Narla Environmental Pty Ltd will not endorse this report if it has been submitted to the regulatory authority while it is still in draft stage. This document is and shall remain the property of Narla Environmental Pty Ltd.

Disclaimer:

Narla Environmental Pty Ltd has completed this assessment in accordance with the relevant federal, state and local government legislation as well as current industry best practices including guidelines. Narla Environmental Pty Ltd accepts no liability for any loss or damages sustained as a result of reliance placed upon this report and any of its content or for any purpose other than that for which this report was intended.

Narla Environmental Pty Ltd
www.narla.com.au


Report Certification

Works for this report were undertaken by:

Name	Company / Position	Role
Nathan Banks BZool	Narla Environmental – Ecologist	Field Ecologist, Mapping, Reporting
Alexander Graham BSc	Narla Environmental – Senior Ecologist	Project Management, Desktop Review, Reporting
Kurtis Lindsay BSc (Hons)	Narla Environmental – Principal Ecologist	Document Review

As Principal of Narla Environmental Pty Ltd, I Kurtis Lindsay, certify that:

- this report has been prepared in accordance with the brief provided by the client.
- the information presented in this report is a true and accurate record of the study findings in the opinion of the authors.



Kurtis Lindsay
Principal Ecologist and Business Manager
Accredited Biodiversity Assessor (BAAS18059)
Narla Environmental Pty Ltd
02 9986 1295
0414 314 859
kurtis.lindsay@narla.com.au

Executive Summary

Narla Environmental Pty Ltd (Narla) were engaged by CPB Contractors to deliver a Flora and Fauna Assessment Report for the proposed construction of a Site Compound, Batch Plant and preliminary Haul Road for The Northern Road upgrade ('the project').

Narla were engaged to map the extent of Threatened Ecological Communities (TEC) within the Study Area, and undertake an assessment of Significance (7-part test) for potential impacts of the Site Compound, Batch Plant and preliminary Haul Road (the Subject Site) on any threatened species, populations or ecological communities.

Narla Environmental confirmed the presence of all three (3) historically mapped vegetation communities within the Study Area:

- *Grey Box – Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion – Low; Grey Box – Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion;*
- *Grey Box – Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion – Moderate/Good; Grey Box – Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion; and*
- *Phragmites australis and Typha orientalis coastal freshwater wetlands of the Sydney Basin Bioregion.*

Narla Environmental also identified the presence of one (1) novel community within the Study Area:

- *Derived grasslands on shale plains of the Cumberland Plain (PCT 807).*

Targeted survey by Narla Environmental identified no threatened flora or fauna within the Study Area.

No impacts are anticipated to threatened flora and fauna as a result of the proposed Site Compound, Batch Plant and preliminary Haul Road.

The construction of the preliminary Haul Road, will require the removal of approximately 1.48ha of Cumberland Plain Woodland Derived Native Grasslands (DNG). The construction of the preliminary Haul Road is anticipated to require minor branch trimming to three (3) CPW trees in the north of the Subject Site and the removal of a single dam containing Coastal Freshwater Wetlands (CFW).

The potential for significant impact upon CPW was assessed against the '7-Part Test Assessment of Significance' criteria. It was deemed that the proposed works will not have a significant impact such that a local viable population of a species will be placed at risk of extinction. Therefore, no additional impact assessment, EPBC Act Referral to Commonwealth are required for the proposed development.

Contents

Executive Summary	4
Glossary	6
1. Introduction.....	7
1.1. Background	7
1.1.1. Purpose	7
1.1.2. Relevant Legislation	7
1.2. Aims.....	8
1.3. Sources of Information Used.....	9
2. Methodology	11
2.1. Ecological Site Assessment.....	11
2.1.1. General Survey.....	11
2.1.2. Weather conditions prior and during site assessment	12
2.1.3. Vegetation Community Assessment.....	13
2.1.4. Targeted Threatened Flora Surveys	14
2.1.5. Targeted Threatened Fauna Surveys.....	14
2.1.6. Opportunistic sightings and analysis of scats, tracks and traces	14
2.2. Study Limitations.....	15
3. Results and Discussion	16
3.1. Vegetation Communities	16
3.1.1. Historically Mapped Vegetation Communities.....	16
3.1.2. Field Validated Plant Community Type (PCT) within the Study Area.....	16
3.1.3. Listing Status of the Ecological Communities present in the Study Area	17
3.1.3.1. Cumberland Plain Woodland	17
3.1.3.2. Coastal Freshwater Wetlands	17
3.2. Threatened Species	21
3.2.1. Threatened Flora	21
3.2.2. Threatened Fauna.....	21
4. Impact Summary.....	22
4.1. Impacts to Threatened Ecological Communities.....	22
4.1.1. Impacts to Cumberland Plain Woodland	22
4.1.2. Impacts to Cumberland Plain Woodland Derived Native Grassland.....	22
4.1.3. Impacts to Coastal Freshwater Wetlands	22
4.2. Impacts to Threatened Flora and Fauna	22
4.3. Impacts to Waterfront Land.....	23
5. References	24
6. Appendices.....	26

Glossary

Acronym/ Term	Definition
APZ	Asset Protection Zone: required to protect the proposed development from the effects of bushfire.
BC Act	Biodiversity Conservation Act 2016
BAM	Biodiversity Assessment Method
BOS	Biodiversity Offset Scheme
BOM	Bureau of Meteorology
BV Map	Biodiversity Value Map
CEEC	Critically Endangered Ecological Community
CFW	Coastal Freshwater Wetlands
CPW	Cumberland Plain Woodland
DA	Development Application
DCP	Development Control Plan
Development	The use of land, and the subdivision of land, and the carrying out of a work, and the demolition of a building or work, and the erection of a building, and any other act, matter or thing referred to in section 26 that is controlled by an environmental planning instrument, but does not include any development of a class or description prescribed by the regulations for the purposes of this definition (Environmental Planning and Assessment Act 1979).
DPI	Department of Primary Industries
EEC	Endangered Ecological Community
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ESD	Ecologically Sustainable Development
FFA	Flora and Fauna Assessment
ha	Hectares
km	Kilometre
KTP	Key Threatening Process (as listed in the BC Act)
LEP	Local Environmental Plan
LGA	Local Government Area
Locality	The area within a 10km radius of the Subject Site. The same meaning when describing a local population of a species or local occurrence of an ecological community.
m	Metres
NPWS	NSW National Parks and Wildlife Services
NSW	New South Wales
OEH	Office of Environment and Heritage
PCT	Plant Community Type
Proposal	The development, activity or action proposed.
RMS	Road and Maritime Services
ROTAP	Rare or Threatened Australian Plants
SIS	Species Impact Statement pursuant to s. 5A of the Environmental Planning and Assessment Act 1979
Study Area	Subject Site and adjoining properties (Subject Site and any additional areas that are likely to be affected by the proposal, either directly or indirectly)
Subject Site	Proposed Site Compound, Batch Plant and preliminary Haul Road
Threatened species, populations and ecological communities	Species, populations and ecological communities specified in Schedules 1, 1A and 2 and <i>threatened species, population or ecological community</i> means a species, population or ecological community specified in any of those Schedules.
TNR	The Northern Road
TSC Act	Threatened Species Conservation Act 1995
VMP	Vegetation Management Plan
WoNS	Weed of National Significance

1. Introduction

1.1. Background

This Flora and Fauna Assessment (FFA) has been prepared to accompany a Consistency Assessment (CA) for The Northern Road Upgrade (Stage 5) which involves construction of 'early works' involving a Site Compound, Batch Plant and preliminary Haul Road ('the activity') (**Figure 1**) within land leased by the proponent (hereafter referred to as 'the Study Area') for Stage 5 of The Northern Road (TNR) Upgrade ('the Subject Site').

Narla Environmental (Narla) were engaged to map the extent of Threatened Ecological Communities (TEC) within the Study Area, and undertake an assessment of Significance (7-part test) in accordance with the relevant provisions of the *Environmental Planning And Assessment Act 1979* (EP&A Act) and the for potential impacts resulting from the construction of the Site Compound, Batch Plant and preliminary Haul Road on any threatened species, populations or ecological communities.

1.1.1. Purpose

All areas assessed in this report, have been previously assessed during preparation of the approved Environmental Impact Statement (EIS) for The Northern Road Upgrade Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park (RMS 2017). The purpose of this report is to assess Subject Site, to determine compliance and consistency with the EIS (RMS 2017a).

The requirement for a CA was determined by the Principal (CPB Contractors), as a condition to begin clearance of a threatened ecological community (TEC), before approval of the Construction Environmental Management Plan (CEMP) (CPB 2019).

This purpose of this assessment is to form an addendum to the Environmental Impact Statement (RMS 2017a), therefore, this assessment has been conducted in accordance with the Threatened Species Conservation Act (TSC Act).

It is important to note that this assessment does not form a 'modification' but rather an CA to advise if any further offset is required.

1.1.2. Relevant Legislation

The *Biodiversity Conservation Act 2016* (BC Act) and its supporting regulations commenced on 25 August 2017.

The BC Act repeals the *Threatened Species Conservation Act 1995* (TSC Act) along with other natural resource management legislation. The BC Act sets out the assessment framework for threatened species and ecological communities.

Transitional arrangements for State Significant Infrastructure (SSI) are in place for projects that were previously assessed under the *Threatened Species Conservation Act 1995* in accordance with the *Biodiversity Conservation (Savings and Transitional) Regulation 2017*.

For all State Significant Infrastructure (SSI) projects considered under Part 5.1, the assessment process can continue and modifications can be considered under the previous legislative framework and guidelines provided that:

- Substantial environmental assessment was undertaken before 25 August 2017 (as determined in writing by the Secretary of the Department of Planning and Environment) and the application is made within 18 months of the Secretary's determination, or
- Environmental assessment requirements were issued before 25 August 2017 and the application is made before 25 February 2019. If the environmental assessment requirements are reissued, the application must instead be made within 18 months of the reissue, but no later than 25 August 2020.

The recent gazettal of the *Biodiversity Conservation (Savings and Transitional) Regulation 2017* means that the BC Act now applies to modifications of planning approvals granted or applied for before the commencement of the BC Act. However, since this is not a 'modification' but rather an adjustment to credit commitment for one species, *Marsdenia viridiflora subsp. viridiflora* it is deemed adequate that this assessment can be assessed in accordance with the TSC Act through undertaking an addendum to the EIS (RMS 2017a).

The relevant pathway for assessment under the TSC Act is through the application of the 'Assessment of Significance' (7-part test).

1.2. Aims

The aim of this report is to assess the impacts of the proposed activity upon biodiversity through:

- Undertaking a background review to identify threatened species (flora and fauna), populations and ecological communities listed under the New South Wales *Threatened Species Conservation Act 1995* (TSC Act) and national *Environment Protection & Biodiversity Conservation Act 1999* (EPBC Act) that have potential to occur within the Study Area;
- Undertaking an on-site Ecological assessment for threatened ecological communities, flora species and fauna habitat within the Study Area;
- Identifying any threatened plants observed in the Study Area and confirm the presence of any *Marsdenia viridiflora subsp. viridiflora* that has been historically mapped near the Study Area;
- Identifying the plant community present and determine whether it is part of a threatened ecological community;
- Assessing the impacts of the proposed Site Compound, Batch Plant and preliminary Haul Road upon any threatened species, population or ecological community listed under the New South Wales TSC Act in accordance with relevant impact assessment guidelines (DECC 2004); and
- Assessing the impacts of the proposed Site Compound, Batch Plant and preliminary Haul Road upon any Matters of National Environmental Significance (NES) relating to biodiversity under the EPBC Act in accordance with relevant impact assessment guidelines (DoE 2013).

1.3. Sources of Information Used

A thorough literature review of local information relevant to the locality was undertaken. Relevant literature that was reviewed in preparation of this report included:

- Relevant State and Commonwealth Databases
 - Protected Matters Search Tool (Commonwealth of Australia 2018);
 - NSW Bionet. The website of the Atlas of NSW Wildlife (OEH 2018); and
 - Atlas of Living Australia Spatial Portal (ALA 2018).
- Regional Vegetation Mapping
 - Native Vegetation of the Cumberland Plain, Western (Tozer. M 2003); and
 - New South Wales Vegetation Information System (VIS) 2.1 (OEH 2017).
- Project-specific Documents
 - The Northern Road Upgrade Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park. NSW Environmental Impact Statement / Commonwealth Draft Environmental Impact Statement. Appendix I – Technical working paper: Biodiversity (RMS 2017);
 - The Northern Road STAGE 5 Sensitive Areas Map (CPB 2018); and
 - Roads and Maritime Services. The Northern Road Stage 5. Vegetation Clearing Map (GHD 2017).
- State and Federal Guidelines
 - Threatened Species Survey and Assessment: Guidelines for activities and activities. Working Draft. (DEC 2004);
 - NSW Guideline to Surveying Threatened Plants (OEH 2016b); and
 - Biodiversity Guidelines – Protecting and managing biodiversity on RTA projects (RTA 2011).



Figure 1. Study Area and Subject Site

2. Methodology

2.1. Ecological Site Assessment

The following sections of this report detail the site assessments undertaken by Narla Environmental including the survey methods and the weather conditions experienced in the lead-up to and during the assessment.

2.1.1. General Survey

Site assessments were undertaken by Narla Environmental Ecologist, Nathan Banks and Senior Ecologist, Alexander Graham. Surveys were conducted on Wednesday 23rd January, Monday 4th January and Wednesday 6th March 2019. A total of 16 hours was spent surveying the entirety of the Study Area with focus on the location of the proposed Site Compound, Batch Plant and preliminary Haul Road (the Subject Site).

During the site assessment, the following activities were undertaken:

- Identifying and recording the vegetation communities present on the Study Area, with focus on identifying any Threatened Ecological Communities (TEC);
- Recording a detailed list of flora species encountered on the Study Area, with a focus on threatened species, species diagnostic of threatened ecological communities and priority weeds;
- Recording opportunistic sightings of any fauna species seen or heard on or within the immediate surrounds of the Study Area;
- Identifying and recording the locations of notable fauna habitat such as important nesting, roosting or foraging microhabitats;
- Targeting the habitat of any threatened and regionally significant fauna including:
 - Tree hollows (habitat for threatened large forest owls, parrots, cockatoos and arboreal mammals);
 - Caves and crevices (habitat for threatened reptiles, small mammals and microbats);
 - Termite mounds (habitat for threatened reptiles and the echidna);
 - Soaks (habitat for threatened frogs and dragonflies);
 - Wetlands (habitat for threatened fish, frogs and water birds);
 - Drainage lines (habitat for threatened fish and frogs);
 - Fruiting trees (food for threatened frugivorous birds and mammals);
 - Flowering trees (food for threatened nectivorous mammals and birds);
 - Trees and shrubs supporting nest structures (habitat for threatened birds and arboreal mammals);
 - Logs, bark and artificial debris (habitat for threatened frogs, reptiles and snails); and
 - Any other habitat features that may support fauna (particularly threatened) species.
- Assessing the connectivity and quality of the vegetation within the Study Area and surrounding area.

2.1.2. Weather conditions prior and during site assessment

A summary of the prevailing weather conditions during the Study Area and the lead-up to the survey is presented (**Table 1**). This data was collected from the nearest weather station 'Badgerys Creek'.

Table 1. Weather conditions taken from the nearest weather station (Badgerys Creek) in the lead up to and during the field survey (BOM 2019) (Survey dates in bold).

Timing / Activities	Attending Ecologist	Survey date	Day	Temp.		Rainfall (mm)	Max Wind Gust		Relative Humidity at 9 am (%)
				Minimum Temp. °C	Maximum Temp. °C		Dir	Spd km	
Lead-up to Site Assessment		17-Jan-19	Th	20.3	39.7	0.8	S	31	75
		18-Jan-19	Fr	22.3	39.8	0	SSE	37	68
		19-Jan-19	Sa	22.5	29.5	0	SSE	33	75
		20-Jan-19	Su	19.3	28.6	0	NNE	26	87
		21-Jan-19	Mo	20.4	26.9	0	SSE	28	95
		22-Jan-19	Tu	21.2	35.4	0	NE	28	84
Pre-clearing Survey	Nathan Banks	23-Jan-19	We	20.9	35.1	0	ESE	33	86
Lead-up to Site Assessment		29-Jan-19	Tu	20.9	35.9	0	ESE	28	74
		30-Jan-19	We	21.5	33.6	0	N	17	83
		31-Jan-19	Th	21.6	40.4	0	SSE	52	70
		1-Feb-19	Fr	16.7	21.4	1.2	SSE	33	93
		2-Feb-19	Sa	17.6	25.7	6.6	E	24	100
		3-Feb-19	Su	19.2	33.9	1.8	NE	31	95
Pre-clearing Survey	Alexander Graham	4-Feb-19	Mo	19.5	35.5	0	ESE	28	78
Lead-up to Site Assessment		28-Feb-19	Th	17.2	31.1	0	E	33	72
		1-Mar-19	Fr	17.7	30.8	0	E	43	75
		2-Mar-19	Sa	18.1	31.1	0.2	ENE	39	70
		3-Mar-19	Su	17.6	31.7	0	E	37	68
		4-Mar-19	Mo	16.3	34.5	0	E	31	78
		5-Mar-19	Tu	18.9	34.7	0	SSE	30	76
Pre-clearing Survey	Nathan Banks	6-Mar-19	We	17.7	36.0	0	W	74	64

2.1.3. Vegetation Community Assessment

The following document was consulted during assessment to assist identification of the historically mapped Plant Community Types (PCTs) present within the Study Area:

- Native Vegetation of the Cumberland Plain, Western (Tozer 2003); and
- The Northern Road Upgrade Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park. NSW Environmental Impact Statement / Commonwealth Draft Environmental Impact Statement. Appendix I – Technical working paper: Biodiversity (RMS 2017).

The determinations of each PCT was based on desktop and field analysis of the geomorphology and geology of the Study Area, in addition to a quantitative analysis of the positive 'diagnostic' flora species (Tozer 2003) identified in each discrete vegetation patch within the Study Area.

2.1.4. Targeted Threatened Flora Surveys

Targeted surveys were undertaken to identify locations of the threatened flora species known or predicted to occur within the locality (within 10km of the Study Area). Narla Environmental undertook targeted survey for all threatened flora with potential to occur, with effort focused on:

- *Pultenaea parviflora*;
- *Marsdenia viridiflora* subsp. *viridiflora* population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas;
- *Dillwynia tenuifolia*;
- *Pimelea spicata*;
- *Grevillea juniperina* subsp. *juniperina*;
- *Acacia pubescens*.

The Random Meander technique documented by Cropper (1993) was employed with maximum effort directed toward sampling areas with suitable habitat.

Any tentative threatened species found were photographed and specimens taken for identification utilising formal keys. Where necessary this involved the use of a microscope. Any confirmed or plausible specimens identified were GPS tagged, for future reference. Where identification of plausible specimens could not be made with absolute confidence by Narla Ecologists, specimens were collected and sent to the National Herbarium for expert identification.

2.1.5. Targeted Threatened Fauna Surveys

Targeted surveys were undertaken to identify the locations of threatened fauna species known or predicted to occur within the locality (within 10km of the Study Area), with particular effort focused on *Meridolum corneovirens* (Cumberland Plain Land Snail).

Ecologist Nathan Banks traversed the entire site, focusing on areas identified as providing preferred or optimal habitat. This included;

- Rolling logs, flipping large bark debris, raking leaf litter, searching the bases of native trees, and searching bases of native sedges and dense grasses; and
- Locating, recording and searching around areas of fungal fruiting bodies.

Any tentative threatened species found were photographed and specimens taken for identification utilising formal keys. Where necessary this involved the use of a microscope. Any confirmed or plausible specimens identified were GPS tagged, for future reference. Where identification of plausible specimens could not be made with absolute confidence by Narla Ecologists, specimens were collected and sent to the Australian Museum for expert identification.

2.1.6. Opportunistic sightings and analysis of scats, tracks and traces

During all site visits throughout the project, opportunistic fauna observations including sightings, scats, tracks, characteristic scrapes on trees, burrows and bones were collected. These were identified within the site, and/or used as focus areas to position additional targeted survey techniques to determine species presence.

2.2. Study Limitations

The ecological dataset provided for the site was restricted to what was observed by Narla Environmental over the three days of survey on the 23rd January, 4th January and 6th March 2019.

The timing of the survey may not have coincided with emergence times of some species of flora and fauna (**Table 2**), such as seasonally flowering herbs, seasonal migratory fauna or nocturnal fauna. No spotlighting/call playback was undertaken for nocturnal fauna and no passive acoustic recordings or harp trapping were undertaken for bats as these items were outside the scope of works.

Table 2. Optimal survey periods for the threatened flora species targeted

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Pultenaea parviflora</i>												
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i>												
<i>Dillwynia tenuifolia</i>												
<i>Pimelea spicata</i>												
<i>Grevillea juniperina</i> subsp. <i>juniperina</i>												
<i>Acacia pubescens</i>												
KEY		Timing of Survey Undertaken by Narla (2019)			Flowering Period (PlantNet, OEH, SPRAT)			Sporadic flowering/ identifiable from other features			Unsuitable Survey Times	

3. Results and Discussion

3.1. Vegetation Communities

3.1.1. Historically Mapped Vegetation Communities

Historical vegetation mapping (RMS 2017) depicts the presence of three (3) vegetation communities (**Figure 2**):

- Grey Box – Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion – Low; Grey Box – Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion;
- Grey Box – Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion – Moderate/Good; Grey Box – Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion.
- *Phragmites australis* and *Typha orientalis* coastal freshwater wetlands of the Sydney Basin Bioregion.

This historical vegetation mapping was sourced from 'The Northern Road Upgrade Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park. NSW Environmental Impact Statement / Commonwealth Draft Environmental Impact Statement. Appendix I – Technical working paper: Biodiversity' (RMS 2017).

3.1.2. Field Validated Plant Community Type (PCT) within the Study Area

Narla Environmental confirmed the presence of all three (3) vegetation communities within the Study Area (**Figure 3**):

- Grey Box – Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion – Low; Grey Box – Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion;
- Grey Box – Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion – Moderate/Good; Grey Box – Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion; and
- *Phragmites australis* and *Typha orientalis* coastal freshwater wetlands of the Sydney Basin Bioregion.

Narla Environmental also identified the presence of one (1) novel community within the Study Area:

- Derived grasslands on shale plains of the Cumberland Plain (PCT 807, BVT: HN627).

Derived native grassland (DNG) of CPW within the site is characterised by grassland (trees and shrubs absent), dominated by native perennial graminoid and herbaceous flora species including, *Themeda triandra* (Kangaroo Grass), *Rytidosperma tenuius*, *Aristida ramosa* (Purple Wiregrass), *Portulaca oleracea* (Common Purslane), *Einadia hastata* (Berry Saltbush), *Chloris truncata* (Windmill Grass), *Sporobolus creber* (Slender Rat's Tail Grass), *Wahlenbergia gracilis* (Australian Bluebell), *Microlaena stipoides* (Weeping Grass), *Einadia nutans* (Climbing Saltbush) and *Einadia nutans* subsp. *nutans*.

Descriptions of the communities, their corresponding Plant Community Type (PCT) and their relative listing status under New South Wales and national legislation are presented (**Table 3**).

3.1.3. Listing Status of the Ecological Communities present in the Study Area

3.1.3.1. Cumberland Plain Woodland

Cumberland Plain Woodland (CPW) is listed under the New South Wales TSC Act as a critically endangered ecological community (CEEC) officially known as 'Cumberland Plain Woodland in the Sydney Basin Bioregion'. The state-listed woodland community listing includes derived native grasslands (DNG), irrespective of their landscape context, therefore all of the CPW including the woodland and DNG present within the study area meet the definition of CPW EEC under the TSC Act.

CPW is also listed nationally as 'Critically Endangered' under the EPBC Act, where it is officially known as 'Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest Ecological Community'. The nationally-listed ecological community does not include DNG or derived shrubland. However, grassland or shrubland derived from the woodland may occur as small-scale variations within a patch, and are also considered to be native vegetation when determining whether a patch of the ecological community adjoins a large (more than 5 ha) native vegetation remnant (as per the condition thresholds in the flowchart). DNG present within the site does not meet the condition thresholds of CPW under the EPBC Act.

DNG within the site is characterised by grassland (trees and shrubs absent), dominated by native perennial graminoid and herbaceous flora species including, *Themeda triandra* (Kangaroo Grass), *Rytidosperma tenuius*, *Aristida ramosa* (Purple Wiregrass), *Portulaca oleracea* (Common Purslane), *Einadia hastata* (Berry Saltbush), *Chloris truncata* (Windmill Grass), *Sporobolus creber* (Slender Rat's Tail Grass), *Wahlenbergia gracilis* (Australian Bluebell), *Microlaena stipoides* (Weeping Grass), *Einadia nutans* (Climbing Saltbush) and *Einadia nutans* subsp. *nutans*.

3.1.3.2. Coastal Freshwater Wetlands

Vegetation characteristic of Coastal Freshwater Wetlands (CFW) was identified within a man-made dam in the proposed development site. CFW within this dam was also identified and offset, during preparation of *The Northern Road Upgrade Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park. NSW Environmental Impact Statement / Commonwealth Draft Environmental Impact Statement. Appendix I – Technical working paper: Biodiversity* (RMS 2017).

Although this vegetation displayed similar floristic assemblage to CFW 'Artificial wetlands created on previously dry land specifically for purposes such as sewerage treatment, stormwater management and farm production, are not regarded as part of the Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions TEC' (NSW Scientific Committee, 2004) (RMS 2017).

A summary of vegetation communities observed within the Survey Area is presented below **Table 3**.

Table 3. New South Wales Plant Community Types Recorded within the Study Area

Plant Community Type (PCT) ID	Equivalent Vegetation Type	Description of PCT (Tozer 2003)	Equivalent Threatened Ecological communities (TEC)	Equivalent Commonwealth EPBC Act Threatened Ecological communities
PCT 849: Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	<p>Grey Box – Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion – Low; Grey Box – Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion;</p> <p>Grey Box – Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion – Moderate/Good; Grey Box – Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion.</p>	<p>The gentle topography associated with the shale plains of western Sydney carried an open grassy woodland dominated by grey box (<i>Eucalyptus moluccana</i>), forest red gum (<i>Eucalyptus tereticornis</i>) and ironbark (<i>Eucalyptus crebra</i>/<i>Eucalyptus fibrosa</i>). Localised patches of spotted gum (<i>Corymbia maculata</i>) may occur in the Fairfield LGA. Cumberland Shale Plains Woodland is the second of the grassy woodlands that comprise the Cumberland Plain Woodland in the Sydney Basin Bioregion Critically Endangered Ecological Community listed under the NSW TSC Act. Like the related community Cumberland Shale Hills Woodland (S_GW02) it is typified by a sparse to moderate cover of shrubs and a high cover of grasses and forbs.</p> <p>Tozer et al. (2010) define the primary habitat for the community as occurring at elevations less than 150 metres above sea level with some sites occurring at higher elevations where the landscape remains gently inclined. Rainfall is restricted to a narrow band between 750 and 950 millimetres per annum. The community occupies the north-west and west zones of the study area but is widespread elsewhere across the Cumberland Plain.</p>	Cumberland Plain Woodland in the Sydney Basin Bioregion.	Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest
PCT 807: Derived grasslands on shale plains of the Cumberland Plain.	Derived Native Grassland (DNG)	Derived native grassland is a community that forms after the human-induced removal of tree and shrub cover from Cumberland Plain Woodland. This PCT does not occur as an original vegetation community, except as very small patches. Often occurs as a mono-specific grassland dominated by species such as <i>Aristida vagans</i> or <i>Themeda australis</i> . Derived from cleared / thinned / grazed open forest and woodlands, typically dominated by Ironbarks, Grey Box, Red Gums and Spotted Gum (i.e. Coastal Valley Grassy Woodlands, sensu Keith 2004). Note, no appropriate Vegetation Class, closest is Coastal Valley Grassy Woodlands.	Cumberland Plain Woodland in the Sydney Basin Bioregion.	NA
PCT 781: Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion	<i>Phragmites australis</i> and <i>Typha orientalis</i> coastal freshwater wetlands of the Sydney Basin Bioregion.	Coastal Freshwater Wetland is associated with freshwater lagoons and swamps on alluvial flats and sand depressions across the New South Wales east coast. Lagoons have fluctuating levels of standing water that gives rise to a varied assemblage of species. They include a range of sedges, rushes and aquatic herbs with woody shrubs and small trees found only on the margins of the wetlands in low abundance. Tall reedlands (reaching over three metres in height) may dominate individual wetlands. Cumbungi (<i>Typha orientalis</i>) is typically dominant in urban wetlands and may be joined by common reed (<i>Phragmites australis</i>). Other tall reeds include <i>Eleocharis sphacelata</i> and tall sedges such as twig-rushes (<i>Baumea</i> spp.). The margins of open water carry a range of aquatic herbs such as <i>Isachne gibbosa</i> and <i>Persicaria decipiens</i> . Less frequently inundated wetlands support only a few species of sedges or rushes such as <i>Carex appressa</i> and or <i>Baumea</i> spp. which do not reach the height of the taller reedlands found elsewhere. In the Sydney metropolitan area Coastal Freshwater Wetland is most commonly found at low elevations less than five metres above sea level on coastal plains and flats. Several swamps occur on highly disturbed floodplains of the Cumberland Plain where elevations reach 20 metres above sea level.	Not Listed (Man-made Dam).	NA

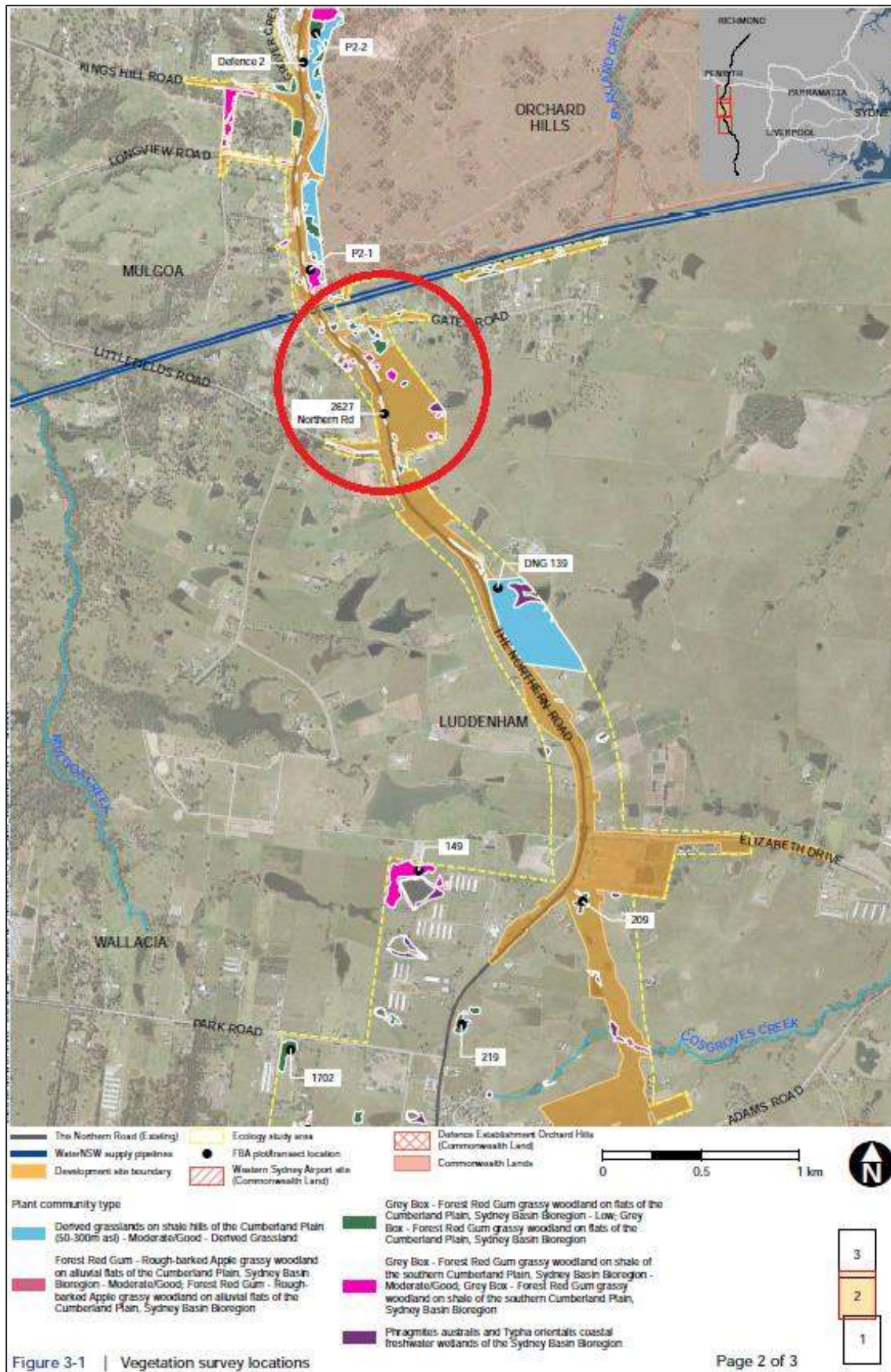


Figure 2. Vegetation Mapping conducted for TNR Environmental Impact Statement (RMS 2017)

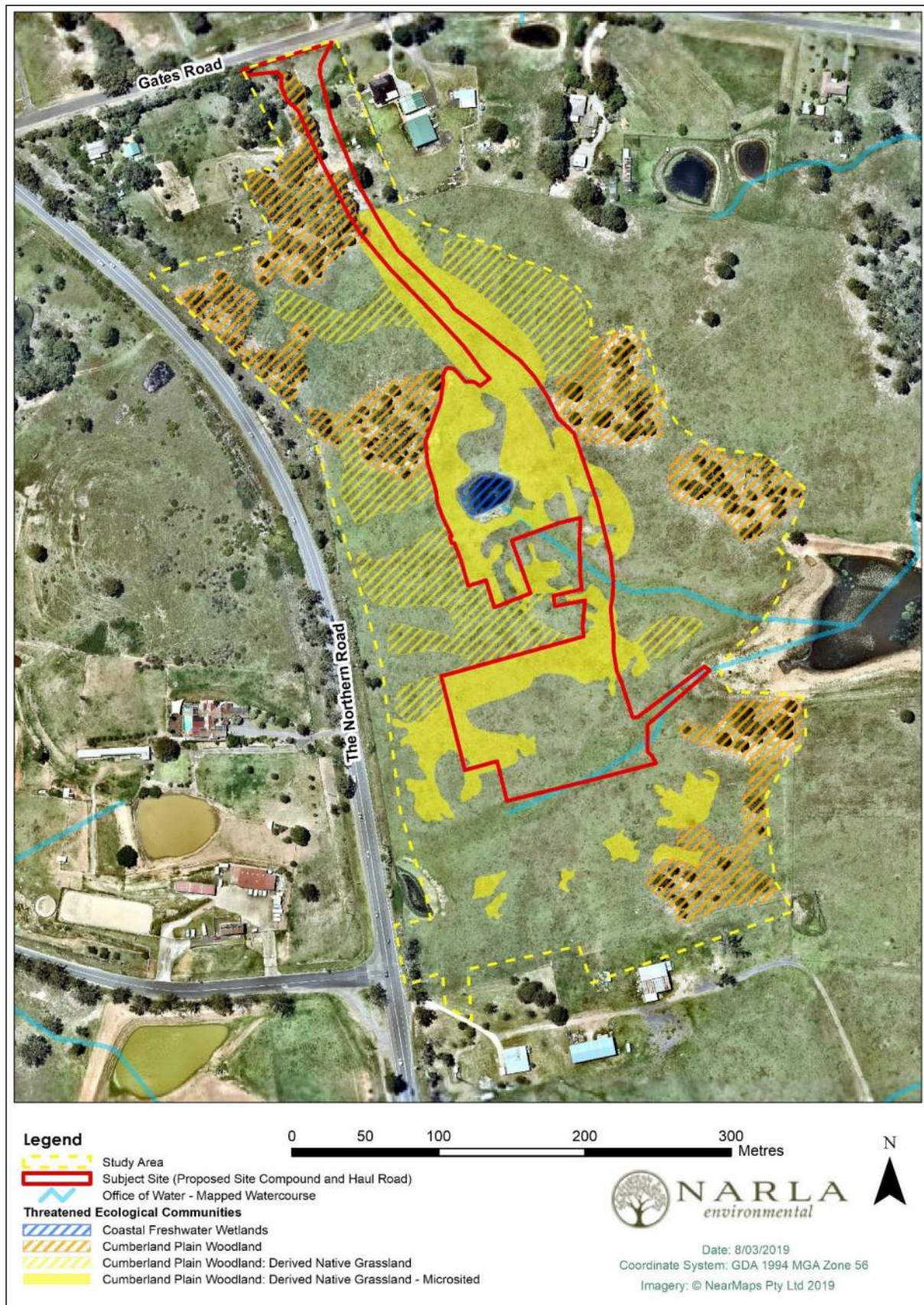


Figure 3. Vegetation Mapping

3.2. Threatened Species

3.2.1. Threatened Flora

Desktop analysis revealed a range of threatened flora as occurring or having the potential to occur on or within 10 km radius of the Study Area (see **section 2.1.4.**).

Targeted survey identified no threatened flora within the Study Area. *Pimelea spicata* (Spiked Rice-flower) is an Endangered (TSC Act and EPBC Act) flowering herb, that emerges after suitable conditions (rainfall) and usually dies back to rootstock during dry conditions such as during drought.

Spiked Rice flower is "cryptic and difficult to detect, particularly when not in flower, and may not be apparent aboveground during drought conditions" (DEC 2006a). This endangered herb species has not been Owing to the extensive surveys conducted during the preparation of *The Northern Road Environmental Impact Statement* (RMS 2017), it is considered unlikely that this species occurs within the Study Area.

3.2.2. Threatened Fauna

No threatened fauna were identified within the Study Area during the assessment by Narla Environmental.

Extensive searches undertaken by the Narla Ecologist revealed no Cumberland Plain Land Snail. Searches were undertaken in suitable habitat, including grass-tussocks, woody debris, and accumulated leaf litter.

All hollow-bearing trees were marked in accordance with the approved demarcation protocol, and included in the *Ancillary Compound and Temporary Haul Road - Pre-clearing Report*, to be cleared at a later date. No hollow-bearing trees are required to be cleared for the establishment of the Haul Road into site.

4. Impact Summary

4.1. Impacts to Threatened Ecological Communities

4.1.1. Impacts to Cumberland Plain Woodland

The construction of the preliminary Haul Road, will require minor branch trimming of three (3) CPW trees in the north of the Subject Site.

4.1.2. Impacts to Cumberland Plain Woodland Derived Native Grassland

The construction of the Site Compound, Batch Plant and preliminary Haul Road will require the wholesale removal of approximately 1.48ha of Cumberland Plain Woodland Derived Native Grassland.

The potential for significant impact upon CPW was assessed against under the '7-Part Test Assessment of Significance' criteria. It was deemed that the proposed works will have no significant impact such that a local viable population of a species will be placed at risk of extinction.

Therefore, no additional impact assessment, EPBC Act Referral to Commonwealth are required for the proposed development.

4.1.3. Impacts to Coastal Freshwater Wetlands

The construction of the Batch Plant will require the wholesale removal of approximately 0.007ha of 'Wetland Vegetation' comprised of common emergent macrophytes such as *Typha orientalis* and *Phragmites australis*. This vegetation assemblage is located entirely within an artificial dam that was historically created by damming an ephemeral watercourse.

Although this vegetation displayed similar floristic assemblage to the 'Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions Endangered Ecological Community' listed under the TSC Act, The '*Artificial wetlands created on previously dry land specifically for purposes such as sewerage treatment, stormwater management and farm production, are not regarded as part of the Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions TEC*' (NSW Scientific Committee, 2004) (RMS 2017).

4.2. Impacts to Threatened Flora and Fauna

No impacts are anticipated to threatened flora and fauna as a result of the proposed Site Compound, Batch Plant and preliminary Haul Road.

Minor trimming of three (3) CPW trees is limited to select, dead, non-hollow branches that are not likely to provide nesting or foraging habitat for the *Anthochaera phrygia* (Regent Honeyeater) or any other threatened species.

The removal of the farm dam will result in the loss of minor *Litoria aurea* (Green and Golden Bell Frog) habitat. Targeted surveys (call playback and spotlighting) were undertaken in more significant water bodies surrounding the dam, including the large dam approximately 200m east of the dam (**Figure 1**). No GGBF were identified during preparation of the EIS (RMS 2017).

Aquatic survey conducted during the preparation of the EIS revealed '*No protected or threatened fish species are considered likely to occur within the study area due to the limited water and aquatic habitat present*' (RMS 2017).

Although threatened species are unlikely to be present within these dams, there is a possibility that native (Eels and freshwater turtles) and invasive fish species have colonised these dams. Should dams or creeks be dewatered during the construction of the project, then native fish species will need to be relocated in to a similar aquatic environment to which it was found by trained aquatic ecologists under a Fisheries Permit issued by DPI (RMS 2017).

During dewatering, a qualified aquatic ecologist will be present to capture and relocate all native fauna, and humanely euthanise any exotic species in accordance with an Animal Ethics Permit. All dewatering will be undertaken in accordance with the projects approved Farm Dam Dewatering Plan (CPB 2019).

4.3. Impacts to Waterfront Land

The proposal will involve disturbance/modification to two (2) Category 1 watercourses that occur within the Study Area (Figure 3). Given these streams are likely to be intersected by the proposed works, mitigation measures proposed in CPB Contractors relevant management plans are applicable.

Aquatic survey conducted during the preparation of the EIS revealed '*No protected or threatened fish species are considered likely to occur within the study area due to the limited water and aquatic habitat present*' (RMS 2017).

5. References

- Atlas of Living Australia (ALA) (2019) Atlas of Living Australia. Spatial Portal <http://spatial.ala.org.au/>
- Australian Native Plants Society (Australia) (ANPSA) (2010) Threatened Flora Lists: ROTAP Coding System <http://anpsa.org.au/coding.html>
- Briggs, J.D. and Leigh, J.H.C. (1996) Rare or Threatened Australian Plants: 1995 Revised Edition. CSIRO Division of Plant Industry/Australian National Parks and Wildlife Service. CSIRO Publishing, Melb.
- Commonwealth Bureau of Meteorology (BOM) (2018) Richmond, New South Wales November 2018 Daily Weather Observations
- Commonwealth of Australia (2010) Survey guidelines for Australia's threatened birds. Guidelines for detecting birds listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999
- Commonwealth of Australia (2013) Survey guidelines for Australia's threatened orchids. Guidelines for detecting orchids listed as 'threatened' under the Environment Protection and Biodiversity Conservation Act 1999
- Commonwealth of Australia (2018) Protected Matters Search Tool. <http://www.environment.gov.au/epbc/protect/index.html>
- CPB Contractors (2018) The Northern Road STAGE 5 Sensitive Areas Map
- CPB Contractors (2019) Appendix B2 CPB Construction Flora and Fauna Management Plan
- Cropper S.C. (1993) Management of Endangered Plants. CSIRO Publishing, Collingwood, Victoria, Australia
- Department of Environment (DoE) (2013) Matters of National Environmental Significance. Significant impact guidelines 1.1 *Environment Protection and Biodiversity Conservation Act 1999*
- Department of Environment and Conservation (DEC) (2007). Threatened Species Assessment Guidelines: The Assessment of Significance. Department of Environment and Climate Change NSW.
- Department of Environmental Conservation (DEC) (2004b) Threatened Species Survey and Assessment: Guidelines for activities and activities (working draft), New South Wales Department of Environment and Conservation, Hurstville, NSW.
- Department of Environment and Conservation (DEC) (2006) *Pimelea spicata* R. Br. Recovery Plan, Department of Environment and Conservation (NSW), Sydney.
- Department of Primary Industries (DPI) (2008) Threatened Species Assessment Guidelines: The assessment of significance.
- Department of Primary Industries (DPI) (2018) Priority weeds for Greater Sydney, NSW Weeds Wise <https://weeds.dpi.nsw.gov.au/WeedBiosecurity?Arealid=66>
- Department of the Environment (DoE) 2018. Protected Matters Search Tool <http://www.environment.gov.au/epbc/protect/index.html>
- GHD (2017) Vegetation Clearing Map. Roads and Maritime Services The Northern Road Stage 5
- Harden, G.J. (ed) (2002). Flora of New South Wales Volume 2. NSW University Press: Sydney.

- Harden, G.J. (ed) (1992). Flora of New South Wales Volume 3. NSW University Press: Sydney.
- Harden, G.J. (ed) (1993). Flora of New South Wales Volume 4. NSW University Press: Sydney.
- Harden, G.J. (ed) (2000). Flora of New South Wales Volume 1. NSW University Press: Sydney.
- Hazelton and Bannerman (1990) Soil Landscape of the Penrith 1:100 000 Sheet map and report, Soil Conservation Service of NSW, Sydney
- Landcom (2004) Managing Urban Stormwater: Soils and Construction 'The Blue Book', Volume 1, Fourth Edition, New South Wales Government, ISBN 0-9752030-3-7
- NSW Scientific Committee (2011a) Cumberland Plain Woodland in the Sydney Basin Bioregion - critically endangered ecological community listing
- NSW Scientific Committee (2011b) Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions - endangered ecological community listing
- Office of Environment and Heritage (OEH) (2016) NSW Guide to Surveying Threatened Plants
- Office of Environment and Heritage (OEH) (2017a) New South Wales Vegetation Information Sydney 2.1 <http://www.environment.nsw.gov.au/NSWVCA20PRapp/LoginPR.aspx>
- Office of Environment and Heritage (OEH) (2017e) Guidance to assist a decision-maker to determine a serious and irreversible impact <http://www.environment.nsw.gov.au/resources/bcact/guidance-decision-makers-determine-serious-irreversible-impact-170204.pdf>
- Office of Environment and Heritage (OEH) (2017f) Mitchell Landscapes
- Office of Environment and Heritage (OEH) (2018) NSW Bionet. The website of the Atlas of NSW Wildlife <http://www.bionet.nsw.gov.au/>
- PlantNET (2018) The NSW Plant Information Network System, Royal Botanic Gardens and Domain Trust, Sydney. <http://plantnet.rbgsyd.nsw.gov.au>
- Roads and Maritime Services (2017) The Northern Road Upgrade Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park. NSW Environmental Impact Statement / Commonwealth Draft Environmental Impact Statement. Appendix I – Technical working paper: Biodiversity
- Roads & Traffic Authority (2011) Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects. Revision 0/September 2011
- Robinson, L. (2003) 'Field Guide to the Native Plants of Sydney', Third Edition, Kangaroo Press
- Tozer (2003) The native vegetation of the Cumberland Plain, western Sydney: systematic classification and field identification of communities

6. Appendices

Appendix A: Flora List recorded within the Study Area

Appendix B: Photographs

Appendix C: TSC Act Assessment of Significance (5-Part Test)

Appendix A. Flora species recorded within the Study Area

Scientific Name	Status	Canopy	Mid-storey	Groundcover
<i>Araujia sericifera</i> *	Priority			x
<i>Aristida ramosa</i>				x
<i>Briza subaristata</i> *				x
<i>Bryophyllum spp.*</i>				x
<i>Cestrum parqui</i> *	Priority		x	
<i>Chloris gayana</i> *				x
<i>Chloris truncata</i>				x
<i>Cynodon dactylon</i>				x
<i>Cyperus gracilis</i>				x
<i>Dichondra repens</i>				x
<i>Einadia hastata</i>				x
<i>Einadia nutans</i>				x
<i>Einadia nutans subsp. nutans</i>				x
<i>Eragrostis curvula</i> *				x
<i>Eucalyptus moluccana</i>		x		
<i>Eucalyptus tereticornis</i>		x		
<i>Euphorbia peplus</i> *				x
<i>Glycine microphylla</i>				x
<i>Glycine tabacina</i>				x
<i>Lycium ferocissimum</i> *	Priority		x	
<i>Medicago sativa</i> *				x
<i>Microlaena stipoides</i>				x
<i>Modiola caroliniana</i> *				x
<i>Paspalum dilatatum</i> *				x
<i>Phytolacca octandra</i> *				x
<i>Portulaca oleracea</i>				x
<i>Rytidosperma tenuius</i>				x
<i>Setaria parviflora</i> *				x
<i>Sida rhombifolia</i> *				x
<i>Solanum sisymbriifolium</i> *				x
<i>Sporobolus creber</i>				x
<i>Typha orientalis</i>				x
<i>Wahlenbergia gracilis</i>				x

Appendix B. Photographs



Plate 1. Typical Derived Native Grassland – Cumberland Plain Woodland.



Plate 2. Cumberland Plain Woodland to be cleared

**Appendix C: NSW Threatened Species Conservation Act 1995 Assessment of Significance (7-Part Test)
for impacts associated with the proposed Haul Road**

Threatened Species Conservation Act 1995 Assessment of Significance (7-part Test) for Cumberland Plain Woodland in the Sydney Basin Bioregion		
TSC Act Status: Critically Endangered Ecological Community		
Background to Assessment of Significance	<p>This Threatened Species Conservation Act 1995 Assessment of Significance (7-Part Test) is for the combined impacts of the proposed activity upon the local occurrence of Cumberland Plain Woodland in the Sydney Basin Bioregion, which specifically includes:</p> <ul style="list-style-type: none"> removal of branches from three Eucalyptus tereticornis trees in the north of the Subject Site; and the wholesale removal of approximately 1.48ha of CPW Derived Native Grassland (DNG) throughout the Subject Site. 	
Community Ecology	<p>Cumberland Plain Woodland in the Sydney Basin Bioregion (CPW) is the name given to the ecological community in the Sydney Basin bioregion associated with clay soils derived from Wianamatta Group geology, or more rarely alluvial substrates, on the Cumberland Plain, a rainshadow area to the west of Sydney's Central Business District. The mean annual rainfall of this area is typically in the range of 700-900 mm, and is generally lower than that received on more elevated terrain that partially surrounds the Plain. The community typically occurs on flat to undulating or hilly terrain up to about 350 m elevation but may also occur on locally steep sites and at slightly higher elevations. The state-listed woodland community listing includes derived native grasslands (DNG), irrespective of their landscape context.</p>	
(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,	Not Applicable – Cumberland Plain Woodland is not a species.	
(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,	Not applicable – Cumberland Plain Woodland is not an endangered population.	
(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:	<p>(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or</p>	<p>i) No. The action is unlikely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction.</p> <p>The cumulative area of CPW (including DNG) to be impacted covers 1.48ha. This constitutes 21% of CPW within the Study Area and only 0.0007% of the 2053ha of CPW mapped within 10,000ha of the total TNR linear development footprint (RMS 2017).</p>

Threatened Species Conservation Act 1995 Assessment of Significance (7-part Test) for Cumberland Plain Woodland in the Sydney Basin Bioregion		
TSC Act Status: Critically Endangered Ecological Community		
	(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,	<p>ii) The proposed action is not likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.</p> <p>The proposed works will involve wholesale removal of CPW, however, approximately 5.42ha including DNG (2.7ha without DNG) of similar quality CPW will continue to occur in the Study Area.</p> <p>It is not expected that the proposed activity will cause the permanent loss of any structural complexity or unique floristic components of the CPW occurrence, such that it is likely to be placed at risk of extinction.</p>
(d) in relation to the habitat of a threatened species or ecological community:	(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and	<p>i) The proposed activity (Subject Site) will encompass approximately 3ha of the Study Area. Although only 1.48ha (49%) of this is existing CPW.</p> <p>The remaining 1.52ha (51%) has potential to constitute CPW habitat in the future, as it is likely to contain native seedbank resilience that could be rehabilitated using assisted natural regeneration techniques.</p>
	(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and	<p>ii) CPW within the Study Area is already severely fragmented and isolated, within the Study Area and the broader local occurrence. The CPW required for removal occurs on the fringe of the approved TNR upgrade. Therefore, the construction of a temporary Site Compound, Batch Plant and preliminary Haul Road are unlikely to result in further fragmentation of CPW.</p>
	(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,	<p>iii) All areas which support viable patches of CPW are important, however, the patches required for removal are already degraded, and severely fragmented. Higher-quality CPW will continue to persist in the Study Area and the local occurrence, therefore these patches are not considered important to the long-term survival of the ecological community.</p>
(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),	The activity proposed is not likely to have an adverse effect on any declared area of outstanding biodiversity value, directly or indirectly.	

<p>Threatened Species Conservation Act 1995 Assessment of Significance (7-part Test)</p> <p>for</p> <p>Cumberland Plain Woodland in the Sydney Basin Bioregion</p>	
<p>TSC Act Status: Critically Endangered Ecological Community</p>	
<p>(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.</p>	<p>The following Key Threatening Processes (KTPs) are documented to impact upon the survival of CPW CEEC:</p> <ul style="list-style-type: none"> ▪ Clearing of native vegetation ▪ Loss of hollow-bearing trees ▪ Invasion and establishment of exotic vines and scramblers ▪ High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition <p>The proposal will exacerbate the following KTP:</p> <ul style="list-style-type: none"> ▪ Clearing of native vegetation <p>No hollow-bearing trees will be required to be removed to facilitate the proposal.</p>
<p>Conclusion</p> <p>The proposed action will not cause a significant impact on <i>Cumberland Plain Woodland in the Sydney Basin Bioregion</i> therefore the proposed action should not warrant the further impact assessment or offset.</p>	
<p>References</p> <p>NSW Scientific Committee (2016) Cumberland Plain Woodland – endangered ecological community. NSW Scientific Committee – final determination. https://www.environment.nsw.gov.au/determinations/CumberlandPlainWoodlandEndComListing.htm</p> <p>NSW Government (2017) NSW Legislation: Biodiversity Conservation act 2016 No 63, Schedule 3: Key Threatening Processes https://www.legislation.nsw.gov.au/acts/2016-63.pdf</p> <p>Roads and Maritime Service (2017a) Final Environmental Impact Statement – Volume 1: Main Report: The Northern Road Upgrade Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park</p>	



NARLA

environmental

Eastern Sydney Office

2/26-30 Tepko Road
Terrey Hills
NSW 2084

Western Sydney Office

7 Twentyfifth Avenue
West Hoxton
NSW 2171

Hunter Valley Office

10/103 Glenwood Drive
Thornton
NSW 2322

Ph: 02 9986 1295
www.narla.com.au



rms.nsw.gov.au/



13 22 13



Customer feedback
Roads and Maritime
Locked Bag 928,
North Sydney NSW 2059

April 2018
RMS XX.XXX
ISBN: XXX-X-XXXXXX-XX-X