Newcastle Inner City Bypass – Rankin Park to Jesmond

Modification report: additional construction compounds

Submissions report

September 2021

BLANK PAGE

Transport for NSW

Newcastle Inner City Bypass – Rankin Park to Jesmond

Modification report: additional construction compounds

Submissions report

September 2021

Prepared by Transport for NSW
Transport for NSW Publication Number: 21.232
ISBN: 978-1-922549-26-6

Document controls

Document Status	Date	Prepared by	Reviewed by
Rev 1.0	16.08.21	M Mayfield-Smith	A Grainger
Rev 2.0	8.09.21	M Mayfield-Smith	A Grainger

Executive summary

Background

Transport for NSW is planning for the construction of the fifth section of the Newcastle Inner City Bypass between Rankin Park and Jesmond (the project). The project involves the construction of 3.4 kilometres of new four lane divided road between Lookout Road, New Lambton Heights and Newcastle Road, Jesmond. The project is located in the Newcastle local government area, about 11 kilometres west of the Newcastle central business district and about 160 kilometres north of Sydney.

An environmental impact statement (EIS) was prepared by Transport in November 2016 (*Newcastle Inner City Bypass – Rankin Park to Jesmond Environmental Impact Statement* (GHD, 2016a)) to assess the potential impacts of the project. Following public exhibition of the EIS, Transport prepared the *Newcastle Inner City Bypass – Rankin Park to Jesmond Submissions and Preferred Infrastructure Report* (SPIR) (GHD, 2018) to respond to submissions and describe project design refinements. Approval for the project was granted on 15 February 2019 by the Minister for Planning (application number SSI 6888) and was subject to a number of conditions of approval.

In May 2021, Transport requested the following modification to the project:

- Establishment and use of an additional four construction compounds at Peatties Road, Cardiff Road, Astra Street and Lookout Road, by the addition of a reference to the modification report in Condition A1 to enable the establishment and use of four additional construction compounds during construction of the project
- Removal of Conditions A29 to A33 'compliance monitoring and reporting program' conditions and replacement with standard 'Notification of commencement' conditions to align with recent approvals
- In Condition E63 update the reference to 'EIS and the SPIR' to 'documents listed in condition A1' to enable the use of local roads for the proposed additional construction compounds to be approved by the Planning Secretary via approval of this proposed modification.

A modification report was prepared to assess the potential environmental impacts associated with the proposed modification. The modification report was publically exhibited by the Department of Planning, Industry and Environment for 15 days from 16 June 2021 to 30 June 2021. A total of 45 submissions from 42 submitters were received for the proposed modification.

Key issues raised by submissions

Thirty five of the 42 submissions received following the exhibition were from the community, one was from an organisation, and a further six were from government agencies.

The most common issues raised by the community related to the Peatties Road compound site. They included:

- Traffic impacts at the Peatties Road and Charlestown Road intersection
- Existing road infrastructure and the ability to accommodate heavy vehicles
- Pedestrian and motorist safety
- Noise impacts, particularly with the operation of the Peatties Road outside of standard working hours
- Stakeholder and community consultation completed for the project.

The main issues raise by government agencies were:

- City of Newcastle identified that the Astra Street site would not be available for use
- Potential impacts to Council infrastructure surrounding the proposed compound sites
- Department of Planning Industry and Environment (DPIE), Biodiversity Conservation Division, asked for clarification on the extent of flora survey at the Peatties Road site and how *Maundia triglochinoides* has been considered.

Response to submissions and additional studies

In response to submissions, additional studies were carried out for Section 170 listed Tickhole Tunnel and for potential traffic and transportation impacts at Peatties Road.

Tickhole Tunnel is located 65 metres from the Peatties Road compound. While, this is outside of the typical structural damage buffer distance for heritage structures, an additional management measure has been recommended. This measures requires further investigation to confirm the appropriate buffer distance.

Additional traffic studies including pedestrian counts, vehicle movement survey, swept path analysis, traffic detector counts as well as a review of traffic light phasing were carried out in response to community submissions.

A pedestrian count survey found low pedestrian and cyclist usage with three to nine pedestrians recorded over each survey period of at least two hours. Provisions for pedestrians would be managed through the implementation of Condition E71 which requires safe pedestrian and cyclist access to be maintained around worksites.

Vehicle movement surveys confirmed that the Peatties Road and Charlestown Road intersection is currently performing well with very little queuing and sufficient signal operation capacity to accommodate the anticipated construction traffic.

Swept path analysis showed that all vehicle types were able to complete all movements within the existing road infrastructure. However, all vehicles modelled encroached upon opposing lanes when travelling in all directions into and out of Peatties Road. To ensure road user safety is maintained traffic control would be required to manage heavy vehicle movements into and out of Peatties Road. These movements are expected to be primarily during site establishment and decommissioning.

Proposed changes to the project

Transport has made changes to the proposal as presented in the modification report, in response to submissions received. The key changes to the project include:

- The proposed compound at Astra Street is no longer proposed to be used
- Transport are no longer seeking to remove Conditions A29 to A33 ‘compliance monitoring and reporting program’.

Revised environmental management measures

The modification report identified a range of environmental management measures proposed to avoid or reduce the environmental impacts. After consideration of submissions, additional environmental assessment and further consultation with stakeholders, Transport has identified amendments to the environmental management measures for the project. These environmental management measures will guide the detailed design and construction phases of the project.

The key changes include removal of the management measure proposed in the modification report to manage the contamination risk at the Astra Street site as this site is no longer proposed to be used. An additional management measure has also been proposed for Transport to carry out further investigation during detailed design to confirm appropriate construction buffer distances for Section 170 listed Tickhole Tunnel.

Contents

Appendices

Glossary and terms of abbreviations

Term	
BDAR	Biodiversity Development Assessment Report
CNVMP	Construction Noise and Vibration Management Plan
City of Newcastle	City of Newcastle Council
CoA	Conditions of Approval
CTMP	Construction Traffic Management Plan
DPIE	NSW Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EPA	NSW Environment Protection Authority
EP&A Act	*Environmental Planning & Assessment Act 1979 (NSW)*
PCT	Plant Community Type
S170	State Agency Section 170 Heritage and Conservation Register. Section 170 of the *Heritage Act 1977* (NSW) requires NSW Government agencies to keep a register of heritage items/assets owned, occupied or managed by that government agency
SPIR	Submissions and Preferred Infrastructure Report
SSI	State Significant Infrastructure
Transport	Transport for NSW, formerly Roads and Maritime Services

1 Introduction and background

1.1 The project

Transport for NSW (Transport, formerly Roads and Maritime Services) is planning for construction of the fifth section of the Newcastle Inner City Bypass between Rankin Park and Jesmond (the project). The project involves the construction of 3.4 kilometres of new four lane divided road between Lookout Road, New Lambton Heights and Newcastle Road, Jesmond.

In May 2021, Transport prepared a modification report requesting the following changes to the project:

- Establishment and use of four additional construction compounds at Peatties Road, Cardiff Road, Astra Street and Lookout Road
- Removal of Conditions A29 - A33 'compliance monitoring and reporting program' conditions and replacement with standard 'Notification of commencement' conditions to align with recent approvals
- In Condition E63 updating the reference to 'EIS and the SPIR' to 'documents listed in Condition A1' to enable the use of local roads for the proposed additional construction compounds to be approved by the Planning Secretary via approval of this proposed modification.

A more detailed description of the modification is found in the Newcastle Inner City Bypass – Rankin Park to Jesmond Modification report: additional construction compounds prepared by Transport in May 2021. Figure 1.1 shows the locality of the project and Figure 1.2 shows the approved project and the proposed modification.

1.2 Statutory context

Transport formed the opinion that the Newcastle Inner City Bypass: Rankin Park to Jesmond would have an impact which would likely significantly affect the environment and required an environmental impact statement to be obtained under Part 5 of the EP&A Act. Planning approval was granted by the NSW Minister for Planning on 15 February 2019 (application number SSI 6888) and was subject to a number of Conditions of Approval (CoA).

Section 5.25(2) of the EP&A Act notes the Minister's approval for a modification is not required if the infrastructure as modified will be consistent with the existing approval under Division 5.2 of the EP&A Act. However, where there would be a change, the proponent is required to lodge a request to the Minister to modify the Minister's approval. Transport lodged a request to modify the Minister's approval on 2 December 2020.

In accordance with the requirements of the EP&A Act, a modification report was prepared to assess the potential impacts of the proposed modification.

Paper Size ISO A4

0 0.75 1.5 2.25 3

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

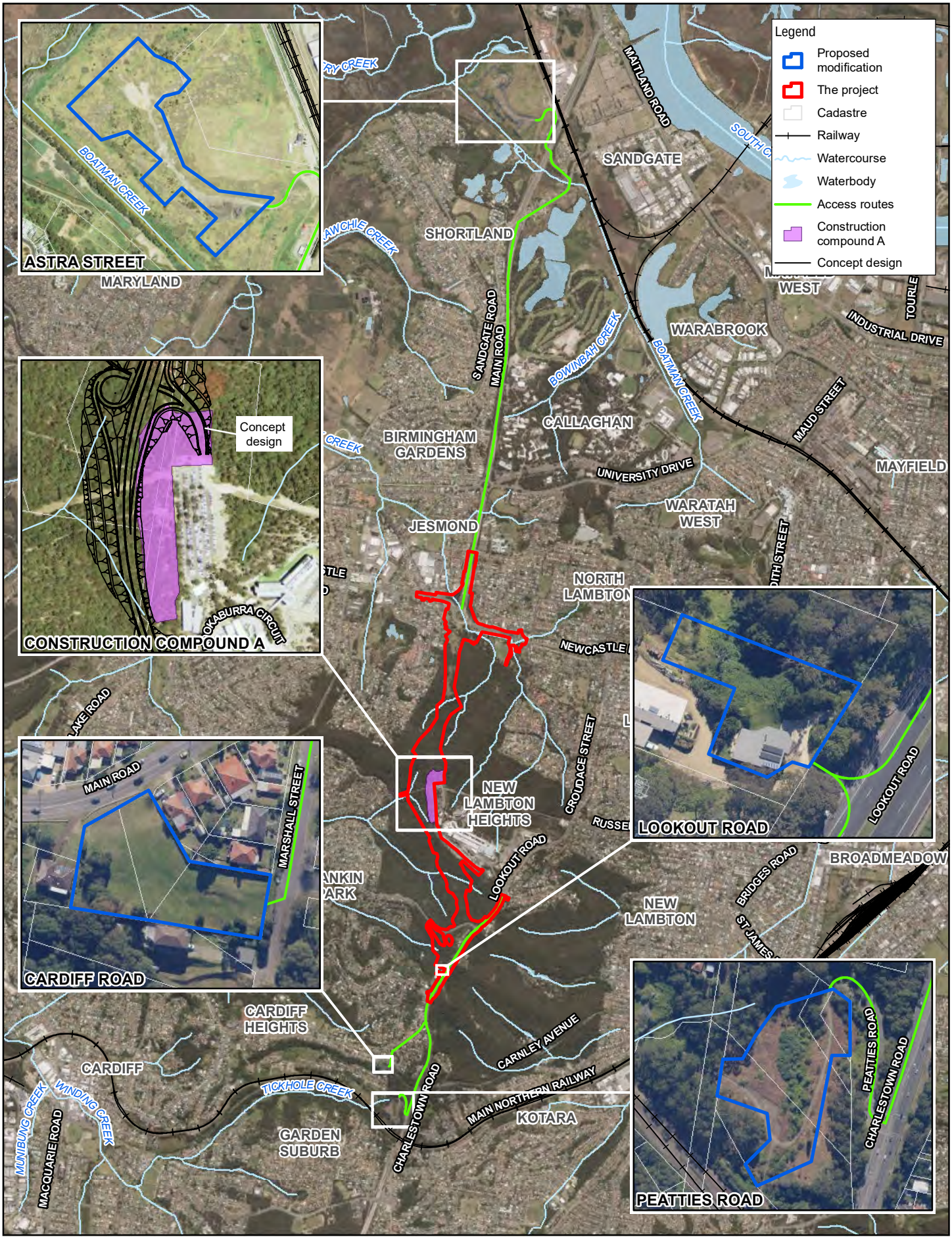
Rankin Park to Jesmond

Figure 1-1

Project locality

Data source: Geoscience Australia: 250k Topographic Data Series 3, 2006; TfNSW / Aurecon: The Project, 2018; LPI: DTDB / DCDB, 2017 .

G:\22\12528155\GIS\Maps\Deliverables\Modification\12528155_MR001_ProjectLocality_0.mxd



Paper Size ISO A4

0 300 600 900 1,200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

Rankin Park to Jesmond

Figure 1-2

Project and proposed modification overview

G:\22\12528155\GIS\Maps\Deliverables\Modification\12528155_MR002_ProjectOverview_0.mxd

1.3 Modification report exhibition

The modification report was exhibited by the DPIE for 15 days from 16 June to 30 June 2021. The exhibition was advertised in the Newcastle Herald. The modification report was exhibited on the Department of Planning, Industry, and Environment's NSW Planning Portal.

Prior to exhibition of the modification report, Transport delivered a letter to properties immediately adjacent to the proposed modification sites in November 2020. The letter advised residents that a modification was being sought and report being prepared, and invited residents to discuss any concerns. Two meetings were held with residents on request, and information provided to clarify proposed site use.

A further letter was delivered to a broader area on 17 June 2021 at the start of the public exhibition of the modification report. The letter outlined ways to provide feedback on the report and invited residents to discuss any concerns with Transport representatives. One meeting with two residents was held and a number of issues clarified by Transport in phone calls and email.

1.4 Purpose of the document

During the exhibition of the modification report, 45 submissions were received. The Secretary of DPIE provided copies of the submissions to Transport. The Secretary required Transport to provide a response to the issues raised in those submissions by Monday 30 August 2021, in accordance with clause 82(2) of the Environmental Planning and Assessment Regulation 2000.

This report identifies the issues raised during exhibition of the modification report and provides responses to those issues (Chapter 2). It includes information regarding additional studies carried out since the exhibition of the modification report (Chapter 3), and describes changes to the project (Chapter 4). Revised environmental management measures for the project are also included (Chapter 5).

2 Project changes

In accordance with Section 5.17 of the EP&A Act, a submissions report has been prepared for the project. This chapter describes changes proposed to the modification to minimise its environmental impact and to deal with issues raised during the public exhibition of the modification report.

2.1 Astra Street

2.1.1 Description

Located within Lot 16 of DP 1149782, this site is located within the former Astra Street landfill site within part of 2 and 28 Astra Street, Shortland, NSW. The site is owned and managed by the City of Newcastle and was nominated as an additional compound site in the modification report.

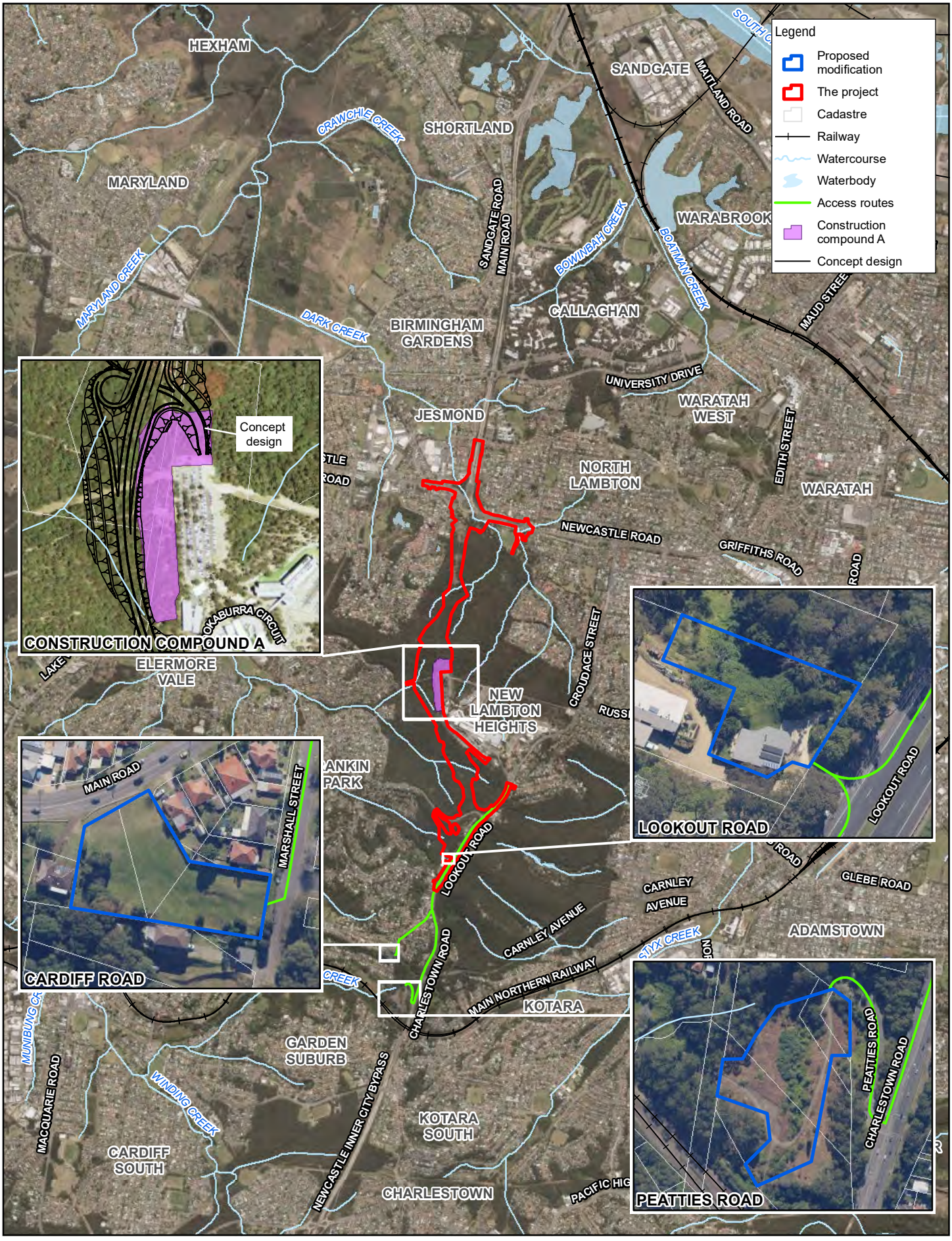
While consultation was carried out with City of Newcastle during the development of the modification report, City of Newcastle have provided further advice that the Astra Street site is no longer available for use by Transport. City of Newcastle raised concern that the proposed use of the site would impact on the Council's current use of the site. The site is also subject to an approved voluntary management proposal issued under Section 17 of the *Contaminated Land Management Act 1997*. While the timing for the remediation program has not been confirmed, City of Newcastle advised that the site would not be remediated until at least the fourth quarter of 2023, and therefore would not be available for use by Transport.

Astra Street site is no longer proposed to be used as a compound site. An updated proposed modification overview is provided in Figure 2.1.

2.2 Compliance monitoring and reporting

2.2.1 Description

Following consideration of community feedback, Transport are no longer seeking approval to remove Conditions A29 to A33 'compliance monitoring and reporting program'.



Paper Size ISO A4

0 300 600 900 1,200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

Rankin Park to Jesmond

Figure 2.1

Project and updated proposed modification overview

G:\22\12528155\GIS\Maps\Deliverables\Submissions\12528155_SR002_ProjectOverview_0.mxd

3 Submissions received

3.1 Respondents

A total of 45 submissions from 42 submitters were received for the modification as summarised in Table 2-1. Of these, 35 were submissions from the community, one from an organisation and six from government agencies. The last submission was received on 16 July 2021 from Water and the Natural Resources Access Regulator (NRAR).

Table 3.1 List of respondents

Respondent	Submitter No.	Section number where issues are addressed
Individual	1	5.10.4, 5.10.5, 0
Individual	2	5.1, 5.2, 5.6.1, 5.8.1, 5.8.3, 5.10.3, 5.10.4, 5.10.5, 0
Individual	3	5.4.1, 5.10.3, 5.10.4, 5.11
Individual	4	5.1, 5.6.2, 5.9, 5.10.3, 5.10.4, 5.10.5, 0
Individual	5	5.6.1, 5.10.4, 0
Individual	6	5.6.1, 5.9, 5.10.4, 0
Individual	7	5.1, 5.2, 5.6.2, 5.8.3, 5.9, 5.10.4, 0
Individual	8	5.6.1, 5.9, 5.10.4, 5.10.5, 0
Individual	9	5.6.1, 5.8.1, 5.8.3, 5.9, 5.10.4, 5.10.5, 0, 5.11
Individual	10	5.6.1, 5.10.4, 0
Individual	11	5.1, 5.2, 5.3, 5.6.1, 5.8.3, 5.9, 5.10.4, 5.10.5, 0, 5.11
Individual	12	5.2, 5.3, 5.6.2, 5.9, 5.10.4, 5.10.5, 0
Individual	13	5.1, 5.2, 5.4.1, 5.6.1, 5.6.2, 5.8.2, 5.9, 5.10.3, 5.10.4, 5.10.5, 0
Individual	14	5.10.4
Individual	15	5.2, 5.4.1, 5.6.1, 5.10.4, 5.10.5, 0
Individual	16	5.1, 5.2, 5.3, 5.4.1, 5.6.2, 5.7, 5.8.2, 5.10.3, 5.10.4, 5.10.5, 0
Individual	17	5.1, 5.2, 5.4.1, 5.6.1, 5.6.3, 5.10.4, 5.10.5, 0
Individual	18	5.6.1, 5.8.3, 5.10.4, 5.10.5, 0
Individual	19	5.9, 5.10.4, 5.10.5, 0
Individual	20	5.2, 5.3, 5.6.1, 5.10.4, 0
Individual	21	5.6.1, 5.6.2, 5.9, 0
Individual	22	5.1, 5.2, 5.6.2, 5.9, 5.10.4, 0

Individual	23	5.6.2, 5.9, 5.10.4, 5.10.5, 0
Individual	24	5.4.2, 5.5.2, 5.6.2, 5.8.3, 5.9, 5.10.2
Individual	25	5.1, 5.3, 5.4.1, 5.4.2, 5.5.2, 5.6.2, 5.9, 5.10.3, 5.10.4, 5.10.5, 0
Individual	26	5.3, 5.6.1, 5.8.2, 5.9, 5.10.5, 0
Individual	27	5.10.1
Individual	28	5.9
Individual	29	5.4.2, 5.10.4, 5.10.5, 0
Individual	30	5.1, 5.3, 5.5.1, 5.6.1, 5.9, 5.10.3, 5.10.4, 5.10.5
Individual	31	5.6.1, 5.6.2, 5.6.3, 5.9, 5.10.4, 5.10.5, 0
Individual	32	5.2, 5.4.1, 5.9, 5.10.4, 5.10.5, 0
Individual	33	5.9, 5.10.4, 0
Individual	34	5.10.4
Individual	35	5.1, 5.6.1, 5.9, 5.10.4
Peatties Road Action Group	36	5.1, 5.2, 5.3, 5.4.2, 5.5.2, 5.6.2, 5.9, 5.10.3, 5.10.4, 5.10.5, 0
City of Newcastle	37	4.3, 4.4.1, 4.4.2, 4.5.1, 4.7, 4.8, 4.9.2
Lake Macquarie City Council	38	4.4.1, 4.6, 4.8, 4.9.2, 4.9.3
Biodiversity and Conservation Division, DPIE	39	4.3
Environment Protection Authority	40	4.2, 4.6, 4.8, 4.10
Water and the Natural Resources Access Regulator (NRAR)	41	4.1
Heritage NSW – Aboriginal cultural heritage (ACH)	42	4.1

3.2 Overview of the issues raised

Each submission has been examined individually to understand the issues being raised. The issues raised in each submission have been extracted and collated, and corresponding responses to the issues have been provided. Where similar issues have been raised in different submissions, only one response has been provided. The issues raised and Transport response to these issues forms the basis of this chapter.

A total of 27 (64%) objections were received for the proposal. Of these objections, 26 (62%) related to the use of the Peatties Road site and one (2%) objected to the use of the Astra Street site. Three (7%) submissions expressed support for the overall project but raised concerns regarding the proposed Peatties Road and Cardiff Road sites. A position on the proposal was not offered in 15 (36%) submissions.

The main issues raised by government agencies were:

- City of Newcastle identified that the Astra Street site would not be available for use
- Potential impacts to Council infrastructure surrounding the proposed compound sites
- Biodiversity Conservation Division, DPIE asked for clarification on the extent of flora survey at the Peatties Road site and how *Maundia triglochinoides* has been considered.

The main issues raised by the community were:

- Traffic impacts at the Peatties Road and Charlestown Road intersection
- Existing road infrastructure and the ability to accommodate heavy vehicles
- Pedestrian and motorists safety
- Noise impacts, particularly operation of the Peatties Road site outside of standard working hours
- Stakeholder and community consultation completed for the project.

3.3 Consultation

During investigation into suitable compound sites, strong consideration was given to reducing any impact on residential communities when investigating potential compound sites, as well as proximity to the project, land ownership and environmental impact. Due to the urban nature surrounding the project area and environmental constraints surrounding the project, suitable locations were difficult to identify.

When the four proposed sites were identified as potentially suitable, immediately adjacent residents were advised of Transport's upcoming investigations. This notification was provided in November 2020.

Following the commencement of DPIE's public exhibition of the modification report, a letter was distributed to surrounding residents informing them of the proposal and how to submit feedback. The letter also provided contact details of Transport project team members who were available to provide more information if required.

During exhibition of the modification report, DPIE coordinated various elements of the process including the requirements for supporting documents and evidence, duration of exhibition and methods for the community, agencies and other stakeholders to provide feedback.

Transport have also established a 24-hour community liaison project phone line, email and mailing address for the project. These contact facilities would continue to be available throughout construction. During construction, site contact would also be provided so that complaints can be received and addressed in a timely manner.

The community would be notified prior to the commencement of work at the proposed compound sites. Consultation with the community would also be carried out prior to any out of hours works. This consultation includes providing the community with:

- A schedule of likely out of hours work for a period of at least three months
- Potential work, location and duration
- Identification of respite periods
- Noise characteristics and likely noise and vibration impact levels
- Likely mitigation and management measures.

4 Response to agency issues

4.1 Respondents

The following public authorities provided a submission in response to the modification report:

- Biodiversity Conservation Division, DPIE
- NSW Environment Protection Authority
- Lake Macquarie City Council
- City of Newcastle

DPIE - Water and the Natural Resources Access Regulator (NRAR), known as Water group reviewed the modification report and noted that they had no comment on the proposed modification.

Heritage NSW – Aboriginal Cultural Heritage reviewed the modification report and was satisfied the report considered and addressed Aboriginal cultural heritage matters for the proposed modification. Heritage NSW didn't make any further comment.

4.2 Air Quality

Submission number

40

Issue description

NSW Environment Protection Authority (EPA) noted air quality impacts are generally consistent with those described in the Environmental Impact Statement (EIS) and are comfortable Transport would be able to manage any impacts with the implementation of standard management and mitigation measures.

Response

An Environmental Impact Statement (EIS) was prepared in November 2016 to assess the potential impacts of the project. A modification report was prepared in June 2021 to assess the potential environmental impacts associated with the proposed additional compound sites. Transport notes EPA's endorsement of the proposed approach to manage any air quality impacts.

4.3 Biodiversity

Submission number(s)

37, 39

Issue description

In summary, the respondents raised the following issues:

- Biodiversity Conservation Division, DPIE asked for clarification on the extent of flora survey at the Peatties Road site and how *Maundia triglochinoides* has been considered
- City of Newcastle requested an arboricultural impact assessment and Tree Protection Plan for any street and park trees on City of Newcastle land within and adjacent to the construction compound and its accessway, and requested tree exclusion fencing based on Arboricultural impact assessment in accordance with Australian Standard AS4970-2009.
- City of Newcastle requested any squirrel glider habitat trees and habitat features in the vicinity of construction compound are appropriately identified and protected
- City of Newcastle asked that protocols to prevent the introduction of weeds and managed weeds are implemented
- City of Newcastle requested light spill from the compound site into adjacent bushland and creek corridor be mitigated.

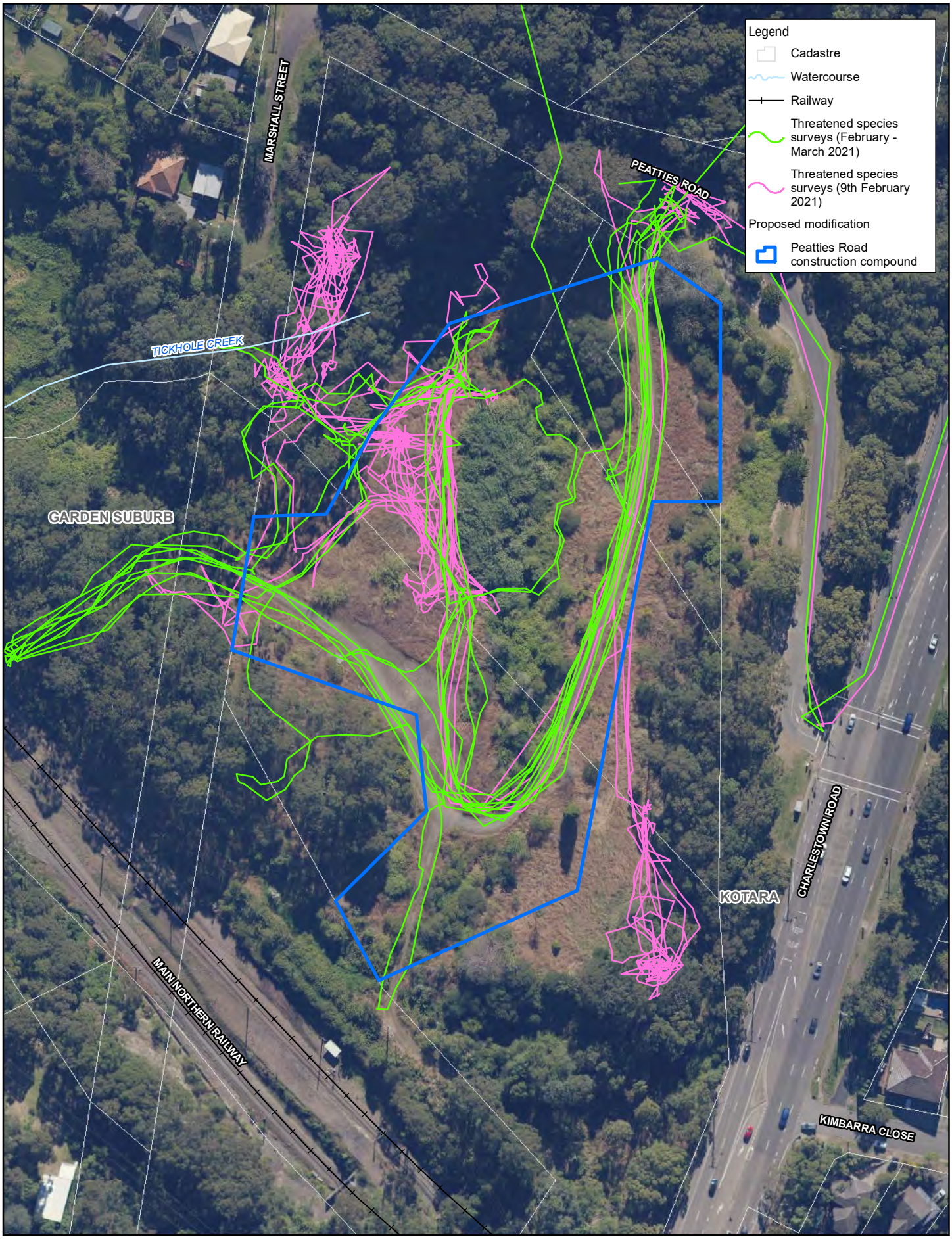
Response

As identified in Section 5.2 of the BDAR two threatened flora surveys (Table 5-3) were completed in accordance with methods described in *Surveying threatened plants and their habitats NSW survey guide for the Biodiversity Assessment Method* (DPIE 2020). An initial random meander survey was completed on 9 February 2021 to collect vegetation plot data. A further site survey was carried out on 24 February 2021. This survey included opportunistic observations for threatened flora and fauna. These surveys did not detect any *Maundia triglochinoides* and determined that site is unlikely to provide suitable habitat for this species. Figure 5.1 in the BDAR has been updated as Figure 4.1 below.

Survey efforts were restricted to the outer edge of the artificial wetland due to the extremely dense vegetation growth within the wetland which made the area impenetrable as shown in Photo 1 (also provided as photograph 1 in the BDAR) and Photo 2. *Maundia triglochinoides* is known to occur in permanent swamps, lagoons, dams, channels, creeks or shallow freshwater 30 to 60 centimetres on heavy clay, low nutrient soils (DPIE 2021). The wetland area within the Peatties Road site does not contain any freestanding water, contains dense thickets of vegetation including a high abundance of exotic species and occurs on a loam substrate rather than heavy clays with which this species is typically associated.

	
Photo 1 – Peatties Road artificial wetland	Photo 2 - Peatties Road artificial wetland

Native vegetation removal is generally not proposed within the modification areas other than 0.2 hectares of low condition artificially created wetland at Peatties Road. A minimum buffer distance of three metres between the compound site boundary and adjacent areas of native vegetation has been provided at Peatties Road. Additionally, environmental management measures BD07 requires tree exclusion zones be identified and demarcated in accordance with Transport's Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA 2011a). Guide two, which has been prepared to meet the Australian Standard AS4970-2009, identifies the management requirements for determining and establishing tree exclusion zones. One example is using the area directly under the tree branches, known as the drip line, as a practical way of determining the tree exclusion zone. Tree exclusion zones would be established in accordance with Australian Standard AS4970-2009 through the implementation of Transport's Biodiversity Guidelines.



Paper Size ISO A4

0 9.5 19 28.5 38

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Transport for NSW
Newcastle Inner City Bypass
Biodiversity Development Assessment Report

Project No. 12528155
Revision No. 0
Date 27 Jul 2021

Threatened species survey locations

Figure 4-1

G:\22\12528155\GIS\Maps\Deliverables\BDAR\12528155_BDAR006_ThreatSpecies_0.mxd
Print date: 27 Jul 2021 - 10:29

No hollow bearing trees or habitat features, including those suitable for squirrel gliders, were identified during the site survey completed as part of the BDAR. Measures to minimise the impact from the proposed modification on biodiversity, including habitat protection, weed management and light spill are provided in Appendix H of the modification report. These include:

- BD07: Exclusion zones will be identified and demarcated in accordance with Transport's Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (Guide 2: Exclusion zones) (RTA 2011)
- BD12: Protocols for preventing or minimising the spread of noxious and environmental weeds will be developed and implemented in accordance with Transport's Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (Guide 6: Weed Management) (RTA 2011)
- BD13: Protocols for preventing the introduction and/or spread of disease causing agents such as bacteria and fungi will be developed and implemented in accordance with Transport's Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (Guide 7: Pathogen Management) (RTA 2011)
- BD18: Down-lights and motion sensor lighting will be used where possible during construction in order to reduce light spill to surrounding habitat.

4.4 Landscape character and visual amenity

4.4.1 Site restoration

Submission number(s)

37, 38

Issue description

In summary, the respondents raised the following issues:

- City of Newcastle requested a remediation plan of Peatties Road be prepared that supplements Council's surrounding bushland management. Council have noted they were amendable to work with Transport on the delivery of this plan.
- Lake Macquarie City Council and City of Newcastle both requested all sites be returned to an appropriate state.

Response

Transport would lease land for the proposed Peatties Road compound site from the landowners, being City of Newcastle and Sydney Trains. At a minimum, the site would be restored to a condition similar to the existing, upon completion of the works. Prior to site establishment, lease arrangements would be entered into and negotiated with the property owners. These arrangements would include an agreement for post-occupation site condition.

The landscape character and visual amenity related impacts of the proposed modification would be mitigated through the environmental management measure detailed in Section 7. These include:

- LC05: Disturbed areas would be progressively revegetated during the construction period.
- LC07: Landscape and rehabilitation work will be monitored and remedial measures implemented where required until vegetation has stabilised.

4.4.2 Visual Amenity

Submission number

37

Issue description

City of Newcastle requested provision of screening planting at the Cardiff Road site.

Response

Concerns around visual amenity at the Cardiff Road site was also raised by the community and a response is provided in Section 5.4.2.

4.5 Land use and Property

4.5.1 Astra Street

Submission number

39

Issue description

In summary, the City of Newcastle raised the following issues:

- Raised concern that the use of Astra Street would impact Council's current activities at the site
- Expressed concern regarding the availability of Astra Street as their program for the Astra Street remediation program is not until after the start of construction for the project and this timing is not subject to confirmation until the end of 2022.

Response

Transport notes City of Newcastle's comments and as described in Section 2.1, has removed the proposed use of Astra Street from the modification application.

4.6 Noise and vibration

Submission number(s)

38, 40

Issue description

In summary, the respondents raised the following issues:

- Lake Macquarie City Council notes no noise mitigation measures are within the modification report and expressed concern over noise impacts at Cardiff Road, and request consideration for noise mitigation measures
- Lake Macquarie City Council recommend that due to the extent of predicted noise impacts at Cardiff Road, this site is unsuitable for the proposed use
- EPA raised concern over the high number of receivers reported to be impacted by the modification and that the predicted noise levels would be unacceptable to the community
- EPA noted that standard management and mitigation measures should adequately minimise impacts to an acceptable level to the majority of the community. It was also noted that Transport have committed to these measures.

Response

Noise mitigation measures are provided in Appendix H of the modification report and have been revised in Section 7 of this report. Management measures outlined in Section 7 would be implemented at all compound sites.

A construction noise and vibration assessment (GHD, 2021) was prepared for the proposed modification and included as Appendix E of the modification report and summarised in Section 6.2.3. The assessment identified a number of exceedances of the noise management levels from short term activities such as clearing and grubbing as well as longer term activities like stockpiling. Transport only propose to carry out limited activities at the Cardiff Road sites as identified in Table 2.3 of the modification report. The average worst case vehicle movements is shown in Table 6.3 of the modification report and identify that the site is anticipated to generate an additional four vehicles (two light vehicles and two heavy vehicles) per day. All activities are limited to occurring during standard working hours only. Noise and vibration impacts are expected to be minimised with the implementation of the management measures outlined in Section 7.

4.7 Project Description

Submission number

37

Issue description

In summary, City of Newcastle raised the following issues:

- Suggested that DPIE seek further information on the nature of use at each site
- Requested ongoing monitoring, inspection and compliance reporting for the duration of construction.

Response

Section 2.4 of the modification report includes details of the proposed compound site and Table 2.3 identifies the activities to be carried out at each site and where out of hours works are proposed.

Compliance monitoring and reporting was also raised by the community and a response is provided in Section 5.8.1.

4.8 Stakeholder and community consultation

Submission number(s)

37, 38, 39

Issue description

In summary, the respondents raised the following issues:

- City of Newcastle noted that a notification was not provided to some residents in Marshall Street who are located in the vicinity of the Cardiff Road site
- Lake Macquarie City Council noted the importance of community notification to receivers adjacent to proposed compound sites and along haulage routes
- EPA note that Transport has committed to ongoing stakeholder consultation during construction.

Response

Transport delivered a letter to properties immediately adjacent to the proposed modification sites in November 2020. Residences on Marshall Street who were not immediately adjacent to the proposed compound sites were not included in this distribution. The letter advised residents that a modification was being sought and report being prepared, and invited residents to discuss any concerns. Two meetings were held with residents on request, and information provided to clarify proposed site use.

A further letter was delivered to a broader area on 17 June 2021 following the start of the public exhibition of the modification report. This distribution area covered all residences near the four proposed sites, including all residences on Marshall Street south of Cardiff Road, and all residents

on Wimbledon Grove. The letter informed residents of the proposal, outlined how to provide feedback on the report and invited residents to discuss any concerns with Transport representatives. One meeting with two residents was held and a number of issues were clarified by Transport in phone calls and email.

Further details on stakeholder and community consultation carried out as part of the modification and commitments to ongoing consultation is provided in Section 5.9.

4.9 Traffic and transportation

4.9.1 Emergency services

Submission number

37

Issue description

In summary, the respondent raised the following issues:

- City of Newcastle require construction stage bushfire risk management controls to be site specific, in particular Peatties Road due to the sole emergency vehicle route for residents.

Response

Bushfire risk and emergency evacuation was raised by community submissions. A response is provided in Section 5.3.

4.9.2 Road Infrastructure

Submission number(s)

37, 38

Issue description

In summary, the respondents raised the following issues

- City of Newcastle requested pre and post dilapidation surveys of local roads in the vicinity of the compounds
- City of Newcastle have expressed concern about the impacts of work on the stability of the Tickhole Creek culvert, which runs under Peatties Road to the north-west of the compound site and the cost to repair any damages
- Lake Macquarie City Council require that the local road network be returned to an appropriate state after completion of works and repaired as necessary.

Response

In accordance with CoA E68 and E69, condition surveys of local roads would be completed prior to the start of construction. Any damage caused by construction would be repaired and the roads would be restored to an equivalent pre-existing condition.

The Tickhole Creek culvert under Peatties Road is not anticipated to be impacted by construction traffic as it is not located on a construction access route. Any potential impacts would be managed in accordance with CoA E54, E55 and E56. Conditions E54 and E55 require pre and post condition surveys to be completed on structures at risk of damage from the construction works. This includes providing the asset owner with copies of both the pre and post condition survey report. In accordance with Condition E56, where liable, Transport are responsible for rectifying any damage caused by the project.

4.9.3 Traffic

Submission number

38

Issue description

In summary, the respondent raised the following issues

- Lake Macquarie City Council request consideration of traffic impacts of heavy vehicles accessing Cardiff Road compound during peak times

Response

The Cardiff Road compound site is intended to be used as a minor facility only, mainly for the temporary storage and stockpiling of materials. These proposed activities were detailed in Table 2-3 of the modification report. Daily vehicle movements would be infrequent and expected to comprise about two light vehicles and two heavy vehicles. Given the existing daily traffic volumes on Cardiff Road of 14,700 (two way), this minor increase is not expected to impact traffic including during peak times and when accessing the compound via Marshall Street. Where possible vehicle movements to and from the compound, particularly heavy vehicles, would be prioritised outside of peak periods.

4.10 Water quality

Submission number

37

Issue description

In summary, City of Newcastle raised the following issues:

- Recommended adjustment of Peatties Road construction compound boundary as Tickhole Creek has not been accurately mapped
- Stated they do not permit any new direct stormwater connection or increase in overland flows into Tickhole Creek including after site restoration occurs.

Response

Mapping of waterways including Tickhole Creek was prepared using Water Management (General) Regulation 2018 Hydroline spatial data. During the biodiversity site surveys, the location of Tickhole Creek in relation to the proposed site compound was verified to be outside of the boundary of the Peatties Road site. Furthermore, the site inspection found that Tickhole Creek held no particular ecological value.

Potential water quality impacts of the proposed modification would be mitigated through the environmental management measure detailed in Appendix H of the modification report and revised Section 7. This includes the preparation and implementation of a soil and water management plan in consultation with City of Newcastle, DPI Fisheries and DPIE Water, to identify management strategies and specific measures to be implemented on site. Other management measures are listed below. With the implementation of these management measures there is expected to be a negligible contribution to existing overland flow and peak flow to Tickhole Creek.

- FD07: Activities that may affect existing drainage systems will be carried out so that existing hydraulic capacity of these systems is maintained where possible
- SW13: A soil conservation specialist will be engaged during construction to advise on the planning and implementation of erosion and sedimentation controls
- SW14: Sediment laden water will be directed through the construction phase water management system. All construction sedimentation basins and associated temporary

drainage shall be designed and constructed as detailed in this report to manage flows generated by the 80th percentile five day rainfall event.

5 Response to community and organisation issues

5.1 Air Quality

Submission number(s)

4, 7, 11, 13, 16, 17, 22, 25, 30, 36

Issue description

In summary, the respondents raised the following issues:

- Expressed concerns about potential impact of reduced air quality on physical and emotional wellbeing
- Commented that no specific air quality assessment has been completed for the Peatties Road site
- Requested restrictions on the materials, size and management at the Peatties Road site
- Concerned on the lack of assurance on air quality and types of hazardous and other material that it may contain
- Requested details on the type of materials to be stockpiled at the Peatties Road site
- Asked if stockpiles can be placed closer to the construction area
- Questioned how air quality would be monitored.

Response

The potential air quality impacts of the project were assessed in chapter 17 of the EIS and Section 6.11 of the SPIR. An environmental screening and scoping process was completed to determine if changes to the project as a result of the proposed modification would require further assessment. This screening assessment is provided in Table 6-1 of the modification report and determined no further assessment was required and air quality impacts could be effectively managed through the implementation of the management measures in Appendix H of the modification report. These measures are included in Section 7 and include:

- AQ01: The Construction Environmental Management Plan will include measures for the management of air emissions.
- AQ02: The following mitigation measures will be used on-site and included as part of the Construction Environmental Management Plan:
    - Areas of exposed surfaces are to be minimised through construction site planning and programming
    - Locating stockpiled material as far as possible from sensitive receivers
    - All stockpiles will be designed, established, operated and decommissioned in accordance with Roads and Maritime Stockpile Site Management Guideline (Roads and Maritime, 2015)
    - Dust suppression measures, such as the use of water carts or soil binders, will be used on any unsealed surfaces and other exposed areas
    - Sealed roads at access points will be watered-down regularly to minimise the re-suspension of dust on sealed roads
    - Imposing work vehicle speed limits and designating specific routes for haulage and access
    - Construction activities which would generate dust would be avoided or modified during high wind periods where possible
    - All trucks will be covered when transporting materials to and from the site
    - All construction equipment will be maintained and operated in accordance with manufacturer specifications.

Section 5.4.5 of the EIS provides details on the types of materials to be stockpiled. Locating stockpiles within the project alignment would be prioritised. Where materials cannot be stockpiled in the main project alignment, they may be stockpiled at the Peatties Road and Cardiff Road

compound sites. At the Peatties Road site stockpiling would be limited to temporary storage of materials and equipment, such as pre-cast concrete drains, light poles and work equipment. Materials with the potential to produce dust or other environmental impacts would not be stored at the Peatties Road site.

In accordance with CoA C9 to C15, Transport would prepare an air quality construction monitoring program for approval by DPIE prior to the start of construction. This monitoring program would include details on the locations and frequency of air quality monitoring for the project. This would include monitoring of dust at the Peattie's Road compound site. Monitoring program at the other compound sites would be based on the activities being carried out at the site and potential air quality impacts. A construction monitoring report would be prepared to detail the results of the monitoring program. Once prepared, both the air quality construction monitoring program and a construction monitoring reports would be made publically available on the projects webpage.

5.2 Biodiversity

Submission number(s)

2, 7, 11, 12, 13, 15, 16, 17, 20, 22, 32, 36

Issue description

In summary, the respondents raised the following issues:

- Raised concern about impacts to local flora and fauna, from habitat removal, noise, light spill and edge effects
- Expressed concern about the cumulative impact to biodiversity with surrounding urbanisation
- Raised concern that the proposed compound sites aren't being located adjacent to the project alignment due to environmental reasons, but there hasn't been the same consideration to the native fauna living adjacent to the Peatties Road site
- Requested details on the trees to be removed
- Noted that the Plant Community Type (PCT) at Peatties Road is incorrect
- Commented that the modification report does not address weed management
- Stated that the Peatties Road site contains giant parramatta grass (*Sporobolus fertilis*) a noxious weed
- Lack of consideration of indirect impacts from noise and light on powerful owl (*Ninox strenua*) and requested the consideration of mitigation measures
- Requested details on how fauna habitat would be protected.

Response

A BDAR was prepared as part of the modification report to assess the potential biodiversity impact from the proposed modification. The BDAR was included as Appendix D of the modification report and summarised Section 6.2.1.

The proposed compound sites were selected based on their proximity to the project and as they have all been subject to prior disturbance. All sites have been heavily modified and are comprised of mainly exotic vegetation. Peatties Road is the only site with potential impacts to biodiversity associated with the removal of 0.2 hectares of native vegetation. This native vegetation is associated with an artificially created wetland at the centre of the site, which has regrown following historical disturbance.

Native vegetation at the margins of the Peatties Road site provides a buffer to sensitive receivers near the site, and would remain outside of the compound site boundary to minimise noise and visual disturbance, as well as maintain habitat for native flora and fauna, and habitat connectivity with adjacent vegetation. The disturbance footprint for the compound has been located in areas of the site containing the least biodiversity values, such as areas of exotic grassland, that do not contain habitat for threatened species. The compound site would provide a minimum buffer of

three metres between the boundary of the compound and adjacent areas of native vegetation to ensure accidental direct impacts are avoided.

The area of each compound site proposed to be used are shown in figures 4.1a to 4.1d of the BDAR. The area to be used within Peatties Road compound site is also included in Figure 5.1 of this report. The BDAR is provided as Appendix D to the modification report. Tree removal would be limited to within those areas, with tree protection measures provided in accordance with environmental mitigation measures detail in Appendix H of the modification report.

A site survey was carried out by ecologists in February 2021. This site survey included vegetation mapping. To determine the appropriate Plant Community Types (PCTs) for the site the following data was collected in the field and then compared against PCTs outlined in the BioNet Vegetation Classification Database (OEH 2020):

- Soil type
- Landscape position
- Floristics data and structural composition.

Other things considered when determining the PCT types include:

- Lower Hunter regional vegetation mapping (DPIE, 2017)
- Site disturbance history.

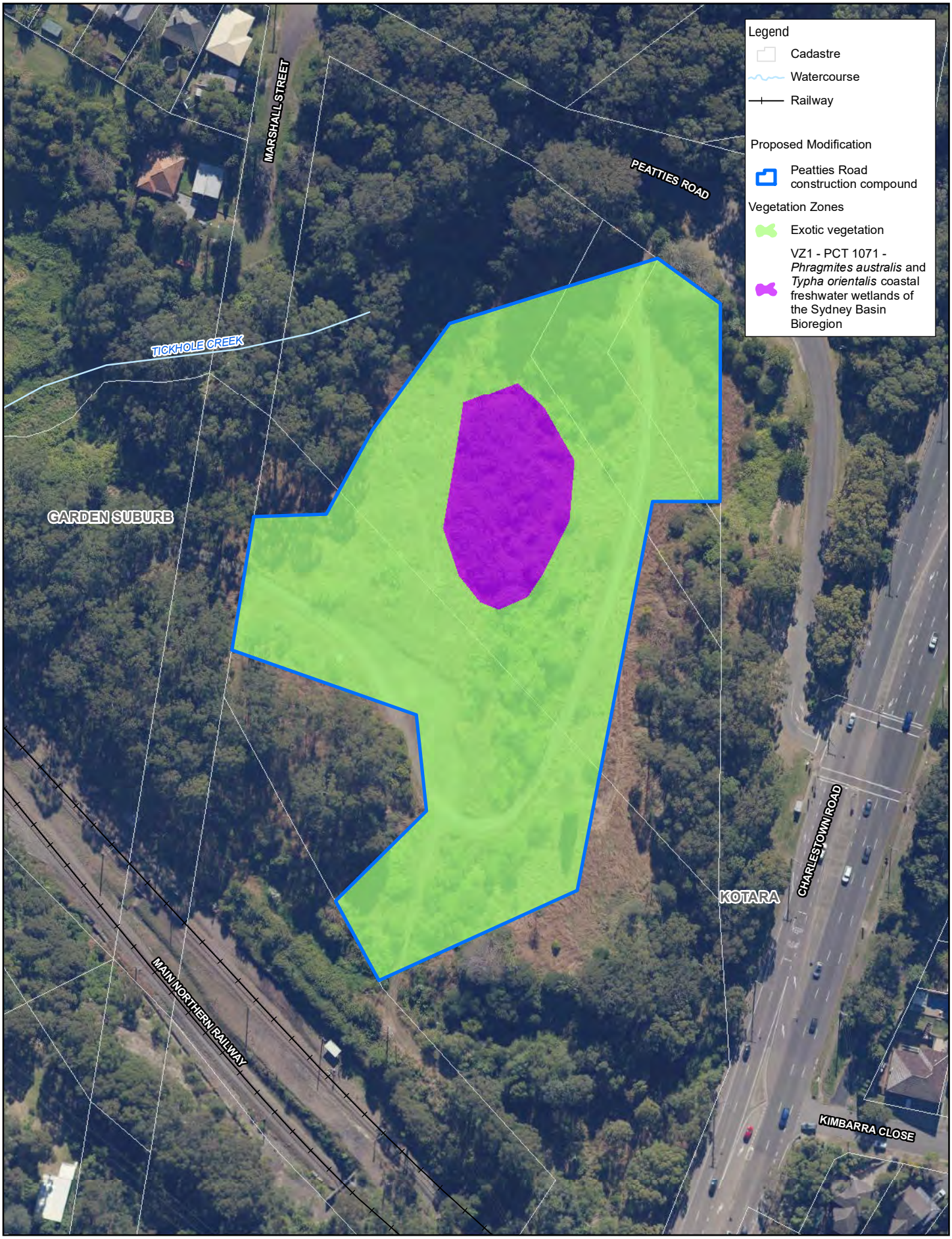
Details of the survey methodology and PCT description are provided in Section 4 for the BDAR. The full flora species list used to classify the PCT is provided in Annexure A of the BDAR.

The site survey also identified a number of high threat, priority weed species and weeds of national significance within the proposed modification area. These weeds, the site they were recorded within and their status are listed in Table 4-3 of the BDAR.

An assessment of the likelihood of occurrence of all threatened species predicted to occur by the Biodiversity Assessment Methodology calculator, and threatened species and community profiles is provided in Annexure B of the BDAR. This assessment included consideration of the powerful owl and squirrel glider. Both species were assessed as having a low likelihood of occurrence. As detailed above, the compound site boundary at Peatties Road provides a minimum buffer of three metres between the compound and adjacent areas of native vegetation to minimise direct and indirect biodiversity impacts.

Measures to minimise the proposal impact on biodiversity including habitat protection, weed management are provided in Appendix H of the modification report and have been revised in Section 7 of this report. These measures include:

- BD07: Exclusion zones will be identified and demarcated in accordance with Transport's Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (Guide 2: Exclusion zones) (RTA 2011)
- BD12: Protocols for preventing or minimising the spread of noxious and environmental weeds will be developed and implemented in accordance with Transport's Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (Guide 6: Weed Management) (RTA 2011)
- BD13: Protocols for preventing the introduction and/or spread of disease causing agents such as bacteria and fungi will be developed and implemented in accordance with Transport's Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (Guide 7: Pathogen Management) (RTA 2011).



Paper Size ISO A4

0 9.5 19 28.5 38

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Transport for NSW
Newcastle Inner City Bypass

Peatties Road construction compound

Project No. 12528155
Revision No. 0
Date 20 May 2021

Figure 5-1

G:\22\12528155\GIS\Maps\Deliverables\BDAR\12528155_BDAR004_VegetationZones_DDP_0.mxd
Print date: 20 May 2021 - 10:28

5.3 Emergency Response

Submission number(s)

11, 12, 13, 16, 20, 25, 26, 30, 36

Issue description

In summary, the respondents raised the following issues:

- Expressed concern that the area surrounding Peatties Road is zoned as a bushfire risk and the additional construction traffic would increase the risk associated with an emergency evacuation
- Questioned if there has been any consideration for emergency vehicle access
- Analysis of whether the proposal increases the bushfire risk to property and life, including evacuation
- Potential impacts to emergency services travelling on Charlestown Road to John Hunter Hospital
- Requested no hot works during fire risk days and the work site and Peatties Road be smoke free.

Response

As described in Section 6.2.2 of the modification report, Charlestown Road forms part of the existing Newcastle Inner City Bypass and carries between 47,200 and 55,100 vehicles per day (Aurecon, 2016a and Aurecon, 2018a). The average worst case daily vehicles movements (two way) at the Peatties Road site is 100 light and 20 heavy vehicles. This slight increase in traffic volume on Charlestown Road is not expected to impact emergency vehicles travelling to the John Hunter Hospital. Potential traffic impacts from the proposed modification are further discussed in Sections 5.10 and 6.2.

Emergency response impacts from the proposed modification, including bushfire risk, emergency access and evacuation would be mitigated through the following management measures:

- HR01: The construction environmental management plan will include a bushfire management plan in accordance with the Planning for Bush Fire Protection 2006 (Rural Fire Service 2006). Measures to be implemented to manage bushfire risk include:
    - Consultation requirements for community notifications in the event of a bushfire
    - Maintaining equipment in good working order
    - Ensuring plant and equipment are fitted with appropriate spark arrestors, where practicable
    - Ensuring site workers are informed of the site rules including designated smoking areas and putting rubbish in designated bins
    - Obtaining hot work permits and implementing total fire bans as required
    - Implementing adequate storage and handling requirements for potentially flammable substances in accordance with the relevant guidelines.
- HR02: Consultation with emergency services, including the Rural Fire Service and Fire and Rescue NSW to:
    - Ensure access is maintained during and after construction
    - To identify hazard reduction burns in the locality of the project.

5.4 Landscape character and visual amenity

5.4.1 Site restoration

Submission number(s)

3, 13, 15, 16, 17, 25, 32

Issue description

In summary, the respondents raised the following issues:

- Raised concern that the modification report doesn't include a rehabilitation plan
- Questioned how the sites would be restored after the completion of construction
- Recommended the Peatties Road site be rehabilitated with native vegetation
- Raised concern about deterioration of the Peatties Road site
- Expressed concern about mess being created at Peatties Road.

Response

City of Newcastle and Lake Macquarie City Council also raised site restoration in their submissions. A response is provided in Section 4.4.1. Restoration of the proposed compounds sites would be managed in agreement with the landowner and through the implementation of the management measures in Section 7 of this report, including:

- BD11: Native vegetation will be re-established in accordance with a re-vegetation management plan prepared in accordance with Transport's Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (Guide 3: Re-establishment of native vegetation) (RTA 2011). The revegetation management plan will use suitable species from the Indigenous vegetation communities present at the site to replace habitat for threatened species including Grey-headed Flying-fox.
- SW18: Proposed re-vegetation of cleared areas will be carried out with consideration of minimising erosion and in accordance with the Guideline for Batter Surface Stabilisation using vegetation (Roads and Maritime 2015).
- LC07: Landscape and rehabilitation work will be monitored and remedial measures implemented where required until vegetation has stabilised.

5.4.2 Visual Amenity

Submission number(s)

24, 25, 29, 36

Issue description

In summary, the respondents raised the following issues:

- Raised concern about privacy at the Cardiff Road site
- Requested temporary boundary fencing at Peatties Road be out of sight
- Questioned if the mature trees at the Peatties Road site would remain.

Response

Privacy at the compound sites, including the Cardiff Road site would be managed in accordance with Condition A20:

- A20: Boundary screening must be erected around ancillary facilities that are adjacent to sensitive receivers, for the duration of works associated with the SSI, unless otherwise agreed with affected residents, business operators or landowners (including City of Newcastle where it is the landowner).

The area at each site proposed to be used as a compound is shown in Figures 4.1a to 4.1d of the BDAR. Native vegetation at the margins of the Peatties Road site has been excluded from the compound site and would be retained to provide a buffer to sensitive receivers near the site and minimises visual amenity impacts.

5.5 Landuse and Property

5.5.1 Peatties Road site

Submission number

30

Issue description

In summary, the respondent raised the following issues:

- The Peatties Road site is located on land zones E3 – Environmental Management and its proposed use is not permitted under that zoning.

Response

As outlined in Section 1.2, the project was determined to be State Significant Infrastructure (SSI) under Division 5.2 of the EP&A Act and was granted approval on 15 February 2019. Under Section 5.22 of the EP&A Act, environmental planning instruments, which includes local environmental plans that establish land zoning, do not apply to SSI projects.

5.5.2 Property impacts

Submission number(s)

24, 25, 36

Issue description

In summary, the respondents raised the following issues:

- Expressed concern about ability to rent out properties adjacent the Cardiff Road site
- Raised concern about impacts to property values.

Response

No property acquisition is required as part of the proposed modification. Transport recognises neighbouring property may be impacted during construction. This impact is temporary in nature with the use of the construction compounds limited to the construction period of the project.

Many aspects influence property values such as location and use. It is recognised properties affected by the project may be difficult to market or rent out before completion of construction due to uncertainty of environmental impacts. Property owners cannot receive financial compensation if they are only adjacent to a new or upgraded road, including if a property decreases in value. The *Roads Act 1993* only provides for Transport to acquire land required for road purposes (called 'directly affected' land). Temporary construction compounds can have impacts due to their proximity, such as increased noise or visual impacts. While Transport does not provide financial compensation, management measures have been proposed in Appendix H of the modification report reduce impacts. Transport would continue to consult with neighbouring landholders and the broader community throughout the detailed design and construction phases in order to manage potential indirect impacts.

5.6 Noise and vibration

5.6.1 Noise

Submission number(s)

2, 5, 6, 8, 9, 10, 11, 13, 15, 17, 18, 20, 21, 26, 30, 31, 35

Issue description

In summary, the respondents raised the following issues:

- Expressed concern that due to the use of technical jargon the impacts are not clearly defined
- Raised concern about noise impacts, specifically given the rural nature of Peatties Road and Wimbledon Grove
- Concerned about sleep disturbance
- Stated that 'construction support activities' and 'general compound activities' are not defined in the modification report
- Concerned about noise from generators, particularly if they are running 24 hours a day
- Noted modification report indicates stockpiling activities to have the largest noise impact and requested no stockpiling at Peatties Road
- Lack of definition of noise and vibration mitigation measures
- The "buffer zone" defining the range for noise sensitive receivers doesn't take into consideration topography
- Expressed concern over who defines what measures are considered 'reasonable and feasible'
- Potential noise impacts from additional vehicle movements
- Impacts of noise on amenity for residents
- Requested noise monitoring.

Response

As detailed in Section 1.2, the project is classified as SSI under the EP&A Act. As an SSI, the project went through a detailed application and review process before being approved by the Minister for Planning in 2019.

Modifications to an approved SSI can be requested to the Minister to improve the design of the project or to vary the conditions of approval. Transport prepared our Modification Report in accordance with the requirements of DPIE and relevant guidelines and policies, assessing the economic, environmental and social impacts of the proposed modification. The report also sought to making sure it was detailed enough using industry accepted terminology to describe the proposed modification and assessed the relevant impacts.

A construction noise and vibration assessment (GHD, 2021) was prepared for the proposed modification and included as Appendix E of the modification report and summarised in Section 6.2.3. This included an assessment of the potential noise and vibration impacts associated with the establishment and use of the proposed compound sites both within and outside of standard working hours.

The assessment predicted exceedances from construction activities both inside and outside of standard working hours, including exceedances of the sleep disturbance and awakening reaction criteria. Construction would largely be carried out during standard working hours (from 7am to 6pm Monday to Friday and from 8am to 5pm Saturdays) with work outside of standard working hours limited to those required to support construction of the project.

Section 5.2.1 of the noise and vibration assessment in the modification report provides details on the relevant modelling scenarios, including construction support activities and general compound activities. This includes the representative equipment, adopted sound power levels and estimated durations for each modelled scenario. Construction support activities modelled the worst case,

simultaneous use of pneumatic hand tools, electric hand tools and water cart. General compound activities modelled the worst case, simultaneous use of light vehicle, compressor and road truck. Both activities were modelled to occur outside of standard working hours.

As identified in Section 2.4.2 of the modification report the establishment of the Peatties Road site includes connection to utilities. Generators are not proposed to be used as a main source of power. In the event that generators are required, the impacts associated with their use would be consistent with the general compound activities modelled scenario. The general compound activities scenario includes a compressor which has a sound power level of 110 dB(A). A compressor is not proposed to be used at night. The sound power level of a generator is 99 dB(A). If a generator is required to be used at night, the noise impacts are expected to be less than that modelled under the general compound activities scenario. This is because the contributing sound power level of a generator is less than a compressor.

As identified in Table 6.4 of the modification report, stockpiling is not proposed to be carried out at night at the Peatties Road site.

Mitigation measures to manage noise impacts were provided in Appendix H of the modification report and have been revised in Section 7. These include the development of a Construction Noise and Vibration Management Plan (CNVMP) for the project. The CNVMP would be implemented for the duration of construction of the project to minimise noise as far as practicable as required by Condition E34 of the CoA. The CNVMP would be prepared in consultation with City of Newcastle and would contain measures to reasonably and feasibly reduce construction noise exceedances. Furthermore, as required by Condition E25, A detailed land use survey would be carried out to confirm sensitive receivers and land uses potentially exposed to construction noise and vibration. Results of the survey would be included in the CNVMP.

In accordance with CoA C9 to C15, Transport would prepare a noise and vibration construction monitoring program for approval by DPIE prior to the start of construction. This monitoring program would include details on the locations and frequency of noise and vibration monitoring for the project. A construction monitoring report would then be prepared to detail the results of the monitoring program. Once prepared, both the noise and vibration construction monitoring program and a construction monitoring reports would be made publically available on the projects webpage.

5.6.2 Out of Hours works

Submission number(s)

4, 7, 12, 13, 16, 21, 22, 23, 24, 25, 31, 36

Issue description

In summary, the respondent(s) raised the following issues:

- Concerned about noise impacts from out of hours works at the Peatties Road site
- Noted inconsistencies in the modification report and requested clarification on the hours of operation of the Peatties Road site
- Requested a restriction on the hours of operation for the Peatties Road site to prohibit out of hours works and limit works from 9:30am to 2:30pm only
- Requested clarification on the number of days per week that out of hours works would be carried out
- Expressed concern about noise impacts from out of hours works at the Cardiff Road site
- Concerned about the cumulative impacts from the Cardiff Road and Peatties Road sites
- Suggested noise abatement measures
- Requested a contact person be available 24 hours a day
- Concerned the out of hour's works impacts in the EIS did not result in impacts to such a high number of residential properties and that this change has not been addressed in the modification report.

- Impacts from consistent night works on the wellbeing of residents in Wimbledon Grove and Marshall Street.

Response

A construction noise and vibration assessment (GHD, 2021) was prepared for the proposed modification and included as Appendix E of the modification report and summarised in Section 6.2.3. This included an assessment of the potential noise and vibration impacts associated with working outside of standard working hours.

Standard working hours are from 7am to 6pm Monday to Friday and from 8am to 5pm Saturdays. As identified in Section 7.2 of the modification report, the majority of construction would be carried out during standard working hours. However, the Peatties Road and Lookout Road compound sites would be used periodically to support work outside standard working hours. Work outside of standard working hours at Peatties Road would be limited to general compound activities (the use of site offices and parking), deliveries and construction support activities. In accordance with Condition E29, the community would be consulted prior to carrying out any out of hours work. This consultation includes providing the community with a schedule of likely out of hours works for a period of at least three months and identification of respite periods. No out of hours work would be carried out at the Cardiff Road site.

Mitigation measures to manage noise impacts were provided in Appendix H of the modification report and have been revised in Section 7. These measures include:

- NV07: An out of hours work procedure (for work outside the proposed extended construction hours) will be developed and would include the following:
    - Contact the local community potentially affected by the proposed work and inform them by letter of the proposed work, location, type of work, days and dates of work and hours involved. The contact will be made before the start of work
    - A suitable advertisement will be placed in local papers including a reference to night-time noise impacts
    - A 24-hour community liaison phone number and permanent site contact will be provided so that complaints can be received and addressed in a timely manner
    - Measures to investigate and respond to any valid noise complaints.
- NV13: Where practical, equipment will be selected to minimise noise emissions. Equipment will be fitted with appropriate silencers and be in good working order. Machines found to produce excessive noise compared to normal industry expectations will be removed from the site or stood down until repairs or modifications can be made.
- NV14: Where reasonable and feasible, measures will be taken to shield sensitive receivers from noise such as:
    - The layout of the construction compound so that primary noise sources are at a maximum distance from residences, with solid structures (sheds, containers, etc.) placed between residences and noise sources (and as close to the noise sources as is practical).
    - Enclosures to shield fixed noise sources such as pumps, compressors, fans, screens (where practicable).
    - Taking advantage of site topography when situating plant.

In addition, the existing CoA for the approved project provide a robust framework for managing potential noise impacts during construction.

5.6.3 Vibration

Submission number(s)

17, 31

Issue description

In summary, the respondent(s) raised the following issues:

- Requested vibration monitoring
- Raised concern about structural damage to houses on Wimbledon Grove.

Response

In accordance with CoA C9 to C15, Transport would prepare a noise and vibration construction monitoring program for approval by DPIE prior to the start of construction. This monitoring program would include details on the locations and frequency of noise and vibration monitoring for the project. A construction monitoring report would then be prepared to detail the results of the monitoring program. Once prepared, both the noise and vibration construction monitoring program and a construction monitoring reports would be made publically available on the projects webpage.

An assessment on the potential for structural damage is included in Section 8.1.1 of Appendix E of the modification report. This assessment predicted safe working buffer distances to comply with cosmetic damage, standard dwelling and heritage building structural damage criteria. The assessment found no receivers are located within the buffer distances for the Peatties Road site. At the Cardiff Road compound, six receivers were identified within the 18 metre buffer associated with vibratory roller activities and two receiver structures were identified within the four metre buffer associated with excavator activities. None of these receivers are located on Wimbledon Grove.

Measures to minimise the potential vibration impacts are provided in Section 7. This includes vibration monitoring and building condition surveys at receivers within 18 metres of proposed vibration generating activities.

5.7 Non-Aboriginal heritage

Submission number(s)

16

Issue description

In summary, the respondent raised the following issues:

- As previous heritage assessments did not include Peatties Road, they cannot be relied upon
- Construction and vibration impacts on Tickhole Tunnel, which is registered on Section 170 of the *NSW Heritage Act 1977*.

Response

Transport acknowledges the Peatties Road compound site was not included in part of the heritage assessment prepared for the project. As part of the modification report, potential impacts to non-Aboriginal heritage assessment was included in Table 6.1 of the modification report. An additional assessment has been carried out for Section 170 listed heritage items, including Kotara (Tickhole) Railway Tunnel and is included in Section 6.1. The construction noise and vibration assessment in Appendix E of the modification report has also been updated to assess potential vibration impacts on Kotara (Tickhole) Railway Tunnel. The construction noise and vibration assessment is included as Appendix B of this report.

5.8 Project Description

5.8.1 Compliance monitoring

Submission number(s)

2, 9

Issue description

In summary, the respondent(s) raised the following issues:

- Lack of justification to support the request to remove compliance and reporting condition
- Concerned that the modification report does not detail consequences for non-compliances
- Lack of detail on the mitigation measures in the modification report.

Response

Both DPIE and EPA are involved in independent regulation of the project from a compliance perspective. Transport works openly, inviting both organisation to inspect work and attend monthly meetings. Both authorities are able to impose punitive action (including financial penalties or stop work notices) on proponents found to be non-compliant with conditions or obligations of the approvals.

Following consideration of community feedback, Transport are no longer seeking to remove Conditions A29 to A33 'compliance monitoring and reporting program'.

Other provisions for managing and reporting on compliance are also provided in the management measures provided in Section 7 of this report and through other CoA for the project. These include:

- A34: No later than four (4) weeks before the date notified for the commencement of construction (in the pre-construction compliance report), an Independent Audit Program prepared in accordance with the Independent Audit – Post Approval Requirements (DPE 2018) must be submitted to the Planning Secretary.
- A35: Independent Audits of the development must be carried out in accordance with:
  a) the Independent Audit Program submitted to the Department under Condition A34 of this approval; and
  b) the requirements for an Independent Audit Methodology and Independent Audit Report in the Independent Audit – Post Approval Requirements (DPE 2018).
- A36: In accordance with the specific requirements in the Independent Audit – Post Approval Requirements (DPE 2018), the Proponent must:
  a) review and respond to each Independent Audit Report prepared under Condition A35 of this approval;
  b) submit the response to the Department; and
  c) make each Independent Audit Report and response to it publicly available and notify the Department in writing when this has been done.
- C1: A Construction Environmental Management Plan (CEMP) must be prepared to detail how the performance outcomes, commitments and mitigation measures specified in the documents listed in Condition A1 will be implemented and achieved during construction.
- C2: lists the requirements for the CEMP, which includes a protocol for managing and reporting any non-compliances.

5.8.2 Public utilities

Submission number(s)

13, 16, 26

Issue description

In summary, the respondent(s) raised the following issues:

- Questioned if there would be interruptions to utility supply from the Peatties Road site
- Concerned about impacts from infrastructure upgrades
- Lack of detail in the modification report on the utility connections required to the Peatties Road site.

Response

As identified in Section 2.4.2 of the modification report the establishment of the Peatties Road site includes connection to utilities. This work would be planned and programmed with the respective utility providers and in compliance with applicable standards, specifications and any utility provider specific requirements. Measures to mitigate the disruption and impact to the community, utility provider and road users are detailed in Section 7 and include the following:

- SL01: The draft Community Consultation Framework will be finalised during detailed design and will be implemented during construction to provide timely and transparent information about changes to access, traffic conditions, details of the construction program and general construction progress during the construction phase.
- SL09: Transport will co-ordinate work with respective utility providers before any changes to the utility services infrastructure.
- SL11: Where services will be disrupted the affected residents will be consulted before work being carried out.

To minimise disruption, some of the utility work may be carried out outside of normal construction hours. This out of hours work (OOHW) would be carried out in accordance with CoA E27, E28, E29, E30 and E32.

5.8.3 Site Selection

Submission number(s)

2, 7, 9, 11, 18, 24

Issue description

In summary, the respondent(s) raised the following issues:

- Questioned why the compound can’t be located along the bypass and why the original footprint didn’t accommodate a compound
- Stated that the Peatties Road and Cardiff Road sites are unsuitable for their proposed use
- Requested clarification on what is meant by main construction compound
- Requested that the Peatties Road site not proceed
- Expressed displeasure regarding the proposed use of the Cardiff Road site
- Mental health impacts to residents of Wimbledon Grove and Marshall Street.

Response

Section 2.2 of the modification report outlines the need for the proposed modification. The EIS and SPIR identified six compound sites, one of which was nominated as the main site compound. The main site compound was nominated in an area adjacent to the John Hunter Hospital, which was to be leased for the duration of the work.

Since approval of the project, Health Infrastructure NSW has progressed planning for the John Hunter Health and Innovation Precinct project. Work at the John Hunter Health and Innovation Precinct would occur sooner than originally anticipated and construction is likely to coincide with construction of the project.

This change to construction timing would result in a major reduction to the useable area of the main compound nominated in the EIS. While some of the area would still be available for use, the remaining space is not large enough to support a main site compound including project offices, so alternative sites would be needed.

Alternative site compound locations were sought as close to the project area as possible, with the four locations proposed in the modification report the best available. Reducing the impact on residential communities was a key consideration when investigating potential compound sites, as well as proximity to the project, land ownership and environmental impact.

The main activities to be carried out at the Peatties Road site are use of site offices, deliveries and staff parking. In any remaining areas, the site may also be used for temporary storage of materials and equipment, such as pre-cast concrete drains, light poles and work equipment. Materials with the potential to produce dust or other environmental impacts would not be stored at the Peatties Road site. The layout of the site compound would be determined by the construction contractor and would be contained within the area shown in Figure 5.1.

Other activities would be required to establish, demobilise and rehabilitate the site. A full list of activities to be carried out at the proposed main site compound at Peatties Road is included in Table 2.3 of the modification report.

5.9 Stakeholder and Community consultation

Submission number(s)

4, 6, 7, 8, 9, 11, 12, 13, 19, 21, 22, 23, 24, 25, 26, 28, 30, 31, 32, 33, 35, 36

Issue description

In summary, the respondent(s) raised the following issues:

- Expressed concern on the level consultation completed prior to public exhibition of the modification report
- Requested an extension of time to make a submission
- Raised concern regarding accessibility to make a submission due to the requirement for submissions to be made online
- The length of the modification report is too long for people to read or understand
- Requested further community consultation
- Avenues for the community to raise any issues or concerns during the construction period.

Response

When Transport became aware that the area within the approved main compound site would be substantially reduced due to adjoining development, investigations into suitable alternative ancillary compounds started. Strong consideration was given to reducing any impact on residential communities when investigating potential compound sites, as well as proximity to the project, land ownership and environmental impact. Due to the urban nature surrounding the project area and environmental constraints surrounding the project, suitable locations were difficult to identify.

When the four proposed sites were identified as potentially suitable, immediately adjacent residents to the compound sites were advised of our upcoming investigations. This notification was provided in November 2020. Assessment of the suitability of the sites was then carried out as part of the preparation of the modification report, which included preliminary discussions with stakeholders, landowners and DPIE.

Following the commencement of DPIE's public exhibition of the modification report, a letter was distributed to surrounding residents informing them of the proposal and how to submit feedback. The letter also provided contact details of Transport project team members who were available to provide more information if required.

DPIE coordinate the exhibition of the modification report, including the requirements for supporting documents and evidence, duration of exhibition and methods to provide feedback.

A project phone line, email and mailing address are available for the project and would continue to be available throughout construction.

Furthermore, as required by Conditions B1 to B12, a community consultation strategy and complaints management strategy has been prepared for the project to provide mechanisms to facilitate communication during the design and construction of the project. Transport would continue to implement these strategies for all work including work at the proposed compound sites.

5.10 Traffic and Transportation

5.10.1 Astra Street

Submission number

27

Issue description

In summary, the respondent raised the following issues:

- Expressed concerns about traffic impacts to the golf practice centre off Astra Street
- Requested additional information on the location of the Astra Street site and anticipated traffic movements.

Response

Following feedback from the property owner, Transport has removed the proposed use of Astra Street from the modification application.

5.10.2 Cardiff Road

Submission number(s)

24

Issue description

In summary, the respondent raised the following issues:

- Concerned about ability to park on the narrow and no-through road Marshall Street.

Response

The Cardiff Road compound is intended to be used as a minor facility, for infrequent temporary storage and stockpiling of materials. The proposed activities were detailed in Table 2-3 of the modification report. The daily vehicle movements expected would be two light vehicles and two heavy vehicles. Subsequently, the additional traffic is not expected to cause a noticeable increase and is not expected to impact parking or access along Marshall Street.

5.10.3 Peatties Road - Parking

Submission number(s)

2, 3, 4, 13, 16, 25, 30, 36

Issue description

In summary, the respondent(s) raised the following issues:

- Questioned if parking would be provided within the Peatties Road site and asked how much would be provided
- Identified that currently there is no dedicated parking on Peatties Road and the area can become boggy
- Expressed concern about construction personnel parking on local streets and potentially impacting access to driveways
- Requested no parking be permitted on local roads
- Concerned about shuttle buses for workers and that any shuttle bus drop off locations may further encourage workers to park on local streets
- Potential damage to the road from vehicles parking on the road verge
- Concerned around littering on local roads from construction workers

Response

All project vehicle and worker parking would be within the proposed compound sites, with no on street parking on local roads or road verges permitted. For the proposed main compound, the compound entrance is located on Peatties Road before all residential properties on Wimbledon Grove and Marshall Street, with the closest residential property more than 100 metres from the Peatties Road compound access. Access to driveways along Wimbledon Grove and Marshall Street would not be impacted. Additionally, if a shuttle bus is used, it would pick up and drop off workers from inside the compound and not on the street.

Council raised concern regarding damage to local roads and a response is provided in Section 4.9.2.

Roadside littering is an offence punishable by fines or legal action and is applicable to anyone, including construction workers. Project staff, construction personnel and sub-contractors would receive an induction prior to performing work on the site. Among safety, quality and environmental requirements, the induction would also outline obligations for the management of different types of waste. The proposed compound sites would include suitable waste receptacles to promote separation, reuse, recycling and as a last result, disposal. As workers would not be parking along Peatties Road, there is a low likelihood of the project contributing to litter encountered along Peatties Road.

5.10.4 Peatties Road - Pedestrian Safety

Submission Number(s)

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 23, 25, 29, 30, 31, 32, 33, 34, 35, 36

Issue description

In summary, the respondent(s) raised the following issues:

- Raised concern for pedestrian safety given the lack of existing pedestrian facilities and additional traffic movements
- Raised safety concern for children riding and walking to travel to school and to return home
- Asked if there would there be traffic control for children and residents
- Requested a stop sign at the compound exit
- Nature strip currently not effectively maintained to enable pedestrian use

- Would like better lighting to improve pedestrian safety
- Requested a footpath be provided

Response

In accordance with CoA E71, pedestrian and cyclist access would be provided and maintained throughout construction. In circumstances where pedestrian and cyclist access is restricted or removed due to construction activities, an alternate route (temporary or permanent) which complies with the relevant standards would be provided and signposted. Management measures TT07 and TT08 in Section 7 of this report outline a CTMP would be developed which would provide the detail around the traffic management measures adopted to minimise impacts on traffic movement, cyclists, pedestrians and parking. The CTMP would also include the provision of a pedestrian movement plan which would show the allocated safe travel paths for workers and pedestrians around or through the work areas. This would include signs and devices used to guide the workers or pedestrians, including at compound access points.

As detailed in Section 6.2, pedestrian, cyclist and vehicle counts were completed on Peatties Road over two weekday mornings and two weekday evenings, during school commuting times. These counts confirmed that pedestrian and cyclist usage at Peatties Road is low, with three to nine pedestrians recorded each count, one to three of these being school students either commuting to or from school.

Transport have consulted with Council regrading permanent pedestrian facilities on Peatties Road and given the low pedestrian movements there are no current plans for a footpath in the area. City of Newcastle are supportive of the provision of a temporary arrangement during construction.

5.10.5 Peatties Road – road infrastructure

Submission number(s)

1, 2, 4, 8, 9, 11, 12, 13, 15, 16, 17, 18, 19, 23, 25, 26, 29, 30, 31, 32, 36

Issue description

In summary, the respondent(s) raised the following issues:

- Raised concern that the intersection with Charlestown Road is restrictive and potentially too tight for heavy vehicles to safely enter and exit
- The risk of heavy vehicles turning into Peatties Road to collide with vehicles queueing to turn out
- Concerned that construction vehicles would completely block Peatties Road
- Concerned with heavy vehicles ability to trigger traffic light sensor locations
- The compound entrance is located on a bend with visibility restrictions
- The current width of Peatties Road is not wide enough to accommodate construction traffic
- Asked what upgrades to the local road are required and requested upgrades to Peatties Road and associated drainage infrastructure
- There is no linemarking
- Requested re-establishing Peatties Road connectivity with Cardiff Road via Marshall Street for alternate access route for residents
- Asked if the bus stop need to be relocated
- The road would not be able to withstand increased traffic volumes, ie damage to pavement, shoulder and verge.

Response

It is expected heavy vehicle movements would be required during the establishment and demobilisation stages of the compound site. During the normal operation of the compound, the movements would be restricted to light vehicles only, with occasional minor exceptions.

In response to community submissions an additional traffic and transportation assessment has been complete and is included in Section 6.2 of this report. This assessment includes swept (turning) path analysis. This assessment confirmed heavy vehicles cannot complete the Charlestown Road intersection movements safely without crossing opposing lanes. As a result, Traffic control would be required to manage all heavy vehicle movements incoming and outgoing at Peatties Road.

The current width of Peatties road is 7.1 metres. As general traffic lanes are 3.0 to 3.5 metres, Peatties road is sufficiently wide enough to safely accommodate a lane for each direction of traffic without the need for any upgrade or widening. The entrance point into the compound would be designed and constructed in compliance with Transport design principles, standards and specifications and would address items such as lane width, sight distances and linemarking. Ultimately the design would ensure light vehicles can safely enter and exit Peatties Road in single turning movements in a forward direction and without the need to cross over into oncoming lanes. Similar to the Charlestown Road intersection, traffic control would be required to manage any heavy vehicle access to the compound.

Management measures outlined Appendix H of the modification report and revised in Section 7 as well as the conditions of approval would be implemented to manage traffic impacts. These include:

- TT02: During detailed design, Roads and Maritime will carry out consultation with affected landowners about changes to property access
- TT07 and TT08: Preparation of a construction traffic management plan which will outline requirements such as traffic control plans, traffic control measures, road safety audit requirements, access arrangements and notification requirements for changes to the existing road network and properties
- TT09: Obtaining licences and permits required for any work on public roads
- TT10: Minimise vehicle and pedestrian access impact and consult with residents to provide alternate arrangements
- SL12: Minimise disruption to access, provide alternative access and maintaining pedestrian and emergency vehicle access to properties at all times

Based on the additional traffic and transportation assessment in Section 6.2 on this report, the existing network would support the additional traffic associated with the Peatties Road compound site. As such, there was no need to open of Marshall Street and this is considered out of scope for this project.

Comments were made around the absence of any stormwater or kerb and gutter along Peatties Road. Currently, the road grades allows water to effectively sheet away into natural channels on each shoulder which then travel down and into Tickhole Creek. The proposal would not change these existing conditions.

It is not anticipated bus stops would be impacted by the work. In the event a stop needs to be relocated, consultation with bus service providers would be carried out in line with management measure TT04, and all relevant stakeholders would be notified. The notification requirements would be detailed within the Construction Traffic Management Plan as per management measure TT08. Safe and unhindered access for pedestrians to bus stops would be maintained at all times.

City of Newcastle and Lake Macquarie Council also raised potential impacts to road surface from the additional vehicle movements. A response is provided in Section 4.9.2.

5.10.6 Peatties Road - traffic

Submission number(s)

1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 26, 29, 31 32, 33, 36

Issue description

In summary, the respondent(s) raised the following issues:

- Concerned the intersection would not be able to handle the additional vehicle movements. The traffic signal timing is short, only allowing a few vehicles to exit Peatties Road at a time. Waiting times would increase due to not all vehicles getting through together.
- The queueing capacities of Charlestown Road turning lanes into Peatties Road are insufficient for the additional traffic.
- Identified that currently, motorists complete unsafe U-turns in Peatties Road to avoid Carnley Road traffic queues.
- Anxiety for local residents regarding time management associated with increased travel times

Response

Transport Network Operations division have provided confirmation that the existing intersection and signal operation has enough capacity to accommodate the construction traffic. The current signal operation timings for exiting Peatties Road for the majority of the day, including at peak times (7am to 9am, 3pm to 5pm), is a minimum green signal of five to seven seconds. These phasing timings are incrementally adjusted (increased/decreased) in real-time based off the traffic measured by the sensors. If required, manual operational adjustment can also be made.

The additional traffic and transport assessment provided in Section 6.2 of this report includes two weeks of traffic count data from 28 May to 11 June 2021. The traffic data shows the current incoming and outgoing movements at Peatties Road is low, with only one to five vehicles recorded every 15 minutes. There are four vehicle movements associated with Peatties Road comprising of left in, right in, left out and right out. The daily average vehicle count for each movement is between 125 to 235 vehicles per day, with a total average vehicle count for Peatties Road being 800 vehicles per day.

Pedestrian and vehicle counts were also carried out in the field and are provided in Section 6.2. Generally only one to two vehicles were recorded completing movements into and out of Peatties Road during each green light cycle of the traffic lights. There were no occurrences observed where vehicles failed to make the first green light cycle. These traffic counts are supportive of the Transport Network Operations division assessment that the operational performance of the intersection would be able to accommodate the construction traffic.

Motorists completing unsafe U-turns in Peatties Road to avoid Carnley Road traffic queues was raised by the community. During the vehicle and pedestrian counts, a small number of motorists were observed performing U-turns in Peatties Road. Implementation of traffic management measures such as line marking and advisor signs is expected to discourage this movement.

In accordance with management measure TT07 and CoA E70, a Construction Traffic Management Plan would be prepared and would detail traffic management measures for the construction phase of the project. The project would take all reasonable measures to minimise adverse impacts on traffic movement, pedestrians and parking.

5.11 Water Quality

Submission number(s)

3, 9, 11

Issue description

In summary, the respondent(s) raised the following issues:

- Raised concern regarding the proximity of the Peatties Road site to Tickhole Creek and potential water quality impacts
- Expressed concern that the Peatties Road site doesn't meet the assessment against standard criteria as it is located within 50 metres from a Tickhole Creek.

Response

Potential water quality impacts were also raised in agency submissions and a response is provided in Section 4.10.

Section 5.4.5 of the EIS included an assessment of the compound sites against a standard criteria contained within DPIE's published draft conditions for state significant linear infrastructure approvals. These draft conditions which were published in March 2012, set a criteria for which a project could establish additional compound sites without seeking further approval when they met those criteria. DPIE have since updated the draft conditions and the assessment criteria for additional compound sites no longer includes the requirement to be 50 metres from a waterway. The updated assessment criteria is also included in CoA for the project. Furthermore, as outlined in Section 2.2 of the modification report as the proposed compound sites are not within or immediately adjacent to the construction boundary, a modification to the project is required.

As outlined in Section 5.8.3, proximity to environmentally sensitive areas has been a consideration when selecting locations for additional site compounds. Mitigation measures to avoid or minimises water quality impacts were provided in Appendix H of the modification report and have been revised in Section 7 of this report.

6 Additional assessment

6.1 Non-Aboriginal heritage

6.1.1 Background

As part of the modification report a screening assessment of environmental issues, including non-Aboriginal heritage was carried out. This screening assessment included searches of relevant non-Aboriginal heritage databases for each site including the NSW State Heritage Register, Newcastle Local Environmental Plan 2012 and Australian Heritage Database.

Feedback during the public exhibition noted Kotara (Tickhole) Railway Tunnel as an item registered under Section 170 of the *NSW Heritage Act 1977*. Tickhole Tunnel is not listed under any of the above mentioned databases. In response, an additional assessment has been carried out for Tickhole Tunnel and a search completed for items listed under the Section 170 register. Details from the assessment are outlined below.

6.1.2 Methodology and results

A search of the NSW State Heritage Inventory that includes Section 170 registers was completed on 10 August 2021. No listed non-Aboriginal heritage items were identified as occurring within the modification area. The closest Section 170 listed non-Aboriginal heritage item is Tickhole Tunnel, which is a brick lined, 153 metre long double track railway tunnel constructed in 1887 on the northern-leg of the Main Northern Rail Line which passes under Charlestown Road. Tickhole Tunnel is located about 65 metres to the south of the Peatties Road compound, as shown in Figure 6.1.

Tickhole Tunnel is not listed on the Newcastle Local Environment Plan, State Heritage Register or Australian Heritage Database.

As no listed non-Aboriginal heritage items were identified as occurring within the modification area, the environmental assessment focused on indirect impacts, particularly from vibration. The Construction Noise and Vibration assessment within the modification report has been updated to assess potential impacts including structural damage on Tickhole Tunnel. This updated assessment is included as Appendix B of this report and findings are summarised below.

6.1.3 Environmental assessment

No heritage structures listed on the Section 170 register were identified within the relevant structural damage buffer distances. The closest Section 170 listed heritage items to the proposed modification are:

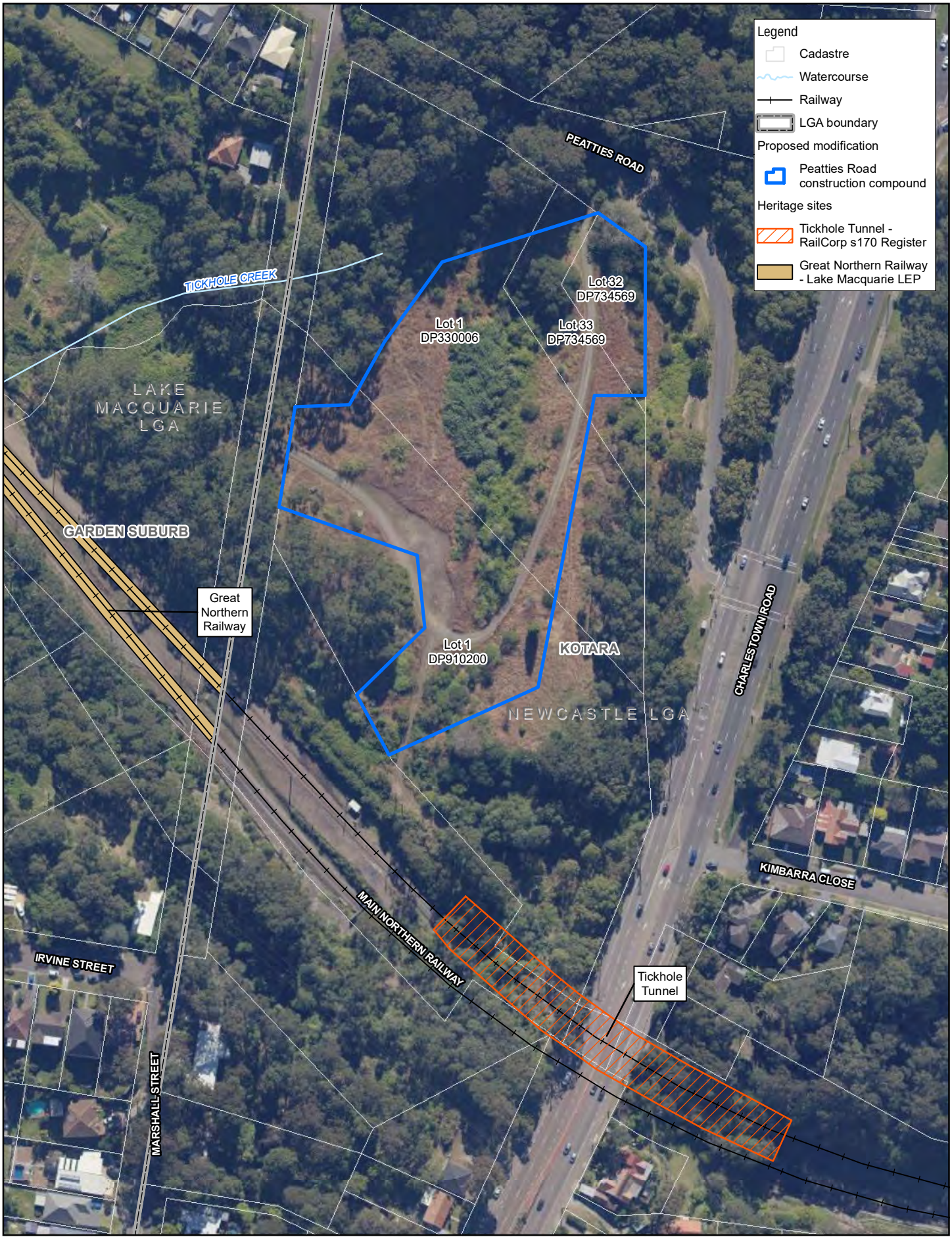
- Tickhole Tunnel which has historical significance at a local level, is located on the northern-leg of the Main Northern Rail Line and passes under Charlestown Road. At the western portal Tickhole Tunnel is about 65 metres from the Peatties Road compound.

While Tickhole Tunnel is outside the 35 metre buffer distance for heritage structures at risk from vibratory rolling, due to the nature of this structure and importance for operation of the Main Northern Rail Line an additional mitigation measure has been recommended**Error! Reference source not found.**.

6.1.4 Additional environmental management measure

The following additional environmental management measure would be implemented to manage non-Aboriginal heritage impacts.

- Transport will carry out further investigation during detailed design to confirm appropriate construction buffer distances and additional mitigation measures to be implemented for Tickhole Tunnel.



Paper Size ISO A4

0 10 20 30 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

Rankin Park to Jesmond

Figure 6.1

Peatties Road - heritage sites

G:\22\12528155\GIS\Maps\Deliverables\Submissions\12528155_SR003_PeattiesRd_Heritage_0.mxd

6.2 Traffic and Transportation

6.2.1 Background

Traffic and transportation impacts were assessed in Section 6.2.2 of the modification report. Feedback during the public exhibition raised concern on the level of detail in the traffic and transportation assessment, specifically that the assessment did not contain traffic data for Peatties Road. Respondents also raised concern on potential impacts on pedestrians and the ability of Peatties Road to cater for heavy vehicles under two way traffic. An additional traffic and transportation assessment has been carried out to address issues raised by respondents. The assessment methodology, results and details of management measures are outlined below.

6.2.2 Methodology

Swept path analysis

Vehicle dimensions and performance capability of design vehicles are the key design criteria on which road and intersection design is based. All vehicles using the road network must be able to safely negotiate intersections without damaging other vehicles, buildings, infrastructure and roadside furniture. It is also important that vehicles negotiating intersections do not unduly obstruct traffic.

When a long vehicle makes a low-speed turn at an intersection, the rear of the vehicle covers a wider area than the inside of the path of the front of the vehicle. This is known as low-speed off-tracking. The swept path is the road area covered by the outermost and innermost points of the vehicle making the low-speed turn.

It is anticipated heavy vehicles such as semi-trailers (19 metres long) and truck and dogs (22 metres long) would be required to access the compound via Peatties Road during the establishment and demobilisation stages, and occasionally during construction. Swept path analysis was completed using these vehicle templates as well as a 12.5 metre truck for each movement incoming and outgoing of Peatties Road.

Pedestrian and vehicle movement survey

Peatties Road is the only road in and out of the area for residents of Wimbledon Grove. There are currently no pedestrian facilities on Peatties Road.

Pedestrian count surveys were carried out on 14, 21, 22 and 23 July 2021 during school commuting times. All surveys were completed during school term and outside of times where COVID 19 stay at home orders were in effect. The counts were captured via a site survey with all pedestrian movements recorded including the date, time, direction of travel and if they were a school student.

Table 6.1 Date and time of pedestrian count and vehicle movement survey

Day	Start	Finish
14/07/2021	7.10am	9.57am
21/07/2021	3pm	4.35pm
22/07/2021	2.47pm	4.25pm
23/07/2021	6.53am	9am

Vehicle movement counts were also recorded during the pedestrian count surveys focusing on queue lengths and number of green light cycles required to complete the movement at the Peatties Road and Charlestown Road intersection.

Existing traffic volumes

Traffic detector counts were carried out over two weeks from 28 May to 11 June 2021 to determine existing traffic volumes at the Peatties Road and Charlestown Road signalised intersection. These counts recorded traffic movements in all directions at 15 minute intervals.

6.2.3 Results

Swept Path Analysis

Swept path analysis showed that all vehicle types were able to complete all movements within the existing road infrastructure. However, all vehicles modelled encroached upon opposing lanes when travelling in all directions into and out of Peatties Road, see Appendix C.

Pedestrian movements

Results from the pedestrian count surveys were categorised into three movements being, leaving Peatties Road, entering Peatties Road and crossing Peatties Road at the intersection with Charlestown Road. These results as well as number of school students during each survey is summarised in Table 6.2.

Table 6.2 Results of pedestrian count survey

Day	Time	Leaving Peatties Road	Entering Peatties Road	Crossing Peatties Road	School student(s)
14/07/2021	7.10am to 9.57am	7	2	2	1
21/07/2021	3pm to 4.35pm	1	2	1	2
22/07/2021	2.47pm to 4.25pm	1	5	0	3
23/07/2021	6.53am to 9am	3	0	0	1

Vehicle movements

The total number of vehicles queuing and completing movements during each green traffic signal phase over all the surveys are shown in Table 6.3. No more than three vehicles were observed queueing for each movement. The largest queue length observed was for vehicles exiting Peatties Road. This maximum queue was five vehicles, which included vehicles turning both right and left out of Peatties Road. On average for all turning movements, 95 per cent of occurrences the queue length was two or less vehicles. There were no instances observed of vehicles not making the first green light cycle for all direction of travel.

Table 6.3 Results of vehicle count survey

Number of Vehicles queuing per green light cycle	Direction of travel			
	Right Leaving Peatties Road	Left Leaving Peatties Road	Left Entering Peatties Road	Right Entering Peatties Road
1	66 (83%)	67 (75%)	78 (92%)	72 (90%)
2	8 (10%)	17 (19%)	5 (6%)	7 (9%)
3	6 (8%)	5 (6%)	2 (2%)	1 (1%)

Transport's Network Operations division have also reviewed the performance of the Peatties Road and Charlestown Road intersection. The review showed that current signal operation timings for exiting Peatties Road for the majority of the day, including at peak times (7am to 9am and 3pm to 5pm), is a minimum green signal of five to seven seconds. These phasing timings are incrementally adjusted (increased/decreased) in real-time, based off the traffic measured by the sensors. This minimal green phase time is low and can be increased to 140 seconds. If required, manual operational adjustment can also be made.

Existing traffic volumes

Traffic detector counts identified weekday average vehicle movements of 132 to 241 vehicles. The right turn movement into Charlestown Road from Peatties Road had the greatest average daily traffic volume. The right turn into Peatties Road from Charlestown Road had the lowest average daily traffic volume, as shown in Table 6.4.

Table 6.4 Average daily traffic volumes between 28 May and 11 June 2021

Road	Direction	Movement	Weekday average (vehicles)
Charlestown Road	SB	Right turn in to Peatties Road	132
Charlestown Road	NB	Left turn in to Peatties Road	165
Peatties Road	EB	Left turn in to Charlestown Road	171
Peatties Road	EB	Right turn in to Charlestown Road	241

Note: NB = northbound, SB = southbound, EB = eastbound, WB = westbound

Figure 6.2 shows the average daily traffic volume profile for vehicles entering and exiting Peatties Road. The blue line represents vehicles entering Peatties Road and the Orange line represents vehicles exiting Peatties Road. There is a peak of about 30 to 35 vehicles per hour exiting Peatties Road between 7am and 11am. The afternoon peak of about 35 to 40 vehicles per hour was identified to occur between 3pm and 4pm for vehicles both entering and exiting Peatties Road.

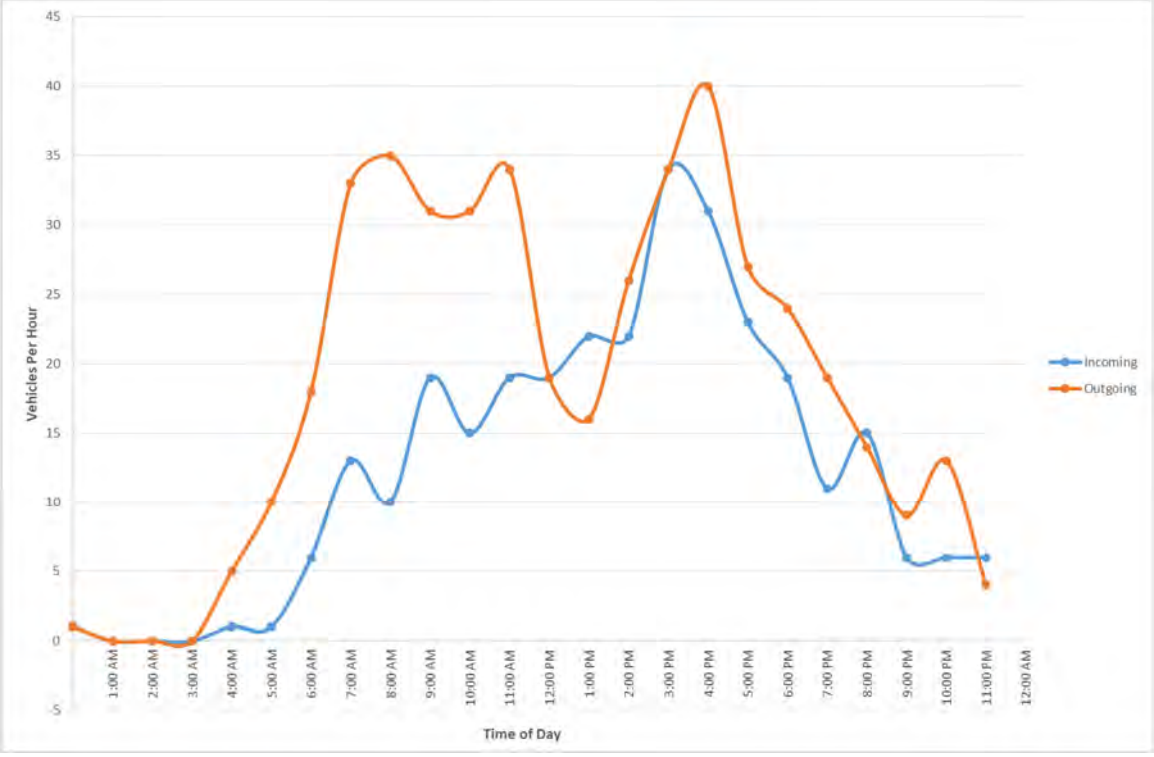


Figure 6.2 Peatties Road Average Daily Traffic Volume (per hour)

Environmental Assessment

As discussed in Section 2.4 of the Modification report, the number of construction vehicle movements at the Peatties Road site has been estimated to be up to 100 light and 20 heavy vehicles per day. These estimates are worst case with heavy vehicles primarily required during site establishment and demobilisation with only periodic movements outside of these times. Swept path analysis identified that for all movements' heavy vehicles encroach on opposing lanes. This encroachment could result in collisions with other vehicles at the intersection. To mitigate this risk traffic control is required to manage heavy vehicle movements and to ensure road user safety is maintained. This would be captured within the CTMP, required under environmental management measures TT07. In accordance with TT08 this CTMP would be prepared in consultation with City of Newcastle and emergency services providers and include specific controls for the work areas.

Pedestrian, cyclist and vehicle counts were completed on Peatties Road over two weekday mornings and two weekday evenings, during school commuting times. These counts confirmed that pedestrian and cyclist usage at Peatties Road is low, with three to nine pedestrians recorded each count. Of these, one to three were school students commuting either to or from school. With the implementation of CoA E71 which requires safe pedestrian and cyclist access be maintained around the worksite for the duration of construction, there are only expected to be minor impacts to pedestrian and cyclists.

During all vehicle movement surveys there were no occurrences observed of vehicles not completing their movement at the Peatties Road and Charlestown Road intersection within the first green light cycle. Additionally, on average for all turning movements the queue length was two or less vehicles on 95 percent of occurrences. Vehicle count surveys also showed total average vehicle movements of 132 to 241 vehicles at the intersection, with the largest peak occurring around 4pm. On average, at this 4pm peak about 40 vehicles travelled out of Peatties Road. Based on these low traffic counts, Transport Network Operations division assessment that the operational performance of the intersection would be able to accommodate the construction traffic, and with the implementation of the environmental management measures identified in Section 7 of this report, there is only expected to be a minor traffic impact.

Additional environmental management measure

Environmental management measures Section 7 includes specific environmental management measures to minimise potential traffic and transportation impacts associated with the proposal. While the assessment has identified additional traffic and transportation impacts, the existing measures specify appropriate controls for the avoidance and minimisation of the identified impacts. As such, no new mitigation measures are recommended beyond those summarised in Section 7.

7 Revised environmental management measures

The modification report for additional construction compounds for the Newcastle Inner City Bypass – Rankin Park to Jesmond identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts.

After consideration of the issues raised in the public submissions, the environmental management measures for the project (refer to Appendix H of the modification report) have been revised. Should the project be approved, the environmental management measures in Table 7.1 will guide the subsequent phases of the Newcastle Inner City Bypass – Rankin Park to Jesmond development. Additional and/or modified environmental management measures to those presented in the modification report have been italicised and deleted measures, or parts of measures, have been struck out.

Table 7.1: Summary of revised environmental management measures

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Biodiversity				
General	BD01	A flora and fauna management plan will be prepared as part of the Construction Environmental Management Plan (CEMP) for the project. The flora and fauna management plan will be prepared and implemented in accordance with the Roads and Maritime *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011a).	Construction contractor	Pre-construction
	BD02	All workers will be provided with an environmental induction before starting work on-site. This would include information on the ecological values of the site and study area and measures to be implemented to protect biodiversity.	Construction contractor	Construction
Clearing of native vegetation	BD03	The Biodiversity Offsets Strategy will be finalised, in accordance with the *NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014b) as part of detailed design and required offsets secured.	Transport	Pre-construction/ construction
Impacts to threatened flora and fauna species	BD04	Vegetation clearing will be carried out in accordance with the Roads and Maritime *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (Guide 4: Clearing of vegetation and removal of bushrock)* (RTA 2011a).	Construction contractor	Construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
	BD05	Pre-clearance surveys will be carried out in accordance with the Roads and Maritime *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (Guide 1: Pre-clearing process)* (RTA 2011a).	Construction contractor	Construction
	BD06	Any unexpected threatened species finds will be dealt with in accordance with the Roads and Maritime *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011a).	Construction contractor	Construction
	BD07	Exclusion zones will be identified and demarcated in accordance with the Roads and Maritime *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (Guide 2: Exclusion zones)* (RTA 2011a).	Construction contractor	Construction
Impacts to native vegetation	BD08	Clearing of native vegetation and mature trees, particularly hollow-bearing trees, will be avoided and minimised where possible around watercourses, in Jesmond Park, near proposed fauna crossing structures and those identified as known or likely to be used for breeding and roosting by Powerful Owl (*Ninox strenua*).	Transport and Construction contractor	Detailed design and construction
	BD09	Roads and Maritime will investigate opportunities to retain trees in construction compound A to provide an arboreal crossing for Squirrel Gliders and other arboreal fauna between vegetation to the east and west of the alignment.	Transport	Detailed design
	BD10	The location of trees to be retained in the construction footprint would be confirmed during detailed design and incorporated in the flora and fauna management plan, landscape plan and re-vegetation management plan.	Transport and Construction contractor	Detailed design and pre-construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
	BD11	Native vegetation will be re-established in accordance with a re-vegetation management plan prepared in accordance with the Roads and Maritime *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (Guide 3: Re-establishment of native vegetation) (RTA 2011a). The re-vegetation management plan will use suitable species from the indigenous vegetation communities present at the site to replace habitat for threatened species including Grey-headed Flying-fox.	Construction contractor	Construction
Potential for spread of exotic species, or spread of pathogens	BD12	Protocols for preventing or minimising the spread of noxious and environmental weeds will be developed and implemented in accordance with the Roads and Maritime *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (Guide 6: Weed Management)* (RTA 2011a).	Construction contractor	Construction
	BD13	Protocols for preventing the introduction and/or spread of disease causing agents such as bacteria and fungi will be developed and implemented in accordance with the Roads and Maritime *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (Guide 7: Pathogen Management)* (RTA 2011a).	Construction contractor	Construction
Impacts to fauna and fauna habitat	BD14	Fauna handling will be conducted in accordance with the Roads and Maritime *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (Guide 9: Fauna handling)* (RTA 2011a).	Construction contractor	Construction
	BD15	Habitat will be replaced or re-instated in accordance with Roads and Maritime *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (Guide 5: Reuse of woody debris and bushrock* and *Guide 8: Nest boxes)* (RTA 2011a).	Construction Contractor	Construction
	BD16	Clearing of hollow-bearing trees will be carried out during periods which avoid breeding and hibernation seasons for threatened hollow-dependant fauna species (particularly the Powerful Owl (*Ninox strenua*) and Squirrel Glider (*Petaurus norfolcensis*)) where practicable.	Construction Contractor	Construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
	BD17	All permanent lighting will be designed to minimise light spill to surrounding habitat as far as practicable.	Transport	Detailed design
	BD18	Down-lights and motion sensor lighting will be used where possible during construction in order to reduce light spill to surrounding habitat.	Construction contractor	Construction
Fragmentation of identified biodiversity links and habitat corridors	BD19	The fauna connectivity strategy will be finalised during detailed design to minimise impacts to fauna movement, in particular the Squirrel Glider.	Transport	Detailed design
	BD20	Connectivity measures will be implemented in accordance with the Wildlife Connectivity Guidelines for Road Projects (Roads and Maritime, in preparation).	Construction contractor	Construction
Aquatic habitat impacts	BD21	Aquatic habitat will be protected in accordance with Roads and Maritime *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (Guide 10: Aquatic habitats and riparian zones)* (RTA 2011a), standard precautions and mitigation measures of the *Policy and guidelines for fish habitat conservation and management Update 2013* (Department of Primary Industries 2013) and with reference to DPI Water *Guidelines for Controlled Activities on Waterfront Land*.	Construction contractor	Construction
	BD22	The realignment of the northern branch of watercourse 2 will be designed to behave in a similar hydrologic and geomorphic manner as existing conditions and encourage native revegetation.	Transport	Detailed design
	BD23	Native vegetation will be re-established around the realignment of the northern branch of watercourse 2 in accordance with a re-vegetation management plan prepared in accordance with the Roads and Maritime *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (Guide 3: Re-establishment of native vegetation) (RTA 2011a).	Construction contractor	Construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Impacts to native vegetation	BD24	Roads and Maritime will carry out further consultation with Newcastle City Council during detailed design regarding construction compounds D and E which are located in Jesmond Park to consider management measures required to minimise potential impacts to the area.	Transport	Detailed design
Traffic and transport				
Construction traffic impacts	TT01	Roads and Maritime will carry out further consultation with NSW Health Infrastructure, Hunter New England Local Health District and Ronald McDonald House during detailed design to minimise potential impacts associated with use of the hospital road network for construction access.	Transport	Detailed design
Property access impacts	TT02	During detailed design, Roads and Maritime will carry out consultation with affected landowners about changes to property access.	Transport	Detailed design
Fire trail impact	TT03	Consultation with relevant fire authorities will be carried out during the detailed design phase regarding the construction of additional fire trails.	Transport	Detailed design
Public transport impacts	TT04	Roads and Maritime will carry out consultation with bus service providers during detailed design to manage potential impacts to bus operations and identify need for temporary and/or permanent relocation of bus stops.	Transport	Detailed design
Parking impacts	TT05	Roads and Maritime will carry out consultation with Newcastle City Council to determine if replacement disabled parking spaces are required in the dedicated carpark in Jesmond Park.	Transport	Detailed design
Impacts on access in the bushland area	TT06	During detailed design, Roads and Maritime will investigate the feasibility of an additional pedestrian access point across the proposed road corridor in the bushland area in consultation with nearby landowners, in order to provide improved connectivity between the John Hunter Hospital precinct and residential areas to the west.	Transport	Detailed design

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Construction traffic impacts	TT07	A construction traffic management plan (CTMP), including a vehicle movement plan, will be prepared in accordance with: • Roads and Maritime *QA Specification G10* (Roads and Maritime 2015c) • Roads and Maritime's *Traffic Control at Work Sites* (Roads and Traffic Authority 2010) • Relevant Australian Standards such as *Australian Standard (AS) 1742 – Manual of Uniform Traffic Control Devices* (Standards Australia 2014a).	Construction contractor	Pre-construction
	TT08	The CTMP will be developed in consultation with, as relevant, Newcastle City Council, NSW Health Infrastructure, Hunter New England Local Health District and emergency service providers. The plan will specify all requirements related to construction traffic and transport including: • Details of heavy haulage routes • Traffic control plans for work area including access to the site. This will include details of site specific traffic control measures (including signage) to manage traffic movements • Road safety audit requirements • Requirements for condition surveys of roads before the start of construction • Parking arrangements for construction staff • Access arrangements at construction sites detailing vehicle access movements • Notification requirements for changes to the existing road network • Notification requirements for changes to property access, bus stops and pedestrian/cyclist facilities.	Construction contractor	Pre-construction
	TT09	The contractor would obtain any licences and permits, such as a road occupancy licence, which would be required for any work or traffic controls in a public road.	Construction contractor	Pre-construction and construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Property access impacts	TT10	In order to minimise access impacts, in consultation with residents the construction contractor will: • Provide vehicle access as far as practical/safe to enable residents, visitors and patrons to park inside the affected property • Where vehicle access is not available, pedestrian access would be provided where practical/safe • Where pedestrian access is unavailable for safety reasons, pedestrians can be escorted through the construction site by pre-arrangement with the construction contractor.	Construction contractor	Construction
Jesmond Park shared path impacts	TT11	In order to minimise the impacts to users of the Jesmond Park shared path during construction Roads and Maritime will: • Construct the new shared path bridge (Bridge 7) over Newcastle Road and associated connections as early work • Provide pedestrian and cyclist access across the construction footprint on the southern side of Newcastle Road for limited periods of time where safe and practical to do so • Construct the new overpass bridge (Bridge 8) and underpass arrangement for the Jesmond Park shared path as soon as practicable.	Construction contractor	Construction
Noise and vibration				
Operational noise impacts	NV01	Roads and Maritime will review and update the operational noise model during detailed design to determine the final mitigation scenario. Where required this will include consultation with affected sensitive receivers.	Transport	Detailed design
	NV02	Roads and Maritime will investigate opportunities for implementation of the final mitigation scenario prior to, or as soon as possible during construction, to assist with mitigation of construction noise levels.	Transport	Detailed design

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
	NV03	Roads and Maritime will carry out further review of the sensitive non-residential receivers, including those in the John Hunter Hospital precinct, where it has been identified that the internal criteria may be exceeded. This review, including assessment of building materials and monitoring (if required), will determine the transmission loss through the relevant building facades and identify if mitigation is required.	Transport	Detailed design
	NV04	Roads and Maritime will investigate opportunities to further refine grades where possible and assess the need for installation of signage to limit use of compression brakes by heavy vehicles.	Transport	Detailed design
Vibration impacts (sensitive equipment)	NV05	Consultation with NSW Health and Hunter New England Local Health District will be carried out to identify the specific construction vibration limits for all sensitive equipment and facilities in the hospital precinct. Appropriate buffer distances will then be established.	Transport	Detailed design

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Construction noise and vibration management	NV06	A construction noise and vibration management plan (CNVMP) will be prepared as part of the construction environmental management plan (CEMP). The plan will include, but not be limited to: • A map indicating the locations of receivers • A risk assessment to determine potential risk for activities likely to affect receivers (for activities carried out during standard construction hours, during the proposed extended construction hours and outside of the proposed extended construction hours) • Management measures to avoid noise and vibration impacts during construction activities including identification of appropriate work practices and equipment selection and use • A process for community notifications regarding construction activities • A process for scheduling of high noise and/or vibration generating activities during less sensitive noise periods as far as is possible • A process for implementation of respite periods, where required, in accordance with *Interim Construction Noise Guideline* (DECC 2009) for noise and vibration generating activities with impulsive, tonal or low frequency characteristics • A process for assessing the performance of the implemented management measures • A process for documenting and resolving issues and complaints • A program of noise and vibration monitoring for sensitive receivers • A process for updating the plan when activities affecting construction noise and vibration change. Identify in inductions and where required toolbox talks where noise and vibration management is required.	Construction contractor	Pre-construction and construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
	NV07	An out of hours work procedure (for work outside the proposed extended construction hours) will be developed and would include the following: • Contact the local community potentially affected by the proposed work and inform them by letter of the proposed work, location, type of work, days and dates of work and hours involved. The contact will be made before the start of work • A suitable advertisement will be placed in local papers including a reference to night-time noise impacts • A 24-hour community liaison phone number and permanent site contact will be provided so that complaints can be received and addressed in a timely manner • Measures to investigate and respond to any valid noise complaints.	Construction contractor	Pre-construction and construction
Construction vibration impacts	NV08	Building condition surveys will be conducted at receivers (as required) within 18 metres of proposed vibration generating activities (buildings and other structures).	Construction contractor	Pre-construction
	NV09	Notification of the proposed construction activities by letterbox drop will be carried out for all occupied buildings within 18 metres of vibration generating activities.	Construction contractor	Pre-construction and construction
	NV10	Where construction work will be located within 18 metres of any buildings vibration monitoring will be carried out at the beginning of the given construction activity. Where measurements indicate building damage criteria are exceeded, vibration generating activities are to immediately halt and alternative low-vibration work practices will be investigated and implemented.	Construction contractor	Construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
	NV11	A documented review will be carried out to determine if alternative methods can be implemented, where construction activity involving vibration intensive plant occurs: • Within 18 metres of buildings • Within the sensitive equipment buffer distances • Or if any monitoring indicates levels are excessive.	Construction contractor	Pre-construction and construction
Construction vibration impacts - John Hunter Hospital precinct	NV12	Construction buffer distances and potential additional mitigation measures identified during detailed design will be implemented in relation to sensitive equipment, standard buildings and heritage buildings in the John Hunter Hospital precinct.	Construction contractor	Construction
Construction noise impacts	NV13	Where practical, equipment will be selected to minimise noise emissions. Equipment will be fitted with appropriate silencers and be in good working order. Machines found to produce excessive noise compared to normal industry expectations will be removed from the site or stood down until repairs or modifications can be made.	Construction contractor	Construction
	NV14	Where reasonable and feasible, measures will be taken to shield sensitive receivers from noise such as: • The layout of the construction compound so that primary noise sources are at a maximum distance from residences, with solid structures (sheds, containers, etc.) placed between residences and noise sources (and as close to the noise sources as is practical). • Enclosures to shield fixed noise sources such as pumps, compressors, fans, screens (where practicable). • Taking advantage of site topography when situating plant.	Construction contractor	Construction
Construction noise and vibration complaints handling	NV15	In the event of a valid noise complaint, monitoring will be carried out and reported as soon as possible. If exceedances are detected, the situation will be reviewed to attempt to identify reduce the impact to acceptable levels, where practicable.	Construction contractor	Construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Blasting overpressure and ground vibration impacts	NV16	If blasting is to be carried out, a detailed blasting assessment will be carried out in consultation with NSW Health Infrastructure and Hunter New England Local Health District. The assessment will be prepared with reference to the human comfort, sensitive equipment and structural damage criteria for all receivers including residential receivers and receivers located in the John Hunter Hospital precinct. The assessment will be carried out by a suitably qualified and experienced blast consultant/contractor and determine the allowable blast sizes based on-site specific conditions and may include carrying out test blasts (or equivalent method). The assessment will identify all relevant requirements to be incorporated into a blasting management plan for the construction phase to ensure the relevant criteria can be met.	Transport / Construction contractor	Detailed design, pre-construction and construction
Operational noise impacts	NV17	To confirm the findings of the operational noise assessment a post-construction noise monitoring program (including simultaneous traffic counts) will be carried out within 12 months of project opening once traffic flows have stabilised. Monitoring locations will be selected along the project at/near the monitoring locations carried out in this assessment. A review of L_{Amax} events including heavy vehicle engine (compression) braking will be included in the post-construction noise assessment.	Transport	Operation

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Landscape character and visual impact				
Landscape and visual impacts	LC01	The concept urban design and landscape plans will be finalised during detailed design and be consistent with the urban design objectives and principles. The plans will be developed in accordance with: • *Beyond the Pavement* (Roads and Maritime 2014a) • *Bridge Aesthetics* (Roads and Maritime 2012a) • *Landscape Guideline* (Roads and Traffic Authority 2008) • Noise Wall Design Guideline (Roads and Maritime 2016b). The landscape plan will be consistent with the re-vegetation management plan (management measure BD11) and will use suitable species from the indigenous vegetation communities present at the site to replace habitat for threatened species including Grey-headed Flying-fox. The landscape plan will include vegetation screening for highly impacted viewpoints where possible.	Transport	Detailed design
Impacts on access in the bushland area	LC02	During detailed design, Roads and Maritime will investigate the feasibility of an additional pedestrian access point across the proposed road corridor in the bushland area in consultation with nearby landowners, in order to provide improved connectivity between the John Hunter Hospital precinct and residential areas to the west.	Transport	Detailed design
Water sensitive urban design	LC03	Temporary and permanent drainage infrastructure would be designed to incorporate water sensitive urban design principles where possible such as replacing concrete lined longitudinal catch drains with vegetated swales and the operational water quality control measures.	Transport	Detailed design
Visual impacts	LC04	Roads and Maritime will review feasible and reasonable measures to address privacy concerns for residents located immediately near the southbound off-ramp at the northern interchange in consultation with the affected property owners.	Transport	Detailed design

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Construction visual impacts	LC05	Disturbed areas would be progressively revegetated during the construction period.	Construction contractor	Construction
	LC06	Construction lighting will be located to minimise potential impacts to surrounding residents.	Construction contractor	Construction
Monitoring of landscaping and rehabilitation	LC07	Landscape and rehabilitation work will be monitored and remedial measures implemented where required until vegetation has stabilised.	Transport	Operation
Socio-economic, land use and property				
Community consultation	SL01	The draft Community Consultation Framework will be finalised during detailed design and will be implemented during construction to provide timely and transparent information about changes to access, traffic conditions, details of the construction program and general construction progress during the construction phase.	Transport	Detailed design and construction
Property acquisition	SL02	Property acquisition will be carried out in accordance with the *Land Acquisition Information Guide* (Roads and Maritime 2014b) and the *Land Acquisition (Just Terms Compensation) Act 1991.*	Transport	Detailed design
Residual public land	SL03	Areas of potentially residual public land would be confirmed during the detailed design phase and where there is residual Roads and Maritime land not required for the project or other future road requirements, consultation with Newcastle City Council and other government agencies will be carried out to identify possible land swaps or transfers.	Transport	Detailed design
Fire trail impact	SL04	Consultation with relevant fire authorities will be carried out during the detailed design phase regarding the construction of additional fire trails.	Transport	Detailed design

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Impacts to Disc Golf course at Jesmond Park	SL05	Roads and Maritime will carry out consultation with the Newcastle Disc Golf club and the Newcastle City Council regarding potential relocation of the impacted Disc Golf course holes.	Transport	Detailed design
Impacts on local businesses	SL06	Roads and Maritime will consult with local businesses that would be affected by the project.	Transport	Detailed design
Impacts on access in the bushland area	SL07	During detailed design, Roads and Maritime will investigate the feasibility of an additional pedestrian access point across the proposed road corridor in the bushland area in consultation with nearby landowners, in order to provide improved connectivity between the John Hunter Hospital precinct and residential areas to the west.	Transport	Detailed design
	SL08	During detailed design, Roads and Maritime will carry out consultation with Newcastle City Council about the feasibility of modifying the Bicentennial walking trail, if required.	Transport	Detailed design
Impact to utilities	SL09	Roads and Maritime will co-ordinate work with respective utility providers before any changes to the utility services infrastructure.	Transport	Detailed design
Impact to residences	SL10	During detailed design, Roads and Maritime will review the northern interchange layout including opportunities to move the intersection (including the southbound off-ramp) to the south-west further away from residential properties and to refine the layout of the northbound off-ramp further away from residential properties.	Transport	Detailed design
Impact to utilities	SL11	Where services will be disrupted the affected residents will be consulted before work being carried out.	Construction contractor	Construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Private property access	SL12	The construction contractor will consult with affected property owners/residents to minimise disruption to access. Where access to property would be disrupted for an extended period, alternative access will be provided. Pedestrian and emergency vehicle access to properties will be maintained at all times.	Construction contractor	Construction
Pedestrian and cyclist access	SL13	Pedestrian and cyclist access on existing formal paths will be maintained where possible. Where closure of a formal path is required alternative access and appropriate signage will be provided.	Construction contractor	Construction
Emergency services access	SL14	During construction emergency vehicle access to the bushland areas surrounding the project will be provided at all times.	Construction contractor	Construction
Flooding and drainage				
Flooding and stormwater impacts	FD01	The proposed flood mitigation measures and changes to watercourses would be further refined during detailed design to minimise potential impacts.	Transport	Detailed design
Flooding impacts	FD02	Roads and Maritime will consult with affected property owners likely to be affected by a change in flood levels including providing details of the predicted actual changes in flood levels in relation to each individual property.	Transport	Detailed design
	FD03	Roads and Maritime will consult with the owners of the block of residential units to the north-east of the northern interchange where flood mitigation work will be carried out.	Transport	Detailed design
	FD04	Construction staging plans will be refined during detailed design to ensure flood mitigation structures are constructed in a way that minimises flood risk.	Transport	Detailed design
Realignment of watercourse 2 (WC2)	FD05	Further refinement of the design for the realignment of WC2 will be investigated during detailed design to ensure it is designed to behave in a similar hydrologic and geomorphic manner as existing conditions as far as is practicable.	Transport	Detailed design

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Flooding impacts during construction	FD06	The construction environmental management plan will include a flood risk management plan that details the processes for flood preparedness, materials management, weather monitoring, site management and flood incident management. The plan will be developed in accordance with: • *Managing Urban Stormwater, Soils and Construction, Volume 1 4th Edition, March 2004* (Landcom 2004) and *Managing Urban Stormwater, Volume 2D – Main road construction* (DECC 2008) • Roads and Maritime *Erosion and Sedimentation Management Procedure* (Roads and Traffic Authority 2009) • Roads and Maritime *Technical Guideline, Temporary Stormwater Drainage for Road Construction* (Roads and Maritime Services 2011b) • Roads and Maritime *Stockpile Site Management Guideline* (Roads and Maritime Services ~~2011c~~ *2015*).	Construction contractor	Pre-construction
Drainage impacts during construction	FD07	Activities that may affect existing drainage systems will be carried out so that existing hydraulic capacity of these systems is maintained where possible.	Construction contractor	Construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Soils, contamination and water quality				
Watercourse erosion	SW01	Roads and Maritime will investigate the following during detailed design: • Watercourse 2 (northern branch) – additional stabilisation measures near the bridge to minimise the risk of the existing gully head located about 200 metres downstream of the bridge from undermining the bridge or creek realignment work • Watercourse 2 (southern branch) – additional stabilisation measures near the culvert outlet to minimise the risk of undermining of the outlet structure by the existing gully head (currently located about 100 metres downstream) • Watercourse 3 and 4 - stabilised flow paths, including scour protection measures, to convey the cross drainage outlet flows to existing drainage lines on the western side of the project • Watercourse 4 – measures such as energy dissipaters to minimise erosion risk in the gully system below the multi-storey hospital carpark • Watercourse 4 – measures to minimise erosion and scour risk downstream of the project associated with concentrated flows from drainage outlets.	Transport	Detailed design

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Impacts to water quality and soil erosion	SW02	A soil and water management plan will be prepared in accordance with: • Roads and Maritime *Code of Practice for Water Management, Road Development and Management* (RTA 1999) • Roads and Maritime *Erosion and Sedimentation* Management *Procedure* (RTA 2009) • *Managing Urban Stormwater, Soils and Construction, Volume 1 4th Edition, March 2004* (Landcom 2004) and *Managing Urban Stormwater, Volume 2D – Main road construction* (DECC 2008) • Roads and Maritime *Technical Guideline, Temporary Stormwater Drainage for Road Construction* (Roads and Maritime 2011b) • Roads and Maritime *Stockpile Site Management Guideline* (Roads and Maritime ~~2011c~~ *2015*) • Roads and Maritime *Technical Guideline, Environmental Management of Construction Site Dewatering* (RTA 2011b) • *Management of Tannins from Vegetation Mulch* (Roads and Maritime 2012b) • *Guideline for Batter Surface Stabilisation using vegetation* (Roads and Maritime 2015e).	Construction contractor	Pre-construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Impacts to water quality and soil erosion	SW03	The soil and water management plan will address the following: • Identify areas of high risk based on soil erodibility • Management strategies to be used to minimise surface water impacts, including identification of water treatment measures, discharge points and erosion and sediment control measures • Minimising stormwater (volume and velocity) from running onto downstream work by appropriate staging of the work and, where necessary, utilising erosion control measures • Maximising diversion of clean water around or through disturbed portions of the site • Sedimentation basin construction and management • Measures to monitor and manage spoil, fill and materials • Protection of waterways • Management of tannins that may be generated from stockpiled vegetation • Monitoring of discharge waters • Measures for the management of tannins from stockpiled vegetative materials • Management of stockpiles.	Construction contractor	Pre-construction
Contaminated soil	SW04	Further soil testing would be carried out to delineate the extent of areas of contamination and classify the soils against the relevant criteria for reuse on-site or for disposal off-site.	Construction contractor	Pre-construction and construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Contaminated soil	SW05	A contaminated soil management plan will be prepared in accordance with the *Contaminated Land Management Act 1997,* Roads and Maritime *Guideline for the Management of Contaminated Land* (Roads and Maritime 2013a), Roads and Maritime *Environmental Incident Classification and Reporting Procedure*, (Roads and Maritime 2016c) and EPA Guidelines on contaminated land management. The contaminated soil management plan will include: • Contaminated land legislation and guidelines including any relevant licences and approvals to be obtained • Identification of locations of known or potential contamination • Identification of rehabilitation requirements, classification, transport and disposal requirements of any contaminated soil • Measures to manage excavation, segregation, stockpiling, validation and disposal requirements for potentially contaminated materials • Measures to ensure the contaminated soil is managed so that it does not pose a risk to water quality. Measures to be implemented include ensuring contaminated soils are deep buried and blended where further testing confirms on-site reuse is acceptable, or off-site disposal to a licensed facility where required • Contaminated management measures including unexpected finds procedures for unanticipated discovery of contaminated material or other source of contamination during construction.	Construction contractor	Pre-construction and construction
Soil erosion	SW06	The project will be constructed in accordance with the soil and water management plan.	Construction contractor	Construction
Accidental spills during construction	SW07	An emergency spill response procedure will be prepared to minimise the impact of spills including details on the requirements for managing, cleaning up and reporting.	Construction contractor	Construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
	SW08	Spill kits and adequate quantities of suitable material to counteract spillage would be kept readily available.	Construction contractor	Construction
	SW09	The refuelling of plant and maintenance of machinery will be carried out in designated refuelling areas. Refuelling would be attended at all times.	Construction contractor	Construction
	SW10	Vehicle wash-downs and/or concrete truck washouts will be located in a designated bunded area or located off-site.	Construction contractor	Construction
	SW11	Machinery will be checked daily to ensure that there are no oil, fuel, or other liquid leaks.	Construction contractor	Construction
Contamination	SW12	In the event that indicators of contamination are encountered during construction of the project (such as odours or visually contaminated materials), work in the area will cease until advice on the need for remediation or other action is obtained from the Roads and Maritime project manager.	Construction contractor	Construction
Water quality impacts	SW13	A soil conservation specialist will be engaged during construction to advise on the planning and implementation of erosion and sedimentation controls.	Construction contractor	Construction
	SW14	Sediment laden water will be directed through the construction phase water management system. All construction sedimentation basins and associated temporary drainage shall be designed and constructed as detailed in this report to manage flows generated by the 80th percentile five day rainfall event.	Construction contractor	Construction
	SW15	Water quality monitoring will be carried out at key discharge points from the construction phase water management system. The monitoring requirements will be defined in the soil and water management plan and will include collection of samples for analysis from sedimentation basin discharge points and visual monitoring of other points of release of construction waters.	Construction contractor	Construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Building demolition impacts	SW16	During demolition the following controls will be implemented: • Scheduling of work to avoid strong winds and rainfall • Mandatory coverage of trucks carrying waste and debris • Temporary barriers or dust screens, as appropriate, to suppress the effect of dust movement to uncontrolled sites • Dust suppression such as wetting measures • Appropriate control of temporary stockpiles on hardstands.	Construction contractor	Construction
Water quality impacts	SW17	Construct the operational water quality controls detailed in this report (subject to further refinement during detailed design).	Construction contractor	Construction
Revegetation	SW18	Proposed re-vegetation of cleared areas will be carried out with consideration of minimising erosion and in accordance with the *Guideline for Batter Surface Stabilisation using vegetation* (Roads and Maritime 2015e).	Construction contractor	Post construction
Water quality impacts	SW19	Where practical stormwater, including road runoff and intercepted groundwater, will be directed towards operational water quality treatment structures that will assist in the removal of pollutants from discharge water.	Transport	Operations
Water quality impacts	SW20	As part of an operational environmental management plan visual inspection of stormwater management system, including the operational water quality treatment structures, will be carried out for a minimum period of 12 months to ensure the stormwater management system is operating as designed.	Transport	Operation

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
~~*Potential interactions at the Astra Street landfill site*~~	~~*SW21*~~	~~*The establishment and use of the Astra Street site as a construction compound would not occur until remediation work under the voluntary management proposal are complete on the land to be occupied by the construction compound. It will comply with:*~~ • ~~*City of Newcastle's Voluntary Management Proposal under the Contaminated Land Management Act 1997*~~ • ~~*Relevant outcomes of consultation with the City of Newcastle.*~~ • ~~*Relevant EPA guidelines.*~~	~~*Construction contractor*~~	~~*Construction*~~
Groundwater				
Groundwater inflow	GW01	During detailed design the cuttings will be designed to minimise the volume of groundwater inflow as far as is practicable.	Transport	Detailed design

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Groundwater monitoring	GW02	A groundwater monitoring program will be prepared and implemented. The program will include: • Installation of monitoring bores (to replace those that would be removed during construction) • New monitoring bores will be installed both in and outside the predicted zones of perched groundwater drawdown to confirm the conceptual model. New bore(s) will be established in the proposed mine remediation area to confirm the depth to groundwater and groundwater quality • New monitoring bores will be installed near where mine remediation work is proposed to confirm the groundwater depth • Establishment of project specific water quality objectives • Bores will initially be monitored monthly for 12 months to collect baseline data. Monitoring will start as soon as possible and before the start of construction and will continue until completion, which may be after start of construction. The frequency of monitoring will then be reviewed to determine the appropriate regime • Bores will be monitored for standing water level and water quality (including pH, total dissolved solids, dissolved metals, nutrients and total recoverable hydrocarbons (silica gel clean-up) • A program of reporting of the monitoring results so that any unforeseen impacts are identified and responded to in a timely manner • The monitoring program will continue until 12 months after completion of construction with an annual review of groundwater data unless results permit an earlier end date.	Transport	Detailed design, pre-construction, construction and operation-
Groundwater discharge	GW03	During detailed design Roads and Maritime will review the monthly groundwater monitoring data to confirm the proposed construction and operational water management controls are appropriate and the project specific water quality objectives can be achieved.	Transport	Detailed design

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Groundwater dewatering	GW04	A construction groundwater and dewatering management plan will be prepared to manage groundwater inflows during construction.	Construction contractor	Pre-construction and construction
Groundwater quality	GW05	Coal seams exposed by cuttings will be sealed with shotcrete or over-excavated and backfilled with an inert material.	Construction contractor	Construction
Groundwater discharge	GW06	During construction, all groundwater seepage in the cuttings will be handled in the construction phase surface water management system.	Construction contractor	Construction
Groundwater management	GW07	An operational groundwater management plan will be prepared if groundwater monitoring results indicate there are likely to be post-construction groundwater quality discharge exceedances of the project specific water quality objectives.	Transport	Operation
Aboriginal heritage				
Avoidance of impacts to known Aboriginal heritage sites	AH01	During detailed design, Roads and Maritime will avoid impacts to sites RP2J AFT 1 and RP2J AFT 2. In the event impacts are unavoidable further consultation with Awabakal Local Aboriginal Land Council will be carried out.	Transport	Detailed design
Impacts to Aboriginal heritage sites	AH02	An Aboriginal heritage management plan will be prepared to manage potential direct project impacts to Aboriginal heritage. The plan will include management recommendations contained in the Newcastle Inner City Bypass – Rankin Park to Jesmond NSW, Aboriginal Cultural Heritage Assessment Report (Kelleher Nightingale Consulting 2018). The plan will include: • As part of the site induction, all workers will be advised of their obligations in relation to heritage under the National Parks and Wildlife Act 1974 • Procedures for management of unexpected finds.	Construction contractor	Pre-construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Impact to known Aboriginal heritage site (RP2J AFT 3)	AH03	Roads and Maritime will carry out sub-surface archaeological salvage of site RP2J AFT 3 before construction starts in the affected area. The salvage will be carried out in accordance with the methodology contained in the Aboriginal Cultural Heritage Assessment Report (Kelleher Nightingale Consulting 2018) and in consultation with the Aboriginal community.	Transport	Pre-construction
Impact to known Aboriginal heritage sites (RP2J AFT 3, RP2J AFT 4, RP2J IF 1 and RP2J IF 2)	AH04	Roads and Maritime will carry out surface archaeological collection of the identified sites in the construction footprint before construction starts in the affected area. The collection will be carried out in accordance with the methodology contained in the Aboriginal Cultural Heritage Assessment Report (Kelleher Nightingale Consulting 2018) and in consultation with the Aboriginal community.	Transport	Pre-construction
Non-Aboriginal heritage				
Construction impact on potential heritage item	HH01	Roads and Maritime will consult with DP&E, OEH Heritage Division and the Heritage Council of New South Wales to finalise the salvage program for the Hollywood shanty town site and associated impacted portion of the tramway. The salvage program will include sub-surface archaeological investigations as part of a salvage program, archival recording of any discovered items, further historical research and documentation of the history of the site. The final salvage program will be implemented in accordance with the approved salvage program.	Transport	Pre-construction
Potential finds during construction	HH02	Contractors will be given awareness training on non-Aboriginal heritage before carrying out any construction work to ensure understanding of potential heritage items and the procedure in the event of discovery of non-Aboriginal heritage materials, features or deposits, or the discovery of skeletal remains.	Construction Contractor	Pre-construction and construction
Potential finds during construction	HH03	In the event that either non-Aboriginal heritage items or skeletal remains are identified in the course of construction, the procedure detailed in Roads and Maritime *Standard Management Procedure, Unexpected Heritage Items* (Roads and Maritime 2015f) will be followed.	Construction Contractor	Construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Construction vibration impact on Tickhole Tunnel	*HH04*	*Transport will carry out further investigation during detailed design to confirm appropriate construction buffer distances and additional mitigation measures to be implemented for Tickhole Tunnel.*	*Transport*	*Detailed design*
Air quality				
General air quality impacts	AQ01	The Construction Environmental Management Plan will include measures for the management of air emissions including: • Air quality management objectives • Potential sources and impacts of air emissions • Sensitive receivers • Hours of work • Mitigation measures to minimise air quality impacts to sensitive receivers and the environment • Consideration of high winds in dry weather • Suitable buffer zone separation distance from temporary fixed plant to off-site sensitive receivers (eg at least 100 metres for batching plants where possible) • A monitoring program to assess compliance with identified objectives • Contingency plans to be implemented in the event of non-compliances and/or complaints about air quality.	Construction contractor	Pre-construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
	AQ02	The following mitigation measures will be used on-site and included as part of the Construction Environmental Management Plan: • Areas of exposed surfaces are to be minimised through construction site planning and programming • Locating stockpiled material as far as possible from sensitive receivers • All stockpiles will be designed, established, operated and decommissioned in accordance with Roads and Maritime *Stockpile Site Management Guideline* (Roads and Maritime, ~~2011c~~ *2015*) • Dust suppression measures, such as the use of water carts or soil binders, will be used on any unsealed surfaces and other exposed areas • Sealed roads at access points will be watered-down regularly to minimise the re-suspension of dust on sealed roads • Imposing work vehicle speed limits and designating specific routes for haulage and access • Construction activities which would generate dust would be avoided or modified during high wind periods where possible • All trucks will be covered when transporting materials to and from the site • All construction equipment will be maintained and operated in accordance with manufacturer specifications.	Construction contractor	Construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Resource use and waste management				
Construction waste	RW01	A resource and waste management plan will be prepared to identify the hierarchy for sourcing and the use of resources and waste management. The plan will adopt the resource management hierarchy principles of the *Waste Avoidance and Resource Recovery Act 2001*, Roads and Maritime Services waste management procedures and Environmental Management System. The plan will include, but not be limited to: • Identification of the waste stream that will be generated during construction • A waste register detailing types of waste collected, amounts, date, time, transportation method and details of disposal • A resource management strategy detailing beneficial reuse options for surplus and/or unsuitable material • A strategy to minimise waste in packaging • Consideration of procurement strategies to minimise unnecessary consumption of materials.	Construction Contractor	Pre-construction and construction
Surplus excavation material	RW02	Surplus material that is not able to be used on-site as part of the project would be reused or disposed of in the following order of priority: • Transfer to other nearby Roads and Maritime projects for immediate use • Transfer to an approved Roads and Maritime temporary stockpile site for future use during projects or routine maintenance • Transfer to a Roads and Maritime approved site for reuse on concurrent private/local government project (with appropriate approvals as required) • Disposal at an approved materials recycling or licensed waste disposal facility • As otherwise provided for by the relevant legislation and regulation.	Construction Contractor	Construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Existing waste	RW03	Pre-existing waste will be dealt with in accordance with the POEO Act and *Waste Classification Guidelines Part 1: Classifying Waste* (EPA 2014) and either recycled or disposed of at an appropriately licensed facility at the start of construction.	Construction Contractor	Construction
Operational waste	RW04	All operational waste will be managed in accordance with the Roads and Maritime waste management procedures and Environmental Management System.	Transport	Operation
Hazards and risk				
Bushfire risk	HR01	The construction environmental management plan will include a bushfire management plan in accordance with the *Planning for Bush Fire Protection 2006 (Rural Fire Service 2006).* Measures to be implemented to manage bushfire risk include: • Consultation requirements for community notifications in the event of a bushfire • Maintaining equipment in good working order • Ensuring plant and equipment are fitted with appropriate spark arrestors, where practicable • Ensuring site workers are informed of the site rules including designated smoking areas and putting rubbish in designated bins • Obtaining hot work permits and implementing total fire bans as required • Implementing adequate storage and handling requirements for potentially flammable substances in accordance with the relevant guidelines.	Construction contractor	Pre-construction
Consultation with emergency services	HR02	Consultation with emergency services, including the Rural Fire Service and Fire and Rescue NSW to: • Ensure access is maintained during and after construction • To identify hazard reduction burns in the locality of the project.	Construction contractor	Pre-construction and construction

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Mine subsidence risk	HR03	Roads and Maritime will obtain approval from Subsidence Advisory NSW for the project.	Transport	Detailed design
	HR04	The risk of mine subsidence will be further investigated during detailed design in consultation with Subsidence Advisory NSW, and the final design of bridges and other structures confirmed.	Transport	Detailed design
Mine remediation – grouting	HR05	A mine remediation management plan will be prepared to manage potential risks associated with grouting operations. The plan will be prepared with reference to groundwater monitoring data to determine the risk of grouting impacting on groundwater. The plan will detail measures to manage the risk of escape of grout, including into surface watercourses or groundwater, through natural fractures including: • Consultation • Monitoring • Emergency spill response procedure.	Construction contractor	Construction
Coal seam gas generation	HR06	A coal seam gas management plan will be prepared and implemented to manage risks during construction. The plan will detail the requirements for monitoring before and during construction where excavation would intersect with areas of known coal seam gas or coal seams. It will also include response procedures, including notifying emergency services if required, to ensure the safety of workers and the public.	Construction contractor	Pre-construction and construction
Greenhouse gas and climate change				
Climate change	GH01	The detailed design of the project will take into consideration the potential effect of climate change, including designing drainage to accommodate increased rainfall and severe weather events.	Transport	Detailed design

Environmental issue/impact	ID	Environmental management measures	Responsibility	Timing
Greenhouse gas emissions	GH02	Vegetation removal will be minimised where practicable.	Construction contractor	Pre-construction
	GH03	The use of alternative fuels and power sources for construction plant and equipment will be investigated and implemented, where appropriate.	Construction contractor	Pre-construction
	GH04	Recycled materials will be incorporated in the design of pavement and structures where possible.	Construction contractor	Pre-construction
	GH05	The energy efficiency and related carbon emissions will be considered in the selection of vehicle and plant equipment.	Construction contractor	Pre-construction
Cumulative impacts				
Cumulative impacts	CU01	The construction contractor will review environmental impacts before the start of construction and every six months during construction. Any new impacts identified will be addressed appropriately to reduce cumulative effects and reported as part of the construction environmental management plan.	Construction contractor	Construction

8 Proposed amendments to conditions of approval

The CoA are presented in Schedule 2 of the Infrastructure approval. Section 2 of the modification report presents a number of proposed changes to the CoA for the project.

After consideration of the issues raised in the public submissions, changes are proposed to the modifications requested in the Newcastle Inner City Bypass – Rankin Park to Jesmond modification report: additional construction compounds. The changes are that Transport are no longer requesting the removal of CoA A29 to A33 'compliance monitoring and reporting program'.

The proposed amendments to the CoA are described below. The consolidated proposed changes to the conditions of approval are attached in Appendix A. Proposed additional and/or modified conditions of approval have been italicised and coloured red and deleted conditions, or parts of conditions, have been struck out and coloured red.

Table 8.1 Proposed Changes to SSI-6888

Condition(s)	Proposed Modification	Justification
A1	The SSI must be carried out in accordance with the terms of this approval and generally in accordance with the description of the SSI in the *Newcastle Inner City Bypass – Rankin Park to Jesmond Environmental impact statement (RMS, 2016)* (the EIS) and the *Submissions and Preferred Infrastructure Report Newcastle Inner City Bypass Rankin Park to Jesmond (RMS, 2018)* (the SPIR), the *Newcastle Inner City Bypass-Rankin Park to Jesmond Modification report: additional construction compounds and the Newcastle Inner City Bypass-Rankin Park to Jesmond Modification report: additional construction compounds submissions report*.	Update to include the Modification report and this response to submissions report.
E3	Impacts to plant community types must not exceed those identified in ~~the SPIR~~ *documents listed in* ***Condition A1***.	Update to refer to Condition A1 for approved project documents, allowing inclusion of additional clearing assessed in the in the Modification report.
E63	Local roads proposed to be used by heavy vehicles for the SSI works that were not assessed in the ~~EIS and the SPIR~~ *documents listed in* ***Condition A1***, must be approved by the Planning Secretary through the **Construction Traffic and Transport Management Sub-plan** (including any revisions to the sub-plan that identify additional local roads**).** The request to the Planning Secretary must include a traffic and pedestrian impact assessment, and a swept path analysis, if required. The traffic and pedestrian impact assessment must: (a) demonstrate that the use of local roads will not compromise the safety of the public and have no more than minimal amenity impacts;	Update to refer to Condition A1 for approved project documents, allowing inclusion of the Modification report and this response to submissions report.

	(b) provide details as to the date of completion of the road dilapidation surveys for the subject local roads; and (c) describe the measures that will be implemented to minimise safety and amenity impacts to any schools, aged care facilities and child care facilities during their peak operation times.	

9 References

Aurecon Australasia Pty Ltd (Aurecon) 2016, *Newcastle Inner City Bypass, Rankin Park to Jesmond, Technical Paper 2 – Traffic and Transport Assessment*.

Aurecon 2018, *Newcastle Inner City Bypass, Rankin Park to Jesmond, Technical Paper 2 ‑ Traffic and Transport Assessment* ‑ Supplementary Report.

Department of Environment and Conservation NSW 2006, Assessing vibration: a technical guideline, February 2006.

Department of Planning, Industry and Environment (DPIE) 2017, Lower Hunter Vegetation Mapping, 2013. VIS_ID 4513. Accessed via https://datasets.seed.nsw.gov.au/dataset/lower-hunter-vegetation-mapping-2013-vis-id-4513.

DPIE 2020, Surveying threatened plants and their habitats. NSW survey guide for the Biodiversity Assessment Method. Accessed via https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/surveying-threatenedplants-and-habitats-nsw-survey-guide-biodiversity-assessment-method-200146.pdf

DPIE 2021, NSW Bionet Threatened Biodiversity Profile Data Collection, NSW Threatened Species Scientific Committee, final determination for *Maundia triglochinoides.*

GHD Pty Ltd (GHD) 2021, *Newcastle Inner City Bypass – Rankin Park to Jesmond, construction noise and vibration assessment,* May 2021.

Office of Environment and Heritage (OEH) 2020b, NSW Bionet Vegetation Classification.

Roads and Maritime Services 2015, *Guideline for Batter Surface Stabilisation using vegetation,* April 2015.

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

RTA 2001, *Environmental Noise Management Manual,* December 2001.

Rural Fire Service 2006, Planning for Bush Fire Protection. Accessed via https://www.rfs.nsw.gov.au/__data/assets/pdf_file/0008/4400/Complete-Planning-for-Bush-Fire-Protection-2006.pdf.

Transport for NSW 2019*, Construction Noise and Vibration Strategy ST-157/4.1,* April 2019.

Appendix A

Proposed changes to the conditions of approval

Schedule 2

Part A- Administrative Conditions

General

A1 The SSI must be carried out in accordance with the terms of this approval and generally in accordance with the description of the SSI in the *Newcastle Inner City Bypass – Rankin Park to Jesmond Environmental impact statement (RMS, 2016)* (the EIS) and the *Submissions and Preferred Infrastructure Report Newcastle Inner City Bypass Rankin Park to Jesmond (RMS, 2018)* (the SPIR), the *Newcastle Inner City Bypass-Rankin Park to Jesmond Modification report: additional construction compounds and the Newcastle Inner City Bypass-Rankin Park to Jesmond Modification report: additional construction compounds submissions report*.

A2 The SSI must be carried out in accordance with all procedures, commitments, preventative actions, performance criteria and mitigation measures as identified in the documents listed in **Condition A1** unless otherwise specified in, or required under, this approval.

A3 In the event of an inconsistency between the documents listed in **Condition A1**, or any other document required under this approval, and a term of this approval, the term of this approval prevails to the extent of the inconsistency.

Note: For the purpose of this condition, there will be an inconsistency between a term of this approval and any document if it is not possible to comply with both the term and the document.

A4 The Proponent must comply with all written requirements or directions of the Planning Secretary, including in relation to:

(a) the environmental performance of the SSI;
(b) any document or correspondence in relation to the SSI;
(c) any notification given to the Planning Secretary under the terms of this approval;
(d) any audit of the construction or operation of the SSI;
(e) the terms of this approval and compliance with the terms of this approval (including anything required to be done under this approval);
(f) the carrying out of any additional monitoring or mitigation measures; and
(g) in respect of ongoing monitoring and management obligations, compliance with an updated or revised version of a guideline, protocol, Australian Standard or policy required to be complied with under this approval.

A5 Where the terms of this approval require a document or monitoring program to be prepared or a review to be undertaken in consultation with identified parties, evidence of the consultation undertaken must be submitted to the Planning Secretary with the document. The evidence must include:

(a) documentation of the engagement with the party identified in the condition of approval that has occurred before submitting the document for approval;
(b) a log of the dates of engagement or attempted engagement with the identified party and a summary of the issues raised by them;
(c) documentation of the follow-up with the identified party where engagement has not occurred to confirm that they do not wish to engage or have not attempted to engage after repeated invitations;
(d) outline of the issues raised by the identified party and how they have been addressed; and
(e) a description of the outstanding issues raised by the identified party and the reasons why they have not been addressed.

A6 This approval lapses five (5) years after the date on which it is granted unless works are physically commenced on or before that date.

A7 References in the terms of this approval to any guideline, protocol, Australian Standard or policy are to such guidelines, protocols, standards or policies in the form they are in as at the date of this approval.

A8 Any document that must be submitted within a timeframe specified in or under the conditions of this approval may be submitted within a later timeframe agreed with the Planning Secretary. This condition does not apply to the immediate written notification required in respect of an incident under **Condition A37.**

Bridge 7 – Shared Path Bridge Over Newcastle Road (Bridge 7)

A9 Construction of Bridge 7 and its associated components is not subject to Part C and Part D of this approval, however it is subject to:

(a) preparation of a **Construction Environmental Management Process (Plan)** and an **Environmental Work Method Statement (EWMS)**, in consultation with relevant public authorities and Newcastle City Council and approved by the **ER** under **Condition A26(d)**. The Plan must detail how the performance outcomes, commitments, mitigation and monitoring measures specified in the documents listed in **Condition A1** will be implemented and achieved during construction; and
(b) implementation of the approved **Construction Environmental Management Process (Plan)** and **Environmental Work Method Statement (EWMS)**.

Staging

A10 The SSI may be constructed and operated in stages. Where staged construction or operation is proposed, a **Staging Report** (for either or both construction and operation as the case may be) must be prepared and submitted to the Planning Secretary for information. The **Staging Report** must be submitted to the Planning Secretary no later than one month before the commencement of construction of the first of the proposed stages of construction (or if only staged operation is proposed, one month before the commencement of operation of the first of the proposed stages of operation).

A11 The **Staging Report** must:

(a) If staged construction is proposed, set out how the construction of the whole of the SSI will be staged, including details of work and other activities to be carried out in each stage and the general timing of when construction of each stage will commence and finish;
(b) If staged operation is proposed, set out how the operation of the whole of the SSI will be staged, including details of work and other activities to be carried out in each stage and the general timing of when operation of each stage will commence and finish (if relevant);
(c) Specify how compliance with conditions will be achieved across and between each of the stages of the SSI; and
(d) Set out mechanisms for managing any cumulative impacts arising from the proposed staging.

A12 The construction and/or operation of the SSI must be carried out in accordance with the **Staging Report**, as submitted to the Planning Secretary.

A13 Where staging is proposed, the terms of this approval that apply or are relevant to the work to be carried out in a specific stage, must be complied with at the relevant time for that stage

Ancillary Facilities

A14 Ancillary facilities that are not identified in the documents listed in **Condition A1** can only be established and used in each case if:

(a) they are located within or immediately adjacent to the construction boundary; and
(b) they are not located next to a sensitive receiver (including where an access road is between the facility and the receiver), unless the landowner and occupier have given written acceptance to the carrying out of the relevant facility in the proposed location; and
(c) they have no impacts on heritage items (including areas of archaeological sensitivity), and threatened species, populations or ecological communities beyond the impacts approved under the terms of this approval; and
(d) the establishment and use of the facility can be carried out and managed within the outcomes set out in the terms of this approval, including in relation to environmental, social and economic impacts.

Ancillary Facility Establishment Management Plan

A15 Before the establishment of any construction ancillary facilities (excluding minor construction ancillary facilities determined by the ER to have minimal environmental impact and those established under **Condition A19),** the Proponent must prepare an **Ancillary Facility Establishment Management Plan** which outlines the environmental management practices and procedures to be implemented for the establishment of construction ancillary facilities. The **Ancillary Facility Establishment Management Plan** must be prepared in consultation with the Newcastle City Council and relevant public authorities. The **Ancillary Facility Establishment Management Plan** must be submitted to the Planning Secretary for approval one (1) month before the establishment of any construction ancillary facilities. The **Ancillary Facility Establishment Management Plan** must detail the management of construction ancillary facilities and include:

(a) a description of activities to be undertaken during establishment of the construction ancillary facility (including scheduling and duration of works to be undertaken at the site);
(b) figures illustrating the proposed operational site layout, including access roads;
(c) a program for ongoing analysis of the key environmental risks arising from the site establishment activities described in subsection (a) of this condition, including an initial risk assessment undertaken prior to the commencement of site establishment works;
(d) details of how the site establishment activities described in subsection (a) of this condition will be carried out to:
    (i) meet the performance outcomes stated in the documents listed in **Condition A1**, and
    (ii) manage the risks identified in the risk analysis undertaken in subsection (c) of this condition; and
(e) a program for monitoring the performance outcomes, including a program for construction noise monitoring consistent with the requirements of **Condition C10.**

Nothing in this condition prevents the Proponent from preparing individual **Ancillary Facility Establishment Management Plans** for each construction ancillary facility.

A16 The requirements of **Condition A15** in relation to Bridge 7 may be addressed by the documents required under **Condition A9**.

Use of Construction Ancillary Facilities

A17 The use of a construction ancillary facility must not commence until the **CEMP** required by **Condition C1**, relevant **CEMP Sub-plans** required by **Condition C4** and relevant **Construction Monitoring Programs** required by **Condition C9** have been approved by the Planning Secretary.

This condition does not apply to a construction ancillary facility determined by the ER to have minimal environmental impact and those established under **Condition A19**.

A18 The requirements of **Condition A17** in relation to Bridge 7 may be addressed by the documents required under **Condition A9**.

Minor Construction Ancillary Facilities

A19 Lunch sheds, office sheds, portable toilet facilities, material storage, parking and the like, that are not identified as a construction ancillary facility in the documents listed in **Condition A1**, can be established where they satisfy the following criteria:

(a) are located within the construction boundary; and
(b) have been assessed by the **ER** to have -
  (i) minimal amenity impact to surrounding residences and businesses, after consideration of matters such as compliance with the *Interim Construction Noise Guideline* (DECC, 2009), traffic and access impacts, dust and odour impacts, and visual (including light spill) impacts, and
  (ii) minimal environmental impact with respect to waste management and flooding, and
  (iii) no impacts on biodiversity, soil and water, and heritage items beyond those already approved under other terms of this approval.

Boundary screening

A20 Boundary screening must be erected around ancillary facilities that are adjacent to sensitive receivers, for the duration of works associated with the SSI, unless otherwise agreed with affected residents, business operators or landowners (including Newcastle City Council where it is the landowner).

A21 Boundary screening required under **Condition A20** of this approval must reduce visual, noise and air quality impacts on adjacent sensitive receivers

Environment Representative

A22 Works must not commence until an **ER** has been approved by the Planning Secretary and engaged by the Proponent.

A23 The Planning Secretary's approval of an **ER** must be sought no later than one month before the commencement of works.

A24 The proposed **ER** must be a suitably qualified and experienced person who was not involved in the preparation of the documents listed in **Condition A1**, and independent of the design and construction personnel for the SSI and those involved in the delivery of it.

Note: Skills and qualifications may include higher education qualifications (generally provided by universities and by other higher education institutions such as Technical and Further Education institutes and Registered Training Organisations) in either science, environmental engineering, environmental management or an equivalent field and including knowledge and experience in noise and vibration assessment and management.

A25 The Proponent may engage more than one **ER** for the SSI, in which case the functions to be exercised by an **ER** under the terms of this approval may be carried out by any **ER** that is approved by the Planning Secretary for the purposes of the SSI.

A26 For the duration of works and 12 months after the commencement of operation, or as agreed with the Planning Secretary, the approved **ER** must:

(a) receive and respond to communication from the Planning Secretary in relation to the environmental performance of the SSI;
(b) consider and inform the Planning Secretary on matters specified in the terms of this approval;
(c) consider and recommend to the Proponent any improvements that may be made to work practices to avoid or minimise adverse impacts to the environment and to the community;
(d) review documents identified in **Conditions C1, C4** and **C9** and any other documents that are identified by the Planning Secretary, to ensure they are consistent with requirements in or under this approval and if so:
    (i) Make a written statement to this effect before submission of such documents to the Planning Secretary (if those documents are required to be approved by the Planning Secretary); or
    (ii) make a written statement to this effect before the implementation of such documents (if those documents are required to be submitted to the Planning Secretary / Department for information or are not required to be submitted to the Planning Secretary / Department);
(e) regularly monitor the implementation of the documents listed in **Conditions C1, C4** and **C9** to ensure implementation is being carried out in accordance with the document and the terms of this approval;
(f) as may be requested by the Planning Secretary, help plan, attend or undertake audits of the SSI commissioned by the Department including scoping audits, programming audits, briefings and site visits, but not independent environmental audits required under **Condition A35** of this approval;
(g) as may be requested by the Planning Secretary, assist the Department in the resolution of community complaints;
(h) assess the impacts of minor ancillary facilities comprising lunch sheds, office sheds and portable toilet facilities as required by **Condition A19** of this approval;
(i) undertake the functions as required under the terms of this approval;
(j) consider any minor amendments to be made to the **CEMP**, **CEMP Sub-plans** and monitoring programs that comprise updating or are of an administrative nature and are consistent with the terms of this approval and the **CEMP**, **CEMP Sub-plans** and monitoring programs approved by the Planning Secretary and, if satisfied such amendment is necessary, approve the amendment. This does not include any modifications to the terms of this approval; and
(k) prepare and submit to the Planning Secretary and other relevant regulatory agencies, for information, an **Environmental Representative Monthly Report** providing the information set out in the Environmental Representative Protocol under the heading "Environmental Representative Monthly Reports." The **Environmental Representative Monthly Report** must be submitted within seven days following the end of each month for the duration of the ER's engagement for the SSI.

A27 The Proponent must provide the **ER** with all documentation requested by the **ER** in order for the **ER** to perform their functions specified in **Condition A26** (including preparation of the **ER** monthly report), as well as:

(a) the complaints register (to be provided on a daily basis); and
(b) a copy of any assessment carried out by the Proponent to determine whether proposed work is consistent with the approval (which must be provided to the **ER** before the commencement of the subject work).

A28 The Planning Secretary may at any time commission an audit of an **ER's** exercise of its functions under **Condition A26**. The Proponent must:

(a) facilitate and assist the Planning Secretary in any such audit; and
(b) make it a term of their engagement of an **ER** that the **ER** facilitate and assist the Planning Secretary in any such audit.

Compliance Monitoring and Reporting Program

A29 No later than four (4) weeks before the commencement of any work, a **Compliance Monitoring and Reporting Program** prepared in accordance with the *Compliance Reporting – Post Approval Requirements* (DPE, 2018) must be endorsed by the **ER** and submitted to the Planning Secretary for information.

A30 **Compliance Reports** of the SSI must be prepared and carried out in accordance with the *Compliance Reporting – Post Approval Requirements* (DPE 2018). The Department must be notified of the commencement dates of construction and operation of the SSI in the pre-construction and pre-operational compliance reports.

A31 The compliance report must provide details of any review of, and minor amendments made to, the **CEMP** (which must be approved by the **ER**), resulting from construction carried out during the reporting period.

A32 The Proponent must make each compliance report publicly available and notify the Department in writing when this has been done.

A33 The **Compliance Monitoring and Reporting Program** in the form required under **Condition A29** of this approval must be implemented for the duration of works and for a minimum of one
(1) year following commencement of operation, or for a longer period as determined by the Planning Secretary based on the outcomes of independent audits, **Environmental Representative Reports** and regular compliance reviews submitted through **Compliance Reports**. If staged operation is proposed, or operation is commenced of part of the SSI, the **Compliance Monitoring and Reporting Program** must be implemented for the relevant period of each stage or part of the SSI.

Auditing

A34 No later than four (4) weeks before the date notified for the commencement of construction (in the pre-construction compliance report), an Independent Audit Program prepared in accordance with the *Independent Audit – Post Approval Requirements* (DPE 2018) must be submitted to the Planning Secretary.

A35 Independent Audits of the development must be carried out in accordance with:

(a) the Independent Audit Program submitted to the Department under **Condition A34** of this approval; and
(b) the requirements for an Independent Audit Methodology and Independent Audit Report in the *Independent Audit – Post Approval Requirements* (DPE 2018).

A36 In accordance with the specific requirements in the *Independent Audit – Post Approval Requirements* (DPE 2018), the Proponent must:

(a) review and respond to each Independent Audit Report prepared under **Condition A35**

of this approval;

(b) submit the response to the Department; and

(c) make each Independent Audit Report and response to it publicly available and notify the Department in writing when this has been done.

Incident Notification and Reporting

A37 The Planning Secretary must be notified in writing to compliance@planning.nsw.gov.au immediately after the Proponent becomes aware of an incident. The notification must identify the SSI (including the application number and the name of the SSI if it has one), and set out the date, location and nature of the incident.

A38 Subsequent notification must be given, and reports submitted in accordance with the requirements set out in **Appendix A** of this approval.

Part B- Community Information and Reporting

Community Information, Consultation and Involvement

Communication Strategy

B1 A **Community Communication Strategy** must be prepared to provide mechanisms to facilitate communication between the Proponent, the **ER**, relevant public authorities and the community (including adjoining affected landowners and occupiers, and others directly impacted by the SSI), during the design and works associated with the SSI and for a minimum period of 12 months following the completion of construction of the SSI.

B2 The **Community Communication Strategy** must:

(a) identify people and organisations to be consulted during the design and work phases;
(b) set out procedures and mechanisms for the regular distribution of accessible information about or relevant to the SSI including use of construction hoardings to provide information regarding construction. The information to be distributed must include information regarding current site construction activities, schedules and milestones at each construction site;
(c) identify opportunities and make provision for the community to visit construction sites (taking into consideration workplace, health and safety requirements);
(d) provide for the formation of issue or location-based community forums that focus on key environmental management issues of concern to the relevant communities; and
(e) set out procedures and mechanisms:
    (i) through which the community can discuss or provide feedback to the Proponent;
    (ii) through which the Proponent will respond to enquiries or feedback from the community; and
    (iii) to resolve any issues or disputes that may arise in relation to construction of the SSI, including disputes regarding rectification or compensation.

B3 The **Community Communication Strategy** must be submitted to the Planning Secretary for approval no later than one month before the commencement of any work.

B4 Work for the purposes of the SSI must not commence until the **Community Communication Strategy** has been approved by the Planning Secretary.

B5 The **Community Communication Strategy**, as approved by the Planning Secretary, must be implemented for the duration of works and for a period of 12 months following the completion of construction.

Complaints Management System

B6 A **Complaints Management System** must be prepared and implemented before the commencement of any work and maintained for the duration of construction and for a minimum of 12 months following completion of the SSI.

B7 The following must be available, to facilitate community enquiries and manage complaints, one month before the commencement of work and for 12 months following the completion of construction:

(a) a 24- hour telephone number for the registration of complaints and enquiries about the SSI;
(b) a postal address to which written complaints and enquires may be sent;
(c) an email address to which electronic complaints and enquiries may be transmitted; and
(d) a mediation system for complaints unable to be resolved (including access to an independent mediation process and mediator).

This information must be accessible to all in the community regardless of age, ethnicity, disability or literacy level. The **Complaints Management System** must be provided to the Planning Secretary prior to any work commencing.

B8 The telephone number, postal address and email address required under **Condition B7** of this approval must be published in a newspaper circulating in the relevant local area and advertised on site hoardings at each construction site, before the commencement of any work and published in the same way before the commencement of operation. This information must also be provided on the website required under **Condition B13** of this approval.

B9 A **Complaints Register** must be maintained recording information on all complaints received about the SSI during the carrying out of any work and for a minimum period of 12 months following the completion of construction. The **Complaints Register** must record the:

(a) number of complaints received;
(b) number of people affected in relation to a complaint; and
(c) means by which the complaint was addressed and whether resolution was reached, with or without mediation.

B10 The **Complaints Register** must be provided to the Planning Secretary upon request, within the timeframe stated in the request, and made available to the **ER** on a daily basis.

B11 The independent mediation process required under **Condition B7(d)** must detail how members of the public, who are not satisfied by the Proponent's response to a compliant, has the ability to have the Proponent's response reviewed**.**

Any application made under the independent mediation process for a review of a complaint must be responded to within 28 days of the request being made or within other specified timeframe agreed with the member of the public.

B12 The independent mediation process required under **Condition B7(d)** must:

(a) Review any unresolved disputes if the procedures and mechanisms under **Condition B2(e)(iii)** do not satisfactorily address complaints; and
(b) Make recommendations to the Proponent to satisfactorily address complaints, resolve disputes or mitigate against the occurrence of future complaints or disputes.

Provision of Electronic Information

B13 A website providing information in relation to the SSI must be established before commencement of work and maintained for the duration of works and for a minimum of 24 months following the completion of construction of the SSI. Up-to-date information (excluding confidential, private, commercial information, or other documents as agreed to by the Planning Secretary) must be published before the relevant works commencing and maintained on the website or dedicated pages including:

(a) information on the current implementation status of the SSI;
(b) a copy of the documents listed in **Condition A1** and **Condition A2** of this approval, and any documentation relating to any modifications made to the SSI or the terms of this approval;
(c) a copy of this approval in its original form, a current consolidated copy of this approval (that is, including any approved modifications to its terms), and copies of any approval granted by the Minister to a modification of the terms of this approval;
(d) a copy of each statutory approval, licence or permit required and obtained in relation to the SSI;

(e) a current copy of each document required under the terms of this approval, which must be published before the commencement of any work to which they relate or before their implementation, as the case may be; and

(f) a copy of the compliance reports required under **Condition A30** and independent audit reports under **Condition A36** of this approval

Part C- Construction Environmental Management

Construction Environmental Management Plan

C1 A **Construction Environmental Management Plan** (**CEMP**) must be prepared to detail how the performance outcomes, commitments and mitigation measures specified in the documents listed in **Condition A1** will be implemented and achieved during construction.

C2 The **CEMP** must provide:

(a) a description of activities to be undertaken during construction (including the scheduling of construction);
(b) details of environmental policies, guidelines and principles to be followed in the construction of the SSI;
(c) a program for ongoing analysis of the key environmental risks arising from the activities described in subsection (a) of this condition, including an initial risk assessment undertaken prior to the commencement of construction of the SSI;
(d) details of how the activities described in subsection (a) of this condition will be carried out to:
  (i) meet the performance outcomes stated in the documents listed in **Condition A1**; and
  (ii) manage the risks identified in the risk analysis undertaken in subsection (c) of this condition;
(e) an inspection program detailing the activities to be inspected and frequency of inspections;
(f) a protocol for managing and reporting any:
  (i) incidents; and
  (ii) non-compliances with this approval or statutory requirements;
(g) procedures for rectifying any non-compliance with this approval identified during compliance reporting and auditing, incident management or at any time during construction;
(h) a list of all the **CEMP Sub-plans** required in respect of construction, as set out in **Condition C4**. Where staged construction of the SSI is proposed, the **CEMP** must also identify which **CEMP Sub-plan** applies to each of the proposed stages of construction;
(i) a description of the roles and environmental responsibilities for relevant employees and their relationship with the **ER**;
(j) for training and induction for employees, including contractors and sub-contractors, in relation to environmental and compliance obligations under the terms of this approval; and
(k) for periodic review and update of the **CEMP** and all associated plans and programs.

C3 The **CEMP** must be endorsed by the **ER** and then submitted to the Planning Secretary for approval no later than one month before the commencement of construction.

C4 The following **CEMP Sub-plans** must be prepared in consultation with the relevant public authorities identified for each **CEMP Sub-plan**:

Table 3: CEMP Sub-Plan and relevant public authorities

	Required CEMP Sub-plan	**Relevant public authorities to be consulted for each CEMP Sub-plan**
(a)	Traffic and transport	Newcastle City Council and Health Administration Corporation
(b)	Noise and vibration	Newcastle City Council and Health Administration Corporation
(c)	Flora and Fauna	DPI Fisheries and Newcastle City Council

(d)	Air quality	Newcastle City Council and Health Administration Corporation
(e)	Soil and water	Newcastle City Council, DPI Fisheries, DoI Water,
(f)	Aboriginal cultural heritage	OEH and Registered Aboriginal Parties
(g)	Flood management	Newcastle City Council

C5 The **CEMP Sub-plans** must state how:
- **(a)** the environmental performance outcomes identified in the documents listed in **Condition A1** and terms of this approval will be achieved;
- (b) the mitigation measures identified in the documents listed in **Condition A1** and terms of this approval will be implemented;
- (c) the relevant terms of this approval will be complied with; and
- (d) issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.

C6 The **CEMP Sub-plans** must be developed in consultation with the relevant public authorities specified in **Table 3**. Details of all information requested by an authority to be included in a **CEMP Sub-plan** as a result of consultation**,** including copies of all correspondence from those authorities, must be provided with the relevant **CEMP Sub-Plan**.

C7 Any of the **CEMP Sub-plans** may be submitted along with, or subsequent to, the submission of the **CEMP** but in any event, no later than one (1) month before construction for approval by the Planning Secretary.

C8 Construction must not commence until the **CEMP** and all **CEMP Sub-plans** have been approved by the Planning Secretary, or as otherwise agreed by the Planning Secretary. The **CEMP** and **CEMP Sub-plans**, as approved by the Planning Secretary, including any minor amendments approved by the **ER** must be implemented for the duration of construction. Where construction of the SSI is staged, construction of a stage must not commence until the **CEMP** and **sub-plans** for that stage have been approved by the Planning Secretary.

Construction Monitoring Programs

C9 The following **Construction Monitoring Programs** must be prepared in consultation with the relevant public authorities identified for each to compare actual performance of construction of the SSI against the performance predicted in the in the documents listed in **Condition A1** or in the **CEMP**:

Table 4: Construction Monitoring and relevant public authorities

	Required Construction Monitoring Programs	**Relevant public authorities to be consulted for each Construction Monitoring Program**
(a)	Surface and Ground Water Quality	DPI Fisheries, DoI Water and Newcastle City Council
(b)	Air Quality	Newcastle City Council and Health Administration Corporation
(c)	Noise and vibration	Newcastle City Council and Health Administration Corporation
(e)	Flora and fauna	DPI Fisheries and Newcastle City Council

C10 Each **Construction Monitoring Program** must provide:
- (a) details of baseline data available;
- (b) details of baseline data to be obtained and when;

(c) the parameters of the project to be monitored;
(d) the frequency of monitoring to be undertaken;
(e) the location of monitoring;
(f) the reporting of monitoring results;
(g) procedures to identify and implement additional or alternative mitigation measures where results of monitoring are unsatisfactory; and
(h) any consultation to be undertaken in relation to the monitoring programs.

C11 The **Construction Monitoring Programs** must be developed in consultation with the relevant public authorities specified in **Table 4**. Where an authority's request(s) has not been included in the Monitoring Program, the Proponent must provide justification to the Planning Secretary as to why it was not included. Details of all information requested by an authority including copies of all correspondence from those authorities, must be provided with the relevant **Construction Monitoring Program**.

C12 The **Construction Monitoring Programs** must be endorsed by the **ER** and then submitted to the Planning Secretary for approval at least one (1) month before the commencement of construction.

C13 Construction must not commence until the Planning Secretary has approved, or as otherwise agreed by the Planning Secretary, all the required **Construction Monitoring Programs**, and all relevant baseline data for the specific construction activity has been collected.

C14 The **Construction Monitoring Programs**, as approved by the Planning Secretary including any minor amendments approved by the **ER** must be implemented for the duration of construction and for any longer period set out in the monitoring program or specified by the Planning Secretary, whichever is the greater.

C15 The results of the **Construction Monitoring Programs** must be submitted to the Planning Secretary, and relevant public authorities for information, in the form of a **Construction Monitoring Report** at the frequency identified in the relevant **Construction Monitoring Program**.

Where a relevant **CEMP Sub-plan** exists, the relevant **Construction Monitoring Program** may be incorporated into that **CEMP Sub-plan.**

Part D- Operational Environmental Management

Operational Environmental Management

D1 An **Operational Environmental Management Plan (OEMP)** must be prepared to detail how the performance outcomes, commitments and mitigation measures made in the documents listed in **Condition A1** and the terms of this approval will be implemented and achieved during operation. This condition (**Condition D1**) does not apply if **Condition D2** of this approval applies.

D2 An **OEMP** is not required for the SSI if the Proponent has an **Environmental Management System** (**EMS**) or equivalent as agreed with the Planning Secretary, and demonstrates, to the satisfaction of the Planning Secretary, that through the **EMS** or equivalent:

(a) the performance outcomes, commitments and mitigation measures, made and identified in the documents listed in **Condition A1** and specified relevant terms of this approval can be achieved;
(b) issues identified through ongoing risk analysis can be managed; and
(c) procedures are in place for rectifying any non-compliance with this approval identified during compliance auditing, incident management or any other time during operation.

D3 The **OEMP** or **EMS** or equivalent as agreed with the Planning Secretary, must be submitted to the Planning Secretary for information no later than one (1) month prior to the commencement of operation.

D4 The **OEMP** or **EMS** or equivalent as agreed with the Planning Secretary and amended from time to time, must be implemented for the duration of operation and the **OEMP** or **EMS** must be made publicly available before the commencement of operation.

Part E- Key Issue Conditions

Air Quality

E1 In addition to the performance outcomes, commitments and mitigation measures specified in the documents listed in **Condition A1**, all reasonably practicable measures must be implemented to minimise the emission of dust and other air pollutants from works associated with the SSI.

Biodiversity

E2 Any work associated with the SSI must limit the clearing of native vegetation to the greatest extent practicable.

E3 Impacts to plant community types must not exceed those identified in ~~the SPIR~~ *documents listed in* ***Condition A1***.

E4 The **Biodiversity Offset Strategy (BOS)** detailed in the SPIR must be implemented. The credits specified in the **BOS** and detailed in **Table 5** must be secured within 12 months of the commencement of construction, or as otherwise agreed by the Planning Secretary. The credits must be retired within 12 months of securing the credits, or in a timeframe agreed to by the Planning Secretary.

Table 5: Biodiversity Credits to be Retired

Credit Type	EPBC Act equivalent EEC or habitat of EPBC Act listed threatened species	Number of Credits
Ecosystem Credits		
HU833 (PCT 1619) – Smooth-barked Apple – Red Bloodwood – Brown Stringybark – Hairpin Banksia healthy open forest of coastal lowlands	Grey-headed Flying-fox (foraging habitat)	1,182
HU782 (PCT 1569) – Blackbutt – Turpentine – Sydney Blue Gum mesic tall open forest on ranges of the Central Coast	Grey-headed Flying-fox (foraging habitat)	337
HU806 (PCT 1592) – Spotted Gum – Red Ironbark – Grey Gum shrub – grass open forest on the Lower Hunter	Grey-headed Flying-fox (foraging habitat)	399
HU804 (PCT 1590) – Spotted Gum – Broad-leaved Mahogany – Red Ironbark shrubby open forest*	Grey-headed Flying-fox (foraging habitat)	1,098
HU841 (PCT 1627) – Smooth-barked Apple – Turpentine – Sydney Peppermint heathy woodland on sandstone ranges of the Central Coast	Grey-headed Flying-fox (foraging habitat)	228
Total ecosystem credits required for offsetting		3,244
Species Credits		
Black-eyed Susan (*Tetratheca juneca*)		12,690

Note: Credits have been calculated using the Framework for Biodiversity Assessment.

E5 The Proponent must submit to the Planning Secretary a copy of the **Credit Retirement Report** issued by the OEH (once the offsets are secured) within one month of receiving the report.

E6 Plant community types that provide habitat for impacted EPBC Act threatened species must be retired in a manner that achieves "like-for-like" habitat for the species.

E7 The offsetting of biodiversity impacts must be carried out in accordance with the *NSW Biodiversity Offsets Policy for Major Projects (OEH, 2014)* and can be achieved by:

(a) acquiring and retiring "biodiversity credits" within the meaning of the *Biodiversity Conservation Act 2016*; and/or
(b) making payments to an offset fund developed by the NSW Government; and/or
(c) providing supplementary measures.

Notes:

1. *Following repeal of the Threatened Species Conservation Act 1995 on 25 August 2017, "biodiversity credits" created under that Act are taken to be "biodiversity credits" under the Biodiversity Conservation Act 2016 by virtue of clause 19 of the Biodiversity Conservation (Savings and Transitional) Regulation 2017.*
2. *Any residual impact on EPBC Act listed threatened species and ecological communities must be offset in accordance with an offset process endorsed by the DoEE.*

E8 Prior to work that impacts native vegetation, the Proponent must consult with local community, landcare groups and relevant public authorities to determine if there is an interest for the reuse of suitable timber and root balls in habitat enhancement and rehabilitation work. Timber and root balls must be retained from the project where there is a demonstrated demand for their reuse.

E9 The construction of the SSI must demonstrate how:

(a) EPBC Act listed threatened species and ecological communities are protected;
(b) noxious weeds are managed; and
(c) contamination by pathogens, non-indigenous regenerative plant material and seeds can be prevented by the movement of all tools, vehicles, machinery and personnel.

*Note: These additional requirements must be addressed in the **Flora and Fauna Management Sub-plan** required under **Condition C4 Table** **3 (c).***

Pre-clearing Surveys

E10 Before the removal or clearing of any vegetation, or the demolition of structure identified as potential roosting sites for microbats, commences, pre-clearing/demolition inspections for the threatened species must be undertaken. The inspections, and any subsequent relocation of fauna and associated management/offset measures, must be undertaken under the guidance of a suitably qualified and experienced ecologist. Survey and relocation methodologies and management/offset measures must be included in the **Construction Flora and Fauna Management Sub-plan** required under **Condition C4**, and the documents required under **Condition A9** in relation to Bridge 7.

E11 The SSI must be designed to retain as many trees as possible in Jesmond Park. Where trees are to be removed, and those trees are not required to be offset under **Condition E4,** the Proponent must provide a net increase in the number of replacement trees. Replacement trees must be planted within and on public land within 500 metres of the SSI boundary. Replacement tree plantings may be undertaken beyond 500 metres on public land within the Newcastle City Council area if planting within 500 metres of the SSI boundary is not practicable. The location of the replacement tree plantings must be

determined in consultation with Newcastle City Council, and undertaken prior to the commencement of operation.

Flooding

E12 Measures to manage pre-existing flood characteristics must be incorporated into the detailed design of the SSI, following consultation with directly affected landowners, NSW State Emergency Service (SES) and Newcastle City Council.

E13 Flood information including flood reports, models and geographic information system outputs, and works as executed information from a registered surveyor certifying finished ground levels and the dimensions and finished levels of all structures within the flood prone land, must be provided to Newcastle City Council, OEH and the SES in order to assist in preparing relevant documents and to reflect changes in flood behaviour as a result of the SSI. The Newcastle City Council, OEH and the SES must be notified in writing no later than one month following the completion of construction that the information is available. Information requested by the Newcastle City Council, OEH or the SES must be provided no later than six months following the completion of construction or within another timeframe agreed with the Newcastle City Council, OEH and the SES.

Heritage

E14 An **Unexpected Heritage Finds and Human Remains Procedure** must be prepared to manage unexpected Aboriginal and non-Aboriginal heritage finds in accordance with any guidelines and standards prepared by the Heritage Council of NSW and OEH.

E15 The **Unexpected Heritage Finds and Human Remains Procedure** must be prepared by a suitably qualified and experienced heritage specialist in consultation with OEH and the Heritage Council of NSW (or its delegate) and submitted to the Planning Secretary for information no later than one (1) month before the commencement of any work.

E16 The **Unexpected Heritage Finds and Human Remains Procedure**, as submitted to the Planning Secretary, must be implemented for the duration of work.

Note: Human remains that are found unexpectedly during works are under the jurisdiction of the NSW State Coroner and must be reported to the NSW Police immediately.

Aboriginal Culture Heritage

E17 The surface salvage of sites RP2J AFT3, RP2J AFT 4, RP2J IF 1 and RP2J IF 2, and the subsurface salvage of RP2J AFT3, must be undertaken in accordance with the salvage methodology described in the *SPIR, Appendix H - Technical Paper 10 – Aboriginal Cultural Heritage Assessment Report, April 2018*.

E18 The management of any salvaged of Aboriginal objects must be undertaken in accordance with the documents identified in Condition A1 and in consultation with the Registered Aboriginal Parties.

E19 Following completion of salvage of Aboriginal objects (**Conditions E17**), the Proponent must prepare a **Cultural Heritage Salvage Report** which includes details of any archival recording, further archaeological research either undertaken or to be carried out, and archaeological excavations (with artefact analysis and identification of a final repository for finds), must be prepared in accordance with any guidelines and standards required by OEH.

E20 The **Cultural Heritage Salvage Report** must be submitted to the Planning Secretary, OEH, Newcastle City Council and RAPs, where relevant, for information no later than 12 months after the completion of the salvage work referred to in **Condition E17**.

Non-Aboriginal Heritage

E21 Before any direct impact on the Hollywood shanty town site and the Wallsend Plattsburg tramway, the Proponent must engage a suitably qualified archaeologist whose experience complies with the Heritage Council of NSW's *Criteria for Assessment of Excavation Directors* (July, 2011) (referred to as the Excavation Director) to oversee and advise on matters associated with historic archaeology and to prepare an **Historical Archaeological Research Design and Excavation Methodology** generally consistent with the documents listed in **Condition A1**.

E22 The investigation and salvage of the Hollywood shanty town site and the Wallsend Plattsburg tramway heritage items must be undertaken in accordance with the **Historical Archaeological Research Design and Excavation Methodology**. The Proponent must submit the **Historical Archaeological Research Design and Excavation Methodology** to Newcastle City Council for review and comment prior to finalisation. The **Historical Archaeological Research Design and Excavation Methodology** must:

(a) be consistent with the documents listed in **Condition A1** and *NSW Heritage Council's Archaeological Assessments Guideline (1996)* or as updated*;*
(b) provide for the detailed analysis of any heritage items discovered during the investigations;
(c) include management options for discovered heritage items, whether known or unexpected finds (including options for avoidance, salvage, relocation and display);
(d) for unexpected finds that are determined to be relics, set out the assessment process that will determine an appropriate archaeological response to managing their significance;
(e) include procedures for notifying the Planning Secretary and Newcastle City Council of any relic findings; and
(f) if the findings of the investigations are significant, provide for the preparation and implementation of a **Heritage Interpretation Plan**, as required under **Condition E24**.

E23 The Proponent must prepare an **Archaeological Excavation Report** containing the findings of any excavations, including artefact analysis and the identification of a final repository of any finds. The report must be submitted to the Planning Secretary within 12 months of completing all archaeological investigations. The **Archaeological Excavation Report** must also be submitted to Newcastle City Council, the local library and the local Historical Society.

E24 The Proponent must prepare a **Heritage Interpretation Plan** which identifies and interprets the key heritage values and stories of heritage items and heritage conservation areas impacted by the SSI. The Heritage Interpretation Plan must include, but not be limited to:

(a) a discussion of the key interpretive themes, stories and messages proposed to interpret the history and significance of the affected heritage items and sections of heritage conservation areas including, but not limited to, Hollywood shanty town site and the Wallsend Plattsburg tramway in Jesmond Park; and
(b) identification and confirmation of interpretive initiatives implemented to mitigate impacts to archaeological relics, heritage items and conservation areas affected by the SSI.

The **Heritage Interpretation Plan** must be prepared in consultation with the Newcastle City Council. A copy of the Plan must be provided to the Planning Secretary, Newcastle City Council, the local library and the local Historical Society, before operation of the SSI commences.

Land Use Survey

E25 A detailed land use survey must be undertaken to confirm sensitive receivers and landuses (including critical working areas such as operating theatres and precision laboratories) potentially exposed to construction noise and vibration, construction ground-borne noise and operational noise. The survey may be undertaken on a progressive basis but must be undertaken in any one area before the commencement of works which generate audible construction or operational noise, or do not meet safe working buffer distances for vibration or ground-borne noise in that area. With the exception of works associated with Bridge 7, the results of the survey must be included in the **Noise and Vibration CEMP Sub-plan**.

Construction Hours

E26 Work must only be undertaken during the following construction hours:

(a) 7:00am to 6:00pm Mondays to Fridays, inclusive;
(b) 8:00am to 5:00pm Saturdays; and
(c) at no time on Sundays or public holidays,

Variation to Works Hours

E27 Notwithstanding **Conditions E26** and **E30**, work may be undertaken outside the hours specified, in the following circumstances:

(a) for the delivery of materials where required by the NSW Police Force or other authority for safety reasons; or
(b) where it is required in an emergency to avoid injury or the loss of life, to avoid damage or loss of property or to prevent environmental harm; or
(c) where different construction hours are permitted or required under an EPL in force in respect of the SSI; or
(d) work approved under an **Out-of-Hours Work Protocol** or an Out of Hours Work Management Process or equivalent (for work not subject to an EPL), under **Condition E31**; or
(e) work that causes:
  (i) no more than 5 db(A) above the rating background level at any residence in accordance with the *Interim Construction Noise Guideline* (DECC, 2009), and
  (ii) no more than the 'Noise affected' noise management levels specified in Table 3 of the *Interim Construction Noise Guideline* (DECC, 2009) at other sensitive land uses, and
  (iii) continuous or impulsive vibration values, measured at the most affected residence are no more than the maximum values for human exposure to vibration, specified in Table 2.2 of *Assessing Vibration: a technical guideline* (DEC, 2006), and
  (iv) intermittent vibration values measured at the most affected residence are no more than the maximum values for human exposure to vibration, specified in Table 2.4 of *Assessing Vibration: a technical guideline* (DEC, 2006).

Note: Section 5.24(1)(e) of the EP&A Act requires that an EPL be substantially consistent with this approval.

E28 On becoming aware of the need for emergency work in accordance with **Condition E27(b)**, the Proponent must notify the **ER** and the EPA of the reasons for such work. The Proponent must use best endeavours to notify all noise and/or vibration affected sensitive receivers of the likely impact and duration of those works.

E29 In order to undertake out-of-hours work, the Proponent must identify appropriate respite periods for the out-of-hours works in consultation with the community at each affected

location on a monthly basis. This consultation must include (but not be limited to) providing the community with:

(a) a schedule of likely out-of-hours work for a period of no less than three (3) months in advance;
(b) potential work, location and duration;
(c) proposed respite periods;
(d) noise characteristics and likely noise and vibration levels; and
(e) likely mitigation and management measures.

The outcomes of the community consultation, the identified respite periods and the scheduling of likely out-of-hour work must be provided to the **ER,** EPA and the Planning Secretary.

Highly Noise Intensive Work

E30 Except as permitted by an EPL, highly noise intensive works exceeding 75dB(A) $L_{Aeq(15\ minute)}$ noise descriptor at a sensitive receiver must only be undertaken:

(a) between 8:00 am to 6:00 pm Monday to Friday;
(b) between 8:00 am to 1:00 pm Saturday; and
(c) if continuously, then not exceeding three (3) hours, with a minimum respite from those activities and works of not less than one (1) hour.

For the purposes of this condition, 'continuous' includes any period during which there is less than one (1) hour between ceasing and recommencing any of the work.

Out-of-Hours Work Protocol – Works not subject to an EPL

E31 An **Out-of-Hours Work Protocol** must be prepared to identify a process for the consideration, management and approval of work which are outside the hours defined in **Condition E26**, and that are **not** subject to an EPL. The Protocol must be approved by the Planning Secretary before the commencement of the work. The Protocol must be prepared in consultation with the **ER**. The Protocol must:

(a) provide a process for the consideration of out-of-hours work against the relevant noise and vibration criteria, including the determination of low and high-risk activities;
(b) provide a process for the identification of mitigation measures for residual impacts, including respite periods in consultation with the community at each affected location, consistent with the requirements of **Condition E29;**
(c) identify procedures to facilitate the coordination of out-of-hours work permitted by an EPL to ensure appropriate respite is provided;
(d) undertake a risk analysis that considers the risk of activities, proposed mitigation, management, and coordination, including where:
    i. low risk activities can be approved by the **ER**, and
    ii. any other activity approved by the Planning Secretary; and
(e) identify Department, EPA and community notification arrangements for approved out of hours work, which may be detailed in the Communication Strategy.

The **Out-of-Hours Work Protocol** is not required if the Proponent has an existing **Out of Hours Work Management Process** or equivalent that addresses **Condition E31 (a)** to **(e)** and has been approved by the Planning Secretary prior to the commencement of work.

Utility Coordination and Respite

E32 All work undertaken for the delivery of the SSI, including that undertaken by third parties (such as utility relocation), must be coordinated to ensure respite periods are provided**.** The Proponent must:

(a) schedule any work to provide respite to impacted noise sensitive receivers so that the respite is achieved in accordance with **Condition E29**; or
(b) consider the provision of alternative respite or mitigation to impacted noise sensitive receivers; and
(c) provide documentary evidence to the **ER** in support of any decision made by the Proponent in relation to respite or mitigation.

Noise and Vibration Mitigation

E33 Noise generating work in the vicinity of sensitive receivers and landuses (including community, religious, educational institutions and noise and vibration-sensitive businesses, medical facilities, and the John Hunter Hospital) resulting in noise levels above the NMLs at critical working areas (such as operating theatres and precision laboratories) must not be timetabled within sensitive periods, unless other reasonable arrangements with the affected receivers are made at no cost to the affected receivers.

E34 Mitigation measures must be implemented with the aim of achieving the following construction noise management levels and vibration criteria:

(a) construction 'Noise affected' noise management levels established using the *Interim Construction Noise Guideline* (DECC, 2009);
(b) vibration criteria established using the *Assessing vibration: a technical guideline* (DEC, 2006) (for human exposure);
(c) Australian Standard AS 2187.2 - 2006 "*Explosives - Storage and Use - Use of Explosives*";
(d) BS 7385 Part 2-1993 "*Evaluation and measurement for vibration in buildings Part 2*" as they are "applicable to Australian conditions"; and
(e) The vibration limits set out in the *German Standard DIN 4150-3: Structural Vibration- effects of vibration on structures* (for structural damage).

Any work identified as exceeding the noise management levels and/or vibration criteria must be managed in accordance with the **Noise and Vibration CEMP Sub-plan,** including in any **Out- of-Hours Work Protocol** or **Out of Hours Work Management Process** or equivalent, required by **Condition E31**, and in relation to Bridge 7 the documents required by **Condition A9.**
Note: The Interim Construction Noise Guideline identifies 'particularly annoying' activities that require the addition of 5 dB(A) to the predicted level before comparing to the construction Noise Management Level.

E35 Mitigation measures must be applied when the following residential ground-borne noise levels are exceeded:

(a) evening (6:00 pm to 10:00 pm) — internal $L_{Aeq(15\ minute)}$: 40 db(A); and
(b) night (10:00 pm to 7:00 am) — internal $L_{Aeq(15\ minute)}$: 35 dB(A).

The mitigation measures must be outlined in the **Noise and Vibration CEMP Sub-plan,** including in any **Out-of-Hours Work Protocol** or **Out of Hours Work Management Process** or equivalent, required by **Condition E31**, and in relation to Bridge 7 the documents required by **Condition A9.**

E36 Landowner(s) and occupier(s) of properties at risk of exceeding the screening criteria for cosmetic damage must be notified before works that generate vibration commences near

those properties. If the potential exceedance is to occur more than once or extend over a period of 24 hours, landowner(s) and occupier(s) must be provided a schedule of potential exceedances on a monthly basis for the duration of the potential exceedances, unless otherwise agreed by the landowner and occupier. These properties must be identified and considered in the **Noise and Vibration CEMP Sub-plan,** including in any **Out-of-Hours Work Protocol** or **Out of Hours Work Management Process** or equivalent, required by **Condition E31**, and in relation to Bridge 7 the documents required by **Condition A9.**

*Note: **Condition E54** requires **Pre-construction Building and Structure Condition Surveys** of buildings and structures of risk of damage to be undertaken prior to the commencement of work in the vicinity of the buildings or structures.*

E37 The Proponent must conduct vibration testing before and during vibration generating activities that have the potential to impact on heritage items to identify minimum working distances to prevent cosmetic damage. In the event that the vibration testing and monitoring shows that the preferred values for vibration are likely to be exceeded, the Proponent must review the construction methodology and, if necessary, implement additional mitigation measures.

Noise Mitigation - Operational Noise Mitigation Measures

E38 The Proponent must prepare an **Operational Noise Mitigation Review (ONMR**) to confirm noise mitigation measures that would be implemented for the operation of the SSI. The **ONMR** must be prepared in consultation with the **ER**, EPA and Newcastle City Council and must:

(a) confirm the operational noise predictions based on the final design of the SSI. The operational noise assessment must be based on an appropriately calibrated noise model (which has incorporated additional noise monitoring, and concurrent traffic counting, where necessary for calibration purposes);
(b) review the suitability of the operational noise mitigation measures identified in the documents listed in **Condition A1**. The review must take into consideration the detailed design of the SSI, with the objective of achieving the noise criteria outlined in the *NSW Road Noise Policy* (DECCW, 2011);
(c) where necessary, investigate and identify additional noise mitigation measures to achieve the noise criteria outlined in the *NSW Road Noise Policy* (DECCW, 2011)
(d) measures to address heavy vehicle compression (engine) braking noise; and
(e) procedures for the management of operational noise complaints.

The **ONMR** is to be verified by a suitably qualified and experienced noise and vibration expert and undertaken at the Proponent's expense. The **ONMR** must be submitted to the Planning Secretary for approval before the implementation of operational noise mitigation measures.

The Proponent must implement the identified noise mitigation measures, and following its approval, make the **ONMR** publicly available and provide a copy to the EPA and Newcastle City Council.

E39 Operational noise mitigation measures identified in **Condition E38** that will not be physically affected by work must be implemented within six (6) months of the commencement of construction in the vicinity of the impacted receiver(s), to minimise construction noise impacts. These measures must be detailed in the **Noise and Vibration CEMP Sub-plan**.

E40 Where operational noise mitigation measures are not proposed to be implemented in accordance with **Condition E39**, the Proponent must submit to the Planning Secretary a report providing justification as to why, along with details of temporary measures that would be implemented to reduce construction noise impacts, until such time that the operational noise mitigation measures identified in **Condition E38** are implemented. The report must be endorsed by the **ER** and submitted to the Planning Secretary within six months of construction commencing.

E41 Within 12 months of the commencement of operation of the SSI, the Proponent must undertake monitoring of operational noise to compare the actual noise performance of the SSI against the noise performance predicted in the review of noise mitigation measures required by **Condition E38.**

The Proponent must prepare an **Operational Noise Compliance Report** to document this monitoring. The Report must include, but not necessarily be limited to:

(a) noise monitoring to assess compliance with the operational noise levels predicted in the review of operational noise mitigation measures required under **Condition E38**;
(b) a review of the operational noise levels in terms of criteria and noise goals established in the *NSW Road Noise Policy (DECCW, 2011)*;
(c) methodology, location and frequency of noise monitoring undertaken, including monitoring sites at which SSI noise levels are ascertained, with specific reference to locations indicative of impacts on receivers;
(d) details of any complaints and enquiries received in relation to operational noise generated by the SSI between the date of commencement of operation and the date the report was prepared;
(e) any required recalibrations of the noise model taking into consideration factors such as noise monitoring and actual traffic numbers and proportions;
(f) an assessment of the performance and effectiveness of applied noise mitigation measures together with a review and if necessary, reassessment of mitigation measures; and
(g) identification of additional measures to those identified in the review of noise mitigation measures required by **Condition E38**, that are to be implemented with the objective of meeting the criteria outlined in the *NSW Road Noise Policy* (DECCW, 2011), when these measures is to be implemented and how their effectiveness would be measured and reported to the Planning Secretary and the EPA.

E42 The **Operational Noise Compliance Report** must be verified by a suitably qualified and experienced independent noise and vibration expert, made publicly available and submitted to the Planning Secretary and the EPA within 60 days of completing the operational noise monitoring.

E43 The construction and operation of Bridge 7 and its associated components do not trigger the requirements of **Conditions E38**, **E39, E40** and **E41**.

Construction Vibration

E44 The SSI must be delivered with the aim of achieving the following vibration goals:

(a) for structural damage to heritage structures, the vibration limits set out in the German Standard *DIN 4150-3: Structural Vibration – Part 3 Effects of vibration on structures*;
(b) for damage to other buildings and/or structures, the vibration limits set out in the British Standard *BS 7385-1:1990 – Evaluation and measurement of vibration in buildings— Guide for measurement of vibration and evaluation of their effects on buildings* (and referenced in Australian Standard 2187.2 – 2006 *Explosives – Storage and use – Use of explosives*); and

(c) for human exposure, the acceptable vibration values set out in *Assessing Vibration: A Technical Guideline* (Department of Environment and Conservation, 2006).

E45 Blasting associated with the SSI must only be undertaken during the following hours:

(a) 9:00am to 5:00pm, Monday to Friday, inclusive;
(b) 9:00am to 1:00pm on Saturday; and
(c) at no time on Sunday or public holidays.

This condition does not apply in the event of a direction from the NSW Police Force or other relevant authority for safety or emergency reasons to avoid loss of life, property loss and/or to prevent environmental harm.

Blasting may be undertaken outside the above hours where:

(a) no sensitive receivers would be impacted by blasting; or
(b) an agreement has been made with potentially affected receivers.

E46 Airblast overpressure generated by blasting associated with the SSI must not exceed the criteria specified in **Table 6** when measured at the most affected residence or other sensitive receiver.

Table 6: Airblast overpressure limits for human comfort

Receiver	Type of blasting operations	Airblast Overpressure Limit
Sensitive site	Blasting operations lasting more than 12 months or more than 20 blasts	115 dBL for 95% of blasts per year
		120 dBL maximum limit
Sensitive site	Blasting operations lasting less than 12 months or less than 20 blasts in total	120 dBL for 95% of blasts per year
		125 dBL maximum limit
Occupied non-sensitive sites, such as factories and commercial premises	All blasting	125 dBL maximum limit. For sites containing equipment sensitive to vibration, the vibration level should be kept below manufacturer's specifications or levels that can be shown to adversely affect the equipment operation

Source – Table J5.4(A) – AS 2187.2 – 2006

Note: A sensitive site includes houses and low rise residential buildings, theatres, schools and other similar buildings occupied by people

E47 Ground vibration generated by blasting associated with the SSI must not exceed the criteria specified in **Table 7** and **Table 8** when measured at the most affected residence or other sensitive receiver.

Table 7: Ground vibration limits for human comfort

Receiver	Type of blasting operations	Peak component particle velocity (mm/s)
Sensitive site	Blasting operations lasting more than 12 months or more than 20 blasts	5 mm/s for 95% of blasts per year
		10 mm/s maximum limit

Sensitive site	Blasting operations lasting less than 12 months or less than 20 blasts in total	10 mm/s maximum limit
Occupied non-sensitive sites, such as factories and commercial premises	All blasting	25 mm/s maximum limit. For sites containing equipment sensitive to vibration, the vibration level should be kept below manufacturer's specifications or levels that can be shown to adversely affect the equipment operation

Source – Table J4.5(A) – AS 2187.2 – 2006

Note: A sensitive site includes houses and low rise residential buildings, theatres, schools and other similar buildings occupied by people

Table 8: Ground vibration limits for control of damage to structures

Receiver	**Type of blasting operations**	**Peak component particle velocity (mm/s)**	
Other structures or architectural elements that include masonry, plaster and plasterboard in their construction [1]		15 mm/s 4 Hz to 15 Hz, except for heritage structures where a frequency dependent vibration criteria would be determined in accordance with AS 2187.2 – 2006.	20 mm/s 15 Hz and above
Reinforced or framed structures. Industrial and heavy commercial buildings [5]	All blasting	50 mm/s at 4 Hz and above	
Unreinforced or light framed structure. Residential or light commercial type building [2]	All blasting	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above
Unoccupied structures of reinforced concrete or steel construction	All blasting	100 mm/s maximum, where agreed with the structure owner.	
Infrastructure service structures, such as pipelines, powerlines, cables and reservoirs.	All blasting	Limits to be determined by structural design methodology in consultation with the infrastructure service provider.	

Source: Table J4.5(B) – AS 2187.2 – 2006 and Table J4.4.2.1 – AS 2187.2 – 2006 (BS 7385-2)

E48 The blasting criteria specified in the tables in **Conditions E46** and **E47** may be exceeded where the Proponent has obtained the written agreement of the landowner and occupier to increase the relevant criteria. In obtaining the agreement, the Proponent must make available to the landowner and occupier:

(a) details of the proposed blasting program and justification for the proposed increase in blasting criteria including alternatives considered (where relevant);
(b) an assessment of the environmental impacts of the increased blasting criteria on the

surrounding environment and most affected residences or other sensitive receivers including, but not limited to noise, vibration and air quality and any risk to surrounding utilities, services or other structures; and

(c) details of the blast management, mitigation and monitoring procedures to be implemented.

E49 The Proponent must provide a copy of the landowner and occupier written agreement to the Planning Secretary and the EPA, including details of the consultation undertaken (with clear identification of proposed blast limits and potential property impacts), before commencing blasting at the higher limits.

Unless otherwise agreed by the Planning Secretary, the following exclusions apply:

(a) the landowner and occupier may terminate at any time an agreement made with the Proponent to increase the blasting criteria, should concerns made by the landowner and occupier about the blasting criteria be unresolved. Where an agreement is terminated, the Proponent must not exceed the criteria specified in the tables in **Conditions E46** and **E47** for future blasting that affects the property; and

(b) the blasting limit agreed to under any agreement must not exceed a maximum Peak Particle Velocity vibration level of 25 mm/s or maximum Airblast Overpressure level of 125 dBL.

Blasting Management Strategy

E50 A **Blast Management Strategy** must be prepared and must include:

(a) sequencing and review of trial blasting to inform blasting;
(b) regularity of blasting;
(c) intensity of blasting;
(d) periods of relief; and
(e) blasting program.

E51 The **Blast Management Strategy** must be endorsed by a suitably qualified and experienced independent person.

E52 The **Blast Management Strategy** must be prepared in accordance with relevant guidelines in order to ensure that all blasting and associated activities are carried out so as not to generate unacceptable noise and vibration impacts or pose a significant risk to sensitive receivers.

E53 The **Blast Management Strategy** must be submitted to the Planning Secretary for information no later than one month before the commencement of blasting. The Strategy as submitted to the Planning Secretary, must be implemented for all blasting activities

Socio-Economic, Land Use and Property

Building Condition Survey

E54 **Pre-construction Building and Structure Condition Surveys** must be undertake of all buildings, structures, and utilities and the like, identified in the documents listed in **Condition A1**, as being at risk of damage from works associated with the SSI.

The surveys must be undertaken by a suitably qualified structural engineer before the commencement of any work that could cause damage to buildings, structures and utilities. The results of the surveys must be documented in a **Pre-construction Building and Structure Condition Survey Report** for each building, structure and utility surveyed. Copies of the **Pre- construction Building and Structure Condition Survey Reports** must be provided to the owners of the buildings, structures and utilities surveyed no later than

one (1) month before the commencement of work in the vicinity of the impacted buildings, structures and utilities.

E55 After completion of construction of the SSI, a follow-up condition survey of all items for which building and structure condition surveys were undertaken in accordance with **Condition E54**, must be undertaken by a suitably qualified structural engineer. The results of the surveys must be documented in a **Post-construction Building and Structure Condition Survey Report** for each building, structure and utility surveyed. Copies of the **Post-construction Building and Structure Condition Survey Reports** must be provided to the owners of the buildings, structures and utilities surveyed no later than three months following the completion of construction.

E56 The Proponent, where liable, must rectify any damage caused directly or indirectly (for example from vibration or from groundwater change) by the construction or operation of the SSI at no cost to the landowner. Alternatively, the Proponent may pay compensation for the property damage as agreed with the landowner.

Soils

E57 All reasonably practicable erosion and sediment controls must be installed and appropriately maintained to prevent water pollution. When implementing such controls, any relevant guidance in the *Managing Urban Stormwater* series must be considered

Contaminated Sites

E58 Areas of soil contamination identified within the documents referred to in **Condition A1** must be management in accordance with Management Measure SW04 and SW05 as described in the SPIR.

E59 An **Unexpected Contaminated Land and Asbestos Finds Procedure** must be prepared before the commencement of work and must be followed should unexpected contaminated land or asbestos (or suspected contaminated land or asbestos) be excavated or otherwise discovered during works.

E60 The **Unexpected Contaminated Land and Asbestos Finds Procedure** must be implemented for the duration or work.

Sustainability

E61 A **Sustainability Strategy** must be prepared and submitted to the Planning Secretary for information before the commencement of construction (except Bridge 7 works). The **Sustainability Strategy** must include:

(a) details of achieving an As Built rating under the Infrastructure Sustainability Council of Australia (ISCA) infrastructure rating tool or other justified rating mechanism;
(b) details of the sustainability initiatives which will be implemented; and
(c) a description of how the strategy will be implemented for the SSI.

Traffic and Transport

E62 All road roads within one (1) kilometre of the SSI (including construction ancillary facilities) proposed to be used by heavy vehicles for the SSI must be identified in the **Construction Traffic and Transport Management Sub-plan**.

E63 Local roads proposed to be used by heavy vehicles for the SSI works that were not assessed in the ~~EIS and the SPIR~~ *in the documents listed in* ***Condition A1***, must be approved by the Planning Secretary through the **Construction Traffic and Transport**

Management Sub-plan (including any revisions to the sub-plan that identify additional local roads**).**

The request to the Planning Secretary must include a traffic and pedestrian impact assessment, and a swept path analysis, if required. The traffic and pedestrian impact assessment must:

(d) demonstrate that the use of local roads will not compromise the safety of the public and have no more than minimal amenity impacts;
(e) provide details as to the date of completion of the road dilapidation surveys for the subject local roads; and
(f) describe the measures that will be implemented to minimise safety and amenity impacts to any schools, aged care facilities and child care facilities during their peak operation times.

E64 The requirements of **Conditions E62** and **E63** in relation to Bridge 7 may be addressed by the documents required under **Condition A9**.

E65 Heavy vehicles must only use Construction Access Road 2 (as shown in **Appendix B**) in the John Hunter Hospital precinct for the early works establishment of Construction Compound A, unless otherwise agreed by the Health Administration Corporation.

*Note: Heavy vehicles movements associated with **Condition E65** must comply with the construction hours specified in **Conditions E26** and **E27**.*

E66 Heavy vehicle movements through the John Hunter Hospital precinct must be identified in the **Construction Traffic and Transport Management CEMP Sub-plan.**

The **Construction Traffic and Transport Management CEMP Sub-plan** must include the following:

(a) number of heavy vehicle movements;
(b) frequency of heavy vehicle movements;
(c) deliveries outside the construction hours identified in **Condition E26**; and
(d) governance arrangements to address acute traffic management issues.

*Note: These requirements are additional to the requirements of **Part C** of this approval.*

E67 At no time must heavy vehicles associated with the construction of the SSI, travel through the John Hunter Hospital precinct, except as permitted by **Condition E65**.

E68 Before any local road is used by a heavy vehicle for the SSI, a **Road Dilapidation Report** must be prepared for the road, unless otherwise agreed by the Planning Secretary. The **Road Dilapidation Report** must be prepared by a suitably qualified person before the commencement of works that have the potential to damage local roads (and associated infrastructure). A copy of the **Road Dilapidation Report** must be provided to the landowner and Newcastle City Council within three weeks of completion of the surveys and no later than one (1) month before the use of local roads by heavy vehicles for the construction of the SSI.

E69 If damage to roads or road related structures occurs as a result of the construction of the SSI, the Proponent must either (at the landowner's discretion):

(a) compensate the landowner for the damage so caused. The amount of compensation may be agreed with the landowner, but compensation must be paid even if no agreement is reached; or
(b) rectify the damage to restore the road or road related structure to at least the condition it was in pre-construction.

E70 During the carrying out of work for the SSI, all reasonably practicable measures must be implemented to maintain pedestrian and vehicular access to, and parking in the vicinity of, businesses and affected properties. Disruptions are to be avoided, and where avoidance is not possible, minimised. Where disruption cannot be minimised, alternative pedestrian and vehicular access, and parking arrangements must be developed in consultation with the affected businesses and properties and implemented before the disruption occurs. Signage and directions to businesses must be provided before, and for the duration of, any disruption.

Pedestrian and Cyclist Access

E71 Safe pedestrian and cyclist access must be maintained around work sites for the duration of construction. In circumstances where pedestrian and cyclist access are restricted or removed due to construction activities, an alternate route (temporary or permanent) which complies with the relevant standards must be provided and signposted.

E72 The SSI's shared paths must be designed to discourage pedestrian access onto the bypass.

Note: The intention is to discourage pedestrians and/or cyclist from inadvertently accessing the bypass for safety reasons

E73 The Jesmond Park parking area must be reviewed and optimised to include the replacement of disabled car parking removed by the SSI, in consultation with Newcastle City Council. This parking must be provided before the removal of on street parking on Newcastle Road.

Fire Trails

E74 Alternate fire trails must be provided and implemented in consultation with the relevant fire authorities.

Urban Design and Visual Amenity

Construction Ancillary Facilities

E75 **Construction Ancillary Facilities** must minimise visual impacts to adjoining properties, including, providing temporary landscaping and vegetative screening of the construction sites and minimising light spill

Lighting and Security

E76 All lighting associated with the construction and operation of the SSI must:

(a) operate with the objective to minimising light spill to surrounding properties; and

(a) be consistent with the requirements of *Australian Standard 4282-1997 Control of the obtrusive effects of outdoor lighting* and relevant Australian Standards in the series *AS/NZ 1158 – Lighting for Roads and Public Spaces.*

Notwithstanding, the Proponent must provide mitigation measures to manage any residual night lighting impacts to protect properties adjoining or adjacent to the SSI, in consultation with affected landowners.

Bridge Elements

E77 Bridge 7 and Bridge 8 must be designed in accordance with the following guidelines, as relevant:

(a) *Beyond the Pavement* (RMS 2014);
(b) *Bridge Aesthetics* (RMS 2012);
(c) *Landscape Design Guidelines* (RMS 2008); and
(d) designed to incorporate elements which reflect the steel industry heritage of Newcastle.

The final design of the bridges must be provided to the Planning Secretary for information prior to construction of these structures.

Note: The colour scheme is identified in SPIR, Appendix E - Urban Design and Landscape Character and Visual Impact Assessment.

Structural Adequacy

E78 The Proponent must ensure that the construction of the SSI, including former mine working remediation activities, are carried out in accordance with the requirements of Subsidence Advisory NSW

Operational Maintenance

E79 The ongoing maintenance and operation costs of urban design, open space, landscaping and recreational items and works implemented as part of this approval must remain the Proponent's responsibility, until satisfactory arrangements have been made for the transfer of the asset to the relevant authority. Prior to the transfer of assets, the Proponent must maintain the items and works.

Operational noise barriers design

E80 Operational noise barriers must be designed to minimise visual and amenity impacts and be designed in accordance with the *Noise wall design guideline – Design guideline to improve the appearance of noise walls in NSW* (RMS, March 2016).

Waste

E81 Waste generated during works and operation of the SSI must be dealt with in accordance with the following priorities:

(b) waste generation must be avoided and where avoidance is not reasonably practicable, waste generation must be reduced;
(c) where avoiding or reducing waste is not possible, waste is to be re-used, recycled, or recovered; and
(d) where re-using, recycling or recovering waste is not possible, waste is to be treated or disposed of.

E82 The importation of waste and the storage, treatment, processing, reprocessing or disposal of such waste must comply with the conditions of the EPL for the SSI, or a Resource Recovery Exemption or Order issued under the *Protection of the Environment Operations (Waste) Regulation 2014*, as the case may be.

E83 Waste generated by all activities associated with works and operation of the SSI must only be:

(a) exported to a EPA licensed facility for the storage, treatment, processing, reprocessing or disposal, or to any other place that can lawfully accept such waste, or
(b) reused in accordance with a Resource Recovery Exemption or Order issued under the *Protection of the Environment Operations (Waste) Regulation 2014*.

E84 All waste must be classified in accordance with the EPA's *Waste Classification Guidelines*, with appropriate records and disposal dockets retained for audit purposes.

Water

E85 The SSI must be designed, constructed and operated to achieve the outcomes described in the documents listed in condition A1 and/or to maintain the *NSW Water Quality Objectives* where they are being achieved as at the date of this approval, and contribute towards achievement of the *NSW Water Quality Objectives* over time where they are not being achieved as at the date of this approval, unless an EPL in force in respect of the SSI contains different requirements in relation to the *NSW Water Quality Objectives*, in which case those requirements must be complied with.

E86 Drainage feature crossings (permanent and temporary watercourse crossings and stream diversions) and drainage swales and depressions must be constructed in accordance with the relevant guidelines and designed by a suitably qualified and experienced person.

Appendix B

Construction noise and vibration assessment

Newcastle Inner City Bypass – Rankin Park to Jesmond

Construction noise and vibration assessment- modification for additional construction compounds

Transport for NSW

16 August 2021

Revision 1

→ The Power of Commitment

GHD Pty Ltd | ABN 39 008 488 373
GHD Tower, Level 3, 24 Honeysuckle Drive
Newcastle, New South Wales 2300, Australia
T 61-2-4979 9999 | **F** 61-2-9475 0725 | **E** ntlmail@ghd.com | **ghd.com**

Printed date	16/08/2021 9:11:00 AM
Last saved date	16 August 2021
File name	https://projectsportal.ghd.com/sites/pp01_01/rp2jenviroadvice/ProjectDocs/12528155_RP2J Modification - Construction Noise and Vibration Assessment.docx
Author	Simon Ritchie
Project manager	Simon Murphy
Client name	Transport for NSW
Project name	Newcastle Inner City Bypass - RP2J Enviro Advice
Document title	Newcastle Inner City Bypass – Rankin Park to Jesmond | Construction noise and vibration assessment- modification for additional construction compounds
Revision version	Rev 1
Project number	12528155

Document status

Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S4	0	Simon Ritchie	E Potoczny		S Pearce		26/5/21
S4	1	Simon Ritchie	E Potoczny		S Pearce		16/8/21

Executive summary

Introduction and background

Transport for NSW (formerly Roads and Maritime Services) is planning for the construction of the fifth section of the Newcastle Inner City Bypass between Rankin Park and Jesmond (the project), approved 15 February 2019. Transport for NSW now propose to modify the project. The proposed modification to the project involves the establishment and use of four additional construction compounds for the purpose of construction of the project. The additional construction compounds are located at:

– Astra Street
– Lookout Road
– Cardiff Road
– Peatties Road.

The purpose of the construction noise and vibration assessment is to assess potential noise and vibration impacts from the establishment and use of four construction compounds, and where required, identify feasible and reasonable mitigation measures. The *Newcastle Inner City Bypass – Rankin Park to Jesmond Technical Paper 3 - Noise and Vibration Assessment* (GHD 2016) was prepared in support of the EIS for the project in accordance with the project SEARs. The *Newcastle Inner City Bypass – Rankin Park to Jesmond Technical Paper 3 - Noise and Vibration Assessment*, (GHD 2018) was prepared as part of the response to submissions and to incorporate design refinements. This report should be read in conjunction with these previous assessments.

For the proposed modification, DPIE issued a letter on 9 December 2020 advising that the assessment should be undertaken in accordance with the original SEARs dated 3 March 2015.

Noise impacts

Noise impacts predicted in relation to the Peatties Road compound are summarised as:

– During standard construction hours, 347 residential receivers were identified with potential exceedances of the construction noise management level with impacts of up to 26 dB(A) over the construction noise management level. The predicted worst case activity is vegetation clearing and grubbing (MOD04) and the predicted worst-case activity for the main construction period of up to 30 months is stockpile site (MOD08).
– During out of hours work (OOHW) up to 637 residential receivers were identified with potential exceedances of the construction noise management level with impacts of up to 31 dB(A) over the construction noise management level. The predicted worst case activity during this period is construction support activities (MOD12).

Noise impacts predicted in relation to the Cardiff Road compound are summarised as:

– During standard construction hours, 663 residential receivers were identified with potential exceedances of the construction noise management level with impacts of up to 58 dB(A) over the construction noise management level. The predicted worst case activity is vegetation clearing and grubbing (MOD04), which would occur over a period of up to 2 weeks. During the main construction period of up to 30 months, stockpile site (MOD08) would result in potential exceedances of the construction noise management level at up to 426 residential receivers by up to 50 dB(A) at the worst affected receivers.
– During standard construction hours, 17 residential receivers were identified with potential exceedances of the 75 dB(A) highly affected level with impacts of up to 29 dB(A) over this value. The predicted worst case activity is vegetation clearing and grubbing (MOD04), which would occur over a period of up to 2 weeks.
– Two non-residential receivers (One place of worship and one commercial) were identified with potential exceedances of the relevant construction noise management level. Impacts of up to 13 dB(A) were identified over the construction noise management level for places of worship and 8 dB(A) for the commercial receiver.

Noise impacts predicted in relation to the Astra Street compound are summarised as:

– During standard construction hours, 67 receivers were identified with potential exceedances of the construction noise management level with impacts of up to 9 dB(A) over the construction noise management level. The predicted worst case activity is crushing plant (MOD07), which would occur over a period of up to 30 months.
– During OOHW periods, up to 167 residential receivers were identified with potential exceedances of the construction noise management level with impacts of up to 23 dB(A) over the construction noise management level. The predicted worst case activity during this period is stockpile site (MOD08), which would occur over the construction period of 30 months.
– Three non-residential receivers including one passive recreation receiver, one active recreation receiver and one educational facility were identified with potential exceedances of the relevant construction noise management level. Impacts of up to 4 dB(A) were identified for the activity of crushing plant (MOD07).

Noise impacts predicted in relation to the Lookout Road compound are summarised as:

– One residential receiver adjacent to the compound was identified with potential exceedances of the construction noise management level. Predicted levels exceed the construction noise management level by up to 14 dB(A) at this receiver. No other residential receiver exceedances of the construction noise management level are predicted during standard hours. The predicted worst case activity for level and extent of impact during standard construction hours is general compound activities (MOD05), which would occur over the construction period of 30 months.
– During OOHW, up to 160 receivers were identified with potential exceedances of the construction noise management level with impacts of up to 42 dB(A) over the construction noise management level at the adjacent receiver. The next highest exceedance of the OOHW criteria is 21 dB(A).
– One receiver adjacent to the compound is predicted to exceed the 75 dB(A) highly affected level by up to 5 dB(A) over this level.

Sleep disturbance and awakening

Sleep disturbance and awakening noise predictions for the compounds are as follows:

– Peatties Road - the three proposed night time activities of general compound activities (MOD05), deliveries (MOD11) and construction support activities (MOD12) have predicted impacts at residential receivers impacted for sleep disturbance and awakening potential. These activities are predicted to exceed the external 52 dB(A) L_{Amax} *Noise Policy for Industry* sleep disturbance criteria at up to 391 residential receivers and the internal 55 dB(A) L_{Amax} *Road Noise Policy* awakening criteria at up to 89 residential receivers.
– Astra Street - the proposed night time activities of materials handling (MOD06), stockpile site (MOD08), batching plant (MOD09), bridge girder laydown (MOD10), deliveries (MOD11) and construction support activities (MOD12) have predicted impacts at residential receivers impacted for sleep disturbance and awakening potential. These activities are predicted to exceed the external 52 dB(A) L_{Amax} *Noise Policy for Industry* sleep disturbance criteria at up to 167 residential receivers and the internal 55 dB(A) L_{Amax} *Road Noise Policy* awakening criteria at up to 51 residential receivers.
– Lookout Road - the proposed night time activity of general compound activities (MOD05) has predicted impacts at residential receivers impacted for sleep disturbance and awakening potential. These activities are predicted to exceed the external 52 dB(A) L_{Amax} *Noise Policy for Industry* sleep disturbance criteria at up to 85 residential receivers and the internal 55 dB(A) L_{Amax} *Road Noise Policy* awakening criteria at up to 3 residential receivers.

Structural vibration

The following was found with consideration to structural vibration buffers:

– At the Cardiff Road compound six receiver structures were identified within the 18 metre buffer associated with vibratory roller activities and two receiver structures were identified within the four metre buffer associated with excavator activities.

Human comfort vibration

The following was found with consideration to human comfort vibration buffers:

– At the Peatties Road compound:
  - 210 residential receivers were identified within the human comfort and perception buffer of 310 metres for vibratory roller activities during the daytime period.
– At the Cardiff Road compound:
  - 239 residential receivers were identified within the human comfort and perception buffer of 310 metres for vibratory roller activities during the daytime period.
  - 19 residential receivers were identified within the human comfort and perception buffer of 57 metres for excavator activities during the daytime period.
  - One commercial receiver was identified within the applicable 130 metre buffer distance for vibratory rolling. No other non-residential receivers were identified within this buffer distance or within the 24 metre buffer for excavator activities.
– At the Astra Street compound:
  - 14 residential receivers were identified within the human comfort and perception buffer of 310 metres for vibratory roller activities during the daytime period.
  - One non-residential receiver (the golf range) was identified within the applicable 130 metre buffer distance.

Construction traffic noise

Access to the compounds is proposed via major roads including the existing Newcastle Inner City Bypass, Sandgate Road, Lookout Road, Cardiff Road and Charlestown Road. Due to relatively low numbers of construction traffic and high existing volumes the additional construction traffic movements would have negligible effect on traffic noise levels from these roads.

In relation to construction traffic on minor roads:

– While the proposed traffic movements would increase traffic volumes on Astra Street, the existing noise environment is dominated by the Newcastle Inner City Bypass (Jesmond to Sandgate), Sandgate Road and the adjacent Hunter Valley rail line. Therefore additional traffic on Astra Street is not expected to significantly increase overall traffic noise levels at these receivers.
– While Marshall Street is a local road servicing a residential area, given the low number of proposed construction vehicle movements (two light vehicles and two heavy vehicles per day), a negligible effect on traffic noise levels is predicted due to compound related traffic.
– Peatties Road is a no through road providing access to residential properties on Wimbledon Grove. Access to the Peatties Road site does not pass any residential properties. As such, a negligible effect on traffic noise levels is predicted due to compound related traffic.

Environmental management measures

Environmental management measures in section 7 of the *Newcastle Inner City Bypass – Rankin Park to Jesmond Submissions and Preferred Infrastructure Report* and reproduced in Appendix G of the Newcastle Inner City Bypass – Rankin Park to Jesmond: Modification Report detail specific environmental management measures to minimise potential construction noise and vibration impacts associated with construction areas. These measures are applicable to the proposed modification. Additional mitigation measures are provided below:

– Transport will carry out further investigation during detailed design to confirm appropriate construction buffer distances and additional mitigation measures to be implemented for Tickhole Tunnel.

This report is subject to, and must be read in conjunction with, the limitations set out in section 1.3 and the assumptions and qualifications contained throughout the report.

Contents

Table index

Figure index

Appendices

1. Introduction

1.1 Project background

Transport for NSW (formerly Roads and Maritime Services) is planning for the construction of the fifth section of the Newcastle Inner City Bypass between Rankin Park and Jesmond (the project), approved 15 February 2019. The project involves the construction of 3.4 kilometres of new four lane divided road between Lookout Road, New Lambton Heights and Newcastle Road, Jesmond. The project is located in the Newcastle local government area, about 11 kilometres west of the Newcastle central business district and about 160 kilometres north of Sydney.

The project was determined to be state significant infrastructure requiring approval under Division 5.2 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). In accordance with the Secretary's Environmental Assessment Requirements (SEARs) (dated 3 March 2015) and Supplementary SEARs (dated 19 November 2015), an environmental impact statement (EIS) was prepared by Transport for NSW in November 2016 (*Newcastle Inner City Bypass – Rankin Park to Jesmond Environmental Impact Statement*) to assess the potential impacts of the project. The EIS was exhibited by the former Department of Planning and Environment (DP&E) (now known as Department of Planning, Industry and Environment (DPIE)) for 30 days from 16 November 2016 to 16 December 2016.

Following public exhibition of the EIS, Transport for NSW prepared the *Newcastle Inner City Bypass – Rankin Park to Jesmond Submissions and Preferred Infrastructure Report* in June 2018 to respond to submissions and describe project design refinements.

Approval for the project was granted on 15 February 2019 by the Minister for Planning (application number SSI 6888) and was subject to a number of conditions of 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) on 7 September 2015 due to the presence of listed threatened species and communities and wetlands of international significance that could be impacted by the project. The Australian Minister for the Environment confirmed the project would be a controlled action requiring approval in accordance with the bi-lateral assessment agreement between the Australian Government and the NSW State Government. The EIS was prepared to assess the potential impacts of the project in accordance with the requirements of the EP&A Act and EPBC Act.

Following project approval, Transport for NSW has made a number of project design refinements. These have arisen due to review of the concept design, development of the detailed design, stakeholder consultation and evaluation of construction methodologies. These design refinements resulted in minor changes to the construction footprint and as such were subject to two consistency assessments as follows:

– Consistency assessment 1 - Newcastle Inner City Bypass Rankin Park to Jesmond – Bridge 7 Early Work: Division 5.2 and EPBC Act Approval Consistency assessment report Detailed Design Changes (Aurecon, 2019)
– Consistency assessment 2 - Newcastle Inner City Bypass Rankin Park to Jesmond – Stage 3, Package 1 detailed design changes: Division 5.2 and EPBC Act approval (SSI 6888) consistency review (Bowditch Group, 2020).

The consistency assessments determined that the design refinements were consistent with the project approval and as such, further assessment or modification to the project approval was not required.

Paper Size ISO A4

0 0.75 1.5 2.25 3

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Project No. 12528155
Revision No. 0
Date 20 May 2021

Project locality

Figure 1-1

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N001_ProjectLocality_0.mxd
Print date: 20 May 2021 - 10:34

Data source: Geoscience Australia: 250k Topographic Data Series 3, 2006; TfNSW / Aurecon: The Project, 2018; LPI: DTDB / DCDB, 2017; . Created by: fmackay

1.2 Proposed modification

An overview of the project and the proposed modification is shown on Figure 2.1 and includes establishment and use of four additional construction compounds during construction of the project and described further in section 2. The additional construction compounds are located at:

– Astra Street
– Lookout Road
– Cardiff Road
– Peatties Road

1.3 Purpose of this report

GHD was engaged by Transport for NSW to prepare a construction noise and vibration assessment for the proposed modification. The purpose of the assessment is to assess potential noise and vibration impacts from the establishment and use of four construction compounds, and where required, identify feasible and reasonable mitigation measures.

The *Newcastle Inner City Bypass – Rankin Park to Jesmond Technical Paper 3 - Noise and Vibration Assessment* (GHD 2016) was prepared in support of the EIS for the project in accordance with the project SEARs. The *Newcastle Inner City Bypass – Rankin Park to Jesmond Technical Paper 3 - Noise and Vibration Assessment*, (GHD 2018) was prepared as part of the response to submissions and to incorporate design refinements.

This report should be read in conjunction with these previous assessments.

For the proposed modification, DPIE issued a letter on 9 December 2020 advising that the assessment should be undertaken in accordance with the original SEARs dated 3 March 2015. Table 1.1 summarises these requirements, as relevant to the proposed modification, and where they have been addressed in this report.

Table 1.1 SEARs for construction noise and vibration

Secretary's Environmental Assessment Requirements	Where addressed
The environmental impact statement must include the following:	
– An assessment of construction noise and vibration impacts, consistent with the Interim Construction Noise Guideline (DECC 2009) and Assessing Vibration: a technical guideline (DEC 2006).	Sections 6 and 8
– The construction noise assessment must present, as relevant, an indication of the potential for work outside standard construction hours, including predicted levels and exceedances of the construction noise goals, justification for the activity and discussion of available mitigation and management measures.	Sections 2.5, 5.2, 6, 7 and 10
– Details of stakeholder consultation, including John Hunter Hospital, regarding disruptions due to construction noise and vibration impacts (if any).	Details of consultation with relevant stakeholders for the proposed modification, including noise and vibration impacts, is provided in section 5 of the Modification Report.
– Details of any required construction and/or operational noise abatement measures.	Section 10

1.4 Standards and guidelines

The assessment has been carried out with consideration to the following:

- *Road Noise Policy* (DECCW 2011).
- *Construction Noise and Vibration Guideline* (Roads and Maritime Services 2016).
- *Construction Noise and Vibration Strategy ST-157/4.1* (Transport for NSW, 2019).
- *Noise Policy for Industry* (EPA 2017).
- *Industrial Noise Policy* (EPA 2000).
- *Interim Construction Noise Guideline* (DECC 2009).
- *Assessing Vibration: A Technical Guideline* (DEC 2006).
- *Environmental Noise Management Manual* (RTA 2001).
- *Environmental Criteria for Road Traffic Noise* (EPA 1999).
- *German Standard DIN 4150 (2016) Part 3: Structural Vibration in Buildings: Effects on Structures*.
- *British Standard BS 6472 (1992) Guide to Evaluation of Human Exposure to Vibration in Buildings (1Hz to 80Hz)*.
- *British Standard BS 5228-1:2009 Code of practice for noise and vibration on construction and open sites – Part 1: Noise*.
- *British Standard BS 5228-2:2009 Code of practice for noise and vibration on construction and open sites – Part 2: Vibration*.
- *British Standard BS 7385-2:1993 Evaluation and measurement for vibration in buildings.*
- *Australian Standard AS 2436 – 2010 Guide to noise and vibration control on construction, demolition and maintenance sites*.

1.5 Scope and limitations

This report has been prepared by GHD for Transport for NSW and may only be used and relied on by Transport for NSW for the purpose agreed between GHD and Transport for NSW as set out in section 1.3 of this report.

GHD otherwise disclaims responsibility to any person other than Transport for NSW arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

2. Proposed modification

2.1 Overview

Transport for NSW is seeking to modify the approved project consisting of the establishment and use of four additional construction compounds for the purpose of construction of the project, identified as:

- **Astra Street:** located within Lot 16 of DP 1149782, this site is located within the former Astra Street landfill site within part of 2 and 28 Astra Street, Shortland, NSW. The site is owned by the City of Newcastle. The former Astra Street landfill site is subject to an approved Voluntary Management Proposal issued under Section 17 of the *Contaminated Land Management Act 1997*. The area of the proposed construction compound is 8.1 hectares.
- **Lookout Road:** located within Lot 222 of DP 840728, this site is a residential dwelling. The site is located at 136 Lookout Road, New Lambton Heights, NSW. The area of the proposed construction compound is about 0.1 hectares.
- **Cardiff Road:** located within Lots A-C of DP 347568, this site is located on disturbed vacant land at 10 and 12 Main Road, Cardiff Heights and 60 Marshall Street, New Lambton Heights. The site is owned by Transport for NSW. The area of the proposed construction compound is about 0.4 hectares.
- **Peatties Road:** located within Lot 1 of DP 330006, Lots 32 and 33 of DP 734569, and Lot 1 of DP 910200, this site is located at 1/6 Peatties Road, Kotara. The site has been subject to historical disturbance from a former quarry cut into the hillside, with roads built along terraces cut during quarrying activities. The site is owned by the City of Newcastle and Sydney Trains. The area of the proposed construction compound is about 1.7 hectares.

The additional construction compounds are located outside of the approved project boundary as shown on Figure 2.1. The proposed modification is needed to enable construction of the project safely.

2.2 Site establishment

Site establishment would involve the following activities:

- Erection of a temporary boundary fence and traffic management (as required).
- Installation of erosion and sediment controls.
- Minor earthworks to establish the compounds
- Vegetation clearing and grubbing (as required).
- Installation of site facilities.
- Connection to utilities.

2.3 Use of the construction compounds

A range of activities would be carried out at each construction compound identified for the proposed modification, as summarised in Table 2.1. A summary of daily light and heavy vehicle movements is also provided in Table 2.1.

The Peatties Road compound would replace construction compound A as the main construction compound for the project.

Table 2.1 Proposed activities

Activity	Peatties Road	Cardiff Road	Astra Street	Lookout Road
Main site compound area	Yes [1]			
Materials handling	Yes	Yes	Yes [1]	
Establishment of temporary fencing and traffic management	Yes	Yes	Yes	
Installation of erosion and sediment controls	Yes	Yes	Yes	
Establishment of compounds	Yes	Yes	Yes	
Vegetation clearing and grubbing	Yes	Yes	Yes	
Crushing plant			Yes	
Stockpile site	Yes	Yes	Yes [1]	
Batching plant			Yes [1]	
Bridge girder laydown			Yes [1]	
Site offices	Yes [1]			Yes [1]
Deliveries	Yes [1]		Yes [1]	
Parking	Yes [1]			Yes [1]
Construction support activities	Yes [1]		Yes [1]	
Demobilisation and rehabilitation	Yes	Yes	Yes	
Average worst case vehicle movements – daily (two way)				
Light vehicles	100	2	20	10
Heavy vehicles	20	2	30	2

Note 1: identifies proposed out of hours work (OOHW). Refer to section 2.4 for further information.

2.4 Access and acquisition

The additional construction compounds would have the following access points for both light and heavy vehicles:

– Astra Street: access from the project site would be via the Newcastle Inner City Bypass (Jesmond to Sandgate), Sandgate Road and Astra Street
– Cardiff Road: access from the project site would be via the Newcastle Inner City Bypass (Lookout Road), Cardiff Road and Marshall Street
– Lookout Road: access from the project site would be via Newcastle Inner City Bypass (Lookout Road)
– Peatties Road: access from the project site would be from the Newcastle Inner City Bypass (Lookout Road and Charlestown Road) and Peatties Road.

No acquisition is required for the proposed modification, where the land is not owned by Transport for NSW use of the sites would be carried out in accordance with the terms and conditions of the lease agreement with relevant landowners.

2.5 Construction hours

Construction hours for the proposed modification would generally be in accordance with Condition E26 of SSI-6888, which identifies construction hours as:

Work must only be carried out during the following construction hours:

(a) 7:00 am to 6:00 pm Mondays to Fridays.

(b) 8:00 am to 5:00 pm Saturdays.

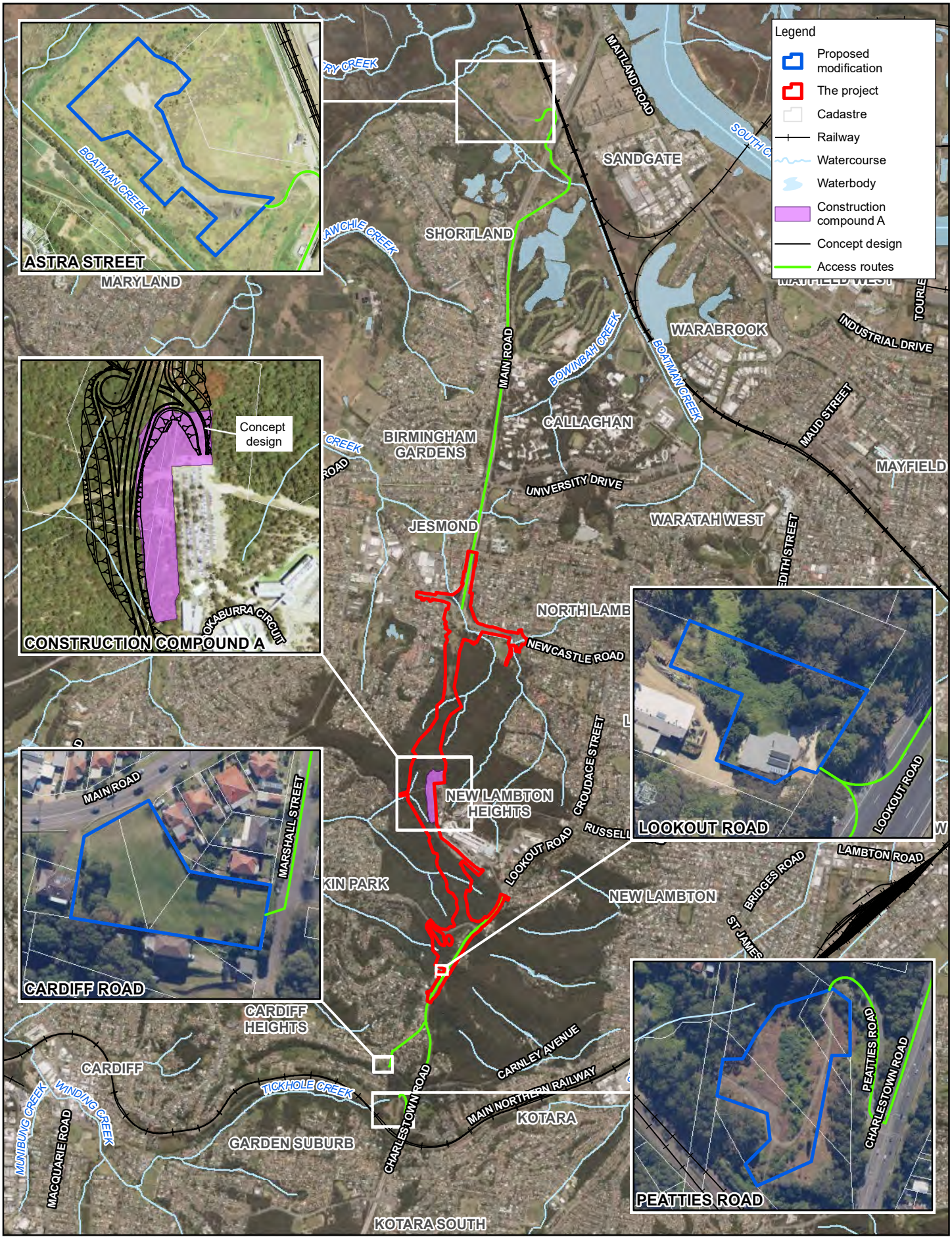
(c) at no time on Sundays or public holidays.

However, some out of hours work (OOHW) activities (refer to Table 2.1) are proposed at the Astra Street, Peatties Road and Lookout Road sites during the evening (6pm to 10pm Monday to Friday and Saturday 1pm to 10pm) and night (10pm to 7am Monday to Saturday) periods.

Any OOHW would be carried out in accordance with the conditions of approval (conditions E27, E28, E29 and E30). In particular, condition E27(c) permits OOHW to be carried out if it complies with the environment protection licence (EPL) (yet to be obtained) under the Protection of the Environment Operations Act 1997 for the project.

The reasons for carrying out OOHW include:

– Ensuring the safety of the public and construction workforce
– Minimising disruption to the existing road network and the network level of service
– Minimising disruption to road users and pedestrians
– In support of approved OOHW assessed in the EIS and SPIR.



Paper Size ISO A4

0 300 600 900 1,200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Project No. 12528155
Revision No. 0
Date 20 May 2021

The project and proposed modification

Figure 2-1

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N002_ProjectOverview_0.mxd
Print date: 20 May 2021 - 10:35

3. Existing environment

3.1 Noise monitoring

Background noise monitoring was carried out in *Newcastle Inner City Bypass – Rankin Park to Jesmond Technical Paper 3 - Noise and Vibration Assessment* (GHD 2016) to establish representative existing noise levels. Background noise monitoring was used to:

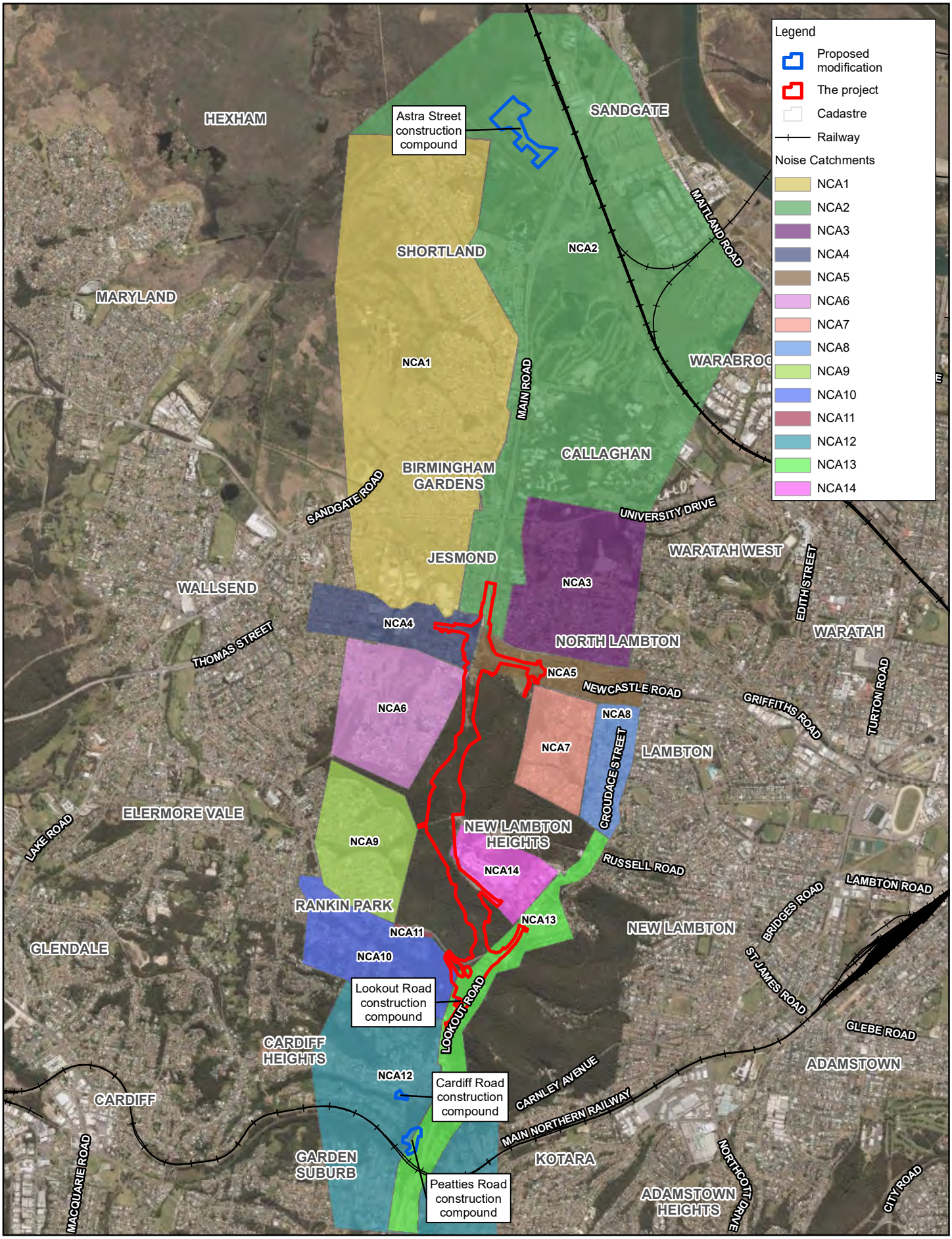
– Determine the existing background noise levels across each noise catchment area.
– Derive construction noise management levels.

Due to the similar distance from existing transportation noise sources noise monitoring conducted during the EIS is considered representative of the study area for this assessment, therefore no additional noise monitoring has been carried out for this updated assessment.

3.2 Noise sensitive receivers

As three of the construction compounds are geographically separated from the project, a 600 metre buffer from each construction compound was used to identify additional noise sensitive receivers for consideration in the assessment. Additional receivers identified within the buffer include 1037 residential receivers, two active recreation receivers, seven passive recreation receivers, one community facility, 10 commercial receivers, two educational receivers and two worship receivers.

All additional receivers have been grouped into the nearest representative existing noise catchment areas (NCA) based on the NCAs used in the *Newcastle Inner City Bypass – Rankin Park to Jesmond Technical Paper 3 - Noise and Vibration Assessment* (GHD 2018). Potentially impacted receivers from compound operations assessed in this report are located in NCAs 1, 2, 10, 11, 12 and 13 (Figure 3.1). Noise sensitive receivers considered in the assessment and their locations are presented in Appendix A to Appendix D for each of the compounds.



Paper Size ISO A4

0 300 600 900 1,200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Project No. 12528155
Revision No. 0
Date 20 May 2021

Noise catchment areas

Figure 3-1

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N008_NoiseCatchments_0.mxd
Print date: 20 May 2021 - 10:38

4. Criteria

4.1 Construction noise management levels

Specific construction noise management levels (CNMLs) for residential receivers were calculated for each NCA and are summarised in Table 4.1. CNMLs for non-residential receivers based on *Interim Construction Noise Guideline* (DECC 2009) are presented in Table 4.2.

Table 4.1 Construction noise management levels – residential receivers

NCA	Logging locations	NCA adopted background noise rating background level L_{A90}			Construction noise management level L_{Aeq}				
		Day	Evening	Night	During standard recommended hours		Outside of standard recommended hours (OOHW)		
					Highly noise affected	Noise affected level	Day 7am to 8am and 1pm to 6pm Saturday, 8am to 6pm Sunday & public holidays	Evening 6pm to 10pm Monday to Sunday & public holidays	Night 10pm to 7am, Monday to Saturday; 10pm to 8am Sunday & public holidays
NCA1	L01	45	39	33	75	55	50	44	38
NCA2	L02	49	43	35		59	54	48	40
NCA10	L15, L19	38	35	30(1)		48	43	40	35
NCA11	L14	50	42	33		60	55	47	38
NCA12	L21, L22	36	36	30(1)		46	41	41	35
NCA13	L16, L17, L18, L20, L24	56	49	33		66	61	54	38

Note 1: Background levels less than 30 dB(A) L_{90} have been set at 30 dB as per the *Industrial Noise Policy* (EPA 2000) Section 3.1.2. The *Industrial Noise Policy* also states that the evening rating background level should not be higher than the day time rating background level, and that the night time rating background level should not be higher than the evening rating background level.

The ‘noise affected’ management level represents the point at which there may be some community reaction to noise. Where the noise affected management level is exceeded, all feasible and reasonable work practices to minimise noise need to be applied. All potentially affected receivers will be informed of the nature of the works, expected noise levels, duration of works and a method of contact. The noise affected management level is the background noise level plus 10 dB(A) during recommended standard hours and the background noise level plus 5 dB(A) outside of recommended standard hours.

The ‘highly noise affected’ management level represents the point at which there may be strong community reaction to noise. Where noise is above this management level, any feasible and reasonable ways to reduce noise below this level would be applied. If no quieter work method is feasible and reasonable, the affected residence would be advised of the duration and noise levels of the works and any respite periods that will be provided. The highly noise affected management level for standard hours is 75 dB(A).

Where construction noise is specified as an internal criteria a plus 7 dB conversion to external equivalent has been assumed in this assessment. This is conservatively representative of a typical dwelling of light construction with windows partially open.

Table 4.2 Construction noise management levels – non-residential receivers

Receiver type	Time period	ICNG management level, $L_{Aeq(15\ min)}$
Industrial premises	When in use	75 dB(A)
Offices, retail outlets	When in use	70 dB(A)
Educational institutes	When in use	45 dB(A) internal
Medical facilities	When in use	45 dB(A) internal
Places of worship	When in use	45 dB(A) internal
Active recreation areas	When in use	65 dB(A)
Passive recreation areas	When in use	60 dB(A)

Source: *Interim Construction Noise Guideline* (DECC 2009)

4.2 Sleep awakening and disturbance criteria

The *Interim Construction Noise Guideline* (DECC 2009) states that *‘*where construction works are planned to extend over more than two consecutive nights, the impact assessment should cover the maximum noise level from the proposed works*’*. In NSW, sleep disturbance and awakening are assessed using guidance in the *Road Noise Policy* (DECCW 2011) and the *Noise Policy for Industry* (EPA 2017).

Sleep awakening criteria are based on guidance in the *Road Noise Policy*. The *Environmental Criteria for Road Traffic Noise* (EPA 1999) acknowledges that, based on the current level of understanding, no absolute noise level criteria have been established that correlate to an acceptable level of sleep disturbance. However, the *Road Noise Policy* suggests that internal noise levels below 50 to 55 dB(A) L_{Amax} are unlikely to cause awakening reactions, and one or two events per night, with internal noise levels of 65 to 70 dB(A) L_{Amax} (inside dwellings) are not likely to significantly affect health and wellbeing.

The *Noise Policy for Industry* (EPA 2017) recommends a maximum noise level assessment to assess the potential for sleep disturbance events which includes awakenings and disturbance to sleep stages. An initial screening test for maximum noise level events should be assessed to the following levels:

- $L_{Aeq(15\ min)}$ 40 dB(A) or the prevailing rating background level plus 5 dB, whichever is greater, and/or
- L_{AFmax} 52 dB(A) or the prevailing rating background level plus 15 dB, whichever is greater.

If the screening test indicates a potential for sleep disturbance, then a detailed maximum noise level assessment should be undertaken. The detailed assessment should cover the maximum noise level, the extent to which the maximum noise level exceeds the rating background level and the number of times this happens during the night-time period.

Review of prevailing rating background levels across the relevant NCAs within the study area for this assessment indicates that the controlling *Noise Policy for Industry* sleep disturbance value is L_{AFmax} 52 dB(A) for all relevant NCAs.

A summary of the sleep disturbance criteria is provided in Table 4.3.

Table 4.3 Sleep awakening and disturbance criteria

Criteria	L_{Amax} criteria	Assessment location
Sleep awakening (*Road Noise Policy*)	55 dB(A)	Internal
Sleep disturbance screening level (*Noise Policy for Industry*)	52 dB(A)	External

4.3 Human vibration criteria

The Department of Environment and Conservation (DEC) publication, *Assessing vibration: A technical guideline* (DEC 2006) outlines methods of assessing potential impacts and ways to manage vibration from construction activities. The *Assessing Vibration: A Technical Guideline* is based on guidelines contained in British Standard *BS 6472-1:1992 Evaluation of human exposure to vibration in buildings (1–80 Hz).*

Typically, construction works generate ground vibration of an intermittent nature. In accordance with BS 6472- 1:1992, intermittent vibration is assessed using the Vibration Dose Value (VDV). Acceptable VDVs, as outlined in *Assessing Vibration: A Technical Guideline*, are listed in Table 4.4.

Table 4.4 Acceptable vibration dose values for intermittent vibration

Location	Daytime [1] ($m/s^{1.75}$)		Night-time [1] ($m/s^{1.75}$)	
	Preferred value	Maximum value	Preferred value	Maximum value
Critical areas [2]	0.10	0.20	0.10	0.20
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

Source: Table 2.4 Assessing vibration: A technical guideline (DEC 2006)

Notes:

1. Daytime is 7am to 10pm and night-time is 10pm to 7am.
2. Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring. These criteria are only indicative, and there may be a need to assess intermittent values against the continuous or impulsive criteria for critical areas.

While the assessment of response to vibration in BS 6472-1:1992 is based on VDV and weighted acceleration, for construction-related vibration, it is considered more appropriate to provide guidance in terms of Peak Particle Velocity (PPV), since this parameter is more likely to be routinely measured based on the more usual concern over potential building damage.

Humans are capable of detecting vibration at levels well below those that risk causing damage to a building. The degrees of perception for humans are suggested by the vibration level categories given in British Standard *BS 5228-2:2009 Code of practice for noise and vibration on construction and open sites – Part 2: Vibration* as listed in Table 4.5.

Table 4.5 Guidance on the effects of vibration levels

Approximate vibration level	Degree of perception
0.14 mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
0.30 mm/s	Vibration might be just perceptible in residential environments.
1.00 mm/s	It is likely that vibration of this level in residential environments will cause complaint but can be tolerated if prior warning and explanation has been given to residents.
10.00 mm/s	Vibration is likely to be intolerable for any more than a very brief exposure to this level.

Source: BS 5228-2:2009 *Code of practice for noise and vibration on construction and open sites – Part 2: Vibration*

4.4 Structural damage criteria

Currently, there is no Australian Standard that sets criteria for the assessment of building damage caused by vibration. Consistent with other major projects of a similar type, guidance on limiting vibration values has been obtained by reference to German Standard *DIN 4150-3: 2016-02 Structural Vibration – Part 3: Effects of vibration on structures.* Short-term vibration guideline values for vibration at the foundation of a structure are listed in Table 4.6.

Table 4.6 Guideline values for short-term vibration on structures

Line	Type of structure	Guideline values for velocity, vi(t) [1] [mm/s]		
		1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz [2]
1	Buildings used for commercial purposes, industrial buildings, and buildings of similar design.	20	20 to 40	40 to 50
2	Dwellings and buildings of similar design and/or occupancy.	5	5 to 15	15 to 20
3	Structures that, because of their particular sensitivity to vibration, cannot be classified under lines 1 and 2 and are of great intrinsic value (such as heritage listed buildings under preservation order).	3	3 to 8	8 to 10

Source: *German Standard DIN 4150-3: 2016-02 Structural Vibration – Part 3: Effects of vibration on structures*

Notes:

1. The term v_i refers to vibration levels in any of the x, y or z axes
2. At frequencies above 100 Hz the values given in this column may be used as minimum values

Guideline values for long-term vibration are provided in Table 4.7, including vibration that may cause resonance in a structure being evaluated.

Table 4.7 Guideline values for long-term vibration on structures

Line	Type of structure	Guideline values for velocity, v_i in mm/s	
		Top floor. Horizontal, all frequencies	Ceiling. Vertical, all frequencies
1	Buildings used for commercial purposes, industrial buildings, and buildings of similar design.	10	10
2	Dwellings and buildings of similar design and/or occupancy.	5	10
3	Structures that, because of their particular sensitivity to vibration, cannot be classified under lines 1 and 2 and are of great intrinsic value (such as heritage listed buildings under preservation order).	2.5	10 (a)

Source: *German Standard DIN 4150-3: 2016-02 Structural Vibration – Part 3: Effects of vibration on structures*

Notes:

1. Even if the reference values according to line 1, column 2 are observed, slight damage cannot be ruled out.

(a) significant reduction in this reference value may be necessary to prevent minor damage

4.4.1 Guidelines for tunnels and linings of underground cavities

The British Standard *BS 7385-2:1993 Evaluation and measurement for vibration in buildings* notes that structures below ground are known to sustain higher levels of vibration and are very resistant to damage unless in very poor condition.

Guideline values for vibration to evaluate the effects of vibration on the linings of tunnels and below-ground cavities is provided in German Standard *DIN 4150-3: 2016 Structural Vibration – Part 3: Effects of vibration on structures*. These values are reproduced in Table 4.8.

Table 4.8 Guideline values for vibration effects on the lining of underground cavities

Line	Pipe material	Guideline values for vibration velocity measured at right angles to the lining surface
1	Steel and shotcrete, segments	80 mm/s
2	Concrete, natural stone	60 mm/s
3	Masonry	40 mm/s

Note that in general, compliance with the guideline values for structural damage in Table 4.6 would result in compliance with the guideline values for below-ground structures.

4.5 Construction traffic noise

The *Road Noise Policy* (DECCW 2011) provides traffic noise target levels for receivers near existing roads (Table 4.9). These levels are applied to construction work to identify potential construction traffic impacts and the subsequent need for reasonable and feasible mitigation measures.

The Application Notes[1] for the *Road Noise Policy* states that 'for existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise level as a result of the development should be limited to 2 dB above that of the noise level without the development.' This limit applies wherever the noise level without the development is within 2 dB of, or exceeds, the relevant day or night noise assessment criterion.

If road traffic noise during construction is within 2 dB(A) of current levels, then the objectives of the *Road Noise Policy* are met, and no specific mitigation measures are required.

[1]http://www.environment.nsw.gov.au/noise/roadnoiseappnotes.htm 12 December 2012

Table 4.9 Construction traffic noise criteria, $L_{Aeq(period)}$, dB(A)

Type of development	Day 7:00 am to 10:00 pm	Night 10:00 pm to 7:00 am
Existing residence affected by additional traffic on arterial roads generated by land use developments	60 $L_{Aeq(15hr)}$	55 $L_{Aeq(9hr)}$
Existing residence affected by additional traffic on local roads generated by land use developments	55 $L_{Aeq(1hr)}$	50 $L_{Aeq(1hr)}$
1. School classrooms	$L_{Aeq,1hour}$ 40 (internal) when in use	–
2. Hospital wards	$L_{Aeq,1hour}$ 35 (internal) when in use	$L_{Aeq,1hour}$ 35 (internal) when in use
3. Places of worship	$L_{Aeq,1hour}$ 40 (internal) when in use	$L_{Aeq,1hour}$ 40 (internal) when in use
4. Open space (active use)	$L_{Aeq,15hour}$ 60 (external) when in use	-
5. Open space (passive use)	$L_{Aeq,15hour}$ 55 (external) when in use	-
6. Child Care Facilities	Sleeping rooms $L_{Aeq,1hour}$ 35 (internal) Indoor play areas $L_{Aeq,1hour}$ 40 (internal) Outdoor play areas $L_{Aeq,1hour}$ 55 (external)	
7. Aged care facilities	assessed as residential receivers	Assessed as residential receivers

5. Methodology

The methodology for the construction noise and vibration assessment included:

– The construction noise management levels were adopted from the 2018 assessment.
– A list of likely construction activities and machinery was established for the proposed construction compounds. Representative sound power levels for the selected equipment were obtained from relevant standards and guidelines.
– Noise propagation calculations were carried out for the anticipated activities.
– Where noise levels were predicted to exceed the construction noise management levels, appropriate construction noise and vibration mitigation measures are provided to minimise impacts.

5.1 Noise prediction method

Construction noise impacts associated with the project were determined using CadnaA 2021MR1 noise modelling software using the ISO 9613 algorithm.

The noise model inputs and assumptions for this assessment are provided in Table 5.1.

Table 5.1 Construction noise modelling assumptions

Modelling component	Assumption
Noise model	CadnaA 2021MR1
Prediction algorithm	*ISO 9613 – 2 Acoustics – Attenuation of sound during propagation outdoors*
Modelling period	Typical worst case 15 minute period of operation where each item of equipment is running at full power
Meteorology	ISO 9613 considers the presence of a well-developed moderate ground based temperature inversion, such as commonly occurs on clear, calm nights or 'downwind' conditions which are favourable to sound propagation
Ground absorption coefficient	G = 0.75
Atmospheric absorption	Based on an average temperature of 10°C and an average humidity of 70 %
Receiver heights	1.5 m above building ground level (ground floor)

5.2 Construction compounds

Key construction scenarios for compound operations have been considered in this assessment. Assumed equipment and noise levels are provided in section 5.2.1. Relevant considerations for this assessment are summarised in the following sections.

The different scenarios represent different equipment noise levels and give an idea how noise levels may change with different activities being carried out. The construction noise is assessed assuming that the two loudest pieces of construction equipment are operational concurrently for each scenario. This is considered to represent the upper end of possible noise levels.

Construction equipment would likely move about the sites altering noise impacts with respect to the identified receivers. During any given period, the construction items to be used in the compound sites would operate at maximum sound power levels for only brief stages. At other times, the machinery may produce lower sound levels while carrying out activities not requiring full power. It is highly unlikely that all construction equipment would be operating at their maximum sound power levels at any one time and certain types of construction machinery would be present in the compound sites near to the receiver for only brief periods during construction activities.

5.2.1 Activity sound power levels

Relevant modelling scenarios, representative equipment, adopted sound power levels and estimated durations for this assessment are summarised in Table 5.2.

Table 5.2 Activity sound power levels

Modelling scenario	General tasks	Representative equipment [1]	Equipment individual sound power level, L_W dB(A)	Adopted activity sound power level, L_W dB(A)	Activity duration at each site
MOD01	Establishment of temporary fencing and traffic management	Truck (medium rigid)	103	110	2 months
		Road truck	108		
		Scissor Lift	98		
		Franna crane	98		
MOD02	Installation of erosion and sediment controls	Road truck	108	113	2 weeks
		Backhoe	111		
MOD03	Establishment of compounds	Hand tools (electric)	102	117	1 month
		Crane	110		
		Grader	110		
		Vibratory roller	113		
		Road truck	108		
MOD04	Vegetation clearing and grubbing	Dozer	116	123	2 weeks
		Chainsaw	119		
		Excavator 30T	110		
		Dump truck	117		
		Tub grinder and mulcher	116		
MOD05	General compound activities	Light vehicle	106	113	30 months
		Compressor	110		
		Road truck	108		
MOD06	Materials handling	Excavator 30T	110	114	30 months
		Franna crane	98		
		Front end loader	111		
MOD07	Crushing plant	Rock crusher	124	124	30 months
MOD08	Stockpile site	Excavator 30T	110	119	30 months
		Road Truck	108		
		Front end loader	111		
		Dump truck	117		
MOD09	Batching plant	Batching plant (asphalt)	108	111	30 months
		Batching plant (concrete)	108		
MOD10	Bridge girder laydown	Crane	110	110	30 months
		Franna crane	98		

Modelling scenario	General tasks	Representative equipment [1]	Equipment individual sound power level, L_W dB(A)	Adopted activity sound power level, L_W dB(A)	Activity duration at each site
MOD11	Deliveries	Light vehicle	106	110	30 months
		Franna crane	98		
		Road truck	108		
MOD12	Construction support activities	Hand tools (pneumatic)	116	117	30 months
		Hand tools (electric)	102		
		Water cart	107		
MOD13	Removal of compounds and rehabilitation	Hand tools (electric)	102	113	2 months
		Crane	110		
		Excavator 30T	110		

5.2.2 Assessment scenarios

Table 5.3 shows which activities are proposed for each of the construction compounds along with the time of day that these activities are proposed.

Table 5.3 Assessment scenarios

Compound	Period	Construction activity												
		MOD01	MOD02	MOD03	MOD04	MOD05	MOD06	MOD07	MOD08	MOD09	MOD10	MOD11	MOD12	MOD13
		Establishment of temporary fencing and traffic management	Installation of erosion and sediment controls	Establishment of compounds	Vegetation clearing and grubbing	General compound activities	Materials handling	Crushing plant	Stockpile site	Batching plant	Bridge girder laydown	Deliveries	Construction support activities	Removal of compounds and rehabilitation
Peatties Road	Standard hours	Y	Y	Y	Y	Y	Y	N	Y	N	N	Y	Y	Y
	Day/Evening (OOHW1)	N	N	N	N	Y	N	N	N	N	N	Y	Y	N
	Night (OOHW2)	N	N	N	N	Y	N	N	N	N	N	Y	Y	N
Cardiff Road	Standard hours	Y	Y	Y	Y	N	Y	N	Y	N	N	N	N	Y
	Day/Evening (OOHW1)	N	N	N	N	N	N	N	N	N	N	N	N	N
	Night (OOHW2)	N	N	N	N	N	N	N	N	N	N	N	N	N

Compound	Period	Construction activity												
		MOD01	MOD02	MOD03	MOD04	MOD05	MOD06	MOD07	MOD08	MOD09	MOD10	MOD11	MOD12	MOD13
		Establishment of temporary fencing and traffic management	Installation of erosion and sediment controls	Establishment of compounds	Vegetation clearing and grubbing	General compound activities	Materials handling	Crushing plant	Stockpile site	Batching plant	Bridge girder laydown	Deliveries	Construction support activities	Removal of compounds and rehabilitation
Astra Street	Standard hours	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
	Day/Evening (OOHW1)	N	N	N	N	N	Y	N	Y	Y	Y	Y	Y	N
	Night (OOHW2)	N	N	N	N	N	Y	N	Y	Y	Y	Y	Y	N
Lookout Road	Standard hours	N	N	N	N	Y	N	N	N	N	N	N	N	N
	Day/Evening (OOHW1)	N	N	N	N	Y	N	N	N	N	N	N	N	N
	Night (OOHW2)	N	N	N	N	Y	N	N	N	N	N	N	N	N

5.2.3 Construction vibration assessment

Energy from equipment is transmitted into the ground and transformed into vibration, which attenuates with distance. The magnitude and attenuation of ground vibration is dependent on the following:

– the efficiency of the energy transfer mechanism of the equipment (ie impulsive, reciprocating, rolling or rotating equipment).
– the frequency content.
– the impact medium stiffness.
– the type of wave (surface or body).
– the ground type and topography.

The construction vibration assessment is based on methods and information presented in:

– *Environmental Noise Management Manual* (Roads and Traffic Authority 2001).
– *British Standard BS 5228-2:2009 Code of practice for noise and vibration on construction and open sites – Part 2: Vibration.*
– *British Standard BS 6472:1992 Evaluation of human exposure to vibration in buildings (1–80 Hz)*
– *Construction Noise and Vibration Strategy ST-157/4.1* (Transport for NSW, 2019).
– *Assessing Vibration: A Technical Guideline* (DEC 2006).

The assessment of vibration levels from intermittent construction sources is described in *Assessing Vibration: A Technical Guideline* (DEC 2006), which is based on BS 6472:1992. The assessment evaluates vibration dose value, which incorporates the magnitude of vibration and the length of time the source of the vibration operates. For construction, the vibration impact on a receiver can be predicted and compared to the *Assessing Vibration: A Technical Guideline* vibration dose value criteria at various receiver types for day and night periods.

BS 6472:1992 provides a method to calculate the estimated vibration dose value using root-mean-square (r.m.s.) vibration velocity. The estimated vibration dose value (eVDV) is calculated as:

$eVDV = 0.07 \times V_{rms} \times t^{0.25}$ ($m/s^{1.75}$)

Where t= duration of the event.

The eVDV from construction equipment has been estimated, with assumptions discussed in this section.

With regards to frequency the *Assessing Vibration: A Technical Guideline* states the following:

> *'Over the frequency range of 8 to 80 Hz, z-axis velocity requires no frequency weighting in order to determine annoyance or disturbance response (no weighting over frequency range 2–80 Hz for x- and y-axis vibration). At frequencies below 8 Hz, the use of unweighted velocity is more strict than the requirements of BS 6472.'*

Furthermore, to estimate r.m.s. vibration velocity from available PPV values for given plant items, a sinusoidal waveform has been assumed. This PPV is also based on the conservative propagation relationship of $d^{-0.8}$ with typical ranges for this value being $d^{-0.8}$ to $d^{-1.6}$. Considering these assumptions, the assessment of human comfort vibration impacts using eVDV calculated from velocity is conservative in nature.

An additional assumption of operating time of vibration generating equipment is required to calculate the eVDV. The construction methodology is not known to this level of detail at this stage. The nature of the works would typically result in intermittent vibration levels at any given location as equipment moves within the site (eg a vibratory roller passing up and down the work area). Therefore, a cumulative duration of one hour for a given plant item during the 15-hour day period has been assumed. The 15-hour day period is as per that provided in the *Assessing Vibration: A Technical Guideline*, where daytime is defined as 7am to 10pm and night time is defined as 10pm to 7am. No significant vibration generating activities are proposed for the night time period.

The exact details of the construction methodology for the proposal, such as the operating duration of vibration generating equipment, are not yet known. This information would be determined during construction planning. As a result, estimating the vibration dose values from construction sources requires a broad range of assumptions described above. *Assessing Vibration: A Technical Guideline* notes that velocity values can be used as a screening method. In addition, velocity values are widely available for typical construction equipment, and are more likely to be routinely measured in relation to potential building damage. Therefore, PPV is presented alongside VDV as a screening method to assess human comfort impacts from construction vibration, with consideration given to the guidance in BS 5228-2.2009, which provides level categories that relate to human perception of vibration.

6. Construction noise impacts

The potential construction noise impacts have been assessed with reference to the construction noise management level and construction periods of:

- Standard hours:
  - Monday to Friday 7am to 6pm
  - Saturday 8am-1pm
- Out of hours works period 1 (OOHW1):
  - Day:
    - Saturday 7am to 8am and 1pm to 6pm
    - Sunday and public holidays 8am to 6pm
  - Evening:
    - Monday to Saturday 6pm to 10pm
- Out of hours works period 2 (OOHW2)
  - Monday to Saturday 10pm to 7am
  - Sunday and public holidays 6pm to 8am

6.1 Peatties Road

The predicted construction noise management level exceedances at residential receivers for each assessment scenario are shown in Table 6.1. No impacts are predicted for non-residential receivers. A full list of impacted noise sensitive receivers is provided in Appendix A.

Locations of works are shown in Appendix A (Figure A.1). These figures include noise contours for the worst-case assessment scenario (MOD12 – Construction support activities) and show noise sensitive receivers with their respective unique identifiers (IDs).

Where noise is above the construction noise management level, appropriate mitigation measures will be implemented (refer to section 10).

Table 6.1 Peatties Road – number of residential receivers impacted and level of impact

Assessment	Period	Construction activity												
		MOD01	MOD02	MOD03	MOD04	MOD05	MOD06	MOD07	MOD08	MOD09	MOD10	MOD11	MOD12	MOD13
		Establishment of temporary fencing and traffic management	Installation of erosion and sediment controls	Establishment of compounds	Vegetation clearing and grubbing	General compound activities	Materials handling	Crushing plant	Stockpile site	Batching plant	Bridge girder laydown	Deliveries	Construction support activities	Removal of compounds and rehabilitation
Highest exceedance of construction noise management level (1)	Highly affected level	0	0	0	0	0	0	-	0	-	-	0	0	0
	Standard hours	13	16	20	26	16	17	-	22	-	-	13	20	16
	Day (OOHW1)	-	-	-	-	21	-	-	-	-	-	18	25	-
	Evening (OOHW1)	-	-	-	-	21	-	-	-	-	-	18	25	-
	Night (OOHW2)	-	-	-	-	27	-	-	-	-	-	24	31	-
Number of receivers exceeding the construction noise management level	Highly affected level	0	0	0	0	0	0	-	0	-	-	0	0	0
	Standard hours	58	82	169	347	82	108	-	226	-	-	58	169	82
	Day (OOHW1)	-	-	-	-	199	-	-	-	-	-	126	322	-
	Evening (OOHW1)	-	-	-	-	202	-	-	-	-	-	127	333	-
	Night (OOHW2)	-	-	-	-	472	-	-	-	-	-	342	637	-

Note 1: Highest exceedance of the CNML shows the predicted noise level over the CNML at the single receiver with the highest predicted construction noise level for that scenario. This is an indication of the impact on the wider study area, but can be used to compare the relative level of noise between scenarios at the most potentially affected receiver and help to guide appropriate mitigation measures.

6.2 Cardiff Road

The predicted construction noise management level exceedances at residential receivers for each assessment scenario are shown in Table 6.2. The number of exceedances for non-residential receivers are shown in Table 6.3. A full list of impacted noise sensitive receivers is provided in Appendix B.

Locations of works are shown in Appendix B (Figure B.1). These figures include noise contours for the worst-case assessment scenario anticipated for the 30 month construction period (MOD08 – stockpile site) and show noise sensitive receivers with their respective unique identifiers (IDs).

Where noise is above the construction noise management level, appropriate mitigation measures will be implemented (refer to section 10).

Table 6.2 Cardiff Road– number of residential receivers impacted and level of impact

Assessment	Period	Construction activity												
		MOD01	MOD02	MOD03	MOD04	MOD05	MOD06	MOD07	MOD08	MOD09	MOD10	MOD11	MOD12	MOD13
		Establishment of temporary fencing and traffic management	Installation of erosion and sediment controls	Establishment of compounds	Vegetation clearing and grubbing	General compound activities	Materials handling	Crushing plant	Stockpile site	Batching plant	Bridge girder laydown	Deliveries	Construction support activities	Removal of compounds and rehabilitation
Highest exceedance of construction noise management level (1)	Highly affected level	3	9	17	29	-	11	-	21	-	-	-	-	9
	Standard hours	32	38	46	58	-	40	-	50	-	-	-	-	38
	Day (OOHW1)	-	-	-	-	-	-	-	-	-	-	-	-	-
	Evening (OOHW1)	-	-	-	-	-	-	-	-	-	-	-	-	-
	Night (OOHW2)	-	-	-	-	-	-	-	-	-	-	-	-	-
Number of receivers exceeding the construction noise management level	Highly affected level	4	5	9	17	-	6	-	15	-	-	-	-	5
	Standard hours	141	183	330	663	-	210	-	426	-	-	-	-	183
	Day (OOHW1)	-	-	-	-	-	-	-	-	-	-	-	-	-
	Evening (OOHW1)	-	-	-	-	-	-	-	-	-	-	-	-	-
	Night (OOHW2)	-	-	-	-	-	-	-	-	-	-	-	-	-

Note 1: Highest exceedance of the CNML shows the predicted noise level over the CNML at the single receiver with the highest predicted construction noise level for that scenario. This is an indication of the impact on the wider study area, but can be used to compare the relative level of noise between scenarios at the most potentially affected receiver and help to guide appropriate mitigation measures.

Table 6.3 Cardiff Road – number of non-residential receivers impacted and level of impact

Assessment	Receiver type	Construction activity												
		MOD01	MOD02	MOD03	MOD04	MOD05	MOD06	MOD07	MOD08	MOD09	MOD10	MOD11	MOD12	MOD13
		Establishment of temporary fencing and traffic management	Installation of erosion and sediment controls	Establishment of compounds	Vegetation clearing and grubbing	General compound activities	Materials handling	Crushing plant	Stockpile site	Batching plant	Bridge girder laydown	Deliveries	Construction support activities	Removal of compounds and rehabilitation
Highest exceedance of construction noise management level (1)	Commercial	0	3	7	13	-	4	-	9	-	-	-	-	3
	Place of worship	0	0	4	10	-	1	-	6	-	-	-	-	0
Number of receivers exceeding the construction noise management level	Commercial	0	1	1	1	-	1	-	1	-	-	-	-	1
	Place of worship	0	0	1	1	-	1	-	1	-	-	-	-	0

Note 1: Highest exceedance of the CNML shows the predicted noise level over the CNML at the single receiver with the highest predicted construction noise level for that scenario. This is an indication of the impact on the wider study area, but can be used to compare the relative level of noise between scenarios at the most potentially affected receiver and help to guide appropriate mitigation measures.

6.3 Astra Street

The predicted construction noise management level exceedances at residential receivers for each assessment scenario are shown in Table 6.4. The number of exceedances for non-residential receivers are shown in Table 6.5. A full list of impacted noise sensitive receivers is provided in Appendix C.

Locations of works are shown in Appendix C (Figure C.1). These figures include noise contours for the worst-case assessment scenario (MOD08 – stockpile site) and show noise sensitive receivers with their respective unique identifiers (IDs).

Where noise is above the construction noise management level, appropriate mitigation measures will be implemented (refer to section 10).

Table 6.4 Astra Street– number of residential receivers impacted and level of impact

Assessment	Period	Construction activity												
		MOD01	MOD02	MOD03	MOD04	MOD05	MOD06	MOD07	MOD08	MOD09	MOD10	MOD11	MOD12	MOD13
		Establishment of temporary fencing and traffic management	Installation of erosion and sediment controls	Establishment of compounds	Vegetation clearing and grubbing	General compound activities	Materials handling	Crushing plant	Stockpile site	Batching plant	Bridge girder laydown	Deliveries	Construction support activities	Removal of compounds and rehabilitation
Highest exceedance of construction noise management level (1)	Highly affected level	0	0	0	0	-	0	0	0	0	0	0	0	0
	Standard hours	0	0	2	8	-	0	9	4	0	0	0	2	0
	Day (OOHW1)	-	-	-	-	-	4	-	9	1	0	0	7	-
	Evening (OOHW1)	-	-	-	-	-	10	-	15	7	6	6	13	-
	Night (OOHW2)	-	-	-	-	-	18	-	23	15	14	14	21	-
Number of receivers exceeding the construction noise management level	Highly affected level	0	0	0	0	-	0	0	0	0	0	0	0	0
	Standard hours	0	0	1	53	-	0	67	12	0	0	0	1	0
	Day (OOHW1)	-	-	-	-	-	12	-	67	1	0	0	42	-
	Evening (OOHW1)	-	-	-	-	-	89	-	166	42	32	32	151	-
	Night (OOHW2)	-	-	-	-	-	167	-	167	163	148	148	167	-

Note 1: Highest exceedance of the CNML shows the predicted noise level over the CNML at the single receiver with the highest predicted construction noise level for that scenario. This is an indication of the impact on the wider study area, but can be used to compare the relative level of noise between scenarios at the most potentially affected receiver and help to guide appropriate mitigation measures.

Table 6.5 Astra Street– number of non-residential receivers impacted and level of impact

Assessment	Receiver type	Construction activity												
		MOD01	MOD02	MOD03	MOD04	MOD05	MOD06	MOD07	MOD08	MOD09	MOD10	MOD11	MOD12	MOD13
		Establishment of temporary fencing and traffic management	Installation of erosion and sediment controls	Establishment of compounds	Vegetation clearing and grubbing	General compound activities	Materials handling	Crushing plant	Stockpile site	Batching plant	Bridge girder laydown	Deliveries	Construction support activities	Removal of compounds and rehabilitation
Highest exceedance of construction noise management level (1)	Passive recreation area	0	0	0	3	-	0	4	0	0	0	0	0	0
	Active recreation area	0	0	0	3	-	0	4	0	0	0	0	0	0
	Education facility	0	0	0	3	-	0	4	0	0	0	0	0	0
Number of receivers exceeding the construction noise management level	Passive recreation area	0	0	0	1	-	0	1	0	0	0	0	0	0
	Active recreation area	0	0	0	1	-	0	1	0	0	0	0	0	0
	Education facility	0	0	0	1	-	0	1	0	0	0	0	0	0

Note 1: Highest exceedance of the CNML shows the predicted noise level over the CNML at the single receiver with the highest predicted construction noise level for that scenario. This is an indication of the impact on the wider study area, but can be used to compare the relative level of noise between scenarios at the most potentially affected receiver and help to guide appropriate mitigation measures.

6.4 Lookout Road

The predicted construction noise management level exceedances at residential receivers for each assessment scenario are shown in Table 6.6. No exceedances are predicted at non-residential receivers. A full list of impacted noise sensitive receivers is provided in Appendix D.

Locations of works are shown in Appendix D (Figure D.1). These figures include noise contours for the worst-case assessment scenario (MOD05 – general compound activities) and show noise sensitive receivers with their respective unique identifiers (IDs).

Where noise is above the construction noise management level, appropriate mitigation measures will be implemented (refer to section 10).

Table 6.6 Lookout Road– number of residential receivers impacted and level of impact

Assessment	Period	Construction activity												
		MOD01	MOD02	MOD03	MOD04	MOD05	MOD06	MOD07	MOD08	MOD09	MOD10	MOD11	MOD12	MOD13
		Establishment of temporary fencing and traffic management	Installation of erosion and sediment controls	Establishment of compounds	Vegetation clearing and grubbing	General compound activities	Materials handling	Crushing plant	Stockpile site	Batching plant	Bridge girder laydown	Deliveries	Construction support activities	Removal of compounds and rehabilitation
Highest exceedance of construction noise management level (1)	Highly affected level	-	-	-	-	5 (2) 0 (3)	-	-	-	-	-	-	-	-
	Standard hours	-	-	-	-	14 (2) 0 (3)	-	-	-	-	-	-	-	-
	Day (OOHW1)	-	-	-	-	19 (2) 4 (3)	-	-	-	-	-	-	-	-
	Evening (OOHW1)	-	-	-	-	26 (2) 7 (3)	-	-	-	-	-	-	-	-
	Night (OOHW2)	-	-	-	-	42 (2) 21 (3)	-	-	-	-	-	-	-	-
Number of receivers exceeding the construction noise management level	Highly affected level	-	-	-	-	1 (2) 0 (3)	-	-	-	-	-	-	-	-
	Standard hours	-	-	-	-	1 (2) 0 (3)	-	-	-	-	-	-	-	-
	Day (OOHW1)	-	-	-	-	48 (2) 47 (2)	-	-	-	-	-	-	-	-
	Evening (OOHW1)	-	-	-	-	93 (2) 92 (3)	-	-	-	-	-	-	-	-
	Night (OOHW2)	-	-	-	-	160 (2) 159 (3)	-	-	-	-	-	-	-	-

Note 1: Highest exceedance of the CNML shows the predicted noise level over the CNML at the single receiver with the highest predicted construction noise level for that scenario. This is an indication of the impact on the wider study area, but can be used to compare the relative level of noise between scenarios at the most potentially affected receiver and help to guide appropriate mitigation measures.

Note 2: The worst case result presented is for the residence located next to the Lookout Road site. As part of the proposed modification planning process, Transport for NSW has entered into an *Adjacent Property Access and Use Agreement* with this landowner for the use of Lookout Road compound.

Note 3: Provides results for the next worst affected receiver (ie excluding the residence discussed under note 2).

6.5 Summary of noise impacts

Noise impacts are predicted for sensitive residential and sensitive non-residential receivers due to the establishment, operation and decommissioning of construction compounds. Therefore the noise and vibration mitigation measures recommended for the project will be implemented where feasible and reasonable and all potentially impacted receivers should be informed of the nature of the work, expected noise levels, duration of work and a method of contact. The provided results and following summary are to be interpreted with consideration that the level of impact would vary over the activity duration as the demand and intensity of these activities varies during the project's construction.

Noise impacts predicted in relation to the Peatties Road compound are summarised as:

– During standard construction hours:
  - 347 residential receivers were identified with potential exceedances of the construction noise management level. Predicted levels exceed the construction noise management level by up to 26 dB(A) at the worst affected receivers.
  - The predicted worst case activity for level and extent of impact during standard construction hours is vegetation clearing and grubbing (MOD04), which would occur over a period of up to 2 weeks.
  - The predicted worst-case activity for the main construction period of up to 30 months is stockpile site (MOD08) with potential exceedances of the construction noise management level at up to 226 residential receivers. Predicted levels exceed the construction noise management level by up to 22 dB(A) at the worst affected receivers.
  - No impacts are predicted at non-residential receivers.
– During OOHW period 1 day, up to 322 residential receivers were identified with potential exceedances of the construction noise management level. Predicted levels exceed the construction noise management level by up to 25 dB(A) at the worst affected receivers. The predicted worst case activity during this period is construction support activities (MOD12), which would occur over the construction period of 30 months.
– During OOHW period 1 evening, up to 333 residential receivers were identified with potential exceedances of the construction noise management level. Predicted levels exceed the construction noise management level by up to 25 dB(A) at the worst affected receivers. The predicted worst case activity during this period is construction support activities (MOD12), which would occur over the construction period of 30 months.
– During OOHW period 2 night, up to 637 residential receivers were identified with potential exceedances of the construction noise management level. Predicted levels exceed the construction noise management level by up to 31 dB(A) at the worst affected receivers. The predicted worst case activity during this period is construction support activities (MOD12), which would occur over the construction period of 30 months.
– No receivers are predicted to exceed the 75 dB(A) highly affected level for any of the assessed scenarios.

Noise impacts predicted in relation to the Cardiff Road compound are summarised as:

– During standard construction hours:
  - 663 residential receivers were identified with potential exceedances of the construction noise management level. Predicted levels exceed the construction noise management level by up to 58 dB(A) at the worst affected receivers.
  - The predicted worst case activity for level and extent of impact during standard construction hours is vegetation clearing and grubbing (MOD04) which would occur over a period of up to 2 weeks.
  - The predicted worst-case activity for the main construction period of up to 30 months is stockpile site (MOD08) with potential exceedances of the construction noise management level at up to 426 residential receivers. Predicted levels exceed the construction noise management level by up to 50 dB(A) at the worst affected receivers.
  - Two non-residential receivers (one place of worship and one commercial) were identified with potential exceedances of the relevant construction noise management level. Impacts of up to 13 dB(A) were identified over the construction noise management level for places of worship and 8 dB(A) for the commercial receiver.

- Up to 17 residential receivers were identified with potential exceedances of the 75 dB(A) highly affected level with impacts of up to 29 dB(A) over this value. The predicted worst case activity is vegetation clearing and grubbing (MOD04), which would occur over a period of up to 2 weeks. For the main construction period of up to 30 months, the worst-case activity in relation to the highly affected level is stockpile site (MOD08) with potential exceedances of the highly affected level at up to 15 residential receivers by up to 21 dB(A).

– No activities are proposed for OOHW periods.

Noise impacts predicted in relation to the Astra Street compound are summarised as:

– During standard construction hours:
  - 67 residential receivers were identified with potential exceedances of the construction noise management level. Predicted levels exceed the construction noise management level by up to 9 dB(A) at the worst affected receivers.
  - The predicted worst case activity for level and extent of impact during standard construction hours is crushing plant (MOD07), which would occur over a period of up to 30 months.
  - Three non-residential receivers including one passive recreation receiver, one active recreation receiver and one educational facility were identified with potential exceedances of the relevant construction noise management level. Impacts of up to 4 dB(A) were identified for the activity of crushing plant (MOD07).
– During OOHW period 1 day, up to 67 residential receivers were identified with potential exceedances of the construction noise management level. Predicted levels exceed the construction noise management level by up to 9 dB(A) at the worst affected receivers. The predicted worst case activity during this period is stockpile site (MOD08), which would occur over the construction period of 30 months.
– During OOHW period 1 evening, up to 166 residential receivers were identified with potential exceedances of the construction noise management level. Predicted levels exceed the construction noise management level by up to 15 dB(A) at the worst affected receivers. The predicted worst case activity during this period is stockpile site (MOD08), which would occur over the construction period of 30 months.
– During OOHW period 2 night, up to 167 residential receivers were identified with potential exceedances of the construction noise management level. Predicted levels exceed the construction noise management level by up to 23 dB(A) at the worst affected receivers. The predicted worst case activity during this period is stockpile site (MOD08), which would occur over the construction period of 30 months.
– No receivers are predicted to exceed the 75 dB(A) highly affected level for any of the assessed scenarios.

Noise impacts predicted in relation to the Lookout Road compound are summarised as:

– During standard construction hours:
  - One residential receiver adjacent to the compound was identified with potential exceedances of the construction noise management level. Predicted levels exceed the construction noise management level by up to 14 dB(A) at this receiver. No other exceedances of the daytime CNML are predicted.
  - The predicted worst case activity for level and extent of impact during standard construction hours is general compound activities (MOD05), which would occur over the construction period of 30 months.
  - No impacts are predicted at non-residential receivers.
  - One receiver adjacent to the compound was identified with potential exceedances of the 75 dB(A) highly affected level with impacts of up to 5 dB(A) over this value. The predicted worst case activity is general compound activities (MOD05), which would occur over the construction period of 30 months.
– During OOHW period 1 day, up to 48 residential receivers were identified with potential exceedances of the construction noise management level. Predicted levels exceed the construction noise management level by up to 19 dB(A) at the residential receiver adjacent to the compound. The next highest exceedance is predicted to be 4 dB(A) over the CNML for this period. The predicted worst case activity during this period is general compound activities (MOD05), which would occur over the construction period of 30 months.

– During OOHW period 1 evening, up to 93 residential receivers were identified with potential exceedances of the construction noise management level. Predicted levels exceed the construction noise management level by up to 26 dB(A) at the residential receiver adjacent to the compound. The next highest exceedance is predicted to be 7 dB(A) over the CNML for this period. The predicted worst case activity during this period is general compound activities (MOD05), which would occur over the construction period of 30 months.
– During OOHW period 2 night, up to 160 residential receivers were identified with potential exceedances of the construction noise management level. Predicted levels exceed the construction noise management level by up to 42 dB(A) at the residential receiver adjacent to the compound. The next highest exceedance is predicted to be 21 dB(A) over the CNML for this period. The predicted worst case activity during this period is general compound activities (MOD05), which would occur over the construction period of 30 months.

7. Sleep disturbance and awakening impacts

The sleep disturbance and awakening assessment criteria are provided in section 4.2. Potential noise impacts within the study area have been considered through a maximum noise level (L_{Amax}) assessment. Typically maximum (L_{Amax}) noise levels are around five dB to 10 dB greater than the $L_{Aeq(15\ min)}$ noise levels. A standard window will generally provide a 10 dB reduction when partially open and a 20 dB reduction when closed. As a potential worst-case it is assumed that a seven dB reduction is achieved where windows would be kept partially open at potentially impacted residential dwellings.

There is the potential for sleep disturbance and awakening impacts, with consideration to the *Road Noise Policy* (DECCW 2011) and *Noise Policy for Industry* (EPA 2017) criteria, if construction activities occur during the night-time period. Potential exceedances of these criteria are provided in Table 7.1. The provided results and following summary are to be interpreted with consideration that the level of impact would vary over the activity duration as the demand and intensity of these activities varies during the project's construction.

Sleep disturbance and awakening noise predictions for the compounds are as follows:

– Peatties Road - the three proposed night time activities of general compound activities (MOD05), deliveries (MOD11) and construction support activities (MOD12) have predicted impacts at residential receivers impacted for sleep disturbance and awakening potential. These activities are predicted to exceed the external 52 dB(A) L_{Amax} *Noise Policy for Industry* sleep disturbance criteria at up to 391 residential receivers and the internal 55 dB(A) L_{Amax} *Road Noise Policy* awakening criteria at up to 89 residential receivers. Of the proposed night time activities, the scenario construction support activities (MOD12) has the greatest potential for sleep disturbance and awakening impacts and is anticipated to occur over the construction period of 30 months.

– Cardiff Road - compound operation and activities are proposed to occur during daytime standard hours only for this compound, therefore no sleep disturbance impacts are predicted.

– Astra Street - the proposed night time activities of materials handling (MOD06), stockpile site (MOD08), batching plant (MOD09), Bridge girder laydown (MOD10), deliveries (MOD11) and construction support activities (MOD12) have predicted impacts at residential receivers impacted for sleep disturbance and awakening potential. These activities are predicted to exceed the external 52 dB(A) L_{Amax} *Noise Policy for Industry* sleep disturbance criteria at up to 167 residential receivers and the internal 55 dB(A) L_{Amax} *Road Noise Policy* awakening criteria at up to 51 residential receivers. Of the proposed night time activities, the scenario stockpile site (MOD08) has the greatest potential for sleep disturbance and awakening impacts and is anticipated to occur over the construction period of 30 months.

– Lookout Road - the proposed night time activity of general compound activities (MOD05) has predicted impacts at residential receivers impacted for sleep disturbance and awakening potential. These activities are predicted to exceed the external 52 dB(A) L_{Amax} *Noise Policy for Industry* sleep disturbance criteria at up to 85 residential receivers and the internal 55 dB(A) L_{Amax} *Road Noise Policy* awakening criteria at up to 3 residential receivers.

Table 7.1 Sleep disturbance – number of residential receivers impacted and level of impact

Assessment	Period	Construction activity												
		MOD01	MOD02	MOD03	MOD04	MOD05	MOD06	MOD07	MOD08	MOD09	MOD10	MOD11	MOD12	MOD13
		Establishment of temporary fencing and traffic management	Installation of erosion and sediment controls	Establishment of compounds	Vegetation clearing and grubbing	General compound activities	Materials handling	Crushing plant	Stockpile site	Batching plant	Bridge girder laydown	Deliveries	Construction support activities	Removal of compounds and rehabilitation
***Noise Policy for Industry* sleep disturbance criteria** *Level of exceedance (dBA, L_{Amax})*	Peatties Road	-	-	-	-	20	-	-	-	-	-	17	24	-
	Cardiff Road	-	-	-	-	-	-	-	-	-	-	-	-	-
	Astra Street	-	-	-	-	-	16	-	21	13	12	12	19	-
	Lookout Road	-	-	-	-	38 (1) 17 (2)	-	-	-	-	-	-	-	-
***Noise Policy for Industry* sleep disturbance criteria** *Number of residential receivers impacted*	Peatties Road	-	-	-	-	218	-	-	-	-	-	141	391	-
	Cardiff Road	-	-	-	-	-	-	-	-	-	-	-	-	-
	Astra Street	-	-	-	-	-	151	-	167	86	69	69	167	-
	Lookout Road	-	-	-	-	85 (1) 84 (2)	-	-	-	-	-	-	-	-
***Road Noise Policy* awakening criteria** *Level of exceedance (dBA, L_{Amax})*	Peatties Road	-	-	-	-	10	-	-	-	-	-	7	14	-
	Cardiff Road	-	-	-	-	-	-	-	-	-	-	-	-	-
	Astra Street	-	-	-	-	-	6	-	11	3	2	2	9	-
	Lookout Road	-	-	-	-	28 (1) 7 (2)	-	-	-	-	-	-	-	-
***Road Noise Policy* awakening criteria** *Number of residential receivers impacted*	Peatties Road	-	-	-	-	42	-	-	-	-	-	11	89	-
	Cardiff Road	-	-	-	-	-	-	-	-	-	-	-	-	-
	Astra Street	-	-	-	-	-	1	-	51	1	1	1	21	-
	Lookout Road	-	-	-	-	3 (1) 2 (2)	-	-	-	-	-	-	-	-

Note 1: The worst case result presented is for the residence located next to the Lookout Road site. As part of the proposed modification planning process, Transport for NSW has entered into an *Adjacent Property Access and Use Agreement* with this landowner for the use of Lookout Road compound.

Note 2: Provides results for the next worst affected receiver (ie excluding the residence discussed under note 1).

8. Construction vibration assessment

8.1 Potential impacts of individual equipment

Table 8.1 outlines typical vibration levels for different plant activities sourced from the *Environmental Noise Management Manual* (RTA 2001), *British Standard BS 5228-2: 2009 Code of Practice for noise and vibration control on construction and open sites: Part 2 Vibration* and the *Construction Noise and Vibration Strategy ST-157/4.1* (Transport for NSW, 2019).

As stated in the *Environmental Noise Management Manual*, it can be assumed that the vibration level of a source is inversely proportional to the distance source-receiver. Field variations show that the distance relationship generally varies between $d^{-0.8}$ and $d^{-1.6}$, rather than d^{-1}. The figures below are based on the conservative assumption of $d^{-0.8}$ unless otherwise stated.

The potential vibration levels due to the construction works at various distances are shown in Table 8.1.

Table 8.1 Predicted construction vibration levels

Vibration source	Distance to Source/Peak Particle Velocity (mm/s)			
	10 m	20 m	50 m	100 m
Vibratory roller (15 tonne)	8.0	4.6	2.2	1.3
Excavator	2.1	1.2	0.6	0.3

Note 1: Based on levels derived from BS 5228-2. *Bored piling through stones or other obstruction*. Vibratory piling based on relationship provided in Table E.1

8.1.1 Potential for structural damage

Predicted safe working buffer distances to comply with the cosmetic damage, standard dwelling and heritage building structural damage criteria were calculated for typical vibration values and listed in Table 8.2. This table is based on advice given in *BS 7385-2:1993 Evaluation and measurement for vibration in buildings.*

While vibration may be amplified in multi-level buildings through the structure to the upper floors, the buffer distances provided in Table 8.2 are based on *German Standard DIN 4150 (2016) Part 3: Structural Vibration in Buildings: Effects on Structures* and are applicable at a building's foundation where "if these values are complied with, damage that reduces the serviceability of the building will not occur". DIN 4150-3 (2016) specifies higher acceptable values for upper floors by a multiple of three to four compared to the base value for standard dwellings used in this assessment, therefore these buffers are considered appropriate for multi-level buildings of typical construction.

For the purposes of this assessment, non-residential receiver structures such as educational facilities, churches and medical facilities are assumed to have equivalent construction to standard dwellings. Passive and active recreational receivers have also been included as these may include facilities building, club houses or buildings for equipment storage.

Table 8.2 Vibration buffer distances – structural damage

Activity	Structural damage	
	Heritage building/structure DIN 4150-3 criteria (3.0 mm/s) – short term vibration (2.5 mm/s) – continuous vibration	Standard dwellings DIN 4150-3 criteria (5.0 mm/s)
Vibratory roller (15 tonne)	35 m (short term vibration) 50 m (continuous vibration)	18 m
Excavator	7 m	4 m

Numbers of identified receiver structures and relevant receiver IDs within structural damage vibration buffers for each compound are detailed in Table 8.3.

Table 8.3 Receivers within vibration buffer distances – structural damage

Activity	Structural damage, Standard dwellings DIN 4150-3 criteria (5.0 mm/s)			
	Peatties Road	Cardiff Road	Astra Street	Lookout Road
15 tonne vibratory roller (18 m buffer)	Nil	6 (R3019, R3013, R3010, R3006, R3035, R3024)	Nil	Nil
Excavator (4 m buffer)	Nil	3 (R3035, R3024, R3010)	Nil	Nil

The following was found with consideration to structural vibration buffers, at the Cardiff Road compound, six receiver structures were identified within the 18 metre buffer associated with vibratory roller activities and two receiver structures were identified within the four metre buffer associated with excavator activities. The buffer distances are based on the perimeter of the compound footprint, therefore operation of vibration generating sources further within the compound footprint and at the relevant buffer distances from the receiver buildings would result in predicted compliance with the structural damage criteria.

No sensitive receiver structures were identified within these buffers for Astra Street or Peatties Road compounds. No vibration generating activities are proposed for the Lookout Road compound site, therefore no structural impacts are expected.

Construction vibration buffers are provided in Appendix E.

No heritage structures were identified within the relevant structural damage buffer distances. The closest listed heritage items to the proposed modification are:

– Great Northern Railway listed in the *Lake Macquarie Local Environmental Plan 2014* located about 50 metres south-west of the Peatties Road site.
– "Tickhole Tunnel" on the northern-leg of the Main Northern Rail Line which passes under Charlestown Road and at the western portal is about 65 metres from the Peatties Road compound. This is a brick lined 153 metre long double track railway tunnel constructed in 1887.
– Sandgate Cemetery listed in the *Newcastle Local Environmental Plan 2012* located about 200 metres east of the Astra Street site, and the Great Northern Railway listed in the *Lake Macquarie Local Environmental Plan 2014* located about 50 metres south-west of the Peatties Road site.

While "Tickhole Tunnel" is outside the 35 metre buffer distance for heritage structures regarding vibratory rolling, due to the nature of this structure and importance for operation of the Main Northern Rail Line an additional mitigation measure has been recommended (see section 10).

8.1.2 Potential for human comfort and perception

Predicted safe working buffer distances to comply with the human comfort, and human perception were calculated for typical vibration values and listed in Table 8.4 and Table 8.5 for residential receivers and non-residential receivers respectively. These are based on advice given in *BS 5228-2:2009 Code of practice for noise and vibration on construction and open sites – Part 2: Vibration* and the *Assessing Vibration: A Technical Guideline* (DEC 2006). The various criteria buffers are interpreted as follows:

– The BS 5228-2.2009 criteria represents a level at which "*It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents*"
– The 'preferred' *Assessing Vibration: A Technical Guideline* vibration dose values represent a goal at which there is low probability of adverse comment or disturbance to building occupants.

– For ‘maximum values’ the *Assessing Vibration: A Technical Guideline* states: “*Where all feasible and reasonable measures have been applied, values up to the maximum value may be used if they can be justified. For values beyond the maximum value, the operator should negotiate directly with the affected community*.”

Vibration is typically attenuated through multi-levels building to upper floors, however in some cases it may be amplified in the upper floors due to structural resonances and other factors. Locations of multi-level buildings are not known at this stage and therefore should be reviewed on a case-by case basis when identified. As a guide for multi-level receivers, adoption of the preferred value buffers in Table 8.4 and Table 8.5 is anticipated to typically protect against exceedances of the acceptable maximum human comfort values.

Table 8.4 Vibration buffer distances – human comfort and perception, residential receivers

Equipment	Human comfort criteria based on BS 5228-2.2009 (1.0 mm/s)	Human comfort based on AVTG vibration dose value ($m/s^{1.75}$)			
		Day preferred value 0.2 $m/s^{1.75}$	Day maximum value 0.4 $m/s^{1.75}$	Night preferred value 0.13 $m/s^{1.75}$	Night maximum value 0.26 $m/s^{1.75}$
15 tonne vibratory roller	140 m	310 m	130 m	230 m	94 m
Excavator	25 m	57 m	24 m	42 m	18 m

Table 8.5 Vibration buffer distances – human comfort and perception, non-residential receivers

Equipment	Human comfort criteria based on BS 5228-2.2009 (1.0 mm/s)	Human comfort based on AVTG vibration dose value ($m/s^{1.75}$)			
		Day preferred value 0.4 $m/s^{1.75}$	Day maximum value 0.8 $m/s^{1.75}$	Night preferred value 0.4 $m/s^{1.75}$	Night maximum value 0.8 $m/s^{1.75}$
15 tonne vibratory roller	140 m	130 m	54 m	55 m	23 m
Excavator	25 m	24 m	10 m	10 m	4 m

Numbers of identified receiver structures and relevant receiver IDs within human comfort vibration buffers for each compound are detailed in Table 8.6.

Table 8.6 Receivers within vibration buffer distances – human comfort and perception

Activity	Human comfort based on AVTG vibration dose value ($m/s^{1.75}$) Residential - Day preferred value 0.2 $m/s^{1.75}$ Non-residential - Day preferred value 0.4 $m/s^{1.75}$			
	Peatties Road	Cardiff Road	Astra Street	Lookout Road
15 tonne vibratory roller Residential: 310 m buffer Non-residential: 130 m buffer	210 residential	239 residential 1 commercial	14 residential 1 active recreation	Nil
Excavator Residential: 57 m buffer Non-residential: 24 m buffer	Nil	19 residential	Nil	Nil

The following was found with consideration to human comfort vibration buffers:

– At the Peatties Road compound:
  - 210 residential receivers were identified within the human comfort and perception buffer of 310 metres for vibratory roller activities during the daytime period.
  - No residential receivers were identified within the human comfort and perception buffer of 57 metres for excavator activities during the daytime period.
  - No non-residential receivers were identified within the applicable 130 metre buffer distance for vibratory rolling or 24 metre buffer for excavator activities.

– At the Cardiff Road compound:
  - 239 residential receivers were identified within the human comfort and perception buffer of 310 metres for vibratory roller activities during the daytime period.
  - 19 residential receivers were identified within the human comfort and perception buffer of 57 metres for excavator activities during the daytime period.
  - One commercial receiver was identified within the applicable 130 metre buffer distance for vibratory rolling. No other non-residential receivers were identified within this buffer distance or within the 24 metre buffer for excavator activities.
– At the Astra Street compound:
  - 14 residential receivers were identified within the human comfort and perception buffer of 310 metres for vibratory roller activities during the daytime period.
  - No residential receivers were identified within the human comfort and perception buffer of 57 metres for excavator activities during the daytime period.
  - One non-residential receiver (the golf range) was identified within the applicable 130 metre buffer distance.
  - No non-residential receivers were identified within the applicable 24 metre buffer for excavator activities.
– At the Lookout Road compound:
  - No vibration generating activities are proposed for this compound site, therefore no human comfort or vibration perception impacts are anticipated.

As discussed in section 5.2.3, the assessment of vibration is based on worst-case ground propagation conditions represented by $d^{-0.8}$. This results in VDV based human comfort buffer distances for residential receivers of up to 310 metres for vibratory roller activities. For ground that exhibits:

– average vibration propagation characteristics ($d^{-1.2}$), this buffer distance is reduced to 100 metres,
– poor vibration propagation characteristics ($d^{-1.6}$), this buffer distance is reduced to 55 metres.

Therefore, due to the potential for human comfort vibration impacts at nearby residential receivers, the existing environmental management measures recommended for the project will be implemented.

Construction vibration buffers are provided in Appendix E.

9. Construction traffic impacts

The potential traffic impacts of the project were assessed in the traffic and transport assessments (Aurecon, 2016 and Aurecon, 2018) for the EIS and SPIR. The proposed modification would not result in a change to overall construction traffic volumes beyond those assessed as part of the approved project however, access to the sites would involve construction traffic movements on additional roads as described below.

Astra Street:

– The average worst case construction vehicle movements would be 50 (20 light vehicles and 30 heavy vehicles) vehicles per day (two-way).
– The proposed construction access route via Newcastle Inner City Bypass (Jesmond to Sandgate) and Sandgate Road experience high volumes of existing daily traffic flows (about 36,100 and 14,400 average weekday daily traffic (two-way) respectively). As such, the additional construction traffic movements would have negligible effect on traffic noise levels from these roads.
– Astra Street is a local road providing access to the former landfill, Newcastle Golf Practice Centre, Sandgate Railway Station and a small residential area. While the proposed traffic movements would increase traffic volumes on Astra Street (about six two-way movements per hour), the existing noise environment is dominated by the Newcastle Inner City Bypass (Jesmond to Sandgate), Sandgate Road and the adjacent Hunter Valley rail line. Therefore additional traffic on Astra Street is not expected to significantly increase overall traffic noise levels at these receivers.

Cardiff Road:

– The average worst case construction vehicle movements would be four (two light vehicles and two heavy vehicles) vehicles per day (two-way).
– The proposed construction access route via Newcastle Inner City Bypass (Lookout Road), Cardiff Road experience high volumes of existing daily traffic flows (about 47,200 and 14,700 average weekday daily traffic (two-way) respectively). As such, the additional construction traffic movements would have negligible effect on traffic noise levels from these roads.
– While Marshall Street is a local road servicing a residential area, given the low number of proposed construction vehicle movements, a negligible effect on traffic noise levels is predicted due to compound related traffic.

Lookout Road:

– The average worst case construction vehicle movements would be 12 (ten light vehicles and two heavy vehicles) vehicles per day (two-way).
– The proposed construction access route via Newcastle Inner City Bypass (Lookout Road) experiences high volumes of existing daily traffic flows (eg Lookout Road north of McCaffrey Drive has an average weekday daily traffic (two-way) of 49,400 vehicles per day). As such, the additional construction traffic movements would have negligible effect on traffic noise levels from these roads.

Peatties Road:

– The average worst case construction vehicle movements would be 120 (100 light vehicles and 20 heavy vehicles) vehicles per day (two-way).
– The proposed construction access route via Newcastle Inner City Bypass (Lookout Road and Charlestown Road) experience high volumes of existing daily traffic flows (eg Lookout Road south of Carnley Avenue has an average weekday daily traffic (two-way) of 55,100 vehicles per day). As such, the additional construction traffic movements would have negligible effect on traffic noise levels from these roads.
– Peatties Road is a no through road providing access to residential properties on Wimbledon Grove. Access to the Peatties Road site does not pass any residential properties. As such, a negligible effect on traffic noise levels is predicted due to compound related traffic.

10. Mitigation measures

Environmental management measures in section 7 of the *Newcastle Inner City Bypass – Rankin Park to Jesmond Submissions and Preferred Infrastructure Report* and reproduced in Appendix G of the Newcastle Inner City Bypass – Rankin Park to Jesmond: Modification Report detail specific environmental management measures to minimise potential construction noise and vibration impacts associated with construction areas. These measures are applicable to the proposed modification. Additional mitigation measures are provided below:

– Transport will carry out further investigation during detailed design to confirm appropriate construction buffer distances and additional mitigation measures to be implemented for Tickhole Tunnel.

11. References

Aurecon Australasia Pty Ltd (Aurecon) 2016, *Newcastle Inner City Bypass, Rankin Park to Jesmond, Technical Paper 2 – Traffic and Transport Assessment*.

Aurecon Australasia Pty Ltd (Aurecon) 2018, *Newcastle Inner City Bypass, Rankin Park to Jesmond, Technical Paper 2 ‑Traffic and Transport Assessment* ‑ Supplementary Report.

Aurecon Australasia Pty Ltd (Aurecon) 2019, *Newcastle Inner City Bypass Rankin Park to Jesmond – Bridge 7 Early Work: Division 5.2 and EPBC Act Approval Consistency assessment report Detailed Design Changes*.

Bowditch Group 2020, *Newcastle Inner City Bypass Rankin Park to Jesmond – Stage 3, Package 1 detailed design changes: Division 5.2 and EPBC Act approval (SSI 6888) consistency review*.

DEC 2006, *Assessing Vibration: A Technical Guideline*.

DECC 2009, *Interim Construction Noise Guideline*.

DECCW 2011, *Road Noise Policy*.

EPA 1999, *Environmental Criteria for Road Traffic Noise*.

EPA 2000, *Industrial Noise Policy.*

EPA 2017, *Noise Policy for Industry*.

GHD 2016, *Newcastle Inner City Bypass – Rankin Park to Jesmond Technical Paper 3 - Noise and Vibration Assessment*.

GHD 2018, *Newcastle Inner City Bypass – Rankin Park to Jesmond Technical Paper 3 - Noise and Vibration Assessment*.

Roads and Maritime Services 2016, *Construction Noise and Vibration Guideline*.

RTA 2001, *Environmental Noise Management Manual*.

Transport for NSW 2019*, Construction Noise and Vibration Strategy ST-157/4.1*

Appendices

Appendix A

Peatties Road noise impacts

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
R2766_RES	377183.6	6355436.0	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
R2778_RES	377408.9	6355410.8	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	48	43	40	35	RES
R2780_RES	377179.0	6355405.7	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
R2786_RES	377410.4	6355387.4	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	48	43	40	35	RES
R2787_RES	377287.0	6355387.2	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
R2790_RES	377423.1	6355386.2	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	48	43	40	35	RES
R2794_RES	377299.5	6355377.3	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
R2809_RES	377396.0	6355334.1	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
R2810_RES	377410.3	6355333.4	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
R2841_RES	377377.7	6355113.1	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
R2843_RES	377363.2	6355109.1	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
R2855_RES	377405.3	6355066.9	34	37	41	47	37	38	48	43	35	34	34	41[n]	37	66	61	54	38	RES
R2861_RES	377397.9	6355052.0	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
R2866_RES	377382.4	6355037.5	31	34	38	44	34	35	45	40	32	31	31	38[n]	34	46	41	41	35	RES
R2869_RES	377254.5	6355031.4	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
R2871_RES	377372.4	6355021.1	31	34	38	44	34	35	45	40	32	31	31	38[n]	34	46	41	41	35	RES
R2872_RES	377442.0	6355020.2	35	38	42	48	38	39	49	44	36	35	35	42[n]	38	66	61	54	38	RES
R2875_RES	377354.9	6355010.5	34	37	41	47[s]	37[n]	38	48	43	35	34	34	41[n]	37	46	41	41	35	RES
R2877_RES	377340.8	6355002.8	33	36	40	46	36[n]	37	47	42	34	33	33	40[n]	36	46	41	41	35	RES
R2879_RES	377177.0	6355001.3	33	36	40	46	36[n]	37	47	42	34	33	33	40[n]	36	46	41	41	35	RES
R2880_RES	377445.0	6355000.3	36	39	43	49	39[n]	40	50	45	37	36	36	43[n]	39	66	61	54	38	RES
R2883_RES	377327.0	6354991.0	32	35	39	45	35	36	46	41	33	32	32	39[n]	35	46	41	41	35	RES
R2884_RES	377413.2	6354987.0	35	38	42	48[s]	38[n]	39	49	44	36	35	35	42[den]	38	46	41	41	35	RES
R2885_RES	377452.7	6354984.9	36	39	43	49	39[n]	40	50	45	37	36	36	43[n]	39	66	61	54	38	RES
R2886_RES	377180.0	6354984.1	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
R2890_RES	377116.5	6354980.7	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
R2891_RES	377317.1	6354979.4	33	36	40	46	36[n]	37	47	42	34	33	33	40[n]	36	46	41	41	35	RES
R2894_RES	377130.3	6354977.5	31	34	38	44	34	35	45	40	32	31	31	38[n]	34	46	41	41	35	RES
R2895_RES	377403.2	6354975.4	36	39	43	49[s]	39[n]	40	50	45	37	36	36[n]	43[den]	39	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
R2896_RES	377144.9	6354974.5	30	33	37	43	33	34	44	39	31	30	30	37^{n}	33	46	41	41	35	RES
R2897_RES	377159.1	6354974.4	34	37	41	47^{s}	37^{n}	38	48	43	35	34	34	41^{n}	37	46	41	41	35	RES
R2899_RES	377388.3	6354969.1	35	38	42	48^{s}	38^{n}	39	49	44	36	35	35	42^{den}	38	46	41	41	35	RES
R2900_RES	377302.4	6354968.3	32	35	39	45	35	36	46	41	33	32	32	39^{n}	35	46	41	41	35	RES
R2901_RES	377178.9	6354967.2	31	34	38	44	34	35	45	40	32	31	31	38^{n}	34	46	41	41	35	RES
R2903_RES	377284.9	6354963.2	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES
R2904_RES	377379.1	6354960.5	36	39	43	49^{s}	39^{n}	40	50	45	37	36	36^{n}	43^{den}	39	46	41	41	35	RES
R2905_RES	377449.8	6354960.1	38	41	45	51	41^{n}	42	52	47	39	38	38	45^{n}	41	66	61	54	38	RES
R2908_RES	377365.5	6354953.9	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
R2909_RES	377275.2	6354952.4	33	36	40	46	36^{n}	37	47	42	34	33	33	40^{n}	36	46	41	41	35	RES
R2911_RES	377355.0	6354943.0	38	41	45	51^{s}	41^{n}	42	52	47^{s}	39	38	38^{n}	45^{den}	41	46	41	41	35	RES
R2912_RES	377456.3	6354939.4	38	41	45	51	41^{n}	42	52	47	39	38	38	45^{n}	41	66	61	54	38	RES
R2913_RES	377267.2	6354937.3	32	35	39	45	35	36	46	41	33	32	32	39^{n}	35	46	41	41	35	RES
R2917_RES	377342.1	6354934.0	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
R2919_RES	377127.5	6354931.3	30	33	37	43	33	34	44	39	31	30	30	37^{n}	33	46	41	41	35	RES
R2920_RES	377147.3	6354930.2	32	35	39	45	35	36	46	41	33	32	32	39^{n}	35	46	41	41	35	RES
R2921_RES	377325.5	6354929.8	38	41	45	51^{s}	41^{n}	42	52	47^{s}	39	38	38^{n}	45^{den}	41	46	41	41	35	RES
R2924_RES	377247.2	6354927.1	30	33	37	43	33	34	44	39	31	30	30	37^{n}	33	46	41	41	35	RES
R2926_RES	377173.2	6354925.8	29	32	36	42	32	33	43	38	30	29	29	36^{n}	32	46	41	41	35	RES
R2927_RES	377459.7	6354924.9	38	41	45	51	41^{n}	42	52	47	39	38	38	45^{n}	41	66	61	54	38	RES
R2928_RES	377408.1	6354924.7	38	41	45	51^{s}	41^{n}	42	52	47^{s}	39	38	38^{n}	45^{den}	41	46	41	41	35	RES
R2931_RES	377314.1	6354916.7	36	39	43	49^{s}	39^{n}	40	50	45	37	36	36^{n}	43^{den}	39	46	41	41	35	RES
R2932_RES	377231.9	6354916.3	31	34	38	44	34	35	45	40	32	31	31	38^{n}	34	46	41	41	35	RES
R2933_RES	377377.2	6354911.7	40	43	47^{s}	53^{s}	43^{den}	44	54	49^{s}	41	40	40^{n}	47^{sden}	43	46	41	41	35	RES
R2934_RES	377455.3	6354908.7	37	40	44	50	40^{n}	41	51	46	38	37	37	44^{n}	40	66	61	54	38	RES
R2935_RES	377170.6	6354907.1	30	33	37	43	33	34	44	39	31	30	30	37^{n}	33	46	41	41	35	RES
R2936_RES	377303.1	6354906.0	35	38	42	48^{s}	38^{n}	39	49	44	36	35	35	42^{den}	38	46	41	41	35	RES
R2938_RES	377214.4	6354899.4	35	38	42	48^{s}	38^{n}	39	49	44	36	35	35	42^{den}	38	46	41	41	35	RES
R2940_RES	377420.1	6354895.7	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES

Notes:

^{s} = exceeds standard hours criteria, ^{d} = exceeds OOHW period 1 day criteria, ^{e} = exceeds OOHW period 1 evening criteria, ^{n} = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
R2941_RES	377463.6	6354895.5	38	41	45	51	41^{n}	42	52	47	39	38	38	45^{n}	41	66	61	54	38	RES
R2942_RES	377283.5	6354893.5	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES
R2943_RES	377145.8	6354892.9	29	32	36	42	32	33	43	38	30	29	29	36^{n}	32	46	41	41	35	RES
R2944_RES	377167.3	6354891.2	31	34	38	44	34	35	45	40	32	31	31	38^{n}	34	46	41	41	35	RES
R2945_RES	377375.3	6354886.0	38	41	45	51^{s}	41^{n}	42	52	47^{s}	39	38	38^{n}	45^{den}	41	46	41	41	35	RES
R2946_RES	377301.0	6354879.7	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
R2948_RES	377421.1	6354874.1	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
R2950_RES	376920.5	6354872.3	32	35	39	45	35	36	46	41	33	32	32	39^{n}	35	46	41	41	35	RES
R2951_RES	376953.7	6354872.1	31	34	38	44	34	35	45	40	32	31	31	38^{n}	34	46	41	41	35	RES
R2953_RES	377254.1	6354870.4	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
R2954_RES	377329.7	6354870.1	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
R2955_RES	376936.5	6354869.7	31	34	38	44	34	35	45	40	32	31	31	38^{n}	34	46	41	41	35	RES
R2956_RES	377349.9	6354868.5	38	41	45	51^{s}	41^{n}	42	52	47^{s}	39	38	38^{n}	45^{den}	41	46	41	41	35	RES
R2957_RES	377242.9	6354864.3	38	41	45	51^{s}	41^{n}	42	52	47^{s}	39	38	38^{n}	45^{den}	41	46	41	41	35	RES
R2958_RES	377365.6	6354864.3	38	41	45	51^{s}	41^{n}	42	52	47^{s}	39	38	38^{n}	45^{den}	41	46	41	41	35	RES
R2960_RES	377313.0	6354863.0	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
R2961_RES	377380.1	6354860.8	38	41	45	51^{s}	41^{n}	42	52	47^{s}	39	38	38^{n}	45^{den}	41	46	41	41	35	RES
R2964_RES	377156.4	6354856.8	35	38	42	48^{s}	38^{n}	39	49	44	36	35	35	42^{den}	38	46	41	41	35	RES
R2965_RES	377262.3	6354856.7	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
R2967_RES	377231.4	6354855.2	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES
R2968_RES	377122.6	6354854.9	32	35	39	45	35	36	46	41	33	32	32	39^{n}	35	46	41	41	35	RES
R2970_RES	377419.1	6354851.0	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
R2971_RES	377219.1	6354846.3	38	41	45	51^{s}	41^{n}	42	52	47^{s}	39	38	38^{n}	45^{den}	41	46	41	41	35	RES
R2972_RES	377140.7	6354845.0	31	34	38	44	34	35	45	40	32	31	31	38^{n}	34	46	41	41	35	RES
R2973_RES	377277.2	6354838.9	38	41	45	51^{s}	41^{n}	42	52	47^{s}	39	38	38^{n}	45^{den}	41	46	41	41	35	RES
R2975_RES	377412.7	6354836.9	40	43	47^{s}	53^{s}	43^{den}	44	54	49^{s}	41	40	40^{n}	47^{sden}	43	46	41	41	35	RES
R2976_RES	376946.0	6354834.8	36	39	43	49^{s}	39^{n}	40	50	45	37	36	36^{n}	43^{den}	39	46	41	41	35	RES
R2977_RES	377207.6	6354832.9	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
R2980_RES	376957.8	6354826.2	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES

Notes:

^{s} = exceeds standard hours criteria, ^{d} = exceeds OOHW period 1 day criteria, ^{e} = exceeds OOHW period 1 evening criteria, ^{n} = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
R2981_RES	377098.1	6354825.4	32	35	39	45	35	36	46	41	33	32	32	39^{n}	35	46	41	41	35	RES
R2982_RES	377289.2	6354822.1	38	41	45	51^{s}	41^{n}	42	52	47^{s}	39	38	38^{n}	45^{den}	41	46	41	41	35	RES
R2983_RES	376976.7	6354817.4	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES
R2984_RES	377407.4	6354816.1	40	43	47^{s}	53^{s}	43^{den}	44	54	49^{s}	41	40	40^{n}	47^{sden}	43	46	41	41	35	RES
R2985_RES	377084.5	6354814.1	36	39	43	49^{s}	39^{n}	40	50	45	37	36	36^{n}	43^{den}	39	46	41	41	35	RES
R2986_RES	376993.0	6354813.5	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
R2987_RES	377008.4	6354811.2	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES
R2988_RES	377349.5	6354810.5	42	45	49^{s}	55^{s}	45^{den}	46	56	51^{s}	43	42	42^{den}	49^{sden}	45	46	41	41	35	RES
R2989_RES	377283.6	6354809.8	35	38	42	48^{s}	38^{n}	39	49	44	36	35	35	42^{den}	38	46	41	41	35	RES
R2990_RES	377258.0	6354808.8	40	43	47^{s}	53^{s}	43^{den}	44	54	49^{s}	41	40	40^{n}	47^{sden}	43	46	41	41	35	RES
R2991_RES	377071.2	6354806.9	36	39	43	49^{s}	39^{n}	40	50	45	37	36	36^{n}	43^{den}	39	46	41	41	35	RES
R2992_RES	377035.4	6354806.7	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES
R2993_RES	377151.9	6354805.0	31	34	38	44	34	35	45	40	32	31	31	38^{n}	34	46	41	41	35	RES
R2995_RES	377058.2	6354801.9	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES
R2996_RES	377363.5	6354800.1	42	45	49^{s}	55^{s}	45^{den}	46	56	51^{s}	43	42	42^{den}	49^{sden}	45	46	41	41	35	RES
R2998_RES	377330.4	6354798.9	41	44	48^{s}	54^{s}	44^{den}	45	55	50^{s}	42	41	41^{n}	48^{sden}	44	46	41	41	35	RES
R2999_RES	377202.8	6354796.8	41	44	48^{s}	54^{s}	44^{den}	45	55	50^{s}	42	41	41^{n}	48^{sden}	44	46	41	41	35	RES
R3000_RES	377377.9	6354796.5	40	43	47^{s}	53^{s}	43^{den}	44	54	49^{s}	41	40	40^{n}	47^{sden}	43	46	41	41	35	RES
R3001_RES	377399.3	6354795.6	40	43	47^{s}	53^{s}	43^{den}	44	54	49^{s}	41	40	40^{n}	47^{sden}	43	46	41	41	35	RES
R3002_RES	377137.6	6354793.4	38	41	45	51^{s}	41^{n}	42	52	47^{s}	39	38	38^{n}	45^{den}	41	46	41	41	35	RES
R3004_RES	377155.8	6354791.8	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
R3005_RES	377250.9	6354789.5	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES
R3006_RES	377119.5	6354786.2	40	43	47^{s}	53^{s}	43^{den}	44	54	49^{s}	41	40	40^{n}	47^{sden}	43	46	41	41	35	RES
R3007_RES	377196.0	6354782.8	33	36	40	46	36^{n}	37	47	42	34	33	33	40^{n}	36	46	41	41	35	RES
R3009_RES	377317.4	6354777.3	42	45	49^{s}	55^{s}	45^{den}	46	56	51^{s}	43	42	42^{den}	49^{sden}	45	46	41	41	35	RES
R3010_RES	377110.2	6354776.4	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
R3012_RES	377250.9	6354772.8	40	43	47^{s}	53^{s}	43^{den}	44	54	49^{s}	41	40	40^{n}	47^{sden}	43	46	41	41	35	RES
R3013_RES	377147.5	6354770.6	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
R3014_RES	377197.0	6354766.2	46	49^{s}	53^{s}	59^{s}	49^{sden}	50^{s}	60	55^{s}	47	46	46^{den}	53^{sden}	49^{s}	46	41	41	35	RES

Notes:

^{s} = exceeds standard hours criteria, ^{d} = exceeds OOHW period 1 day criteria, ^{e} = exceeds OOHW period 1 evening criteria, ^{n} = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
R3015_RES	377305.9	6354764.3	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
R3017_RES	377244.7	6354760.4	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
R3019_RES	377142.3	6354755.9	48^{s}	51^{s}	55^{s}	61^{s}	51^{sden}	52^{s}	62	57^{s}	49	48	48^{sden}	55^{sden}	51^{s}	46	41	41	35	RES
R3020_RES	377289.9	6354753.0	34	37	41	47^{s}	37^{n}	38	48	43	35	34	34	41^{n}	37	46	41	41	35	RES
R3021_RES	377195.9	6354752.9	47^{s}	50^{s}	54^{s}	60^{s}	50^{sden}	51^{s}	61	56^{s}	48	47	47^{sden}	54^{sden}	50^{s}	46	41	41	35	RES
R3023_RES	377236.7	6354748.1	46	49^{s}	53^{s}	59^{s}	49^{sden}	50^{s}	60	55^{s}	47	46	46^{den}	53^{sden}	49^{s}	46	41	41	35	RES
R3024_RES	377047.3	6354744.4	47^{s}	50^{s}	54^{s}	60^{s}	50^{sden}	51^{s}	61	56^{s}	48	47	47^{sden}	54^{sden}	50^{s}	46	41	41	35	RES
R3025_RES	377424.3	6354740.3	40	43	47	53	43^{n}	44	54	49	41	40	40^{n}	47^{n}	43	66	61	54	38	RES
R3028_RES	377508.3	6354736.0	36	39	43	49	39^{n}	40	50	45	37	36	36	43^{n}	39	66	61	54	38	RES
R3029_RES	377288.3	6354731.0	45	48^{s}	52^{s}	58^{s}	48^{sden}	49^{s}	59	54^{s}	46	45	45^{den}	52^{sden}	48^{s}	46	41	41	35	RES
R3030_RES	377412.1	6354727.5	38	41	45	51	41^{n}	42	52	47	39	38	38	45^{n}	41	66	61	54	38	RES
R3031_RES	377278.0	6354722.1	45	48^{s}	52^{s}	58^{s}	48^{sden}	49^{s}	59	54^{s}	46	45	45^{den}	52^{sden}	48^{s}	46	41	41	35	RES
R3033_RES	377398.9	6354716.9	42	45	49	55	45^{n}	46	56	51	43	42	42^{n}	49^{n}	45	66	61	54	38	RES
R3034_RES	377232.0	6354712.5	47^{s}	50^{s}	54^{s}	60^{s}	50^{sden}	51^{s}	61	56^{s}	48	47	47^{sden}	54^{sden}	50^{s}	46	41	41	35	RES
R3035_RES	377106.2	6354712.4	49^{s}	52^{s}	56^{s}	62^{s}	52^{sden}	53^{s}	63	58^{s}	50	49	49^{sden}	56^{sden}	52^{s}	46	41	41	35	RES
R3036_RES	377537.2	6354710.9	38	41	45	51	41^{n}	42	52	47	39	38	38	45^{n}	41	66	61	54	38	RES
R3037_RES	377264.8	6354707.9	48^{s}	51^{s}	55^{s}	61^{s}	51^{sden}	52^{s}	62	57^{s}	49	48	48^{sden}	55^{sden}	51^{s}	46	41	41	35	RES
R3038_RES	377615.1	6354700.9	32	35	39	45	35	36	46	41	33	32	32	39^{n}	35	66	61	54	38	RES
R3039_RES	377390.8	6354699.8	43	46	50	56	46^{n}	47	57	52	44	43	43^{n}	50^{n}	46	66	61	54	38	RES
R3040_RES	377478.3	6354696.7	41	44	48	54	44^{n}	45	55	50	42	41	41^{n}	48^{n}	44	66	61	54	38	RES
R3041_RES	377491.8	6354689.5	41	44	48	54	44^{n}	45	55	50	42	41	41^{n}	48^{n}	44	66	61	54	38	RES
R3042_RES	377547.5	6354688.0	36	39	43	49	39^{n}	40	50	45	37	36	36	43^{n}	39	66	61	54	38	RES
R3043_RES	377382.0	6354686.1	44	47	51	57	47^{n}	48	58	53	45	44	44^{n}	51^{n}	47	66	61	54	38	RES
R3044_RES	377371.7	6354675.7	46	49	53	59	49^{n}	50	60	55	47	46	46^{n}	53^{n}	49	66	61	54	38	RES
R3045_RES	377505.6	6354675.4	42	45	49	55	45^{n}	46	56	51	43	42	42^{n}	49^{n}	45	66	61	54	38	RES
R3046_RES	377479.6	6354666.0	42	45	49	55	45^{n}	46	56	51	43	42	42^{n}	49^{n}	45	66	61	54	38	RES
R3047_RES	377534.3	6354665.8	41	44	48	54	44^{n}	45	55	50	42	41	41^{n}	48^{n}	44	66	61	54	38	RES
RM10194_RES	377122.3	6355396.6	29	32	36	42	32	33	43	38	30	29	29	36^{n}	32	46	41	41	35	RES
RM10196_RES	377100.5	6355378.8	29	32	36	42	32	33	43	38	30	29	29	36^{n}	32	46	41	41	35	RES

Notes:

^{s} = exceeds standard hours criteria, ^{d} = exceeds OOHW period 1 day criteria, ^{e} = exceeds OOHW period 1 evening criteria, ^{n} = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10199_RES	377062.7	6355366.3	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10200_RES	377077.9	6355362.5	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
RM10202_RES	377042.9	6355349.5	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10203_RES	377025.6	6355348.3	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10204_RES	377006.8	6355342.2	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10205_RES	376877.2	6355341.1	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10206_RES	376989.2	6355335.0	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
RM10207_RES	376890.8	6355334.2	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10209_RES	377039.2	6355326.7	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10211_RES	376907.8	6355324.6	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
RM10213_RES	376971.7	6355322.8	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
RM10214_RES	376959.1	6355322.1	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
RM10215_RES	376920.9	6355320.0	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10216_RES	376938.3	6355318.3	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10222_RES	377036.9	6355301.9	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10223_RES	377076.6	6355298.8	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10225_RES	376885.6	6355295.3	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10226_RES	376867.1	6355295.0	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10228_RES	376901.9	6355288.4	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10229_RES	376989.0	6355282.3	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10232_RES	376917.0	6355277.8	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10233_RES	376961.4	6355277.6	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10234_RES	376936.5	6355276.7	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10247_RES	376819.0	6355254.2	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10249_RES	376833.5	6355244.4	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10251_RES	376977.5	6355238.3	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10268_RES	376934.4	6355192.5	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10290_RES	376549.5	6355079.4	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
RM10292_RES	376515.5	6355000.1	32	35	39	45	35	36	46	41	33	32	32	39[n]	35	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10293_RES	376538.4	6354999.0	33	36	40	46	36[n]	37	47	42	34	33	33	40[n]	36	46	41	41	35	RES
RM10295_RES	376567.8	6354989.7	34	37	41	47[s]	37[n]	38	48	43	35	34	34	41[n]	37	46	41	41	35	RES
RM10297_RES	376581.0	6354983.0	34	37	41	47[s]	37[n]	38	48	43	35	34	34	41[n]	37	46	41	41	35	RES
RM10298_RES	376599.1	6354982.2	35	38	42	48[s]	38[n]	39	49	44	36	35	35	42[den]	38	46	41	41	35	RES
RM10299_RES	376627.0	6354978.1	34	37	41	47[s]	37[n]	38	48	43	35	34	34	41[n]	37	46	41	41	35	RES
RM10301_RES	376640.5	6354972.2	33	36	40	46	36[n]	37	47	42	34	33	33	40[n]	36	46	41	41	35	RES
RM10302_RES	376665.6	6354969.0	32	35	39	45	35	36	46	41	33	32	32	39[n]	35	46	41	41	35	RES
RM10303_RES	376692.2	6354968.4	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10309_RES	376502.0	6354946.9	36	39	43	49[s]	39[n]	40	50	45	37	36	36[n]	43[den]	39	46	41	41	35	RES
RM10312_RES	376527.0	6354944.6	36	39	43	49[s]	39[n]	40	50	45	37	36	36[n]	43[den]	39	46	41	41	35	RES
RM10316_RES	376550.1	6354936.9	37	40	44	50[s]	40[n]	41	51	46	38	37	37[n]	44[den]	40	46	41	41	35	RES
RM10317_RES	376582.4	6354924.6	37	40	44	50[s]	40[n]	41	51	46	38	37	37[n]	44[den]	40	46	41	41	35	RES
RM10318_RES	376608.6	6354916.7	38	41	45	51[s]	41[n]	42	52	47[s]	39	38	38[n]	45[den]	41	46	41	41	35	RES
RM10319_RES	376751.4	6354915.9	32	35	39	45	35	36	46	41	33	32	32	39[n]	35	46	41	41	35	RES
RM10320_RES	376628.5	6354911.6	38	41	45	51[s]	41[n]	42	52	47[s]	39	38	38[n]	45[den]	41	46	41	41	35	RES
RM10322_RES	376781.9	6354900.5	33	36	40	46	36[n]	37	47	42	34	33	33	40[n]	36	46	41	41	35	RES
RM10323_RES	376648.0	6354901.2	38	41	45	51[s]	41[n]	42	52	47[s]	39	38	38[n]	45[den]	41	46	41	41	35	RES
RM10325_RES	376677.9	6354895.3	39	42	46	52[s]	42[den]	43	53	48[s]	40	39	39[n]	46[den]	42	46	41	41	35	RES
RM10327_RES	376799.0	6354890.2	33	36	40	46	36[n]	37	47	42	34	33	33	40[n]	36	46	41	41	35	RES
RM10328_RES	376811.8	6354886.3	33	36	40	46	36[n]	37	47	42	34	33	33	40[n]	36	46	41	41	35	RES
RM10330_RES	376714.1	6354880.3	39	42	46	52[s]	42[den]	43	53	48[s]	40	39	39[n]	46[den]	42	46	41	41	35	RES
RM10332_RES	376827.8	6354874.9	35	38	42	48[s]	38[n]	39	49	44	36	35	35	42[den]	38	46	41	41	35	RES
RM10333_RES	376846.2	6354868.3	37	40	44	50[s]	40[n]	41	51	46	38	37	37[n]	44[den]	40	46	41	41	35	RES
RM10334_RES	376742.2	6354868.2	39	42	46	52[s]	42[den]	43	53	48[s]	40	39	39[n]	46[den]	42	46	41	41	35	RES
RM10335_RES	376622.9	6354867.0	36	39	43	49[s]	39[n]	40	50	45	37	36	36[n]	43[den]	39	46	41	41	35	RES
RM10336_RES	376866.3	6354861.8	37	40	44	50[s]	40[n]	41	51	46	38	37	37[n]	44[den]	40	46	41	41	35	RES
RM10337_RES	376636.0	6354859.1	37	40	44	50[s]	40[n]	41	51	46	38	37	37[n]	44[den]	40	46	41	41	35	RES
RM10339_RES	376771.3	6354848.0	40	43	47[s]	53[s]	43[den]	44	54	49[s]	41	40	40[n]	47[sden]	43	46	41	41	35	RES
RM10340_RES	376914.3	6354845.2	38	41	45	51[s]	41[n]	42	52	47[s]	39	38	38[n]	45[den]	41	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10341_RES	376928.5	6354838.4	38	41	45	51^{s}	41^{n}	42	52	47^{s}	39	38	38^{n}	45^{den}	41	46	41	41	35	RES
RM10342_RES	376627.7	6354836.0	38	41	45	51^{s}	41^{n}	42	52	47^{s}	39	38	38^{n}	45^{den}	41	46	41	41	35	RES
RM10343_RES	376471.0	6354834.4	36	39	43	49^{s}	39^{n}	40	50	45	37	36	36^{n}	43^{den}	39	46	41	41	35	RES
RM10344_RES	376795.4	6354833.0	41	44	48^{s}	54^{s}	44^{den}	45	55	50^{s}	42	41	41^{n}	48^{sden}	44	46	41	41	35	RES
RM10345_RES	376821.6	6354820.8	41	44	48^{s}	54^{s}	44^{den}	45	55	50^{s}	42	41	41^{n}	48^{sden}	44	46	41	41	35	RES
RM10346_RES	376835.4	6354815.3	41	44	48^{s}	54^{s}	44^{den}	45	55	50^{s}	42	41	41^{n}	48^{sden}	44	46	41	41	35	RES
RM10347_RES	376852.9	6354811.8	42	45	49^{s}	55^{s}	45^{den}	46	56	51^{s}	43	42	42^{den}	49^{sden}	45	46	41	41	35	RES
RM10348_RES	376888.7	6354801.0	42	45	49^{s}	55^{s}	45^{den}	46	56	51^{s}	43	42	42^{den}	49^{sden}	45	46	41	41	35	RES
RM10349_RES	376671.8	6354793.1	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES
RM10350_RES	376640.8	6354791.7	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
RM10351_RES	376931.1	6354787.6	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
RM10352_RES	376606.7	6354786.5	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES
RM10353_RES	376948.1	6354780.7	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
RM10354_RES	376684.1	6354773.5	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES
RM10355_RES	376652.7	6354773.1	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
RM10356_RES	376468.0	6354770.8	38	41	45	51^{s}	41^{n}	42	52	47^{s}	39	38	38^{n}	45^{den}	41	46	41	41	35	RES
RM10357_RES	376698.1	6354767.1	38	41	45	51^{s}	41^{n}	42	52	47^{s}	39	38	38^{n}	45^{den}	41	46	41	41	35	RES
RM10358_RES	376714.4	6354765.5	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
RM10359_RES	376743.8	6354765.5	35	38	42	48^{s}	38^{n}	39	49	44	36	35	35	42^{den}	38	46	41	41	35	RES
RM10360_RES	376727.4	6354761.7	42	45	49^{s}	55^{s}	45^{den}	46	56	51^{s}	43	42	42^{den}	49^{sden}	45	46	41	41	35	RES
RM10361_RES	376755.8	6354754.4	42	45	49^{s}	55^{s}	45^{den}	46	56	51^{s}	43	42	42^{den}	49^{sden}	45	46	41	41	35	RES
RM10362_RES	376770.9	6354753.7	42	45	49^{s}	55^{s}	45^{den}	46	56	51^{s}	43	42	42^{den}	49^{sden}	45	46	41	41	35	RES
RM10363_RES	376891.6	6354747.3	40	43	47^{s}	53^{s}	43^{den}	44	54	49^{s}	41	40	40^{n}	47^{sden}	43	46	41	41	35	RES
RM10364_RES	376784.9	6354745.2	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
RM10365_RES	376858.3	6354741.3	41	44	48^{s}	54^{s}	44^{den}	45	55	50^{s}	42	41	41^{n}	48^{sden}	44	46	41	41	35	RES
RM10366_RES	376877.6	6354740.9	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
RM10367_RES	376799.6	6354740.1	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
RM10368_RES	376814.0	6354736.8	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
RM10369_RES	376586.4	6354737.4	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES

Notes:

^{s} = exceeds standard hours criteria, ^{d} = exceeds OOHW period 1 day criteria, ^{e} = exceeds OOHW period 1 evening criteria, ^{n} = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10370_RES	376827.9	6354732.7	42	45	49^{s}	55^{s}	45^{den}	46	56	51^{s}	43	42	42^{den}	49^{sden}	45	46	41	41	35	RES
RM10371_RES	376843.4	6354731.6	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
RM10372_RES	376644.9	6354728.9	36	39	43	49^{s}	39^{n}	40	50	45	37	36	36^{n}	43^{den}	39	46	41	41	35	RES
RM10373_RES	376624.8	6354728.4	40	43	47^{s}	53^{s}	43^{den}	44	54	49^{s}	41	40	40^{n}	47^{sden}	43	46	41	41	35	RES
RM10374_RES	376683.3	6354721.6	41	44	48^{s}	54^{s}	44^{den}	45	55	50^{s}	42	41	41^{n}	48^{sden}	44	46	41	41	35	RES
RM10375_RES	376658.6	6354719.7	41	44	48^{s}	54^{s}	44^{den}	45	55	50^{s}	42	41	41^{n}	48^{sden}	44	46	41	41	35	RES
RM10376_RES	376901.1	6354719.0	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
RM10377_RES	376918.6	6354717.9	44	47^{s}	51^{s}	57^{s}	47^{sden}	48^{s}	58	53^{s}	45	44	44^{den}	51^{sden}	47^{s}	46	41	41	35	RES
RM10378_RES	376708.8	6354712.5	41	44	48^{s}	54^{s}	44^{den}	45	55	50^{s}	42	41	41^{n}	48^{sden}	44	46	41	41	35	RES
RM10379_RES	376697.5	6354710.3	42	45	49^{s}	55^{s}	45^{den}	46	56	51^{s}	43	42	42^{den}	49^{sden}	45	46	41	41	35	RES
RM10381_RES	376728.3	6354709.6	42	45	49^{s}	55^{s}	45^{den}	46	56	51^{s}	43	42	42^{den}	49^{sden}	45	46	41	41	35	RES
RM10382_RES	376930.6	6354707.8	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
RM10383_RES	376946.6	6354705.1	44	47^{s}	51^{s}	57^{s}	47^{sden}	48^{s}	58	53^{s}	45	44	44^{den}	51^{sden}	47^{s}	46	41	41	35	RES
RM10384_RES	376752.1	6354705.3	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
RM10385_RES	376770.6	6354703.7	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
RM10386_RES	376961.2	6354700.0	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
RM10387_RES	376977.6	6354694.4	40	43	47^{s}	53^{s}	43^{den}	44	54	49^{s}	41	40	40^{n}	47^{sden}	43	46	41	41	35	RES
RM10388_RES	377111.1	6354678.8	48^{s}	51^{s}	55^{s}	61^{s}	51^{sden}	52^{s}	62	57^{s}	49	48	48^{sden}	55^{sden}	51^{s}	46	41	41	35	RES
RM10389_RES	376989.6	6354679.4	46	49^{s}	53^{s}	59^{s}	49^{sden}	50^{s}	60	55^{s}	47	46	46^{den}	53^{sden}	49^{s}	46	41	41	35	RES
RM10390_RES	376677.8	6354675.9	42	45	49^{s}	55^{s}	45^{den}	46	56	51^{s}	43	42	42^{den}	49^{sden}	45	46	41	41	35	RES
RM10391_RES	377002.9	6354676.0	46	49^{s}	53^{s}	59^{s}	49^{sden}	50^{s}	60	55^{s}	47	46	46^{den}	53^{sden}	49^{s}	46	41	41	35	RES
RM10392_RES	376868.9	6354674.4	42	45	49^{s}	55^{s}	45^{den}	46	56	51^{s}	43	42	42^{den}	49^{sden}	45	46	41	41	35	RES
RM10393_RES	377019.0	6354669.7	46	49^{s}	53^{s}	59^{s}	49^{sden}	50^{s}	60	55^{s}	47	46	46^{den}	53^{sden}	49^{s}	46	41	41	35	RES
RM10394_RES	376781.7	6354667.3	44	47^{s}	51^{s}	57^{s}	47^{sden}	48^{s}	58	53^{s}	45	44	44^{den}	51^{sden}	47^{s}	46	41	41	35	RES
RM10395_RES	376882.8	6354661.4	46	49^{s}	53^{s}	59^{s}	49^{sden}	50^{s}	60	55^{s}	47	46	46^{den}	53^{sden}	49^{s}	46	41	41	35	RES
RM10396_RES	377032.1	6354657.9	47^{s}	50^{s}	54^{s}	60^{s}	50^{sden}	51^{s}	61	56^{s}	48	47	47^{sden}	54^{sden}	50^{s}	46	41	41	35	RES
RM10397_RES	376900.8	6354656.9	47^{s}	50^{s}	54^{s}	60^{s}	50^{sden}	51^{s}	61	56^{s}	48	47	47^{sden}	54^{sden}	50^{s}	46	41	41	35	RES
RM10398_RES	376922.7	6354653.5	47^{s}	50^{s}	54^{s}	60^{s}	50^{sden}	51^{s}	61	56^{s}	48	47	47^{sden}	54^{sden}	50^{s}	46	41	41	35	RES
RM10399_RES	377126.2	6354652.9	51^{s}	54^{s}	58^{s}	64^{s}	54^{sden}	55^{s}	65	60^{s}	52	51	51^{sden}	58^{sden}	54^{s}	46	41	41	35	RES

Notes:

^{s} = exceeds standard hours criteria, ^{d} = exceeds OOHW period 1 day criteria, ^{e} = exceeds OOHW period 1 evening criteria, ^{n} = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10400_RES	376744.8	6354648.0	43	46	50[s]	56[s]	46[den]	47[s]	57	52[s]	44	43	43[den]	50[sden]	46	46	41	41	35	RES
RM10401_RES	377044.6	6354648.2	48[s]	51[s]	55[s]	61[s]	51[sden]	52[s]	62	57[s]	49	48	48[sden]	55[sden]	51[s]	46	41	41	35	RES
RM10402_RES	376714.6	6354643.0	43	46	50[s]	56[s]	46[den]	47[s]	57	52[s]	44	43	43[den]	50[sden]	46	46	41	41	35	RES
RM10403_RES	377058.8	6354641.2	49[s]	52[s]	56[s]	62[s]	52[sden]	53[s]	63	58[s]	50	49	49[sden]	56[sden]	52[s]	46	41	41	35	RES
RM10404_RES	376809.1	6354636.4	45	48[s]	52[s]	58[s]	48[sden]	49[s]	59	54[s]	46	45	45[den]	52[sden]	48[s]	46	41	41	35	RES
RM10405_RES	377128.6	6354633.1	52[s]	55[s]	59[s]	65[s]	55[sden]	56[s]	66	61[s]	53	52	52[sden]	59[sden]	55[s]	46	41	41	35	RES
RM10406_RES	377071.7	6354630.9	49[s]	52[s]	56[s]	62[s]	52[sden]	53[s]	63	58[s]	50	49	49[sden]	56[sden]	52[s]	46	41	41	35	RES
RM10407_RES	376961.0	6354630.2	48[s]	51[s]	55[s]	61[s]	51[sden]	52[s]	62	57[s]	49	48	48[sden]	55[sden]	51[s]	46	41	41	35	RES
RM10408_RES	376945.5	6354626.6	48[s]	51[s]	55[s]	61[s]	51[sden]	52[s]	62	57[s]	49	48	48[sden]	55[sden]	51[s]	46	41	41	35	RES
RM10409_RES	377086.1	6354624.8	50[s]	53[s]	57[s]	63[s]	53[sden]	54[s]	64	59[s]	51	50	50[sden]	57[sden]	53[s]	46	41	41	35	RES
RM10410_RES	376978.0	6354622.7	44	47[s]	51[s]	57[s]	47[sden]	48[s]	58	53[s]	45	44	44[den]	51[sden]	47[s]	46	41	41	35	RES
RM10411_RES	377099.6	6354619.2	51[s]	54[s]	58[s]	64[s]	54[sden]	55[s]	65	60[s]	52	51	51[sden]	58[sden]	54[s]	46	41	41	35	RES
RM10412_RES	376990.2	6354617.4	46	49[s]	53[s]	59[s]	49[sden]	50[s]	60	55[s]	47	46	46[den]	53[sden]	49[s]	46	41	41	35	RES
RM10413_RES	377007.8	6354611.6	50[s]	53[s]	57[s]	63[s]	53[sden]	54[s]	64	59[s]	51	50	50[sden]	57[sden]	53[s]	46	41	41	35	RES
RM10414_RES	377112.5	6354612.3	52[s]	55[s]	59[s]	65[s]	55[sden]	56[s]	66	61[s]	53	52	52[sden]	59[sden]	55[s]	46	41	41	35	RES
RM10415_RES	376987.6	6354606.7	50[s]	53[s]	57[s]	63[s]	53[sden]	54[s]	64	59[s]	51	50	50[sden]	57[sden]	53[s]	46	41	41	35	RES
RM10416_RES	377018.1	6354605.1	50[s]	53[s]	57[s]	63[s]	53[sden]	54[s]	64	59[s]	51	50	50[sden]	57[sden]	53[s]	46	41	41	35	RES
RM10417_RES	377124.3	6354605.2	53[s]	56[s]	60[s]	66[s]	56[sden]	57[s]	67	62[s]	54	53	53[sden]	60[sden]	56[s]	46	41	41	35	RES
RM10418_RES	376969.7	6354602.0	49[s]	52[s]	56[s]	62[s]	52[sden]	53[s]	63	58[s]	50	49	49[sden]	56[sden]	52[s]	46	41	41	35	RES
RM10419_RES	377034.4	6354598.6	51[s]	54[s]	58[s]	64[s]	54[sden]	55[s]	65	60[s]	52	51	51[sden]	58[sden]	54[s]	46	41	41	35	RES
RM10420_RES	377045.5	6354593.7	51[s]	54[s]	58[s]	64[s]	54[sden]	55[s]	65	60[s]	52	51	51[sden]	58[sden]	54[s]	46	41	41	35	RES
RM10421_RES	377059.9	6354581.6	52[s]	55[s]	59[s]	65[s]	55[sden]	56[s]	66	61[s]	53	52	52[sden]	59[sden]	55[s]	46	41	41	35	RES
RM10422_RES	377072.2	6354577.8	44	47[s]	51[s]	57[s]	47[sden]	48[s]	58	53[s]	45	44	44[den]	51[sden]	47[s]	46	41	41	35	RES
RM10423_RES	377072.6	6354565.7	52[s]	55[s]	59[s]	65[s]	55[sden]	56[s]	66	61[s]	53	52	52[sden]	59[sden]	55[s]	46	41	41	35	RES
RM10424_RES	377087.3	6354564.9	54[s]	57[s]	61[s]	67[s]	57[sden]	58[s]	68	63[s]	55	54	54[sden]	61[sden]	57[s]	46	41	41	35	RES
RM10425_RES	377100.6	6354558.9	55[s]	58[s]	62[s]	68[s]	58[sden]	59[s]	69	64[s]	56	55	55[sden]	62[sden]	58[s]	46	41	41	35	RES
RM10426_RES	377113.7	6354555.3	56[s]	59[s]	63[s]	69[s]	59[sden]	60[s]	70	65[s]	57	56	56[sden]	63[sden]	59[s]	46	41	41	35	RES
RM10438_RES	377093.0	6354514.2	58[s]	61[s]	65[s]	71[s]	61[sden]	62[s]	72	67[s]	59	58	58[sden]	65[sden]	61[s]	46	41	41	35	RES
RM10439_RES	377107.7	6354512.9	59[s]	62[s]	66[s]	72[s]	62[sden]	63[s]	73	68[s]	60	59	59[sden]	66[sden]	62[s]	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10447_RES	377439.8	6354464.1	33	36	40	46	36	37	47	42	34	33	33	40^{n}	36	66	61	54	38	RES
RM10448_RES	377458.6	6354454.8	32	35	39	45	35	36	46	41	33	32	32	39^{n}	35	66	61	54	38	RES
RM10454_RES	377429.0	6354431.2	34	37	41	47	37	38	48	43	35	34	34	41^{n}	37	66	61	54	38	RES
RM10460_RES	377447.2	6354408.3	33	36	40	46	36	37	47	42	34	33	33	40^{n}	36	66	61	54	38	RES
RM10463_RES	377427.8	6354396.8	34	37	41	47	37	38	48	43	35	34	34	41^{n}	37	66	61	54	38	RES
RM10470_RES	376564.8	6354388.1	40	43	47^{s}	53^{s}	43^{den}	44	54	49^{s}	41	40	40^{n}	47^{sden}	43	46	41	41	35	RES
RM10480_RES	377392.7	6354359.1	37	40	44	50	40^{n}	41	51	46	38	37	37	44^{n}	40	66	61	54	38	RES
RM10482_RES	376525.6	6354356.2	35	38	42	48^{s}	38^{n}	39	49	44	36	35	35	42^{den}	38	46	41	41	35	RES
RM10484_RES	376604.3	6354354.4	41	44	48^{s}	54^{s}	44^{den}	45	55	50^{s}	42	41	41^{n}	48^{sden}	44	46	41	41	35	RES
RM10485_RES	376542.0	6354352.6	36	39	43	49^{s}	39^{n}	40	50	45	37	36	36^{n}	43^{den}	39	46	41	41	35	RES
RM10488_RES	377423.3	6354350.8	32	35	39	45	35	36	46	41	33	32	32	39^{n}	35	66	61	54	38	RES
RM10490_RES	376729.9	6354350.2	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
RM10495_RES	377365.9	6354341.1	39	42	46	52	42^{n}	43	53	48	40	39	39^{n}	46^{n}	42	66	61	54	38	RES
RM10497_RES	376616.9	6354336.6	41	44	48^{s}	54^{s}	44^{den}	45	55	50^{s}	42	41	41^{n}	48^{sden}	44	46	41	41	35	RES
RM10498_RES	376886.3	6354337.2	50^{s}	53^{s}	57^{s}	63^{s}	53^{sden}	54^{s}	64	59^{s}	51	50	50^{sden}	57^{sden}	53^{s}	46	41	41	35	RES
RM10503_RES	376863.5	6354333.1	46	49^{s}	53^{s}	59^{s}	49^{sden}	50^{s}	60	55^{s}	47	46	46^{den}	53^{sden}	49^{s}	46	41	41	35	RES
RM10505_RES	376631.3	6354327.3	40	43	47^{s}	53^{s}	43^{den}	44	54	49^{s}	41	40	40^{n}	47^{sden}	43	46	41	41	35	RES
RM10506_RES	376566.8	6354326.8	32	35	39	45	35	36	46	41	33	32	32	39^{n}	35	46	41	41	35	RES
RM10508_RES	377363.5	6354326.3	39	42	46	52	42^{n}	43	53	48	40	39	39^{n}	46^{n}	42	66	61	54	38	RES
RM10509_RES	376645.0	6354322.7	40	43	47^{s}	53^{s}	43^{den}	44	54	49^{s}	41	40	40^{n}	47^{sden}	43	46	41	41	35	RES
RM10510_RES	376901.8	6354322.8	50^{s}	53^{s}	57^{s}	63^{s}	53^{sden}	54^{s}	64	59^{s}	51	50	50^{sden}	57^{sden}	53^{s}	46	41	41	35	RES
RM10516_RES	376849.2	6354318.7	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
RM10517_RES	377425.8	6354318.4	33	36	40	46	36	37	47	42	34	33	33	40^{n}	36	66	61	54	38	RES
RM10518_RES	377396.4	6354315.8	36	39	43	49	39^{n}	40	50	45	37	36	36	43^{n}	39	66	61	54	38	RES
RM10521_RES	377357.9	6354309.1	44	47	51	57	47^{n}	48	58	53	45	44	44^{n}	51^{n}	47	66	61	54	38	RES
RM10524_RES	376907.7	6354304.1	51^{s}	54^{s}	58^{s}	64^{s}	54^{sden}	55^{s}	65	60^{s}	52	51	51^{sden}	58^{sden}	54^{s}	46	41	41	35	RES
RM10527_RES	376528.6	6354298.9	31	34	38	44	34	35	45	40	32	31	31	38^{n}	34	46	41	41	35	RES
RM10528_RES	376852.5	6354298.6	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
RM10531_RES	376543.0	6354295.1	31	34	38	44	34	35	45	40	32	31	31	38^{n}	34	46	41	41	35	RES

Notes:

^{s} = exceeds standard hours criteria, ^{d} = exceeds OOHW period 1 day criteria, ^{e} = exceeds OOHW period 1 evening criteria, ^{n} = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10532_RES	376558.7	6354293.9	33	36	40	46	36^{n}	37	47	42	34	33	33	40^{n}	36	46	41	41	35	RES
RM10535_RES	376572.5	6354292.3	34	37	41	47^{s}	37^{n}	38	48	43	35	34	34	41^{n}	37	46	41	41	35	RES
RM10537_RES	377352.2	6354291.8	44	47	51	57	47^{n}	48	58	53	45	44	44^{n}	51^{n}	47	66	61	54	38	RES
RM10539_RES	376902.6	6354289.8	50^{s}	53^{s}	57^{s}	63^{s}	53^{sden}	54^{s}	64	59^{s}	51	50	50^{sden}	57^{sden}	53^{s}	46	41	41	35	RES
RM10541_RES	376947.2	6354288.1	52^{s}	55^{s}	59^{s}	65^{s}	55^{sden}	56^{s}	66	61^{s}	53	52	52^{sden}	59^{sden}	55^{s}	46	41	41	35	RES
RM10542_RES	376589.3	6354288.5	36	39	43	49^{s}	39^{n}	40	50	45	37	36	36^{n}	43^{den}	39	46	41	41	35	RES
RM10543_RES	376673.9	6354286.2	40	43	47^{s}	53^{s}	43^{den}	44	54	49^{s}	41	40	40^{n}	47^{sden}	43	46	41	41	35	RES
RM10545_RES	376611.0	6354282.7	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES
RM10546_RES	376850.7	6354282.2	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
RM10547_RES	377403.7	6354280.5	38	41	45	51	41^{n}	42	52	47	39	38	38	45^{n}	41	66	61	54	38	RES
RM10552_RES	376795.6	6354276.3	29	32	36	42	32	33	43	38	30	29	29	36^{n}	32	46	41	41	35	RES
RM10554_RES	376900.5	6354273.2	49^{s}	52^{s}	56^{s}	62^{s}	52^{sden}	53^{s}	63	58^{s}	50	49	49^{sden}	56^{sden}	52^{s}	46	41	41	35	RES
RM10555_RES	376939.3	6354271.0	51^{s}	54^{s}	58^{s}	64^{s}	54^{sden}	55^{s}	65	60^{s}	52	51	51^{sden}	58^{sden}	54^{s}	46	41	41	35	RES
RM10556_RES	377337.7	6354271.0	43	46	50	56	46^{n}	47	57	52	44	43	43^{n}	50^{n}	46	66	61	54	38	RES
RM10557_RES	376853.5	6354265.0	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES
RM10558_RES	376694.9	6354263.3	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES
RM10564_RES	376902.0	6354256.6	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
RM10566_RES	376937.8	6354255.0	51^{s}	54^{s}	58^{s}	64^{s}	54^{sden}	55^{s}	65	60^{s}	52	51	51^{sden}	58^{sden}	54^{s}	46	41	41	35	RES
RM10567_RES	376530.4	6354253.2	29	32	36	42	32	33	43	38	30	29	29	36^{n}	32	46	41	41	35	RES
RM10569_RES	376548.2	6354251.5	32	35	39	45	35	36	46	41	33	32	32	39^{n}	35	46	41	41	35	RES
RM10572_RES	376569.3	6354246.5	33	36	40	46	36^{n}	37	47	42	34	33	33	40^{n}	36	46	41	41	35	RES
RM10574_RES	377321.1	6354244.0	46	49	53	59	49^{n}	50	60	55	47	46	46^{n}	53^{n}	49	66	61	54	38	RES
RM10575_RES	377338.4	6354244.1	40	43	47	53	43^{n}	44	54	49	41	40	40^{n}	47^{n}	43	66	61	54	38	RES
RM10577_RES	376588.5	6354242.3	33	36	40	46	36^{n}	37	47	42	34	33	33	40^{n}	36	46	41	41	35	RES
RM10578_RES	376809.8	6354241.8	29	32	36	42	32	33	43	38	30	29	29	36^{n}	32	46	41	41	35	RES
RM10580_RES	376609.3	6354241.4	35	38	42	48^{s}	38^{n}	39	49	44	36	35	35	42^{den}	38	46	41	41	35	RES
RM10581_RES	376709.8	6354240.7	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES
RM10582_RES	376975.3	6354238.4	52^{s}	55^{s}	59^{s}	65^{s}	55^{sden}	56^{s}	66	61^{s}	53	52	52^{sden}	59^{sden}	55^{s}	46	41	41	35	RES
RM10583_RES	376896.5	6354238.5	40	43	47^{s}	53^{s}	43^{den}	44	54	49^{s}	41	40	40^{n}	47^{sden}	43	46	41	41	35	RES

Notes:

^{s} = exceeds standard hours criteria, ^{d} = exceeds OOHW period 1 day criteria, ^{e} = exceeds OOHW period 1 evening criteria, ^{n} = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10585_RES	377392.7	6354236.5	37	40	44	50	40[n]	41	51	46	38	37	37	44[n]	40	66	61	54	38	RES
RM10586_RES	377358.8	6354236.3	37	40	44	50	40[n]	41	51	46	38	37	37	44[n]	40	66	61	54	38	RES
RM10587_RES	376629.1	6354236.4	35	38	42	48[s]	38[n]	39	49	44	36	35	35	42[den]	38	46	41	41	35	RES
RM10588_RES	376935.7	6354236.4	48[s]	51[s]	55[s]	61[s]	51[sden]	52[s]	62	57[s]	49	48	48[sden]	55[sden]	51[s]	46	41	41	35	RES
RM10590_RES	377373.1	6354234.4	37	40	44	50	40[n]	41	51	46	38	37	37	44[n]	40	66	61	54	38	RES
RM10592_RES	376732.0	6354232.1	35	38	42	48[s]	38[n]	39	49	44	36	35	35	42[den]	38	46	41	41	35	RES
RM10593_RES	376646.9	6354231.8	36	39	43	49[s]	39[n]	40	50	45	37	36	36[n]	43[den]	39	46	41	41	35	RES
RM10595_RES	377422.0	6354229.2	35	38	42	48[s]	38[n]	39	49	44	36	35	35	42[den]	38	46	41	41	35	RES
RM10596_RES	376860.9	6354225.6	35	38	42	48[s]	38[n]	39	49	44	36	35	35	42[den]	38	46	41	41	35	RES
RM10599_RES	377449.2	6354222.4	32	35	39	45	35	36	46	41	33	32	32	39[n]	35	46	41	41	35	RES
RM10600_RES	376929.7	6354219.7	45	48[s]	52[s]	58[s]	48[sden]	49[s]	59	54[s]	46	45	45[den]	52[sden]	48[s]	46	41	41	35	RES
RM10603_RES	376972.8	6354216.8	52[s]	55[s]	59[s]	65[s]	55[sden]	56[s]	66	61[s]	53	52	52[sden]	59[sden]	55[s]	46	41	41	35	RES
RM10605_RES	376906.8	6354214.5	38	41	45	51[s]	41[n]	42	52	47[s]	39	38	38[n]	45[den]	41	46	41	41	35	RES
RM10607_RES	376994.3	6354212.3	53[s]	56[s]	60[s]	66[s]	56[sden]	57[s]	67	62[s]	54	53	53[sden]	60[sden]	56[s]	46	41	41	35	RES
RM10610_RES	376633.7	6354208.2	34	37	41	47[s]	37[n]	38	48	43	35	34	34	41[n]	37	46	41	41	35	RES
RM10611_RES	376860.1	6354207.8	34	37	41	47[s]	37[n]	38	48	43	35	34	34	41[n]	37	46	41	41	35	RES
RM10613_RES	377061.4	6354204.8	57[s]	60[s]	64[s]	70[s]	60[sden]	61[s]	71	66[s]	58	57	57[sden]	64[sden]	60[s]	46	41	41	35	RES
RM10614_RES	377300.8	6354202.3	47	50	54	60	50[n]	51	61	56	48	47	47[n]	54[n]	50	66	61	54	38	RES
RM10615_RES	376673.5	6354200.6	36	39	43	49[s]	39[n]	40	50	45	37	36	36[n]	43[den]	39	46	41	41	35	RES
RM10617_RES	377319.0	6354200.0	40	43	47	53	43[n]	44	54	49	41	40	40[n]	47[n]	43	66	61	54	38	RES
RM10619_RES	377336.7	6354196.7	36	39	43	49	39[n]	40	50	45	37	36	36	43[n]	39	66	61	54	38	RES
RM10622_RES	376878.5	6354189.5	39	42	46	52[s]	42[den]	43	53	48[s]	40	39	39[n]	46[den]	42	46	41	41	35	RES
RM10624_RES	376656.5	6354185.5	35	38	42	48[s]	38[n]	39	49	44	36	35	35	42[den]	38	46	41	41	35	RES
RM10628_RES	377292.8	6354180.7	40	43	47	53	43[n]	44	54	49	41	40	40[n]	47[n]	43	66	61	54	38	RES
RM10630_RES	376723.3	6354180.6	36	39	43	49[s]	39[n]	40	50	45	37	36	36[n]	43[den]	39	46	41	41	35	RES
RM10631_RES	376679.3	6354180.5	35	38	42	48[s]	38[n]	39	49	44	36	35	35	42[den]	38	46	41	41	35	RES
RM10632_RES	376952.4	6354176.3	44	47[s]	51[s]	57[s]	47[sden]	48[s]	58	53[s]	45	44	44[den]	51[sden]	47[s]	46	41	41	35	RES
RM10633_RES	376861.4	6354175.4	33	36	40	46	36[n]	37	47	42	34	33	33	40[n]	36	46	41	41	35	RES
RM10634_RES	376932.9	6354172.9	41	44	48[s]	54[s]	44[den]	45	55	50[s]	42	41	41[n]	48[sden]	44	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10635_RES	376971.7	6354171.7	47[s]	50[s]	54[s]	60[s]	50[sden]	51[s]	61	56[s]	48	47	47[sden]	54[sden]	50[s]	46	41	41	35	RES
RM10636_RES	376599.7	6354171.2	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
RM10637_RES	376987.1	6354170.9	47[s]	50[s]	54[s]	60[s]	50[sden]	51[s]	61	56[s]	48	47	47[sden]	54[sden]	50[s]	46	41	41	35	RES
RM10640_RES	377466.0	6354166.2	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
RM10641_RES	377449.4	6354166.1	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
RM10642_RES	377008.2	6354162.7	48[s]	51[s]	55[s]	61[s]	51[sden]	52[s]	62	57[s]	49	48	48[sden]	55[sden]	51[s]	46	41	41	35	RES
RM10643_RES	377479.9	6354161.6	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10644_RES	376676.2	6354162.3	32	35	39	45	35	36	46	41	33	32	32	39[n]	35	46	41	41	35	RES
RM10646_RES	376844.1	6354159.9	35	38	42	48[s]	38[n]	39	49	44	36	35	35	42[den]	38	46	41	41	35	RES
RM10647_RES	377021.3	6354159.7	51[s]	54[s]	58[s]	64[s]	54[sden]	55[s]	65	60[s]	52	51	51[sden]	58[sden]	54[s]	46	41	41	35	RES
RM10648_RES	376914.1	6354159.7	38	41	45	51[s]	41[n]	42	52	47[s]	39	38	38[n]	45[den]	41	46	41	41	35	RES
RM10650_RES	377036.3	6354157.9	52[s]	55[s]	59[s]	65[s]	55[sden]	56[s]	66	61[s]	53	52	52[sden]	59[sden]	55[s]	46	41	41	35	RES
RM10651_RES	377051.1	6354157.0	54[s]	57[s]	61[s]	67[s]	57[sden]	58[s]	68	63[s]	55	54	54[sden]	61[sden]	57[s]	46	41	41	35	RES
RM10657_RES	376717.1	6354152.0	35	38	42	48[s]	38[n]	39	49	44	36	35	35	42[den]	38	46	41	41	35	RES
RM10659_RES	376968.5	6354150.9	42	45	49[s]	55[s]	45[den]	46	56	51[s]	43	42	42[den]	49[sden]	45	46	41	41	35	RES
RM10661_RES	376985.4	6354149.3	41	44	48[s]	54[s]	44[den]	45	55	50[s]	42	41	41[n]	48[sden]	44	46	41	41	35	RES
RM10662_RES	377086.2	6354147.5	55	58	62	68[s]	58[en]	59	69	64	56	55	55[en]	62[den]	58	66	61	54	38	RES
RM10664_RES	377409.3	6354145.1	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
RM10665_RES	376598.2	6354145.3	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
RM10667_RES	376775.5	6354144.4	35	38	42	48[s]	38[n]	39	49	44	36	35	35	42[den]	38	46	41	41	35	RES
RM10669_RES	376898.9	6354142.4	38	41	45	51[s]	41[n]	42	52	47[s]	39	38	38[n]	45[den]	41	46	41	41	35	RES
RM10670_RES	376820.4	6354142.0	35	38	42	48[s]	38[n]	39	49	44	36	35	35	42[den]	38	46	41	41	35	RES
RM10671_RES	376670.0	6354140.4	34	37	41	47[s]	37[n]	38	48	43	35	34	34	41[n]	37	46	41	41	35	RES
RM10672_RES	376933.0	6354138.3	42	45	49[s]	55[s]	45[den]	46	56	51[s]	43	42	42[den]	49[sden]	45	46	41	41	35	RES
RM10674_RES	376568.6	6354134.7	31	34	38	44	34	35	45	40	32	31	31	38[n]	34	46	41	41	35	RES
RM10676_RES	376981.2	6354131.9	33	36	40	46	36[n]	37	47	42	34	33	33	40[n]	36	46	41	41	35	RES
RM10677_RES	376611.9	6354130.8	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
RM10679_RES	377004.5	6354129.6	35	38	42	48[s]	38[n]	39	49	44	36	35	35	42[den]	38	46	41	41	35	RES
RM10680_RES	376809.3	6354129.5	34	37	41	47[s]	37[n]	38	48	43	35	34	34	41[n]	37	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10682_RES	376632.1	6354125.6	31	34	38	44	34	35	45	40	32	31	31	38^{n}	34	46	41	41	35	RES
RM10683_RES	376889.3	6354126.4	35	38	42	48^{s}	38^{n}	39	49	44	36	35	35	42^{den}	38	46	41	41	35	RES
RM10685_RES	376665.8	6354125.5	32	35	39	45	35	36	46	41	33	32	32	39^{n}	35	46	41	41	35	RES
RM10686_RES	377035.8	6354125.3	50^{s}	53^{s}	57^{s}	63^{s}	53^{sden}	54^{s}	64	59^{s}	51	50	50^{sden}	57^{sden}	53^{s}	46	41	41	35	RES
RM10688_RES	376922.6	6354119.4	41	44	48^{s}	54^{s}	44^{den}	45	55	50^{s}	42	41	41^{n}	48^{sden}	44	46	41	41	35	RES
RM10689_RES	377082.2	6354117.7	53	56	60	66	56^{en}	57	67	62	54	53	53^{n}	60^{en}	56	66	61	54	38	RES
RM10690_RES	376730.3	6354115.9	34	37	41	47^{s}	37^{n}	38	48	43	35	34	34	41^{n}	37	46	41	41	35	RES
RM10691_RES	376753.6	6354116.1	35	38	42	48^{s}	38^{n}	39	49	44	36	35	35	42^{den}	38	46	41	41	35	RES
RM10692_RES	376660.7	6354113.3	34	37	41	47^{s}	37^{n}	38	48	43	35	34	34	41^{n}	37	46	41	41	35	RES
RM10693_RES	376813.3	6354113.0	36	39	43	49^{s}	39^{n}	40	50	45	37	36	36^{n}	43^{den}	39	46	41	41	35	RES
RM10694_RES	376712.2	6354113.3	34	37	41	47^{s}	37^{n}	38	48	43	35	34	34	41^{n}	37	46	41	41	35	RES
RM10695_RES	376868.0	6354112.3	34	37	41	47^{s}	37^{n}	38	48	43	35	34	34	41^{n}	37	46	41	41	35	RES
RM10696_RES	376981.4	6354111.8	38	41	45	51^{s}	41^{n}	42	52	47^{s}	39	38	38^{n}	45^{den}	41	46	41	41	35	RES
RM10697_RES	376792.8	6354112.2	35	38	42	48^{s}	38^{n}	39	49	44	36	35	35	42^{den}	38	46	41	41	35	RES
RM10700_RES	376770.2	6354105.7	35	38	42	48^{s}	38^{n}	39	49	44	36	35	35	42^{den}	38	46	41	41	35	RES
RM10701_RES	377040.1	6354102.7	47^{s}	50^{s}	54^{s}	60^{s}	50^{sden}	51^{s}	61	56^{s}	48	47	47^{sden}	54^{sden}	50^{s}	46	41	41	35	RES
RM10702_RES	376922.7	6354100.0	41	44	48^{s}	54^{s}	44^{den}	45	55	50^{s}	42	41	41^{n}	48^{sden}	44	46	41	41	35	RES
RM10703_RES	377251.5	6354098.4	50	53	57	63	53^{n}	54	64	59	51	50	50^{n}	57^{en}	53	66	61	54	38	RES
RM10706_RES	376813.5	6354095.4	36	39	43	49^{s}	39^{n}	40	50	45	37	36	36^{n}	43^{den}	39	46	41	41	35	RES
RM10707_RES	376969.0	6354093.5	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
RM10708_RES	376869.1	6354093.5	36	39	43	49^{s}	39^{n}	40	50	45	37	36	36^{n}	43^{den}	39	46	41	41	35	RES
RM10709_RES	377176.5	6354088.6	52	55	59	65	55^{en}	56	66	61	53	52	52^{n}	59^{en}	55	66	61	54	38	RES
RM10710_RES	377032.0	6354088.1	46	49^{s}	53^{s}	59^{s}	49^{sden}	50^{s}	60	55^{s}	47	46	46^{den}	53^{sden}	49^{s}	46	41	41	35	RES
RM10712_RES	377085.4	6354081.5	51	54	58	64	54^{n}	55	65	60	52	51	51^{n}	58^{en}	54	66	61	54	38	RES
RM10713_RES	376787.3	6354082.0	32	35	39	45	35	36	46	41	33	32	32	39^{n}	35	46	41	41	35	RES
RM10714_RES	376921.6	6354079.6	41	44	48^{s}	54^{s}	44^{den}	45	55	50^{s}	42	41	41^{n}	48^{sden}	44	46	41	41	35	RES
RM10716_RES	377274.9	6354078.5	45	48	52	58	48^{n}	49	59	54	46	45	45^{n}	52^{n}	48	66	61	54	38	RES
RM10717_RES	377029.7	6354075.5	47^{s}	50^{s}	54^{s}	60^{s}	50^{sden}	51^{s}	61	56^{s}	48	47	47^{sden}	54^{sden}	50^{s}	46	41	41	35	RES
RM10718_RES	376808.8	6354076.3	35	38	42	48^{s}	38^{n}	39	49	44	36	35	35	42^{den}	38	46	41	41	35	RES

Notes:

^{s} = exceeds standard hours criteria, ^{d} = exceeds OOHW period 1 day criteria, ^{e} = exceeds OOHW period 1 evening criteria, ^{n} = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10721_RES	376856.5	6354074.7	31	34	38	44	34	35	45	40	32	31	31	38^{n}	34	46	41	41	35	RES
RM10722_RES	376870.1	6354073.1	36	39	43	49^{s}	39^{n}	40	50	45	37	36	36^{n}	43^{den}	39	46	41	41	35	RES
RM10723_RES	376962.4	6354072.4	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
RM10724_RES	377167.2	6354070.9	51	54	58	64	54^{n}	55	65	60	52	51	51^{n}	58^{en}	54	66	61	54	38	RES
RM10726_RES	376616.2	6354069.3	31	34	38	44	34	35	45	40	32	31	31	38^{n}	34	46	41	41	35	RES
RM10727_RES	377302.5	6354067.2	37	40	44	50	40^{n}	41	51	46	38	37	37	44^{n}	40	66	61	54	38	RES
RM10730_RES	376892.7	6354066.1	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES
RM10731_RES	377076.6	6354066.0	46	49	53	59	49^{n}	50	60	55	47	46	46^{n}	53^{n}	49	66	61	54	38	RES
RM10733_RES	377233.4	6354064.9	46	49	53	59	49^{n}	50	60	55	47	46	46^{n}	53^{n}	49	66	61	54	38	RES
RM10736_RES	376921.0	6354063.1	41	44	48^{s}	54^{s}	44^{den}	45	55	50^{s}	42	41	41^{n}	48^{sden}	44	46	41	41	35	RES
RM10738_RES	376679.4	6354062.0	29	32	36	42	32	33	43	38	30	29	29	36^{n}	32	46	41	41	35	RES
RM10739_RES	377018.1	6354061.4	47^{s}	50^{s}	54^{s}	60^{s}	50^{sden}	51^{s}	61	56^{s}	48	47	47^{sden}	54^{sden}	50^{s}	46	41	41	35	RES
RM10741_RES	377037.4	6354059.1	48^{s}	51^{s}	55^{s}	61^{s}	51^{sden}	52^{s}	62	57^{s}	49	48	48^{sden}	55^{sden}	51^{s}	46	41	41	35	RES
RM10742_RES	376864.5	6354059.4	36	39	43	49^{s}	39^{n}	40	50	45	37	36	36^{n}	43^{den}	39	46	41	41	35	RES
RM10745_RES	376738.7	6354057.1	29	32	36	42	32	33	43	38	30	29	29	36^{n}	32	46	41	41	35	RES
RM10748_RES	376890.5	6354055.1	36	39	43	49^{s}	39^{n}	40	50	45	37	36	36^{n}	43^{den}	39	46	41	41	35	RES
RM10749_RES	377324.5	6354054.9	34	37	41	47^{s}	37^{n}	38	48	43	35	34	34	41^{n}	37	46	41	41	35	RES
RM10750_RES	376960.7	6354054.0	45	48^{s}	52^{s}	58^{s}	48^{sden}	49^{s}	59	54^{s}	46	45	45^{den}	52^{sden}	48^{s}	46	41	41	35	RES
RM10751_RES	377077.1	6354052.7	50	53	57	63	53^{n}	54	64	59	51	50	50^{n}	57^{en}	53	66	61	54	38	RES
RM10753_RES	377163.2	6354052.1	50	53	57	63	53^{n}	54	64	59	51	50	50^{n}	57^{en}	53	66	61	54	38	RES
RM10754_RES	377341.3	6354051.7	33	36	40	46	36^{n}	37	47	42	34	33	33	40^{n}	36	46	41	41	35	RES
RM10755_RES	376912.6	6354050.3	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
RM10756_RES	377358.9	6354048.8	31	34	38	44	34	35	45	40	32	31	31	38^{n}	34	46	41	41	35	RES
RM10757_RES	377225.3	6354048.9	45	48	52	58	48^{n}	49	59	54	46	45	45^{n}	52^{n}	48	66	61	54	38	RES
RM10758_RES	376804.5	6354048.7	34	37	41	47^{s}	37^{n}	38	48	43	35	34	34	41^{n}	37	46	41	41	35	RES
RM10759_RES	376856.5	6354047.7	35	38	42	48^{s}	38^{n}	39	49	44	36	35	35	42^{den}	38	46	41	41	35	RES
RM10760_RES	377261.3	6354047.8	39	42	46	52	42^{n}	43	53	48	40	39	39^{n}	46^{n}	42	66	61	54	38	RES
RM10762_RES	377012.7	6354043.5	44	47^{s}	51^{s}	57^{s}	47^{sden}	48^{s}	58	53^{s}	45	44	44^{den}	51^{sden}	47^{s}	46	41	41	35	RES
RM10764_RES	377374.6	6354040.4	30	33	37	43	33	34	44	39	31	30	30	37^{n}	33	46	41	41	35	RES

Notes:

^{s} = exceeds standard hours criteria, ^{d} = exceeds OOHW period 1 day criteria, ^{e} = exceeds OOHW period 1 evening criteria, ^{n} = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10765_RES	377151.5	6354039.5	50	53	57	63	53^{n}	54	64	59	51	50	50^{n}	57^{en}	53	66	61	54	38	RES
RM10766_RES	376912.3	6354038.0	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
RM10768_RES	377075.3	6354036.7	49	52	56	62	52^{n}	53	63	58	50	49	49^{n}	56^{en}	52	66	61	54	38	RES
RM10770_RES	376960.7	6354036.0	45	48^{s}	52^{s}	58^{s}	48^{sden}	49^{s}	59	54^{s}	46	45	45^{den}	52^{sden}	48^{s}	46	41	41	35	RES
RM10771_RES	376759.7	6354034.8	32	35	39	45	35	36	46	41	33	32	32	39^{n}	35	46	41	41	35	RES
RM10772_RES	377216.3	6354033.6	45	48	52	58	48^{n}	49	59	54	46	45	45^{n}	52^{n}	48	66	61	54	38	RES
RM10773_RES	377388.3	6354032.3	29	32	36	42	32	33	43	38	30	29	29	36^{n}	32	46	41	41	35	RES
RM10775_RES	376857.1	6354030.0	35	38	42	48^{s}	38^{n}	39	49	44	36	35	35	42^{den}	38	46	41	41	35	RES
RM10777_RES	377257.9	6354029.0	34	37	41	47	37	38	48	43	35	34	34	41^{n}	37	66	61	54	38	RES
RM10778_RES	377403.3	6354028.0	29	32	36	42	32	33	43	38	30	29	29	36^{n}	32	46	41	41	35	RES
RM10779_RES	376909.1	6354025.6	34	37	41	47^{s}	37^{n}	38	48	43	35	34	34	41^{n}	37	46	41	41	35	RES
RM10781_RES	377024.3	6354023.6	46	49^{s}	53^{s}	59^{s}	49^{sden}	50^{s}	60	55^{s}	47	46	46^{den}	53^{sden}	49^{s}	46	41	41	35	RES
RM10782_RES	377145.5	6354023.2	49	52	56	62	52^{n}	53	63	58	50	49	49^{n}	56^{en}	52	66	61	54	38	RES
RM10785_RES	377073.0	6354022.1	49	52	56	62	52^{n}	53	63	58	50	49	49^{n}	56^{en}	52	66	61	54	38	RES
RM10791_RES	376764.7	6354019.3	31	34	38	44	34	35	45	40	32	31	31	38^{n}	34	46	41	41	35	RES
RM10793_RES	376958.7	6354017.9	43	46	50^{s}	56^{s}	46^{den}	47^{s}	57	52^{s}	44	43	43^{den}	50^{sden}	46	46	41	41	35	RES
RM10796_RES	377249.3	6354014.6	36	39	43	49	39^{n}	40	50	45	37	36	36	43^{n}	39	66	61	54	38	RES
RM10799_RES	376849.7	6354012.3	34	37	41	47^{s}	37^{n}	38	48	43	35	34	34	41^{n}	37	46	41	41	35	RES
RM10801_RES	376911.6	6354010.7	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
RM10804_RES	377322.3	6354006.6	29	32	36	42	32	33	43	38	30	29	29	36^{n}	32	46	41	41	35	RES
RM10805_RES	377143.3	6354006.6	39	42	46	52	42^{n}	43	53	48	40	39	39^{n}	46^{n}	42	66	61	54	38	RES
RM10807_RES	377002.1	6354003.5	42	45	49^{s}	55^{s}	45^{den}	46	56	51^{s}	43	42	42^{den}	49^{sden}	45	46	41	41	35	RES
RM10808_RES	377345.3	6354002.7	29	32	36	42	32	33	43	38	30	29	29	36^{n}	32	46	41	41	35	RES
RM10809_RES	376959.5	6354002.7	41	44	48^{s}	54^{s}	44^{den}	45	55	50^{s}	42	41	41^{n}	48^{sden}	44	46	41	41	35	RES
RM10810_RES	376782.3	6354002.8	32	35	39	45	35	36	46	41	33	32	32	39^{n}	35	46	41	41	35	RES
RM10811_RES	377237.5	6354001.2	34	37	41	47	37	38	48	43	35	34	34	41^{n}	37	66	61	54	38	RES
RM10813_RES	377296.2	6353999.3	30	33	37	43	33	34	44	39	31	30	30	37^{n}	33	46	41	41	35	RES
RM10814_RES	376902.0	6353998.1	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
RM10817_RES	377205.9	6353993.9	40	43	47	53	43^{n}	44	54	49	41	40	40^{n}	47^{n}	43	66	61	54	38	RES

Notes:

^{s} = exceeds standard hours criteria, ^{d} = exceeds OOHW period 1 day criteria, ^{e} = exceeds OOHW period 1 evening criteria, ^{n} = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10818_RES	376846.4	6353993.8	34	37	41	47[s]	37[n]	38	48	43	35	34	34	41[n]	37	46	41	41	35	RES
RM10820_RES	376748.5	6353991.9	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
RM10821_RES	377130.1	6353991.6	46	49	53	59	49[n]	50	60	55	47	46	46[n]	53[n]	49	66	61	54	38	RES
RM10822_RES	376953.7	6353989.3	37	40	44	50[s]	40[n]	41	51	46	38	37	37[n]	44[den]	40	46	41	41	35	RES
RM10824_RES	376861.9	6353987.1	33	36	40	46	36[n]	37	47	42	34	33	33	40[n]	36	46	41	41	35	RES
RM10825_RES	376883.3	6353985.4	34	37	41	47[s]	37[n]	38	48	43	35	34	34	41[n]	37	46	41	41	35	RES
RM10826_RES	377014.1	6353984.2	44	47[s]	51[s]	57[s]	47[sden]	48[s]	58	53[s]	45	44	44[den]	51[sden]	47[s]	46	41	41	35	RES
RM10827_RES	377070.9	6353982.8	47	50	54	60	50[n]	51	61	56	48	47	47[n]	54[n]	50	66	61	54	38	RES
RM10828_RES	376908.6	6353982.1	38	41	45	51[s]	41[n]	42	52	47[s]	39	38	38[n]	45[den]	41	46	41	41	35	RES
RM10830_RES	376781.9	6353980.3	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10833_RES	377288.4	6353977.9	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10834_RES	377203.0	6353976.5	39	42	46	52	42[n]	43	53	48	40	39	39[n]	46[n]	42	66	61	54	38	RES
RM10837_RES	377124.0	6353973.5	41	44	48	54	44[n]	45	55	50	42	41	41[n]	48[n]	44	66	61	54	38	RES
RM10838_RES	376866.8	6353973.3	33	36	40	46	36[n]	37	47	42	34	33	33	40[n]	36	46	41	41	35	RES
RM10839_RES	376987.3	6353970.2	41	44	48[s]	54[s]	44[den]	45	55	50[s]	42	41	41[n]	48[sden]	44	46	41	41	35	RES
RM10841_RES	377010.0	6353968.1	43	46	50[s]	56[s]	46[den]	47[s]	57	52[s]	44	43	43[den]	50[sden]	46	46	41	41	35	RES
RM10843_RES	377315.0	6353967.0	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10844_RES	376908.0	6353966.2	38	41	45	51[s]	41[n]	42	52	47[s]	39	38	38[n]	45[den]	41	46	41	41	35	RES
RM10856_RES	376943.7	6353958.7	40	43	47[s]	53[s]	43[den]	44	54	49[s]	41	40	40[n]	47[sden]	43	46	41	41	35	RES
RM10860_RES	376866.4	6353957.1	32	35	39	45	35	36	46	41	33	32	32	39[n]	35	46	41	41	35	RES
RM10864_RES	377190.4	6353952.8	40	43	47	53	43[n]	44	54	49	41	40	40[n]	47[n]	43	66	61	54	38	RES
RM10865_RES	376816.0	6353952.7	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM10866_RES	377061.9	6353951.6	46	49	53	59	49[n]	50	60	55	47	46	46[n]	53[n]	49	66	61	54	38	RES
RM10868_RES	376955.4	6353950.6	40	43	47[s]	53[s]	43[den]	44	54	49[s]	41	40	40[n]	47[sden]	43	46	41	41	35	RES
RM10869_RES	376970.5	6353951.0	40	43	47[s]	53[s]	43[den]	44	54	49[s]	41	40	40[n]	47[sden]	43	46	41	41	35	RES
RM10870_RES	376900.3	6353950.8	38	41	45	51[s]	41[n]	42	52	47[s]	39	38	38[n]	45[den]	41	46	41	41	35	RES
RM10871_RES	376986.0	6353948.8	42	45	49[s]	55[s]	45[den]	46	56	51[s]	43	42	42[den]	49[sden]	45	46	41	41	35	RES
RM10875_RES	377014.9	6353946.5	43	46	50[s]	56[s]	46[den]	47[s]	57	52[s]	44	43	43[den]	50[sden]	46	46	41	41	35	RES
RM10879_RES	376871.3	6353941.7	31	34	38	44	34	35	45	40	32	31	31	38[n]	34	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10881_RES	377059.6	6353938.0	46	49	53	59	49^{n}	50	60	55	47	46	46^{n}	53^{n}	49	66	61	54	38	RES
RM10883_RES	376890.4	6353932.6	30	33	37	43	33	34	44	39	31	30	30	37^{n}	33	46	41	41	35	RES
RM10892_RES	377060.4	6353920.4	45	48	52	58	48^{n}	49	59	54	46	45	45^{n}	52^{n}	48	66	61	54	38	RES
RM10901_RES	376934.3	6353912.9	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES
RM10908_RES	376948.4	6353910.1	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
RM10909_RES	376963.9	6353910.0	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
RM10913_RES	376983.4	6353908.5	41	44	48^{s}	54^{s}	44^{den}	45	55	50^{s}	42	41	41^{n}	48^{sden}	44	46	41	41	35	RES
RM10914_RES	377053.7	6353906.0	40	43	47	53	43^{n}	44	54	49	41	40	40^{n}	47^{n}	43	66	61	54	38	RES
RM10917_RES	377319.8	6353903.4	30	33	37	43	33	34	44	39	31	30	30	37^{n}	33	46	41	41	35	RES
RM10918_RES	377006.2	6353901.5	41	44	48^{s}	54^{s}	44^{den}	45	55	50^{s}	42	41	41^{n}	48^{sden}	44	46	41	41	35	RES
RM10919_RES	376913.2	6353901.5	35	38	42	48^{s}	38^{n}	39	49	44	36	35	35	42^{den}	38	46	41	41	35	RES
RM10923_RES	377305.8	6353895.2	30	33	37	43	33	34	44	39	31	30	30	37^{n}	33	46	41	41	35	RES
RM10926_RES	377053.5	6353891.6	43	46	50	56	46^{n}	47	57	52	44	43	43^{n}	50^{n}	46	66	61	54	38	RES
RM10927_RES	377216.6	6353889.5	34	37	41	47	37	38	48	43	35	34	34	41^{n}	37	66	61	54	38	RES
RM10928_RES	377281.3	6353890.5	30	33	37	43	33	34	44	39	31	30	30	37^{n}	33	46	41	41	35	RES
RM10929_RES	376965.5	6353890.1	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES
RM10931_RES	376850.7	6353887.4	31	34	38	44	34	35	45	40	32	31	31	38^{n}	34	46	41	41	35	RES
RM10934_RES	376998.7	6353881.6	40	43	47^{s}	53^{s}	43^{den}	44	54	49^{s}	41	40	40^{n}	47^{sden}	43	46	41	41	35	RES
RM10938_RES	376920.4	6353878.9	36	39	43	49^{s}	39^{n}	40	50	45	37	36	36^{n}	43^{den}	39	46	41	41	35	RES
RM10940_RES	377055.2	6353877.0	44	47	51	57	47^{n}	48	58	53	45	44	44^{n}	51^{n}	47	66	61	54	38	RES
RM10941_RES	377199.3	6353873.6	38	41	45	51	41^{n}	42	52	47	39	38	38	45^{n}	41	66	61	54	38	RES
RM10945_RES	376950.8	6353873.1	35	38	42	48^{s}	38^{n}	39	49	44	36	35	35	42^{den}	38	46	41	41	35	RES
RM10950_RES	376996.4	6353867.6	42	45	49^{s}	55^{s}	45^{den}	46	56	51^{s}	43	42	42^{den}	49^{sden}	45	46	41	41	35	RES
RM10951_RES	377279.8	6353867.6	30	33	37	43	33	34	44	39	31	30	30	37^{n}	33	46	41	41	35	RES
RM10952_RES	376851.6	6353866.8	34	37	41	47^{s}	37^{n}	38	48	43	35	34	34	41^{n}	37	46	41	41	35	RES
RM10953_RES	377395.4	6353864.9	31	34	38	44	34	35	45	40	32	31	31	38^{n}	34	46	41	41	35	RES
RM10954_RES	377338.2	6353863.3	34	37	41	47^{s}	37^{n}	38	48	43	35	34	34	41^{n}	37	46	41	41	35	RES
RM10955_RES	377056.3	6353861.6	44	47	51	57	47^{n}	48	58	53	45	44	44^{n}	51^{n}	47	66	61	54	38	RES
RM10956_RES	377615.8	6353860.6	29	32	36	42	32	33	43	38	30	29	29	36^{n}	32	46	41	41	35	RES

Notes:

^{s} = exceeds standard hours criteria, ^{d} = exceeds OOHW period 1 day criteria, ^{e} = exceeds OOHW period 1 evening criteria, ^{n} = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10958_RES	377379.7	6353860.0	32	35	39	45	35	36	46	41	33	32	32	39^{n}	35	46	41	41	35	RES
RM10960_RES	377357.5	6353856.7	33	36	40	46	36^{n}	37	47	42	34	33	33	40^{n}	36	46	41	41	35	RES
RM10962_RES	377423.1	6353855.3	29	32	36	42	32	33	43	38	30	29	29	36^{n}	32	46	41	41	35	RES
RM10963_RES	376929.9	6353854.0	37	40	44	50^{s}	40^{n}	41	51	46	38	37	37^{n}	44^{den}	40	46	41	41	35	RES
RM10965_RES	377600.1	6353853.1	29	32	36	42	32	33	43	38	30	29	29	36^{n}	32	46	41	41	35	RES
RM10966_RES	377197.6	6353849.9	39	42	46	52	42^{n}	43	53	48	40	39	39^{n}	46^{n}	42	66	61	54	38	RES
RM10967_RES	377321.9	6353849.6	35	38	42	48^{s}	38^{n}	39	49	44	36	35	35	42^{den}	38	46	41	41	35	RES
RM10968_RES	377531.6	6353848.6	29	32	36	42	32	33	43	38	30	29	29	36^{n}	32	46	41	41	35	RES
RM10970_RES	377295.2	6353848.0	34	37	41	47^{s}	37^{n}	38	48	43	35	34	34	41^{n}	37	46	41	41	35	RES
RM10971_RES	377053.7	6353846.8	39	42	46	52	42^{n}	43	53	48	40	39	39^{n}	46^{n}	42	66	61	54	38	RES
RM10974_RES	377067.9	6353844.7	42	45	49	55	45^{n}	46	56	51	43	42	42^{n}	49^{n}	45	66	61	54	38	RES
RM10977_RES	376994.7	6353842.5	39	42	46	52^{s}	42^{den}	43	53	48^{s}	40	39	39^{n}	46^{den}	42	46	41	41	35	RES
RM10978_RES	376876.5	6353839.6	30	33	37	43	33	34	44	39	31	30	30	37^{n}	33	46	41	41	35	RES
RM10979_RES	377591.8	6353840.5	29	32	36	42	32	33	43	38	30	29	29	36^{n}	32	46	41	41	35	RES
RM10980_RES	377254.7	6353839.9	34	37	41	47^{s}	37^{n}	38	48	43	35	34	34	41^{n}	37	46	41	41	35	RES
RM10981_RES	377231.4	6353838.3	36	39	43	49	39^{n}	40	50	45	37	36	36	43^{n}	39	66	61	54	38	RES
RM10982_RES	377202.7	6353837.8	38	41	45	51	41^{n}	42	52	47	39	38	38	45^{n}	41	66	61	54	38	RES
RM10983_RES	377430.8	6353836.9	29	32	36	42	32	33	43	38	30	29	29	36^{n}	32	46	41	41	35	RES
RM10985_RES	376935.6	6353834.5	36	39	43	49^{s}	39^{n}	40	50	45	37	36	36^{n}	43^{den}	39	46	41	41	35	RES
RM10987_RES	377338.8	6353834.1	36	39	43	49^{s}	39^{n}	40	50	45	37	36	36^{n}	43^{den}	39	46	41	41	35	RES
RM10988_RES	377051.2	6353832.5	40	43	47	53	43^{n}	44	54	49	41	40	40^{n}	47^{n}	43	66	61	54	38	RES
RM10989_RES	376844.7	6353832.3	33	36	40	46	36^{n}	37	47	42	34	33	33	40^{n}	36	46	41	41	35	RES
RM10990_RES	377578.5	6353830.9	30	33	37	43	33	34	44	39	31	30	30	37^{n}	33	46	41	41	35	RES
RM10991_RES	377282.2	6353828.4	35	38	42	48^{s}	38^{n}	39	49	44	36	35	35	42^{den}	38	46	41	41	35	RES
RM10993_RES	376866.9	6353826.4	32	35	39	45	35	36	46	41	33	32	32	39^{n}	35	46	41	41	35	RES
RM10994_RES	377375.0	6353824.7	33	36	40	46	36^{n}	37	47	42	34	33	33	40^{n}	36	46	41	41	35	RES
RM10995_RES	376988.9	6353825.1	40	43	47^{s}	53^{s}	43^{den}	44	54	49^{s}	41	40	40^{n}	47^{sden}	43	46	41	41	35	RES
RM10996_RES	377299.6	6353822.6	36	39	43	49^{s}	39^{n}	40	50	45	37	36	36^{n}	43^{den}	39	46	41	41	35	RES
RM10997_RES	376883.5	6353822.9	32	35	39	45	35	36	46	41	33	32	32	39^{n}	35	46	41	41	35	RES

Notes:

^{s} = exceeds standard hours criteria, ^{d} = exceeds OOHW period 1 day criteria, ^{e} = exceeds OOHW period 1 evening criteria, ^{n} = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10998_RES	377425.1	6353822.7	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
RM10999_RES	377566.6	6353821.5	31	34	38	44	34	35	45	40	32	31	31	38[n]	34	46	41	41	35	RES
RM11000_RES	377515.8	6353819.0	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM11001_RES	377044.9	6353816.8	37	40	44	50	40[n]	41	51	46	38	37	37	44[n]	40	66	61	54	38	RES
RM11002_RES	376943.2	6353814.2	37	40	44	50[s]	40[n]	41	51	46	38	37	37[n]	44[den]	40	46	41	41	35	RES
RM11003_RES	377421.6	6353806.7	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
RM11004_RES	377560.6	6353807.1	32	35	39	45	35	36	46	41	33	32	32	39[n]	35	46	41	41	35	RES
RM11006_RES	377200.4	6353806.1	38	41	45	51	41[n]	42	52	47	39	38	38	45[n]	41	66	61	54	38	RES
RM11007_RES	377507.7	6353806.1	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM11008_RES	377034.4	6353804.1	37	40	44	50	40[n]	41	51	46	38	37	37	44[n]	40	66	61	54	38	RES
RM11009_RES	376979.3	6353804.3	35	38	42	48[s]	38[n]	39	49	44	36	35	35	42[den]	38	46	41	41	35	RES
RM11010_RES	377415.6	6353792.1	31	34	38	44	34	35	45	40	32	31	31	38[n]	34	46	41	41	35	RES
RM11011_RES	377475.0	6353790.4	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM11012_RES	377328.9	6353789.3	36	39	43	49[s]	39[n]	40	50	45	37	36	36[n]	43[den]	39	46	41	41	35	RES
RM11013_RES	377032.0	6353788.4	37	40	44	50	40[n]	41	51	46	38	37	37	44[n]	40	66	61	54	38	RES
RM11016_RES	377229.5	6353786.6	38	41	45	51	41[n]	42	52	47	39	38	38	45[n]	41	66	61	54	38	RES
RM11017_RES	377201.8	6353786.0	38	41	45	51	41[n]	42	52	47	39	38	38	45[n]	41	66	61	54	38	RES
RM11018_RES	377502.2	6353786.2	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
RM11020_RES	377253.1	6353780.7	37	40	44	50[s]	40[n]	41	51	46	38	37	37[n]	44[den]	40	46	41	41	35	RES
RM11021_RES	377296.5	6353779.1	36	39	43	49[s]	39[n]	40	50	45	37	36	36[n]	43[den]	39	46	41	41	35	RES
RM11022_RES	377283.7	6353777.5	36	39	43	49[s]	39[n]	40	50	45	37	36	36[n]	43[den]	39	46	41	41	35	RES
RM11024_RES	377267.5	6353775.7	37	40	44	50[s]	40[n]	41	51	46	38	37	37[n]	44[den]	40	46	41	41	35	RES
RM11025_RES	377463.3	6353775.3	29	32	36	42	32	33	43	38	30	29	29	36[n]	32	46	41	41	35	RES
RM11026_RES	377213.3	6353772.9	37	40	44	50	40[n]	41	51	46	38	37	37	44[n]	40	66	61	54	38	RES
RM11027_RES	377034.4	6353772.5	37	40	44	50	40[n]	41	51	46	38	37	37	44[n]	40	66	61	54	38	RES
RM11028_RES	377318.2	6353770.7	35	38	42	48[s]	38[n]	39	49	44	36	35	35	42[den]	38	46	41	41	35	RES
RM11029_RES	377501.9	6353768.9	30	33	37	43	33	34	44	39	31	30	30	37[n]	33	46	41	41	35	RES
RM11030_RES	377148.0	6353765.2	37	40	44	50	40[n]	41	51	46	38	37	37	44[n]	40	66	61	54	38	RES
RM11032_RES	377215.5	6353759.4	37	40	44	50	40[n]	41	51	46	38	37	37	44[n]	40	66	61	54	38	RES

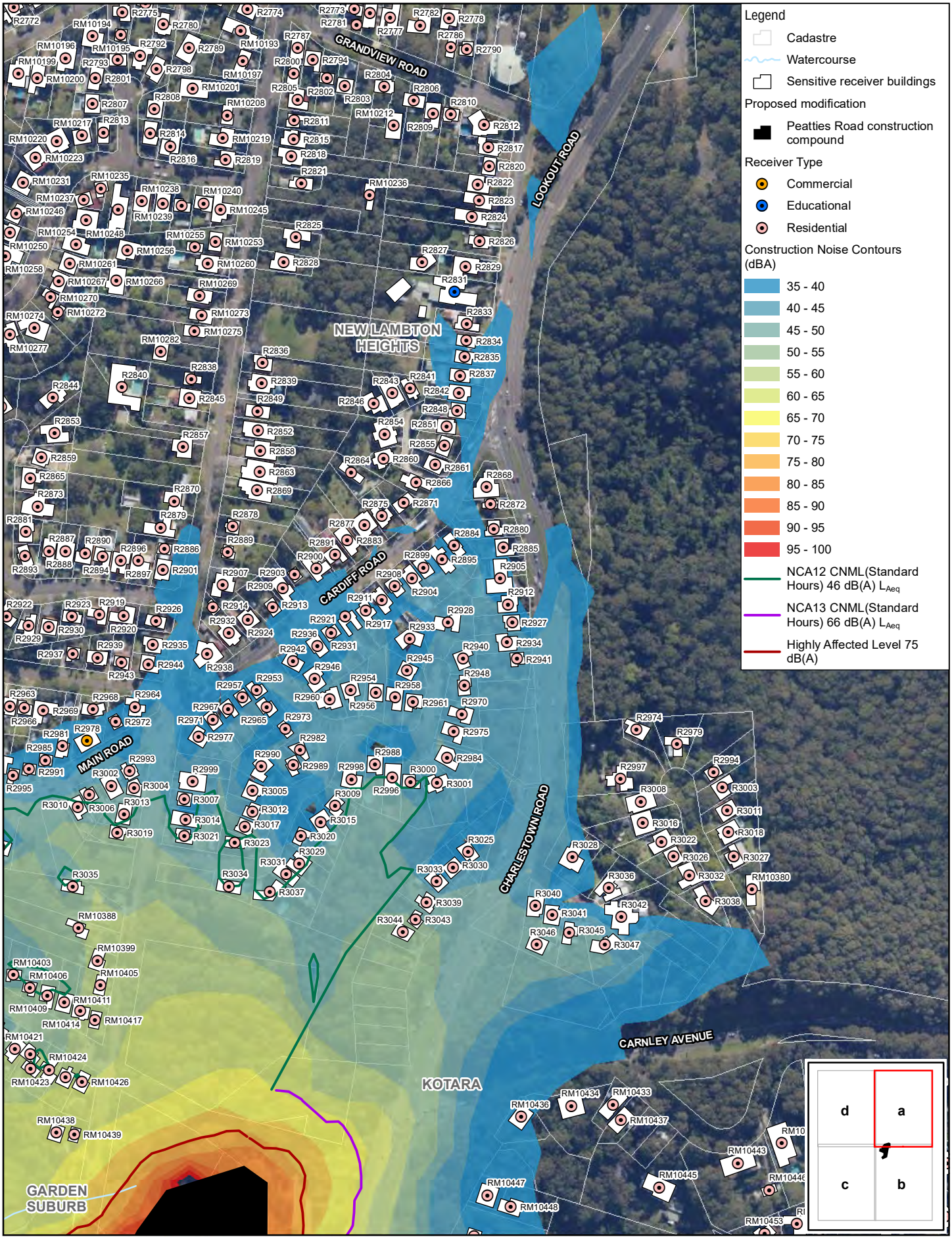
Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM11033_RES	377032.4	6353756.6	35	38	42	48	38	39	49	44	36	35	35	42[n]	38	66	61	54	38	RES
RM11034_RES	377459.1	6353756.3	31	34	38	44	34	35	45	40	32	31	31	38[n]	34	46	41	41	35	RES
RM11035_RES	377498.5	6353753.7	31	34	38	44	34	35	45	40	32	31	31	38[n]	34	46	41	41	35	RES
RM11036_RES	377126.0	6353753.2	37	40	44	50	40[n]	41	51	46	38	37	37	44[n]	40	66	61	54	38	RES
RM11037_RES	377149.7	6353751.0	37	40	44	50	40[n]	41	51	46	38	37	37	44[n]	40	66	61	54	38	RES
RM11038_RES	377251.9	6353749.8	36	39	43	49[s]	39[n]	40	50	45	37	36	36[n]	43[den]	39	46	41	41	35	RES
RM11039_RES	377204.1	6353742.7	35	38	42	48	38	39	49	44	36	35	35	42[n]	38	66	61	54	38	RES
RM11040_RES	377450.4	6353742.9	31	34	38	44	34	35	45	40	32	31	31	38[n]	34	46	41	41	35	RES
RM11042_RES	377025.1	6353740.5	33	36	40	46	36	37	47	42	34	33	33	40[n]	36	66	61	54	38	RES
RM11043_RES	377124.1	6353739.8	38	41	45	51	41[n]	42	52	47	39	38	38	45[n]	41	66	61	54	38	RES
RM11044_RES	377154.3	6353734.0	36	39	43	49	39[n]	40	50	45	37	36	36	43[n]	39	66	61	54	38	RES
RM11045_RES	377441.7	6353730.8	31	34	38	44	34	35	45	40	32	31	31	38[n]	34	46	41	41	35	RES
RM11046_RES	377023.6	6353722.8	36	39	43	49	39[n]	40	50	45	37	36	36	43[n]	39	66	61	54	38	RES
RM11047_RES	377248.7	6353720.9	36	39	43	49[s]	39[n]	40	50	45	37	36	36[n]	43[den]	39	46	41	41	35	RES
RM11048_RES	377205.5	6353720.0	34	37	41	47	37	38	48	43	35	34	34	41[n]	37	66	61	54	38	RES
RM11049_RES	377116.3	6353720.3	37	40	44	50	40[n]	41	51	46	38	37	37	44[n]	40	66	61	54	38	RES
RM11051_RES	377152.1	6353717.2	36	39	43	49	39[n]	40	50	45	37	36	36	43[n]	39	66	61	54	38	RES
RM11052_RES	377114.5	6353705.1	36	39	43	49	39[n]	40	50	45	37	36	36	43[n]	39	66	61	54	38	RES
RM11053_RES	377149.2	6353702.2	36	39	43	49	39[n]	40	50	45	37	36	36	43[n]	39	66	61	54	38	RES
RM11054_RES	377103.8	6353689.9	36	39	43	49	39[n]	40	50	45	37	36	36	43[n]	39	66	61	54	38	RES
RM11055_RES	377202.2	6353688.5	36	39	43	49	39[n]	40	50	45	37	36	36	43[n]	39	66	61	54	38	RES
RM11056_RES	377149.4	6353687.7	36	39	43	49	39[n]	40	50	45	37	36	36	43[n]	39	66	61	54	38	RES
RM11057_RES	377117.1	6353687.3	36	39	43	49	39[n]	40	50	45	37	36	36	43[n]	39	66	61	54	38	RES
RM11058_RES	377129.0	6353677.7	36	39	43	49	39[n]	40	50	45	37	36	36	43[n]	39	66	61	54	38	RES
RM11059_RES	377151.7	6353674.0	35	38	42	48	38	39	49	44	36	35	35	42[n]	38	66	61	54	38	RES
RM11060_RES	377097.4	6353671.1	37	40	44	50	40[n]	41	51	46	38	37	37	44[n]	40	66	61	54	38	RES
RM11061_RES	377198.8	6353667.8	35	38	42	48	38	39	49	44	36	35	35	42[n]	38	66	61	54	38	RES
RM11062_RES	377115.2	6353668.0	36	39	43	49	39[n]	40	50	45	37	36	36	43[n]	39	66	61	54	38	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria



Paper Size ISO A4

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

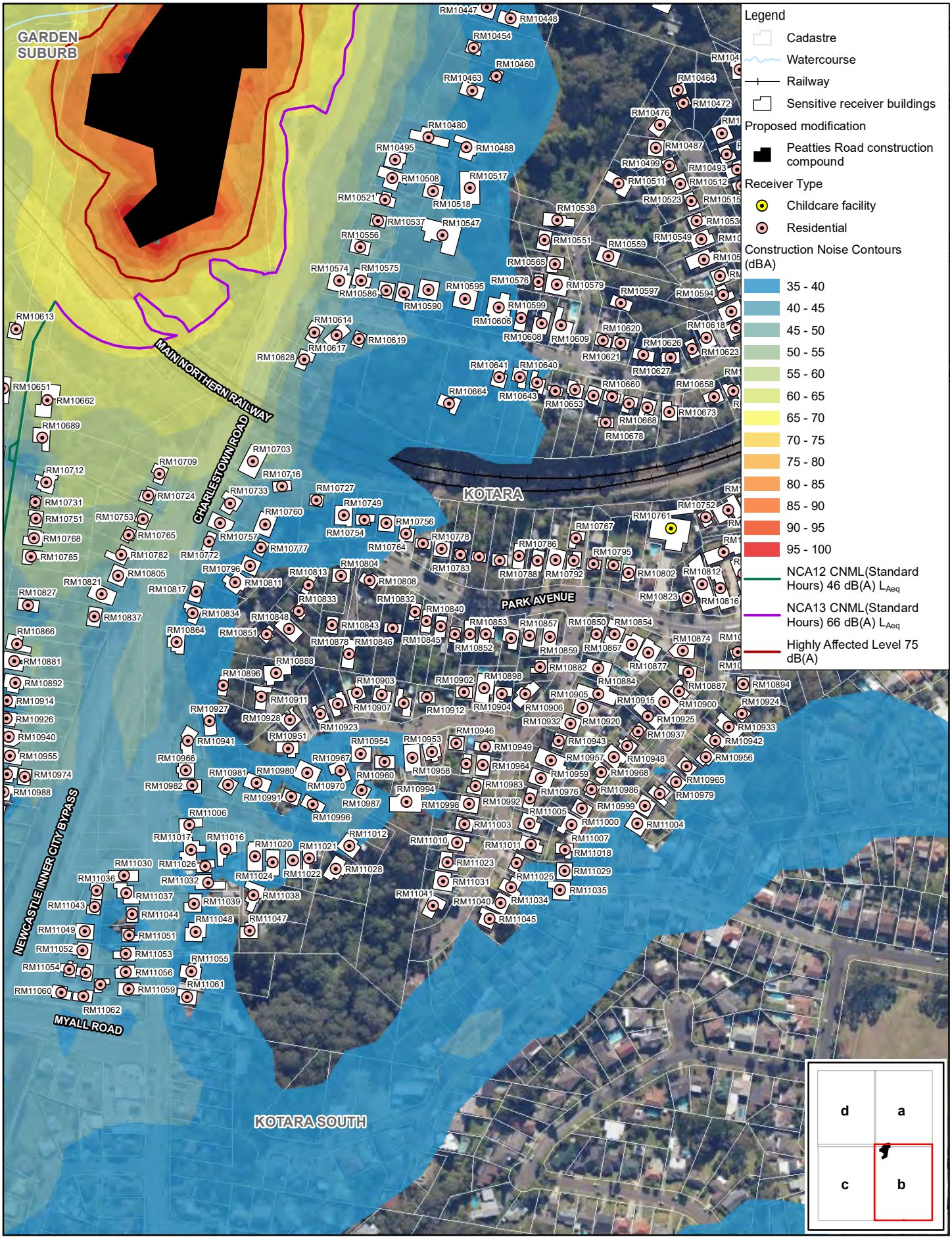
Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Peatties Road compound: construction noise contours, MOD12- construction support activities dB(A),$L_{Aeq\ 15min}$

Project No. 12528155
Revision No. 0
Date 20 May 2021

Figure A.1a

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N003_AppendixA_PeattiesRd_shtA_B_DDP_0.mxd
Print date: 20 May 2021 - 10:35



Paper Size ISO A4

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

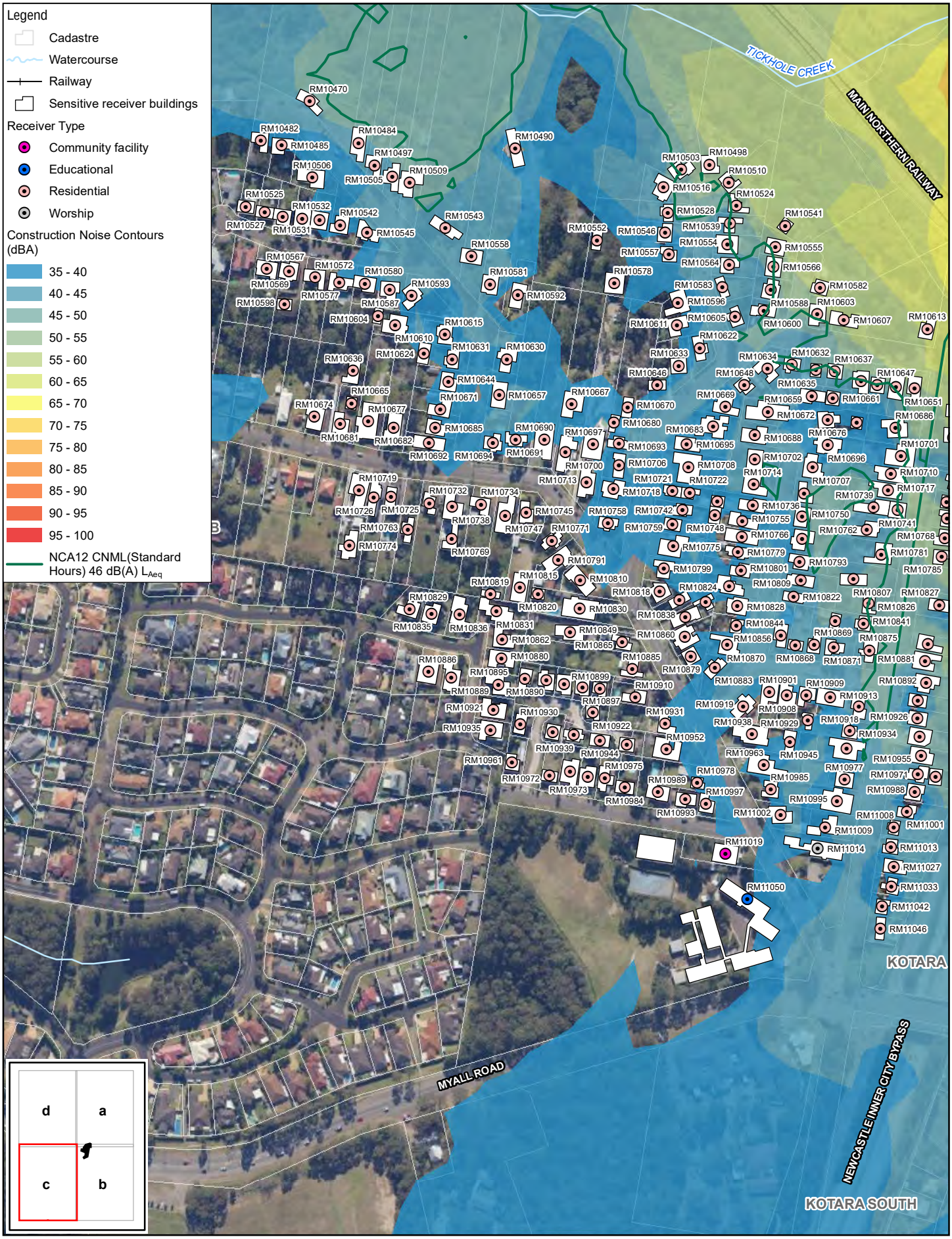
Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Peatties Road compound: construction noise contours, MOD12- construction support activities dB(A),$L_{Aeq\ 15min}$

Project No.	12528155
Revision No.	0
Date	20 May 2021

Figure A.1b

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N003_AppendixA_PeattiesRd_shtA_B_DDP_0.mxd
Print date: 20 May 2021 - 10:35



Paper Size ISO A4

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

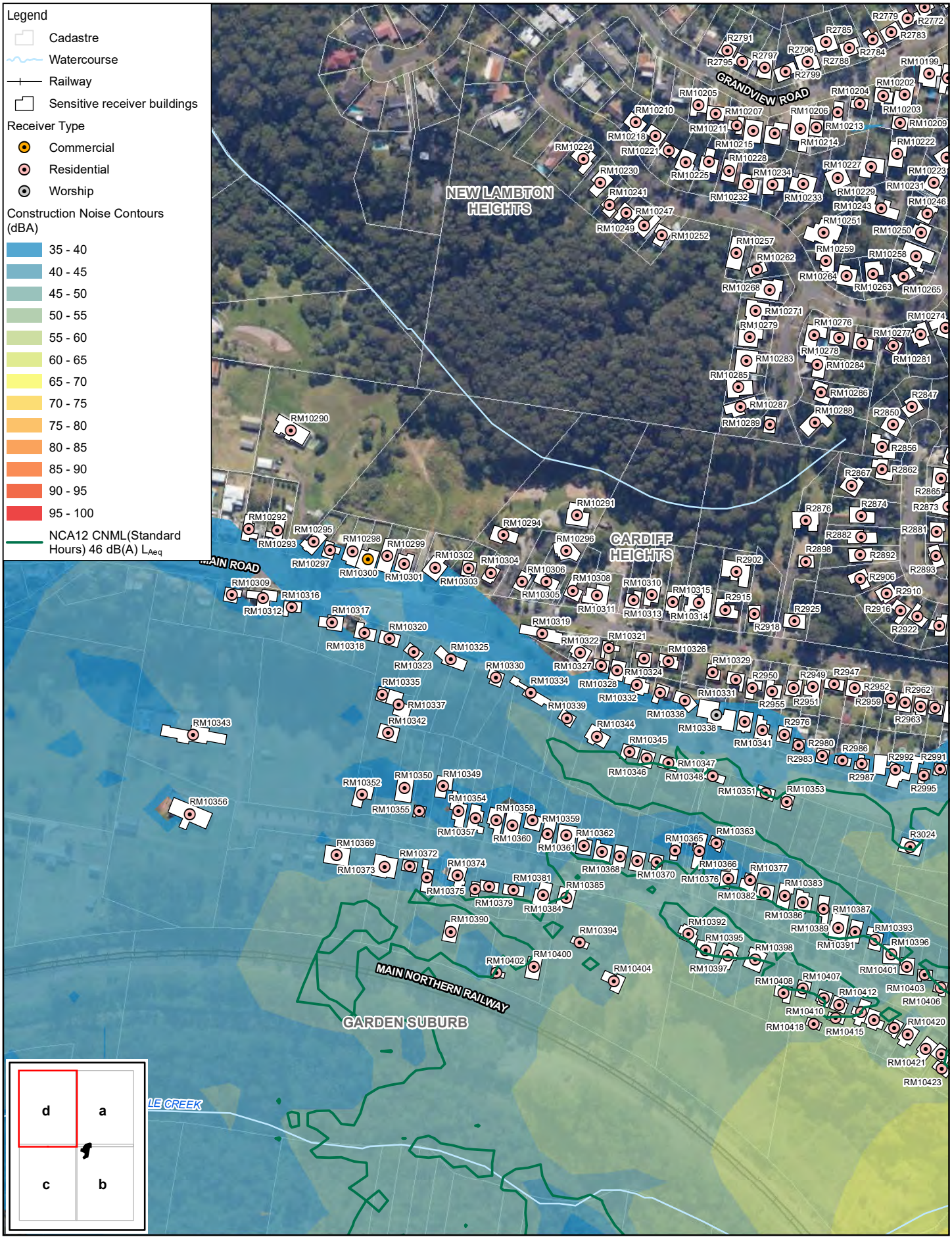
Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Peatties Road compound: construction noise contours, MOD12- construction support activities dB(A),$L_{Aeq\ 15min}$

Project No. 12528155
Revision No. 0
Date 20 May 2021

Figure A.1c

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N003_AppendixA_PeattiesRd_shtC_D_DDP_0.mxd
Print date: 20 May 2021 - 10:35



Paper Size ISO A4

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Peatties Road compound: construction noise contours, MOD12- construction support activities dB(A),$L_{Aeq\ 15min}$

Project No. 12528155
Revision No. 0
Date 20 May 2021

Figure A.1d

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N003_AppendixA_PeattiesRd_shtC_D_DDP_0.mxd
Print date: 20 May 2021 - 10:36

Appendix B

Cardiff Road noise impacts

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
R2758_RES	377237.0	6355476.1	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	48	43	40	35	RES
R2760_RES	377135.3	6355462.2	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	48	43	40	35	RES
R2761_RES	377255.2	6355457.2	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	48	43	40	35	RES
R2762_RES	377121.6	6355453.1	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	48	43	40	35	RES
R2763_RES	377108.8	6355444.4	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	48	43	40	35	RES
R2766_RES	377183.6	6355436.0	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
R2767_RES	377204.6	6355433.9	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
R2770_RES	377223.9	6355428.5	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
R2771_RES	377165.0	6355423.0	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
R2774_RES	377246.9	6355418.1	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
R2775_RES	377146.4	6355415.7	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
R2780_RES	377179.0	6355405.7	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
R2784_RES	377017.3	6355393.9	38	41	45	51[s]	41	42	52	47	39	38	38	45	41	48	43	40	35	RES
R2787_RES	377287.0	6355387.2	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
R2788_RES	376998.4	6355387.2	38	41	45	51[s]	41	42	52	47	39	38	38	45	41	48	43	40	35	RES
R2789_RES	377199.6	6355386.8	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
R2792_RES	377160.5	6355380.5	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
R2793_RES	377142.7	6355377.4	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
R2794_RES	377299.5	6355377.3	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
R2796_RES	376964.6	6355375.9	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	48	43	40	35	RES
R2798_RES	377173.8	6355369.7	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
R2800_RES	377284.0	6355366.2	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
R2801_RES	377124.7	6355362.6	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
R2802_RES	377310.8	6355362.6	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
R2803_RES	377325.1	6355356.4	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
R2804_RES	377356.8	6355356.0	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
R2805_RES	377287.3	6355345.1	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
R2806_RES	377380.7	6355344.6	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
R2807_RES	377122.1	6355342.1	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
R2808_RES	377172.2	6355337.8	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
R2809_RES	377396.0	6355334.1	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
R2810_RES	377410.3	6355333.4	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
R2811_RES	377284.5	6355328.6	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
R2813_RES	377131.1	6355318.9	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
R2814_RES	377168.7	6355318.4	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
R2815_RES	377284.2	6355313.6	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
R2816_RES	377184.7	6355308.1	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
R2818_RES	377281.9	6355299.8	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
R2819_RES	377229.3	6355297.0	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
R2821_RES	377290.3	6355278.1	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
R2827_RES	377387.5	6355214.8	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
R2828_RES	377275.9	6355214.5	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
R2840_RES	377146.1	6355114.3	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
R2841_RES	377377.7	6355113.1	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
R2843_RES	377363.2	6355109.1	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
R2845_RES	377200.2	6355105.3	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
R2846_RES	377348.4	6355101.1	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
R2847_RES	377048.8	6355098.4	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
R2850_RES	377033.5	6355084.1	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
R2852_RES	377255.3	6355079.1	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
R2853_RES	377091.8	6355076.9	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
R2854_RES	377357.2	6355076.3	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
R2856_RES	377024.6	6355065.9	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
R2857_RES	377195.0	6355065.9	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
R2858_RES	377257.0	6355063.0	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
R2860_RES	377356.0	6355056.8	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
R2861_RES	377397.9	6355052.0	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
R2862_RES	377024.7	6355048.0	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
R2863_RES	377256.5	6355046.4	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
R2864_RES	377330.3	6355045.3	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
R2865_RES	377072.0	6355040.9	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
R2866_RES	377382.4	6355037.5	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
R2869_RES	377254.5	6355031.4	45	48[s]	52[s]	58[s]	48	49[s]	59	54[s]	46	45	45	52	48[s]	46	41	41	35	RES
R2870_RES	377187.8	6355022.3	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
R2871_RES	377372.4	6355021.1	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
R2873_RES	377078.1	6355018.3	47[s]	50[s]	54[s]	60[s]	50	51[s]	61	56[s]	48	47	47	54	50[s]	46	41	41	35	RES
R2874_RES	377007.9	6355010.6	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
R2875_RES	377354.9	6355010.5	44	47[s]	51[s]	57[s]	47	48[s]	58	53[s]	45	44	44	51	47[s]	46	41	41	35	RES
R2876_RES	376963.4	6355007.0	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
R2877_RES	377340.8	6355002.8	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
R2878_RES	377234.9	6355002.0	44	47[s]	51[s]	57[s]	47	48[s]	58	53[s]	45	44	44	51	47[s]	46	41	41	35	RES
R2879_RES	377177.0	6355001.3	45	48[s]	52[s]	58[s]	48	49[s]	59	54[s]	46	45	45	52	48[s]	46	41	41	35	RES
R2881_RES	377068.7	6354997.8	49[s]	52[s]	56[s]	62[s]	52	53[s]	63	58[s]	50	49	49	56	52[s]	46	41	41	35	RES
R2882_RES	377008.0	6354993.6	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
R2883_RES	377327.0	6354991.0	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
R2884_RES	377413.2	6354987.0	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
R2886_RES	377180.0	6354984.1	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
R2887_RES	377087.5	6354982.4	49[s]	52[s]	56[s]	62[s]	52	53[s]	63	58[s]	50	49	49	56	52[s]	46	41	41	35	RES
R2888_RES	377100.5	6354982.3	51[s]	54[s]	58[s]	64[s]	54	55[s]	65	60[s]	52	51	51	58	54[s]	46	41	41	35	RES
R2889_RES	377231.1	6354981.3	46	49[s]	53[s]	59[s]	49	50[s]	60	55[s]	47	46	46	53	49[s]	46	41	41	35	RES
R2890_RES	377116.5	6354980.7	49[s]	52[s]	56[s]	62[s]	52	53[s]	63	58[s]	50	49	49	56	52[s]	46	41	41	35	RES
R2891_RES	377317.1	6354979.4	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
R2892_RES	377007.2	6354979.1	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
R2893_RES	377068.0	6354978.1	51[s]	54[s]	58[s]	64[s]	54	55[s]	65	60[s]	52	51	51	58	54[s]	46	41	41	35	RES
R2894_RES	377130.3	6354977.5	50[s]	53[s]	57[s]	63[s]	53	54[s]	64	59[s]	51	50	50	57	53[s]	46	41	41	35	RES
R2895_RES	377403.2	6354975.4	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
R2896_RES	377144.9	6354974.5	50[s]	53[s]	57[s]	63[s]	53	54[s]	64	59[s]	51	50	50	57	53[s]	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
R2897_RES	377159.1	6354974.4	48[s]	51[s]	55[s]	61[s]	51	52[s]	62	57[s]	49	48	48	55	51[s]	46	41	41	35	RES
R2898_RES	376963.5	6354973.8	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
R2899_RES	377388.3	6354969.1	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
R2900_RES	377302.4	6354968.3	47[s]	50[s]	54[s]	60[s]	50	51[s]	61	56[s]	48	47	47	54	50[s]	46	41	41	35	RES
R2901_RES	377178.9	6354967.2	46	49[s]	53[s]	59[s]	49	50[s]	60	55[s]	47	46	46	53	49[s]	46	41	41	35	RES
R2902_RES	376907.6	6354965.5	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
R2903_RES	377284.9	6354963.2	46	49[s]	53[s]	59[s]	49	50[s]	60	55[s]	47	46	46	53	49[s]	46	41	41	35	RES
R2904_RES	377379.1	6354960.5	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
R2906_RES	377006.9	6354960.0	45	48[s]	52[s]	58[s]	48	49[s]	59	54[s]	46	45	45	52	48[s]	46	41	41	35	RES
R2907_RES	377226.8	6354955.2	47[s]	50[s]	54[s]	60[s]	50	51[s]	61	56[s]	48	47	47	54	50[s]	46	41	41	35	RES
R2908_RES	377365.5	6354953.9	46	49[s]	53[s]	59[s]	49	50[s]	60	55[s]	47	46	46	53	49[s]	46	41	41	35	RES
R2909_RES	377275.2	6354952.4	45	48[s]	52[s]	58[s]	48	49[s]	59	54[s]	46	45	45	52	48[s]	46	41	41	35	RES
R2910_RES	377028.3	6354948.3	49[s]	52[s]	56[s]	62[s]	52	53[s]	63	58[s]	50	49	49	56	52[s]	46	41	41	35	RES
R2911_RES	377355.0	6354943.0	44	47[s]	51[s]	57[s]	47	48[s]	58	53[s]	45	44	44	51	47[s]	46	41	41	35	RES
R2913_RES	377267.2	6354937.3	49[s]	52[s]	56[s]	62[s]	52	53[s]	63	58[s]	50	49	49	56	52[s]	46	41	41	35	RES
R2914_RES	377219.2	6354936.9	47[s]	50[s]	54[s]	60[s]	50	51[s]	61	56[s]	48	47	47	54	50[s]	46	41	41	35	RES
R2915_RES	376898.7	6354935.0	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
R2916_RES	377039.4	6354934.3	47[s]	50[s]	54[s]	60[s]	50	51[s]	61	56[s]	48	47	47	54	50[s]	46	41	41	35	RES
R2917_RES	377342.1	6354934.0	47[s]	50[s]	54[s]	60[s]	50	51[s]	61	56[s]	48	47	47	54	50[s]	46	41	41	35	RES
R2918_RES	376922.2	6354931.9	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
R2919_RES	377127.5	6354931.3	54[s]	57[s]	61[s]	67[s]	57	58[s]	68	63[s]	55	54	54	61	57[s]	46	41	41	35	RES
R2920_RES	377147.3	6354930.2	51[s]	54[s]	58[s]	64[s]	54	55[s]	65	60[s]	52	51	51	58	54[s]	46	41	41	35	RES
R2921_RES	377325.5	6354929.8	44	47[s]	51[s]	57[s]	47	48[s]	58	53[s]	45	44	44	51	47[s]	46	41	41	35	RES
R2922_RES	377053.1	6354929.8	50[s]	53[s]	57[s]	63[s]	53	54[s]	64	59[s]	51	50	50	57	53[s]	46	41	41	35	RES
R2923_RES	377105.8	6354929.4	54[s]	57[s]	61[s]	67[s]	57	58[s]	68	63[s]	55	54	54	61	57[s]	46	41	41	35	RES
R2924_RES	377247.2	6354927.1	48[s]	51[s]	55[s]	61[s]	51	52[s]	62	57[s]	49	48	48	55	51[s]	46	41	41	35	RES
R2925_RES	376954.3	6354926.1	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
R2926_RES	377173.2	6354925.8	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
R2928_RES	377408.1	6354924.7	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
R2929_RES	377070.7	6354922.4	50[s]	53[s]	57[s]	63[s]	53	54[s]	64	59[s]	51	50	50	57	53[s]	46	41	41	35	RES
R2930_RES	377087.2	6354921.1	51[s]	54[s]	58[s]	64[s]	54	55[s]	65	60[s]	52	51	51	58	54[s]	46	41	41	35	RES
R2931_RES	377314.1	6354916.7	47[s]	50[s]	54[s]	60[s]	50	51[s]	61	56[s]	48	47	47	54	50[s]	46	41	41	35	RES
R2932_RES	377231.9	6354916.3	49[s]	52[s]	56[s]	62[s]	52	53[s]	63	58[s]	50	49	49	56	52[s]	46	41	41	35	RES
R2933_RES	377377.2	6354911.7	44	47[s]	51[s]	57[s]	47	48[s]	58	53[s]	45	44	44	51	47[s]	46	41	41	35	RES
R2935_RES	377170.6	6354907.1	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
R2936_RES	377303.1	6354906.0	45	48[s]	52[s]	58[s]	48	49[s]	59	54[s]	46	45	45	52	48[s]	46	41	41	35	RES
R2937_RES	377106.4	6354899.8	52[s]	55[s]	59[s]	65[s]	55	56[s]	66	61[s]	53	52	52	59	55[s]	46	41	41	35	RES
R2938_RES	377214.4	6354899.4	54[s]	57[s]	61[s]	67[s]	57	58[s]	68	63[s]	55	54	54	61	57[s]	46	41	41	35	RES
R2939_RES	377126.1	6354896.5	56[s]	59[s]	63[s]	69[s]	59	60[s]	70	65[s]	57	56	56	63	59[s]	46	41	41	35	RES
R2940_RES	377420.1	6354895.7	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
R2942_RES	377283.5	6354893.5	47[s]	50[s]	54[s]	60[s]	50	51[s]	61	56[s]	48	47	47	54	50[s]	46	41	41	35	RES
R2943_RES	377145.8	6354892.9	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
R2944_RES	377167.3	6354891.2	49[s]	52[s]	56[s]	62[s]	52	53[s]	63	58[s]	50	49	49	56	52[s]	46	41	41	35	RES
R2945_RES	377375.3	6354886.0	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
R2946_RES	377301.0	6354879.7	44	47[s]	51[s]	57[s]	47	48[s]	58	53[s]	45	44	44	51	47[s]	46	41	41	35	RES
R2947_RES	376986.1	6354875.1	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
R2948_RES	377421.1	6354874.1	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
R2949_RES	376969.1	6354872.8	46	49[s]	53[s]	59[s]	49	50[s]	60	55[s]	47	46	46	53	49[s]	46	41	41	35	RES
R2950_RES	376920.5	6354872.3	47[s]	50[s]	54[s]	60[s]	50	51[s]	61	56[s]	48	47	47	54	50[s]	46	41	41	35	RES
R2951_RES	376953.7	6354872.1	48[s]	51[s]	55[s]	61[s]	51	52[s]	62	57[s]	49	48	48	55	51[s]	46	41	41	35	RES
R2952_RES	377002.7	6354871.9	46	49[s]	53[s]	59[s]	49	50[s]	60	55[s]	47	46	46	53	49[s]	46	41	41	35	RES
R2953_RES	377254.1	6354870.4	52[s]	55[s]	59[s]	65[s]	55	56[s]	66	61[s]	53	52	52	59	55[s]	46	41	41	35	RES
R2954_RES	377329.7	6354870.1	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
R2955_RES	376936.5	6354869.7	48[s]	51[s]	55[s]	61[s]	51	52[s]	62	57[s]	49	48	48	55	51[s]	46	41	41	35	RES
R2956_RES	377349.9	6354868.5	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
R2957_RES	377242.9	6354864.3	49[s]	52[s]	56[s]	62[s]	52	53[s]	63	58[s]	50	49	49	56	52[s]	46	41	41	35	RES
R2958_RES	377365.6	6354864.3	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
R2959_RES	377031.7	6354863.3	47[s]	50[s]	54[s]	60[s]	50	51[s]	61	56[s]	48	47	47	54	50[s]	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
R2960_RES	377313.0	6354863.0	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
R2961_RES	377380.1	6354860.8	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
R2962_RES	377043.3	6354860.5	55[s]	58[s]	62[s]	68[s]	58	59[s]	69	64[s]	56	55	55	62	58[s]	46	41	41	35	RES
R2963_RES	377055.8	6354857.4	60[s]	63[s]	67[s]	73[s]	63	64[s]	74	69[s]	61	60	60	67	63[s]	46	41	41	35	RES
R2964_RES	377156.4	6354856.8	58[s]	61[s]	65[s]	71[s]	61	62[s]	72	67[s]	59	58	58	65	61[s]	46	41	41	35	RES
R2965_RES	377262.3	6354856.7	50[s]	53[s]	57[s]	63[s]	53	54[s]	64	59[s]	51	50	50	57	53[s]	46	41	41	35	RES
R2966_RES	377067.5	6354855.8	56[s]	59[s]	63[s]	69[s]	59	60[s]	70	65[s]	57	56	56	63	59[s]	46	41	41	35	RES
R2967_RES	377231.4	6354855.2	50[s]	53[s]	57[s]	63[s]	53	54[s]	64	59[s]	51	50	50	57	53[s]	46	41	41	35	RES
R2968_RES	377122.6	6354854.9	61[s]	64[s]	68[s]	74[s]	64	65[s]	75	70[s]	62	61	61	68	64[s]	46	41	41	35	RES
R2969_RES	377082.8	6354853.9	60[s]	63[s]	67[s]	73[s]	63	64[s]	74	69[s]	61	60	60	67	63[s]	46	41	41	35	RES
R2970_RES	377419.1	6354851.0	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
R2971_RES	377219.1	6354846.3	54[s]	57[s]	61[s]	67[s]	57	58[s]	68	63[s]	55	54	54	61	57[s]	46	41	41	35	RES
R2972_RES	377140.7	6354845.0	60[s]	63[s]	67[s]	73[s]	63	64[s]	74	69[s]	61	60	60	67	63[s]	46	41	41	35	RES
R2973_RES	377277.2	6354838.9	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
R2975_RES	377412.7	6354836.9	44	47[s]	51[s]	57[s]	47	48[s]	58	53[s]	45	44	44	51	47[s]	46	41	41	35	RES
R2976_RES	376946.0	6354834.8	50[s]	53[s]	57[s]	63[s]	53	54[s]	64	59[s]	51	50	50	57	53[s]	46	41	41	35	RES
R2977_RES	377207.6	6354832.9	56[s]	59[s]	63[s]	69[s]	59	60[s]	70	65[s]	57	56	56	63	59[s]	46	41	41	35	RES
R2978_COM	377118.0	6354829.6	67	70	74[s]	80[s]	70	71[s]	81	76[s]	68	67	67	74	70	70	70	70	70	COM
R2980_RES	376957.8	6354826.2	52[s]	55[s]	59[s]	65[s]	55	56[s]	66	61[s]	53	52	52	59	55[s]	46	41	41	35	RES
R2981_RES	377098.1	6354825.4	68[s]	71[s]	75[s]	81[s]	71	72[s]	82	77[s]	69	68	68	75	71[s]	46	41	41	35	RES
R2982_RES	377289.2	6354822.1	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
R2983_RES	376976.7	6354817.4	57[s]	60[s]	64[s]	70[s]	60	61[s]	71	66[s]	58	57	57	64	60[s]	46	41	41	35	RES
R2984_RES	377407.4	6354816.1	46	49[s]	53[s]	59[s]	49	50[s]	60	55[s]	47	46	46	53	49[s]	46	41	41	35	RES
R2985_RES	377084.5	6354814.1	70[s]	73[s]	77[s]	83[s]	73	74[s]	84	79[s]	71	70	70	77	73[s]	46	41	41	35	RES
R2986_RES	376993.0	6354813.5	59[s]	62[s]	66[s]	72[s]	62	63[s]	73	68[s]	60	59	59	66	62[s]	46	41	41	35	RES
R2987_RES	377008.4	6354811.2	60[s]	63[s]	67[s]	73[s]	63	64[s]	74	69[s]	61	60	60	67	63[s]	46	41	41	35	RES
R2988_RES	377349.5	6354810.5	45	48[s]	52[s]	58[s]	48	49[s]	59	54[s]	46	45	45	52	48[s]	46	41	41	35	RES
R2989_RES	377283.6	6354809.8	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
R2990_RES	377258.0	6354808.8	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
R2991_RES	377071.2	6354806.9	70[s]	73[s]	77[s]	83[s]	73	74[s]	84	79[s]	71	70	70	77	73[s]	46	41	41	35	RES
R2992_RES	377035.4	6354806.7	67[s]	70[s]	74[s]	80[s]	70	71[s]	81	76[s]	68	67	67	74	70[s]	46	41	41	35	RES
R2993_RES	377151.9	6354805.0	62[s]	65[s]	69[s]	75[s]	65	66[s]	76	71[s]	63	62	62	69	65[s]	46	41	41	35	RES
R2995_RES	377058.2	6354801.9	69[s]	72[s]	76[s]	82[s]	72	73[s]	83	78[s]	70	69	69	76	72[s]	46	41	41	35	RES
R2996_RES	377363.5	6354800.1	46	49[s]	53[s]	59[s]	49	50[s]	60	55[s]	47	46	46	53	49[s]	46	41	41	35	RES
R2998_RES	377330.4	6354798.9	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
R2999_RES	377202.8	6354796.8	59[s]	62[s]	66[s]	72[s]	62	63[s]	73	68[s]	60	59	59	66	62[s]	46	41	41	35	RES
R3000_RES	377377.9	6354796.5	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
R3001_RES	377399.3	6354795.6	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
R3002_RES	377137.6	6354793.4	67[s]	70[s]	74[s]	80[s]	70	71[s]	81	76[s]	68	67	67	74	70[s]	46	41	41	35	RES
R3004_RES	377155.8	6354791.8	63[s]	66[s]	70[s]	76[s]	66	67[s]	77	72[s]	64	63	63	70	66[s]	46	41	41	35	RES
R3005_RES	377250.9	6354789.5	45	48[s]	52[s]	58[s]	48	49[s]	59	54[s]	46	45	45	52	48[s]	46	41	41	35	RES
R3006_RES	377119.5	6354786.2	75[s]	78[s]	82[s]	88[s]	78	79[s]	89	84[s]	76	75	75	82	78[s]	46	41	41	35	RES
R3007_RES	377196.0	6354782.8	62[s]	65[s]	69[s]	75[s]	65	66[s]	76	71[s]	63	62	62	69	65[s]	46	41	41	35	RES
R3009_RES	377317.4	6354777.3	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
R3010_RES	377110.2	6354776.4	78[s]	84[s]	92[s]	104[s]	84	86[s]	106	96[s]	80	78	78	92	84[s]	46	41	41	35	RES
R3012_RES	377250.9	6354772.8	45	48[s]	52[s]	58[s]	48	49[s]	59	54[s]	46	45	45	52	48[s]	46	41	41	35	RES
R3013_RES	377147.5	6354770.6	72[s]	75[s]	79[s]	85[s]	75	76[s]	86	81[s]	73	72	72	79	75[s]	46	41	41	35	RES
R3014_RES	377197.0	6354766.2	67[s]	70[s]	74[s]	80[s]	70	71[s]	81	76[s]	68	67	67	74	70[s]	46	41	41	35	RES
R3015_RES	377305.9	6354764.3	46	49[s]	53[s]	59[s]	49	50[s]	60	55[s]	47	46	46	53	49[s]	46	41	41	35	RES
R3017_RES	377244.7	6354760.4	54[s]	57[s]	61[s]	67[s]	57	58[s]	68	63[s]	55	54	54	61	57[s]	46	41	41	35	RES
R3019_RES	377142.3	6354755.9	78[s]	84[s]	92[s]	99[s]	84	86[s]	100	95[s]	80	78	78	92	84[s]	46	41	41	35	RES
R3020_RES	377289.9	6354753.0	49[s]	52[s]	56[s]	62[s]	52	53[s]	63	58[s]	50	49	49	56	52[s]	46	41	41	35	RES
R3021_RES	377195.9	6354752.9	68[s]	71[s]	75[s]	81[s]	71	72[s]	82	77[s]	69	68	68	75	71[s]	46	41	41	35	RES
R3023_RES	377236.7	6354748.1	60[s]	63[s]	67[s]	73[s]	63	64[s]	74	69[s]	61	60	60	67	63[s]	46	41	41	35	RES
R3024_RES	377047.3	6354744.4	78[s]	84[s]	92[s]	104[s]	84	86[s]	106	96[s]	80	78	78	92	84[s]	46	41	41	35	RES
R3029_RES	377288.3	6354731.0	52[s]	55[s]	59[s]	65[s]	55	56[s]	66	61[s]	53	52	52	59	55[s]	46	41	41	35	RES
R3031_RES	377278.0	6354722.1	52[s]	55[s]	59[s]	65[s]	55	56[s]	66	61[s]	53	52	52	59	55[s]	46	41	41	35	RES
R3034_RES	377232.0	6354712.5	58[s]	61[s]	65[s]	71[s]	61	62[s]	72	67[s]	59	58	58	65	61[s]	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
R3035_RES	377106.2	6354712.4	78[s]	84[s]	92[s]	104[s]	84	86[s]	106	96[s]	80	78	78	92	84[s]	46	41	41	35	RES
R3037_RES	377264.8	6354707.9	53[s]	56[s]	60[s]	66[s]	56	57[s]	67	62[s]	54	53	53	60	56[s]	46	41	41	35	RES
RM10193_RES	377241.4	6355400.7	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10194_RES	377122.3	6355396.6	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10195_RES	377145.0	6355397.2	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10196_RES	377100.5	6355378.8	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10197_RES	377243.1	6355376.5	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10199_RES	377062.7	6355366.3	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10200_RES	377077.9	6355362.5	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10201_RES	377202.8	6355354.1	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10202_RES	377042.9	6355349.5	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10203_RES	377025.6	6355348.3	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10204_RES	377006.8	6355342.2	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10205_RES	376877.2	6355341.1	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10206_RES	376989.2	6355335.0	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10207_RES	376890.8	6355334.2	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10208_RES	377230.7	6355332.8	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10209_RES	377039.2	6355326.7	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10210_RES	376826.7	6355327.2	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10211_RES	376907.8	6355324.6	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10212_RES	377364.4	6355324.4	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10213_RES	376971.7	6355322.8	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10214_RES	376959.1	6355322.1	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10215_RES	376920.9	6355320.0	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10216_RES	376938.3	6355318.3	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10217_RES	377113.9	6355316.8	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10218_RES	376842.4	6355316.4	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10219_RES	377227.0	6355314.3	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10220_RES	377093.5	6355312.0	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10221_RES	376853.2	6355304.4	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10222_RES	377036.9	6355301.9	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10223_RES	377076.6	6355298.8	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10224_RES	376784.6	6355297.6	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10225_RES	376885.6	6355295.3	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10226_RES	376867.1	6355295.0	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10227_RES	377016.0	6355291.5	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10228_RES	376901.9	6355288.4	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10229_RES	376989.0	6355282.3	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10230_RES	376798.2	6355278.7	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10231_RES	377066.3	6355278.4	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10232_RES	376917.0	6355277.8	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10233_RES	376961.4	6355277.6	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10234_RES	376936.5	6355276.7	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10235_RES	377129.1	6355274.1	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10236_RES	377345.2	6355268.3	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10237_RES	377115.1	6355264.6	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10238_RES	377161.8	6355263.5	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10239_RES	377178.9	6355261.9	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10240_RES	377211.6	6355262.0	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10241_RES	376805.5	6355260.9	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10242_RES	377193.9	6355259.9	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10243_RES	377024.1	6355258.1	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10244_RES	377143.0	6355257.0	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10246_RES	377061.1	6355253.7	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10247_RES	376819.0	6355254.2	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10248_RES	377117.2	6355248.3	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10249_RES	376833.5	6355244.4	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10250_RES	377056.1	6355238.4	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10251_RES	376977.5	6355238.3	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10252_RES	376847.5	6355236.6	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10254_RES	377109.0	6355228.8	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10255_RES	377204.5	6355226.7	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10256_RES	377150.3	6355224.4	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10257_RES	376907.5	6355222.0	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10258_RES	377052.1	6355219.7	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10259_RES	376979.7	6355215.9	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10260_RES	377215.0	6355213.6	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10261_RES	377104.0	6355213.9	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10262_RES	376924.2	6355208.8	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10263_RES	377017.7	6355205.5	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10264_RES	376996.2	6355203.5	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10265_RES	377041.9	6355203.0	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10266_RES	377141.5	6355199.6	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10267_RES	377095.2	6355199.2	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10268_RES	376934.4	6355192.5	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10269_RES	377208.2	6355187.5	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10270_RES	377088.5	6355186.3	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10271_RES	376923.1	6355175.5	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10273_RES	377210.1	6355171.9	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10276_RES	376970.2	6355156.1	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
RM10277_RES	377055.8	6355156.1	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10278_RES	376990.2	6355153.9	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
RM10279_RES	376918.4	6355154.4	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10280_RES	377008.9	6355150.0	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
RM10281_RES	377034.0	6355147.3	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10282_RES	377177.1	6355142.7	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10283_RES	376915.6	6355135.1	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10284_RES	376972.5	6355132.3	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10285_RES	376909.3	6355113.9	44	47[s]	51[s]	57[s]	47	48[s]	58	53[s]	45	44	44	51	47[s]	46	41	41	35	RES
RM10286_RES	376975.5	6355110.0	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10287_RES	376910.8	6355098.3	44	47[s]	51[s]	57[s]	47	48[s]	58	53[s]	45	44	44	51	47[s]	46	41	41	35	RES
RM10288_RES	376970.9	6355085.7	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10289_RES	376934.5	6355083.9	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10290_RES	376549.5	6355079.4	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10291_RES	376779.6	6355011.0	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10292_RES	376515.5	6355000.1	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10293_RES	376538.4	6354999.0	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10294_RES	376720.3	6354995.0	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10295_RES	376567.8	6354989.7	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10296_RES	376770.9	6354982.6	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10297_RES	376581.0	6354983.0	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10298_RES	376599.1	6354982.2	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10299_RES	376627.0	6354978.1	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10301_RES	376640.5	6354972.2	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10302_RES	376665.6	6354969.0	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10303_RES	376692.2	6354968.4	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10304_RES	376710.2	6354964.8	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10305_RES	376735.3	6354957.8	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10306_RES	376755.0	6354957.9	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10308_RES	376776.3	6354950.5	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10309_RES	376502.0	6354946.9	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10310_RES	376839.4	6354947.0	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10311_RES	376795.3	6354946.6	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10312_RES	376527.0	6354944.6	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10313_RES	376824.9	6354942.9	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10314_RES	376877.5	6354940.8	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10315_RES	376856.2	6354941.2	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10316_RES	376550.1	6354936.9	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10317_RES	376582.4	6354924.6	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10318_RES	376608.6	6354916.7	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10319_RES	376751.4	6354915.9	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10320_RES	376628.5	6354911.6	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10321_RES	376804.9	6354904.4	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10322_RES	376781.9	6354900.5	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10323_RES	376648.0	6354901.2	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10324_RES	376833.2	6354895.5	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
RM10325_RES	376677.9	6354895.3	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
RM10326_RES	376853.1	6354893.6	44	47[s]	51[s]	57[s]	47	48[s]	58	53[s]	45	44	44	51	47[s]	46	41	41	35	RES
RM10327_RES	376799.0	6354890.2	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10328_RES	376811.8	6354886.3	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10329_RES	376888.7	6354884.6	44	47[s]	51[s]	57[s]	47	48[s]	58	53[s]	45	44	44	51	47[s]	46	41	41	35	RES
RM10330_RES	376714.1	6354880.3	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
RM10331_RES	376907.3	6354878.8	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10332_RES	376827.8	6354874.9	46	49[s]	53[s]	59[s]	49	50[s]	60	55[s]	47	46	46	53	49[s]	46	41	41	35	RES
RM10333_RES	376846.2	6354868.3	49[s]	52[s]	56[s]	62[s]	52	53[s]	63	58[s]	50	49	49	56	52[s]	46	41	41	35	RES
RM10334_RES	376742.2	6354868.2	45	48[s]	52[s]	58[s]	48	49[s]	59	54[s]	46	45	45	52	48[s]	46	41	41	35	RES
RM10336_RES	376866.3	6354861.8	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
RM10338_WOR	376891.5	6354850.7	52	55[s]	59[s]	65[s]	55	56[s]	66	61[s]	53	52	52	59	55[s]	52	52	52	52	WOR
RM10339_RES	376771.3	6354848.0	45	48[s]	52[s]	58[s]	48	49[s]	59	54[s]	46	45	45	52	48[s]	46	41	41	35	RES
RM10340_RES	376914.3	6354845.2	51[s]	54[s]	58[s]	64[s]	54	55[s]	65	60[s]	52	51	51	58	54[s]	46	41	41	35	RES
RM10341_RES	376928.5	6354838.4	53[s]	56[s]	60[s]	66[s]	56	57[s]	67	62[s]	54	53	53	60	56[s]	46	41	41	35	RES
RM10342_RES	376627.7	6354836.0	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10343_RES	376471.0	6354834.4	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10344_RES	376795.4	6354833.0	48[s]	51[s]	55[s]	61[s]	51	52[s]	62	57[s]	49	48	48	55	51[s]	46	41	41	35	RES
RM10345_RES	376821.6	6354820.8	48[s]	51[s]	55[s]	61[s]	51	52[s]	62	57[s]	49	48	48	55	51[s]	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10346_RES	376835.4	6354815.3	49[s]	52[s]	56[s]	62[s]	52	53[s]	63	58[s]	50	49	49	56	52[s]	46	41	41	35	RES
RM10347_RES	376852.9	6354811.8	50[s]	53[s]	57[s]	63[s]	53	54[s]	64	59[s]	51	50	50	57	53[s]	46	41	41	35	RES
RM10348_RES	376888.7	6354801.0	52[s]	55[s]	59[s]	65[s]	55	56[s]	66	61[s]	53	52	52	59	55[s]	46	41	41	35	RES
RM10349_RES	376671.8	6354793.1	45	48[s]	52[s]	58[s]	48	49[s]	59	54[s]	46	45	45	52	48[s]	46	41	41	35	RES
RM10350_RES	376640.8	6354791.7	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
RM10351_RES	376931.1	6354787.6	54[s]	57[s]	61[s]	67[s]	57	58[s]	68	63[s]	55	54	54	61	57[s]	46	41	41	35	RES
RM10352_RES	376606.7	6354786.5	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10353_RES	376948.1	6354780.7	56[s]	59[s]	63[s]	69[s]	59	60[s]	70	65[s]	57	56	56	63	59[s]	46	41	41	35	RES
RM10354_RES	376684.1	6354773.5	45	48[s]	52[s]	58[s]	48	49[s]	59	54[s]	46	45	45	52	48[s]	46	41	41	35	RES
RM10355_RES	376652.7	6354773.1	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10356_RES	376468.0	6354770.8	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10357_RES	376698.1	6354767.1	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10358_RES	376714.4	6354765.5	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10359_RES	376743.8	6354765.5	46	49[s]	53[s]	59[s]	49	50[s]	60	55[s]	47	46	46	53	49[s]	46	41	41	35	RES
RM10360_RES	376727.4	6354761.7	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10361_RES	376755.8	6354754.4	47[s]	50[s]	54[s]	60[s]	50	51[s]	61	56[s]	48	47	47	54	50[s]	46	41	41	35	RES
RM10362_RES	376770.9	6354753.7	47[s]	50[s]	54[s]	60[s]	50	51[s]	61	56[s]	48	47	47	54	50[s]	46	41	41	35	RES
RM10363_RES	376891.6	6354747.3	52[s]	55[s]	59[s]	65[s]	55	56[s]	66	61[s]	53	52	52	59	55[s]	46	41	41	35	RES
RM10364_RES	376784.9	6354745.2	47[s]	50[s]	54[s]	60[s]	50	51[s]	61	56[s]	48	47	47	54	50[s]	46	41	41	35	RES
RM10365_RES	376858.3	6354741.3	47[s]	50[s]	54[s]	60[s]	50	51[s]	61	56[s]	48	47	47	54	50[s]	46	41	41	35	RES
RM10366_RES	376877.6	6354740.9	52[s]	55[s]	59[s]	65[s]	55	56[s]	66	61[s]	53	52	52	59	55[s]	46	41	41	35	RES
RM10367_RES	376799.6	6354740.1	48[s]	51[s]	55[s]	61[s]	51	52[s]	62	57[s]	49	48	48	55	51[s]	46	41	41	35	RES
RM10368_RES	376814.0	6354736.8	48[s]	51[s]	55[s]	61[s]	51	52[s]	62	57[s]	49	48	48	55	51[s]	46	41	41	35	RES
RM10369_RES	376586.4	6354737.4	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10370_RES	376827.9	6354732.7	46	49[s]	53[s]	59[s]	49	50[s]	60	55[s]	47	46	46	53	49[s]	46	41	41	35	RES
RM10371_RES	376843.4	6354731.6	49[s]	52[s]	56[s]	62[s]	52	53[s]	63	58[s]	50	49	49	56	52[s]	46	41	41	35	RES
RM10372_RES	376644.9	6354728.9	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10373_RES	376624.8	6354728.4	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
RM10374_RES	376683.3	6354721.6	44	47[s]	51[s]	57[s]	47	48[s]	58	53[s]	45	44	44	51	47[s]	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10375_RES	376658.6	6354719.7	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
RM10376_RES	376901.1	6354719.0	53[s]	56[s]	60[s]	66[s]	56	57[s]	67	62[s]	54	53	53	60	56[s]	46	41	41	35	RES
RM10377_RES	376918.6	6354717.9	54[s]	57[s]	61[s]	67[s]	57	58[s]	68	63[s]	55	54	54	61	57[s]	46	41	41	35	RES
RM10378_RES	376708.8	6354712.5	45	48[s]	52[s]	58[s]	48	49[s]	59	54[s]	46	45	45	52	48[s]	46	41	41	35	RES
RM10379_RES	376697.5	6354710.3	44	47[s]	51[s]	57[s]	47	48[s]	58	53[s]	45	44	44	51	47[s]	46	41	41	35	RES
RM10381_RES	376728.3	6354709.6	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
RM10382_RES	376930.6	6354707.8	54[s]	57[s]	61[s]	67[s]	57	58[s]	68	63[s]	55	54	54	61	57[s]	46	41	41	35	RES
RM10383_RES	376946.6	6354705.1	56[s]	59[s]	63[s]	69[s]	59	60[s]	70	65[s]	57	56	56	63	59[s]	46	41	41	35	RES
RM10384_RES	376752.1	6354705.3	46	49[s]	53[s]	59[s]	49	50[s]	60	55[s]	47	46	46	53	49[s]	46	41	41	35	RES
RM10385_RES	376770.6	6354703.7	47[s]	50[s]	54[s]	60[s]	50	51[s]	61	56[s]	48	47	47	54	50[s]	46	41	41	35	RES
RM10386_RES	376961.2	6354700.0	57[s]	60[s]	64[s]	70[s]	60	61[s]	71	66[s]	58	57	57	64	60[s]	46	41	41	35	RES
RM10387_RES	376977.6	6354694.4	59[s]	62[s]	66[s]	72[s]	62	63[s]	73	68[s]	60	59	59	66	62[s]	46	41	41	35	RES
RM10388_RES	377111.1	6354678.8	67[s]	70[s]	74[s]	80[s]	70	71[s]	81	76[s]	68	67	67	74	70[s]	46	41	41	35	RES
RM10389_RES	376989.6	6354679.4	60[s]	63[s]	67[s]	73[s]	63	64[s]	74	69[s]	61	60	60	67	63[s]	46	41	41	35	RES
RM10390_RES	376677.8	6354675.9	44	47[s]	51[s]	57[s]	47	48[s]	58	53[s]	45	44	44	51	47[s]	46	41	41	35	RES
RM10391_RES	377002.9	6354676.0	60[s]	63[s]	67[s]	73[s]	63	64[s]	74	69[s]	61	60	60	67	63[s]	46	41	41	35	RES
RM10392_RES	376868.9	6354674.4	50[s]	53[s]	57[s]	63[s]	53	54[s]	64	59[s]	51	50	50	57	53[s]	46	41	41	35	RES
RM10393_RES	377019.0	6354669.7	61[s]	64[s]	68[s]	74[s]	64	65[s]	75	70[s]	62	61	61	68	64[s]	46	41	41	35	RES
RM10394_RES	376781.7	6354667.3	47[s]	50[s]	54[s]	60[s]	50	51[s]	61	56[s]	48	47	47	54	50[s]	46	41	41	35	RES
RM10395_RES	376882.8	6354661.4	51[s]	54[s]	58[s]	64[s]	54	55[s]	65	60[s]	52	51	51	58	54[s]	46	41	41	35	RES
RM10396_RES	377032.1	6354657.9	61[s]	64[s]	68[s]	74[s]	64	65[s]	75	70[s]	62	61	61	68	64[s]	46	41	41	35	RES
RM10397_RES	376900.8	6354656.9	52[s]	55[s]	59[s]	65[s]	55	56[s]	66	61[s]	53	52	52	59	55[s]	46	41	41	35	RES
RM10398_RES	376922.7	6354653.5	53[s]	56[s]	60[s]	66[s]	56	57[s]	67	62[s]	54	53	53	60	56[s]	46	41	41	35	RES
RM10399_RES	377126.2	6354652.9	64[s]	67[s]	71[s]	77[s]	67	68[s]	78	73[s]	65	64	64	71	67[s]	46	41	41	35	RES
RM10400_RES	376744.8	6354648.0	46	49[s]	53[s]	59[s]	49	50[s]	60	55[s]	47	46	46	53	49[s]	46	41	41	35	RES
RM10401_RES	377044.6	6354648.2	60[s]	63[s]	67[s]	73[s]	63	64[s]	74	69[s]	61	60	60	67	63[s]	46	41	41	35	RES
RM10402_RES	376714.6	6354643.0	45	48[s]	52[s]	58[s]	48	49[s]	59	54[s]	46	45	45	52	48[s]	46	41	41	35	RES
RM10403_RES	377058.8	6354641.2	59[s]	62[s]	66[s]	72[s]	62	63[s]	73	68[s]	60	59	59	66	62[s]	46	41	41	35	RES
RM10404_RES	376809.1	6354636.4	47[s]	50[s]	54[s]	60[s]	50	51[s]	61	56[s]	48	47	47	54	50[s]	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10405_RES	377128.6	6354633.1	60[s]	63[s]	67[s]	73[s]	63	64[s]	74	69[s]	61	60	60	67	63[s]	46	41	41	35	RES
RM10406_RES	377071.7	6354630.9	58[s]	61[s]	65[s]	71[s]	61	62[s]	72	67[s]	59	58	58	65	61[s]	46	41	41	35	RES
RM10407_RES	376961.0	6354630.2	54[s]	57[s]	61[s]	67[s]	57	58[s]	68	63[s]	55	54	54	61	57[s]	46	41	41	35	RES
RM10408_RES	376945.5	6354626.6	53[s]	56[s]	60[s]	66[s]	56	57[s]	67	62[s]	54	53	53	60	56[s]	46	41	41	35	RES
RM10409_RES	377086.1	6354624.8	57[s]	60[s]	64[s]	70[s]	60	61[s]	71	66[s]	58	57	57	64	60[s]	46	41	41	35	RES
RM10410_RES	376978.0	6354622.7	55[s]	58[s]	62[s]	68[s]	58	59[s]	69	64[s]	56	55	55	62	58[s]	46	41	41	35	RES
RM10411_RES	377099.6	6354619.2	56[s]	59[s]	63[s]	69[s]	59	60[s]	70	65[s]	57	56	56	63	59[s]	46	41	41	35	RES
RM10412_RES	376990.2	6354617.4	55[s]	58[s]	62[s]	68[s]	58	59[s]	69	64[s]	56	55	55	62	58[s]	46	41	41	35	RES
RM10413_RES	377007.8	6354611.6	55[s]	58[s]	62[s]	68[s]	58	59[s]	69	64[s]	56	55	55	62	58[s]	46	41	41	35	RES
RM10414_RES	377112.5	6354612.3	55[s]	58[s]	62[s]	68[s]	58	59[s]	69	64[s]	56	55	55	62	58[s]	46	41	41	35	RES
RM10415_RES	376987.6	6354606.7	54[s]	57[s]	61[s]	67[s]	57	58[s]	68	63[s]	55	54	54	61	57[s]	46	41	41	35	RES
RM10416_RES	377018.1	6354605.1	54[s]	57[s]	61[s]	67[s]	57	58[s]	68	63[s]	55	54	54	61	57[s]	46	41	41	35	RES
RM10417_RES	377124.3	6354605.2	55[s]	58[s]	62[s]	68[s]	58	59[s]	69	64[s]	56	55	55	62	58[s]	46	41	41	35	RES
RM10418_RES	376969.7	6354602.0	49[s]	52[s]	56[s]	62[s]	52	53[s]	63	58[s]	50	49	49	56	52[s]	46	41	41	35	RES
RM10419_RES	377034.4	6354598.6	54[s]	57[s]	61[s]	67[s]	57	58[s]	68	63[s]	55	54	54	61	57[s]	46	41	41	35	RES
RM10420_RES	377045.5	6354593.7	55[s]	58[s]	62[s]	68[s]	58	59[s]	69	64[s]	56	55	55	62	58[s]	46	41	41	35	RES
RM10421_RES	377059.9	6354581.6	54[s]	57[s]	61[s]	67[s]	57	58[s]	68	63[s]	55	54	54	61	57[s]	46	41	41	35	RES
RM10422_RES	377072.2	6354577.8	53[s]	56[s]	60[s]	66[s]	56	57[s]	67	62[s]	54	53	53	60	56[s]	46	41	41	35	RES
RM10423_RES	377072.6	6354565.7	50[s]	53[s]	57[s]	63[s]	53	54[s]	64	59[s]	51	50	50	57	53[s]	46	41	41	35	RES
RM10424_RES	377087.3	6354564.9	53[s]	56[s]	60[s]	66[s]	56	57[s]	67	62[s]	54	53	53	60	56[s]	46	41	41	35	RES
RM10425_RES	377100.6	6354558.9	52[s]	55[s]	59[s]	65[s]	55	56[s]	66	61[s]	53	52	52	59	55[s]	46	41	41	35	RES
RM10426_RES	377113.7	6354555.3	52[s]	55[s]	59[s]	65[s]	55	56[s]	66	61[s]	53	52	52	59	55[s]	46	41	41	35	RES
RM10438_RES	377093.0	6354514.2	48[s]	51[s]	55[s]	61[s]	51	52[s]	62	57[s]	49	48	48	55	51[s]	46	41	41	35	RES
RM10439_RES	377107.7	6354512.9	47[s]	50[s]	54[s]	60[s]	50	51[s]	61	56[s]	48	47	47	54	50[s]	46	41	41	35	RES
RM10440_RES	377676.5	6354505.7	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10443_RES	377641.2	6354490.1	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10451_RES	377688.5	6354441.0	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10453_RES	377662.6	6354433.2	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10457_RES	377706.3	6354420.9	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10458_RES	377642.8	6354413.5	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10461_RES	377707.6	6354402.8	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10468_RES	377661.1	6354394.2	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10470_RES	376564.8	6354388.1	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10471_RES	377713.7	6354387.9	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10474_RES	377667.6	6354380.0	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10475_RES	377718.3	6354374.1	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10477_RES	377670.9	6354366.1	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10481_RES	377724.1	6354357.7	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10482_RES	376525.6	6354356.2	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10484_RES	376604.3	6354354.4	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10485_RES	376542.0	6354352.6	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10489_RES	377678.8	6354350.5	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10490_RES	376729.9	6354350.2	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10494_RES	377730.6	6354343.4	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10496_RES	377684.9	6354337.6	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10497_RES	376616.9	6354336.6	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10498_RES	376886.3	6354337.2	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
RM10503_RES	376863.5	6354333.1	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
RM10504_RES	377735.6	6354329.4	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10505_RES	376631.3	6354327.3	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10506_RES	376566.8	6354326.8	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10507_RES	377692.7	6354325.7	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10509_RES	376645.0	6354322.7	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10510_RES	376901.8	6354322.8	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
RM10516_RES	376849.2	6354318.7	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
RM10519_RES	377740.2	6354314.6	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10520_RES	377694.8	6354311.6	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10524_RES	376907.7	6354304.1	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10525_RES	376513.4	6354303.4	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10527_RES	376528.6	6354298.9	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10528_RES	376852.5	6354298.6	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10529_RES	377700.0	6354299.1	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10530_RES	377749.2	6354295.4	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10531_RES	376543.0	6354295.1	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10532_RES	376558.7	6354293.9	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10535_RES	376572.5	6354292.3	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10539_RES	376902.6	6354289.8	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10541_RES	376947.2	6354288.1	43	46	50[s]	56[s]	46	47[s]	57	52[s]	44	43	43	50	46	46	41	41	35	RES
RM10542_RES	376589.3	6354288.5	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10543_RES	376673.9	6354286.2	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10544_RES	377709.0	6354285.8	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10545_RES	376611.0	6354282.7	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10546_RES	376850.7	6354282.2	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10552_RES	376795.6	6354276.3	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10553_RES	377713.2	6354272.6	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10554_RES	376900.5	6354273.2	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10555_RES	376939.3	6354271.0	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10557_RES	376853.5	6354265.0	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10558_RES	376694.9	6354263.3	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10563_RES	377720.1	6354257.3	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10564_RES	376902.0	6354256.6	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10565_RES	377494.2	6354257.1	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10566_RES	376937.8	6354255.0	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10569_RES	376548.2	6354251.5	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10572_RES	376569.3	6354246.5	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10576_RES	377481.2	6354242.5	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10577_RES	376588.5	6354242.3	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10578_RES	376809.8	6354241.8	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10579_RES	377495.9	6354240.6	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10580_RES	376609.3	6354241.4	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10581_RES	376709.8	6354240.7	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10582_RES	376975.3	6354238.4	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10583_RES	376896.5	6354238.5	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10587_RES	376629.1	6354236.4	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10588_RES	376935.7	6354236.4	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10592_RES	376732.0	6354232.1	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10593_RES	376646.9	6354231.8	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10595_RES	377422.0	6354229.2	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10596_RES	376860.9	6354225.6	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10597_RES	377547.6	6354225.6	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10599_RES	377449.2	6354222.4	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10600_RES	376929.7	6354219.7	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10603_RES	376972.8	6354216.8	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10604_RES	376619.6	6354215.5	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10605_RES	376906.8	6354214.5	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10606_RES	377467.0	6354213.4	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10607_RES	376994.3	6354212.3	41	44	48[s]	54[s]	44	45	55	50[s]	42	41	41	48	44	46	41	41	35	RES
RM10608_RES	377483.8	6354209.4	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10609_RES	377499.2	6354207.7	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10610_RES	376633.7	6354208.2	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10611_RES	376860.1	6354207.8	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10613_RES	377061.4	6354204.8	42	45	49[s]	55[s]	45	46	56	51[s]	43	42	42	49	45	46	41	41	35	RES
RM10615_RES	376673.5	6354200.6	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10620_RES	377533.0	6354195.7	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10621_RES	377547.2	6354193.5	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10622_RES	376878.5	6354189.5	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10624_RES	376656.5	6354185.5	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10626_RES	377565.5	6354183.9	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10627_RES	377587.5	6354182.0	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10630_RES	376723.3	6354180.6	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10631_RES	376679.3	6354180.5	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10632_RES	376952.4	6354176.3	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10633_RES	376861.4	6354175.4	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10634_RES	376932.9	6354172.9	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10635_RES	376971.7	6354171.7	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10636_RES	376599.7	6354171.2	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10637_RES	376987.1	6354170.9	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10642_RES	377008.2	6354162.7	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10644_RES	376676.2	6354162.3	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10646_RES	376844.1	6354159.9	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10647_RES	377021.3	6354159.7	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10648_RES	376914.1	6354159.7	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10650_RES	377036.3	6354157.9	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10651_RES	377051.1	6354157.0	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10657_RES	376717.1	6354152.0	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10659_RES	376968.5	6354150.9	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10660_RES	377540.2	6354150.4	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10661_RES	376985.4	6354149.3	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10665_RES	376598.2	6354145.3	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10666_RES	377553.9	6354145.1	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10667_RES	376775.5	6354144.4	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10668_RES	377568.6	6354142.1	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10669_RES	376898.9	6354142.4	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10670_RES	376820.4	6354142.0	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10671_RES	376670.0	6354140.4	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10672_RES	376933.0	6354138.3	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10674_RES	376568.6	6354134.7	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10676_RES	376981.2	6354131.9	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10677_RES	376611.9	6354130.8	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10679_RES	377004.5	6354129.6	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10680_RES	376809.3	6354129.5	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10681_RES	376589.4	6354128.8	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10682_RES	376632.1	6354125.6	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10683_RES	376889.3	6354126.4	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10685_RES	376665.8	6354125.5	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10686_RES	377035.8	6354125.3	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10688_RES	376922.6	6354119.4	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10690_RES	376730.3	6354115.9	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10691_RES	376753.6	6354116.1	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10692_RES	376660.7	6354113.3	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10693_RES	376813.3	6354113.0	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10694_RES	376712.2	6354113.3	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10695_RES	376868.0	6354112.3	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10696_RES	376981.4	6354111.8	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10697_RES	376792.8	6354112.2	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10700_RES	376770.2	6354105.7	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10701_RES	377040.1	6354102.7	40	43	47[s]	53[s]	43	44	54	49[s]	41	40	40	47	43	46	41	41	35	RES
RM10702_RES	376922.7	6354100.0	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10706_RES	376813.5	6354095.4	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10707_RES	376969.0	6354093.5	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10708_RES	376869.1	6354093.5	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10710_RES	377032.0	6354088.1	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10713_RES	376787.3	6354082.0	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10714_RES	376921.6	6354079.6	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10717_RES	377029.7	6354075.5	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10718_RES	376808.8	6354076.3	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10719_RES	376604.3	6354075.3	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10721_RES	376856.5	6354074.7	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10722_RES	376870.1	6354073.1	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10723_RES	376962.4	6354072.4	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10730_RES	376892.7	6354066.1	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10732_RES	376661.0	6354065.1	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10734_RES	376702.6	6354063.6	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10736_RES	376921.0	6354063.1	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10738_RES	376679.4	6354062.0	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10739_RES	377018.1	6354061.4	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10741_RES	377037.4	6354059.1	39	42	46	52[s]	42	43	53	48[s]	40	39	39	46	42	46	41	41	35	RES
RM10742_RES	376864.5	6354059.4	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10745_RES	376738.7	6354057.1	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10747_RES	376722.0	6354054.9	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10748_RES	376890.5	6354055.1	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10749_RES	377324.5	6354054.9	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10750_RES	376960.7	6354054.0	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10754_RES	377341.3	6354051.7	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10755_RES	376912.6	6354050.3	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10756_RES	377358.9	6354048.8	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10758_RES	376804.5	6354048.7	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10759_RES	376856.5	6354047.7	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10762_RES	377012.7	6354043.5	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10764_RES	377374.6	6354040.4	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10766_RES	376912.3	6354038.0	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10770_RES	376960.7	6354036.0	38	41	45	51[s]	41	42	52	47[s]	39	38	38	45	41	46	41	41	35	RES
RM10771_RES	376759.7	6354034.8	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10773_RES	377388.3	6354032.3	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10775_RES	376857.1	6354030.0	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10778_RES	377403.3	6354028.0	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10779_RES	376909.1	6354025.6	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10781_RES	377024.3	6354023.6	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10791_RES	376764.7	6354019.3	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10793_RES	376958.7	6354017.9	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10801_RES	376911.6	6354010.7	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10804_RES	377322.3	6354006.6	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10807_RES	377002.1	6354003.5	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10809_RES	376959.5	6354002.7	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10810_RES	376782.3	6354002.8	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10814_RES	376902.0	6353998.1	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10818_RES	376846.4	6353993.8	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10822_RES	376953.7	6353989.3	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10824_RES	376861.9	6353987.1	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10825_RES	376883.3	6353985.4	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10826_RES	377014.1	6353984.2	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10828_RES	376908.6	6353982.1	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10838_RES	376866.8	6353973.3	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10839_RES	376987.3	6353970.2	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10841_RES	377010.0	6353968.1	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10844_RES	376908.0	6353966.2	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10856_RES	376943.7	6353958.7	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10868_RES	376955.4	6353950.6	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10869_RES	376970.5	6353951.0	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES
RM10870_RES	376900.3	6353950.8	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10871_RES	376986.0	6353948.8	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10875_RES	377014.9	6353946.5	37	40	44	50[s]	40	41	51	46	38	37	37	44	40	46	41	41	35	RES

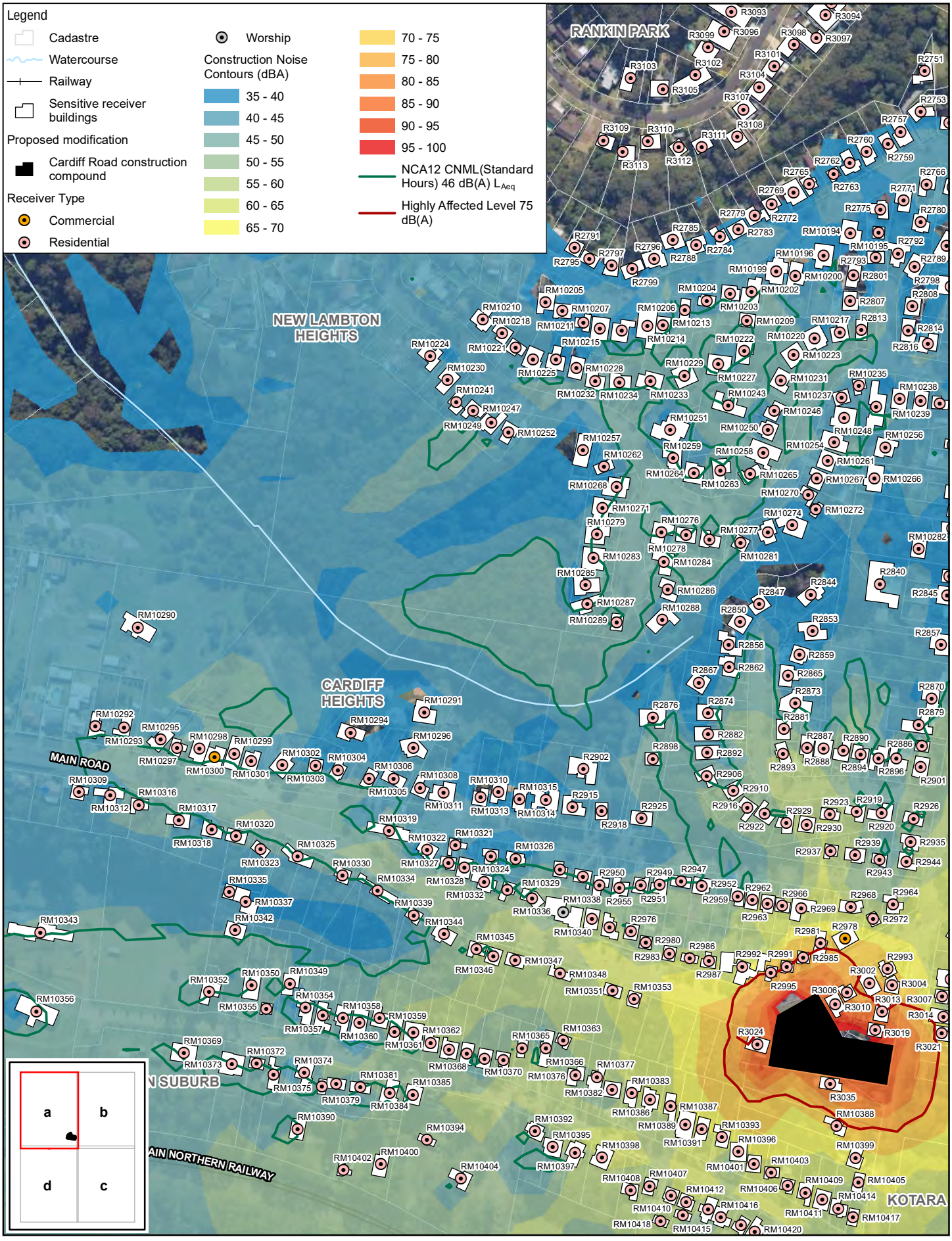
Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10901_RES	376934.3	6353912.9	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10908_RES	376948.4	6353910.1	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10909_RES	376963.9	6353910.0	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10913_RES	376983.4	6353908.5	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10918_RES	377006.2	6353901.5	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10919_RES	376913.2	6353901.5	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10929_RES	376965.5	6353890.1	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10934_RES	376998.7	6353881.6	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10938_RES	376920.4	6353878.9	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10945_RES	376950.8	6353873.1	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10950_RES	376996.4	6353867.6	36	39	43	49[s]	39	40	50	45	37	36	36	43	39	46	41	41	35	RES
RM10954_RES	377338.2	6353863.3	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10960_RES	377357.5	6353856.7	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10963_RES	376929.9	6353854.0	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10967_RES	377321.9	6353849.6	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10978_RES	376876.5	6353839.6	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10987_RES	377338.8	6353834.1	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM10991_RES	377282.2	6353828.4	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10994_RES	377375.0	6353824.7	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10996_RES	377299.6	6353822.6	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM10997_RES	376883.5	6353822.9	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM11012_RES	377328.9	6353789.3	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM11020_RES	377253.1	6353780.7	35	38	42	48[s]	38	39	49	44	36	35	35	42	38	46	41	41	35	RES
RM11022_RES	377283.7	6353777.5	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM11024_RES	377267.5	6353775.7	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM11038_RES	377251.9	6353749.8	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES
RM11047_RES	377248.7	6353720.9	34	37	41	47[s]	37	38	48	43	35	34	34	41	37	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria



Paper Size ISO A4

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

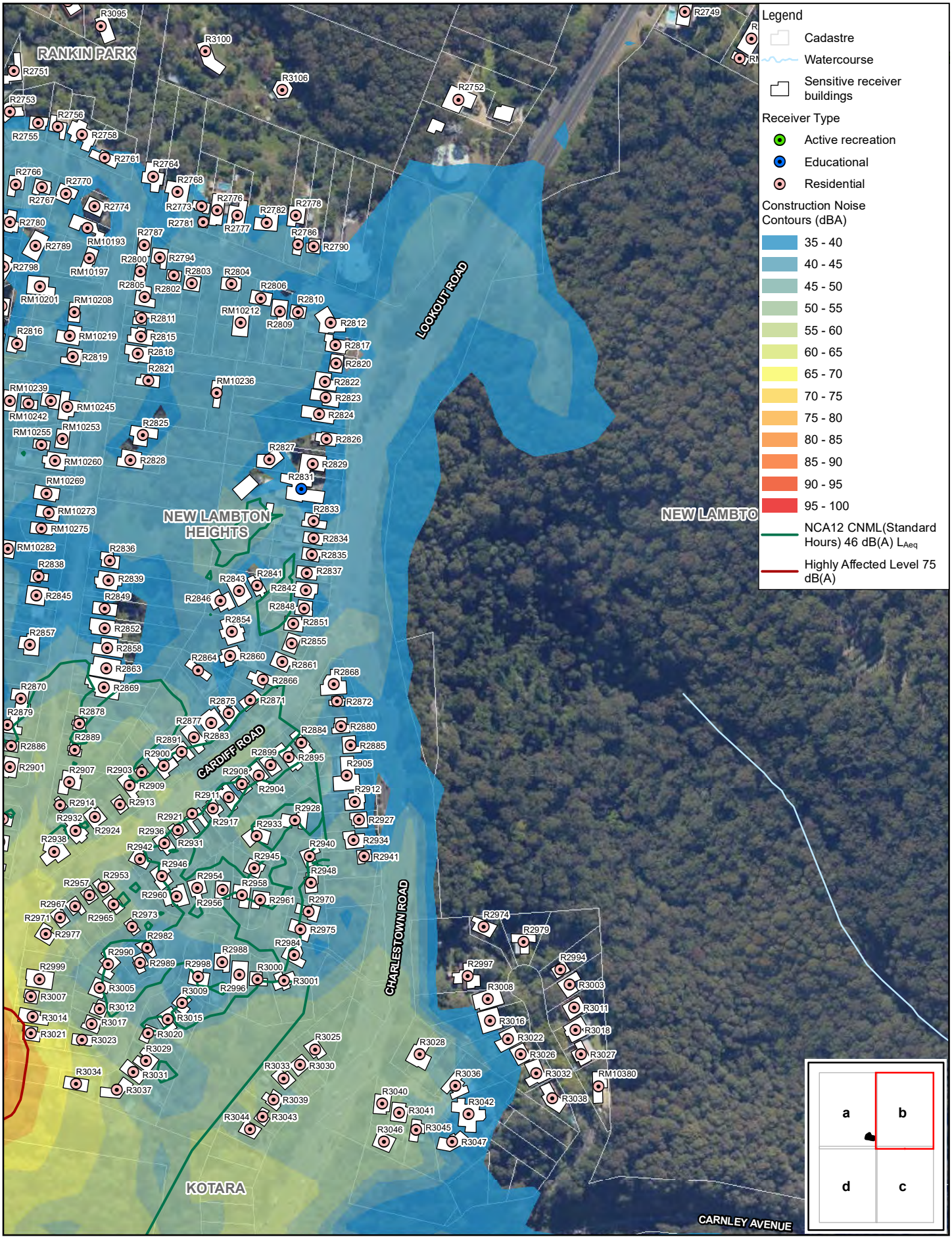
Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Cardiff Road compound: construction noise contours, MOD08- Stockpile site clearing dB(A),$L_{Aeq\ 15min}$

Project No.	12528155
Revision No.	0
Date	20 May 2021

Figure B.1a

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N004_AppendixB_CardiffRd_shtA_C_D_DDP_0.mxd
Print date: 20 May 2021 - 10:36



Paper Size ISO A4

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

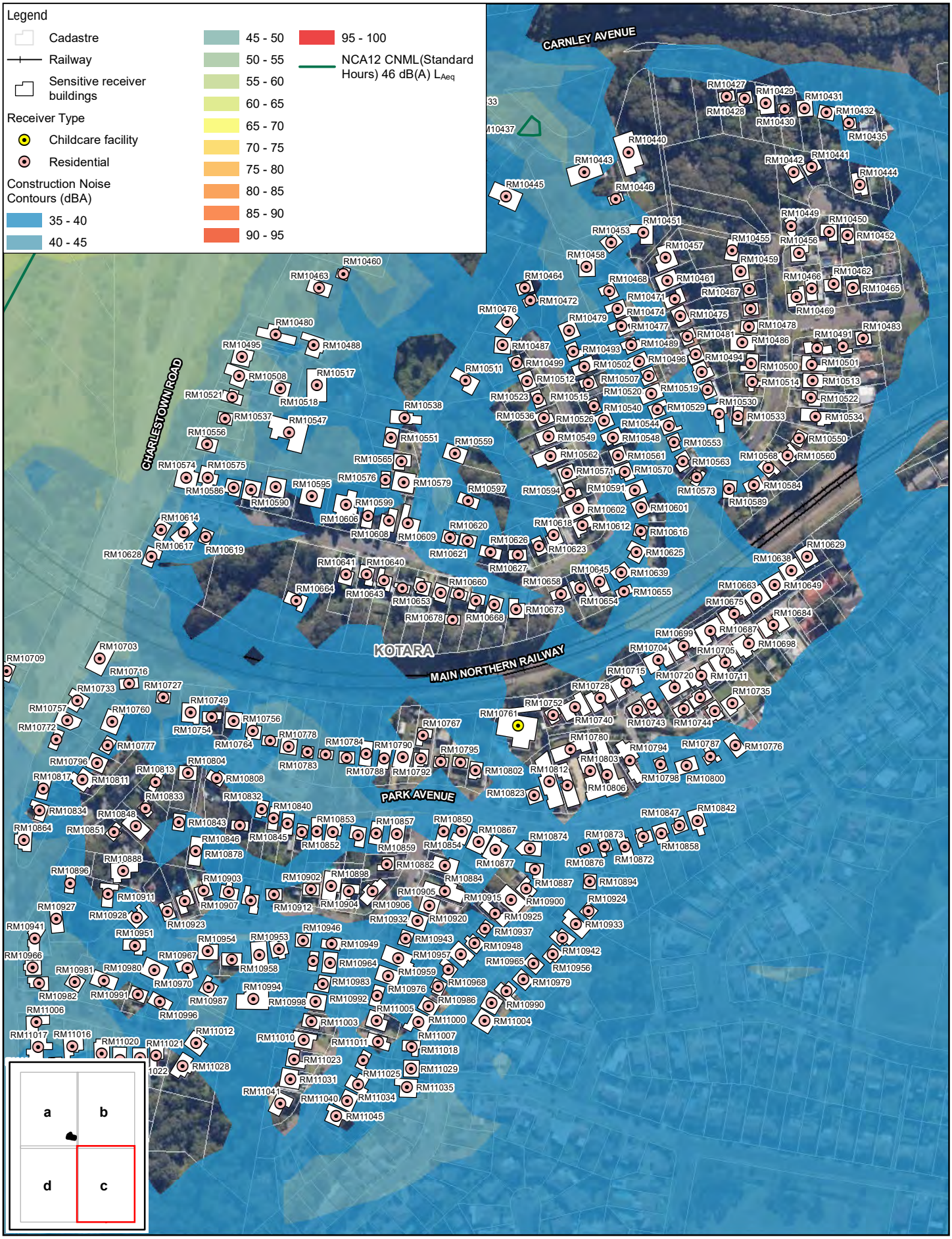
Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Cardiff Road compound: construction noise contours, MOD08- Stockpile site clearing dB(A),$L_{Aeq\ 15min}$

Project No. 12528155
Revision No. 0
Date 20 May 2021

Figure B.1b

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N004_AppendixB_CardiffRd_shtB_0.mxd
Print date: 20 May 2021 - 10:36



Paper Size ISO A4

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

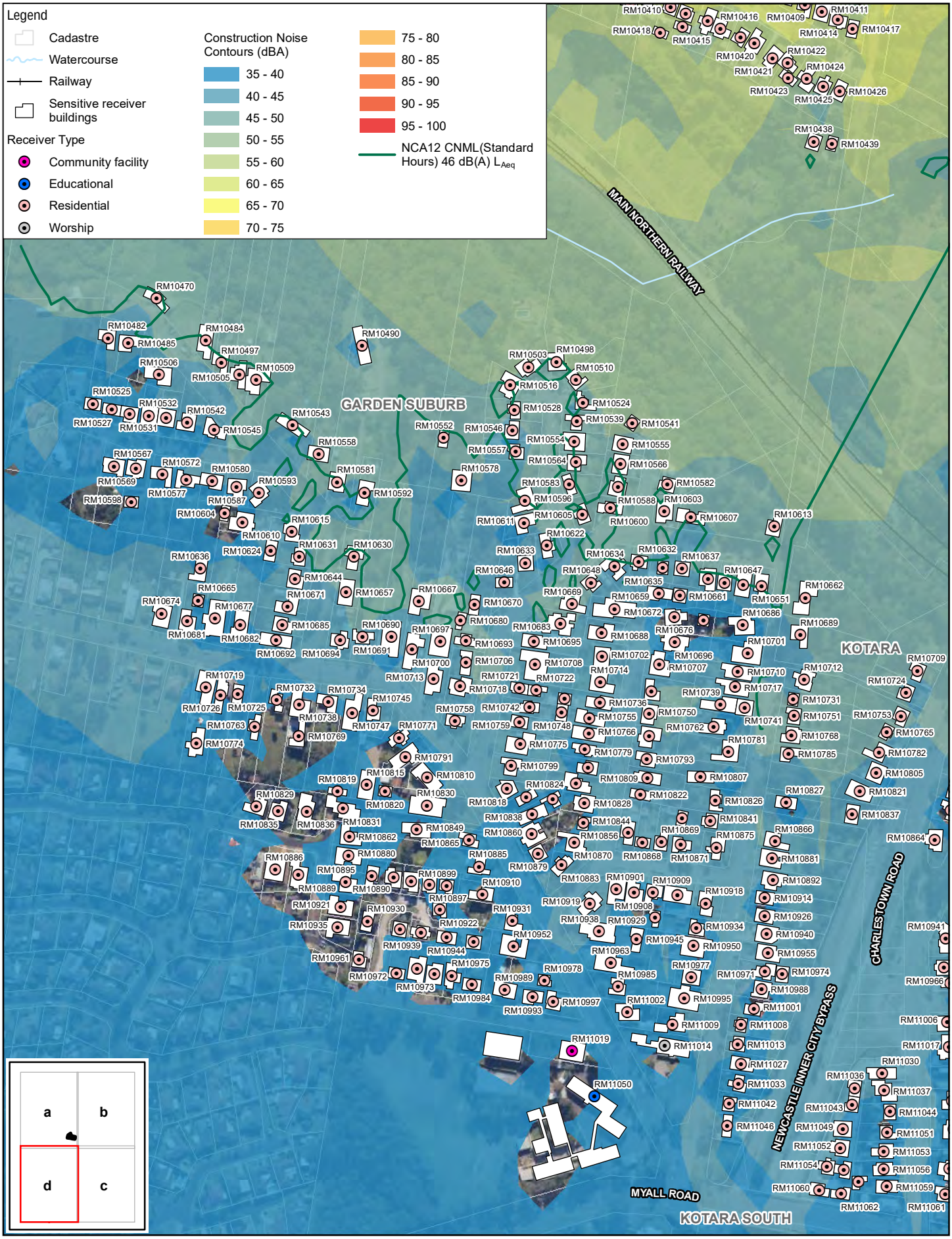
Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Cardiff Road compound: construction noise contours, MOD08- Stockpile site clearing dB(A),$L_{Aeq\ 15min}$

Project No. 12528155
Revision No. 0
Date 20 May 2021

Figure B.1c

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N004_AppendixB_CardiffRd_shtA_C_D_DDP_0.mxd
Print date: 20 May 2021 - 10:36



Paper Size ISO A4

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Cardiff Road compound: construction noise contours, MOD08- Stockpile site clearing dB(A),$L_{Aeq\ 15min}$

Project No. 12528155
Revision No. 0
Date 20 May 2021

Figure B.1d

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N004_AppendixB_CardiffRd_shtA_C_D_DDP_0.mxd
Print date: 20 May 2021 - 10:36

Appendix C

Astra Street noise impacts

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
FM0013_PRA	378154.8	6362012.1	50	53	57	63^{s}	53	54	64^{s}	59	51	50	50	57	53	60	60	60	60	PRA
RM10008_ARA	378398.0	6362493.3	55	58	62	68^{s}	58	59	69^{s}	64	56	55	55	62	58	65	65	65	65	ARA
RM10009_RES	377232.1	6362465.9	40	43	47	53	43	44^{n}	54	49^{en}	41^{n}	40^{n}	40^{n}	47^{en}	43	55	50	44	38	RES
RM10010_RES	377258.2	6362400.5	40	43	47	53	43	44^{n}	54	49^{en}	41^{n}	40^{n}	40^{n}	47^{en}	43	55	50	44	38	RES
RM10011_RES	377465.1	6362389.4	44	47	51	57^{s}	47	48^{en}	58^{s}	53^{den}	45^{en}	44^{n}	44^{n}	51^{den}	47	55	50	44	38	RES
RM10012_RES	377326.9	6362385.5	41	44	48	54	44	45^{en}	55	50^{en}	42^{n}	41^{n}	41^{n}	48^{en}	44	55	50	44	38	RES
RM10013_RES	377483.1	6362383.6	45	48	52	58^{s}	48	49^{en}	59^{s}	54^{den}	46^{en}	45^{en}	45^{en}	52^{den}	48	55	50	44	38	RES
RM10014_RES	377501.6	6362382.5	45	48	52	58^{s}	48	49^{en}	59^{s}	54^{den}	46^{en}	45^{en}	45^{en}	52^{den}	48	55	50	44	38	RES
RM10015_RES	377520.7	6362380.1	45	48	52	58^{s}	48	49^{en}	59^{s}	54^{den}	46^{en}	45^{en}	45^{en}	52^{den}	48	55	50	44	38	RES
RM10016_RES	377356.8	6362376.3	42	45	49	55	45	46^{en}	56^{s}	51^{den}	43^{n}	42^{n}	42^{n}	49^{en}	45	55	50	44	38	RES
RM10017_RES	377542.0	6362375.5	46	49	53	59^{s}	49	50^{en}	60^{s}	55^{den}	47^{en}	46^{en}	46^{en}	53^{den}	49	55	50	44	38	RES
RM10018_RES	377376.2	6362369.8	42	45	49	55	45	46^{en}	56^{s}	51^{den}	43^{n}	42^{n}	42^{n}	49^{en}	45	55	50	44	38	RES
RM10019_RES	377284.4	6362366.4	40	43	47	53	43	44^{n}	54	49^{en}	41^{n}	40^{n}	40^{n}	47^{en}	43	55	50	44	38	RES
RM10020_RES	377394.4	6362366.0	43	46	50	56^{s}	46	47^{en}	57^{s}	52^{den}	44^{n}	43^{n}	43^{n}	50^{en}	46	55	50	44	38	RES
RM10021_RES	377556.7	6362362.0	46	49	53	59^{s}	49	50^{en}	60^{s}	55^{den}	47^{en}	46^{en}	46^{en}	53^{den}	49	55	50	44	38	RES
RM10022_RES	377343.2	6362360.5	39	42	46	52	42	43^{n}	53	48^{en}	40^{n}	39^{n}	39^{n}	46^{en}	42	55	50	44	38	RES
RM10023_RES	377421.3	6362360.6	42	45	49	55	45	46^{en}	56^{s}	51^{den}	43^{n}	42^{n}	42^{n}	49^{en}	45	55	50	44	38	RES
RM10024_RES	377405.6	6362359.9	43	46	50	56^{s}	46	47^{en}	57^{s}	52^{den}	44^{n}	43^{n}	43^{n}	50^{en}	46	55	50	44	38	RES
RM10025_RES	377574.4	6362357.6	46	49	53	59^{s}	49	50^{en}	60^{s}	55^{den}	47^{en}	46^{en}	46^{en}	53^{den}	49	55	50	44	38	RES
RM10026_RES	377292.4	6362354.0	40	43	47	53	43	44^{n}	54	49^{en}	41^{n}	40^{n}	40^{n}	47^{en}	43	55	50	44	38	RES
RM10027_RES	377437.0	6362348.8	42	45	49	55	45	46^{en}	56^{s}	51^{den}	43^{n}	42^{n}	42^{n}	49^{en}	45	55	50	44	38	RES
RM10028_RES	377450.2	6362346.7	43	46	50	56^{s}	46	47^{en}	57^{s}	52^{den}	44^{n}	43^{n}	43^{n}	50^{en}	46	55	50	44	38	RES
RM10029_RES	377584.6	6362344.7	46	49	53	59^{s}	49	50^{en}	60^{s}	55^{den}	47^{en}	46^{en}	46^{en}	53^{den}	49	55	50	44	38	RES
RM10030_RES	377302.6	6362342.5	39	42	46	52	42	43^{n}	53	48^{en}	40^{n}	39^{n}	39^{n}	46^{en}	42	55	50	44	38	RES
RM10031_RES	377465.3	6362342.9	43	46	50	56^{s}	46	47^{en}	57^{s}	52^{den}	44^{n}	43^{n}	43^{n}	50^{en}	46	55	50	44	38	RES
RM10032_RES	377351.6	6362342.5	41	44	48	54	44	45^{en}	55	50^{en}	42^{n}	41^{n}	41^{n}	48^{en}	44	55	50	44	38	RES
RM10033_RES	377480.9	6362341.0	43	46	50	56^{s}	46	47^{en}	57^{s}	52^{den}	44^{n}	43^{n}	43^{n}	50^{en}	46	55	50	44	38	RES
RM10034_RES	377598.9	6362337.3	46	49	53	59^{s}	49	50^{en}	60^{s}	55^{den}	47^{en}	46^{en}	46^{en}	53^{den}	49	55	50	44	38	RES
RM10035_RES	377494.6	6362335.4	43	46	50	56^{s}	46	47^{en}	57^{s}	52^{den}	44^{n}	43^{n}	43^{n}	50^{en}	46	55	50	44	38	RES

Notes:

^{s} = exceeds standard hours criteria, ^{d} = exceeds OOHW period 1 day criteria, ^{e} = exceeds OOHW period 1 evening criteria, ^{n} = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10036_RES	377510.0	6362331.8	44	47	51	57^{s}	47	48^{en}	58^{s}	53^{den}	45^{en}	44^{n}	44^{n}	51^{den}	47	55	50	44	38	RES
RM10037_RES	377366.3	6362330.9	41	44	48	54	44	45^{en}	55	50^{en}	42^{n}	41^{n}	41^{n}	48^{en}	44	55	50	44	38	RES
RM10038_RES	377307.5	6362329.5	40	43	47	53	43	44^{n}	54	49^{en}	41^{n}	40^{n}	40^{n}	47^{en}	43	55	50	44	38	RES
RM10039_RES	377611.4	6362328.9	46	49	53	59^{s}	49	50^{en}	60^{s}	55^{den}	47^{en}	46^{en}	46^{en}	53^{den}	49	55	50	44	38	RES
RM10040_RES	377521.7	6362324.6	44	47	51	57^{s}	47	48^{en}	58^{s}	53^{den}	45^{en}	44^{n}	44^{n}	51^{den}	47	55	50	44	38	RES
RM10041_RES	377628.4	6362324.1	47	50	54	60^{s}	50	51^{den}	61^{s}	56^{sden}	48^{en}	47^{en}	47^{en}	54^{den}	50	55	50	44	38	RES
RM10042_RES	377535.5	6362318.4	44	47	51	57^{s}	47	48^{en}	58^{s}	53^{den}	45^{en}	44^{n}	44^{n}	51^{den}	47	55	50	44	38	RES
RM10043_RES	377372.2	6362317.0	41	44	48	54	44	45^{en}	55	50^{en}	42^{n}	41^{n}	41^{n}	48^{en}	44	55	50	44	38	RES
RM10044_RES	377318.2	6362317.1	40	43	47	53	43	44^{n}	54	49^{en}	41^{n}	40^{n}	40^{n}	47^{en}	43	55	50	44	38	RES
RM10045_RES	377639.7	6362315.2	47	50	54	60^{s}	50	51^{den}	61^{s}	56^{sden}	48^{en}	47^{en}	47^{en}	54^{den}	50	55	50	44	38	RES
RM10046_RES	377550.7	6362311.6	44	47	51	57^{s}	47	48^{en}	58^{s}	53^{den}	45^{en}	44^{n}	44^{n}	51^{den}	47	55	50	44	38	RES
RM10047_RES	377653.2	6362306.9	47	50	54	60^{s}	50	51^{den}	61^{s}	56^{sden}	48^{en}	47^{en}	47^{en}	54^{den}	50	55	50	44	38	RES
RM10048_RES	377322.0	6362304.4	39	42	46	52	42	43^{n}	53	48^{en}	40^{n}	39^{n}	39^{n}	46^{en}	42	55	50	44	38	RES
RM10049_RES	377566.4	6362302.8	44	47	51	57^{s}	47	48^{en}	58^{s}	53^{den}	45^{en}	44^{n}	44^{n}	51^{den}	47	55	50	44	38	RES
RM10050_RES	377412.3	6362301.3	41	44	48	54	44	45^{en}	55	50^{en}	42^{n}	41^{n}	41^{n}	48^{en}	44	55	50	44	38	RES
RM10051_RES	377432.8	6362299.9	42	45	49	55	45	46^{en}	56^{s}	51^{den}	43^{n}	42^{n}	42^{n}	49^{en}	45	55	50	44	38	RES
RM10052_RES	377580.2	6362295.7	45	48	52	58^{s}	48	49^{en}	59^{s}	54^{den}	46^{en}	45^{en}	45^{en}	52^{den}	48	55	50	44	38	RES
RM10053_RES	377663.5	6362296.1	47	50	54	60^{s}	50	51^{den}	61^{s}	56^{sden}	48^{en}	47^{en}	47^{en}	54^{den}	50	55	50	44	38	RES
RM10054_RES	377396.0	6362295.2	41	44	48	54	44	45^{en}	55	50^{en}	42^{n}	41^{n}	41^{n}	48^{en}	44	55	50	44	38	RES
RM10055_RES	377445.0	6362293.4	42	45	49	55	45	46^{en}	56^{s}	51^{den}	43^{n}	42^{n}	42^{n}	49^{en}	45	55	50	44	38	RES
RM10056_RES	377333.2	6362290.9	39	42	46	52	42	43^{n}	53	48^{en}	40^{n}	39^{n}	39^{n}	46^{en}	42	55	50	44	38	RES
RM10057_RES	377460.3	6362291.2	42	45	49	55	45	46^{en}	56^{s}	51^{den}	43^{n}	42^{n}	42^{n}	49^{en}	45	55	50	44	38	RES
RM10058_RES	377380.2	6362289.4	41	44	48	54	44	45^{en}	55	50^{en}	42^{n}	41^{n}	41^{n}	48^{en}	44	55	50	44	38	RES
RM10059_RES	377473.4	6362286.1	42	45	49	55	45	46^{en}	56^{s}	51^{den}	43^{n}	42^{n}	42^{n}	49^{en}	45	55	50	44	38	RES
RM10060_RES	377592.8	6362285.4	45	48	52	58^{s}	48	49^{en}	59^{s}	54^{den}	46^{en}	45^{en}	45^{en}	52^{den}	48	55	50	44	38	RES
RM10061_RES	377678.0	6362285.2	47	50	54	60^{s}	50	51^{den}	61^{s}	56^{sden}	48^{en}	47^{en}	47^{en}	54^{den}	50	55	50	44	38	RES
RM10062_RES	377694.8	6362284.2	47	50	54	60^{s}	50	51^{den}	61^{s}	56^{sden}	48^{en}	47^{en}	47^{en}	54^{den}	50	55	50	44	38	RES
RM10063_RES	377488.8	6362282.6	42	45	49	55	45	46^{en}	56^{s}	51^{den}	43^{n}	42^{n}	42^{n}	49^{en}	45	55	50	44	38	RES
RM10064_RES	377605.5	6362277.5	44	47	51	57^{s}	47	48^{en}	58^{s}	53^{den}	45^{en}	44^{n}	44^{n}	51^{den}	47	55	50	44	38	RES

Notes:

^{s} = exceeds standard hours criteria, ^{d} = exceeds OOHW period 1 day criteria, ^{e} = exceeds OOHW period 1 evening criteria, ^{n} = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10065_RES	377705.8	6362276.6	47	50	54	60^{s}	50	51^{den}	61^{s}	56^{sden}	48^{en}	47^{en}	47^{en}	54^{den}	50	55	50	44	38	RES
RM10066_RES	377503.4	6362275.8	42	45	49	55	45	46^{en}	56^{s}	51^{den}	43^{n}	42^{n}	42^{n}	49^{en}	45	55	50	44	38	RES
RM10067_RES	377337.9	6362276.3	40	43	47	53	43	44^{n}	54	49^{en}	41^{n}	40^{n}	40^{n}	47^{en}	43	55	50	44	38	RES
RM10068_RES	377519.6	6362275.0	43	46	50	56^{s}	46	47^{en}	57^{s}	52^{den}	44^{n}	43^{n}	43^{n}	50^{en}	46	55	50	44	38	RES
RM10069_RES	377621.1	6362274.4	45	48	52	58^{s}	48	49^{en}	59^{s}	54^{den}	46^{en}	45^{en}	45^{en}	52^{den}	48	55	50	44	38	RES
RM10070_RES	377530.5	6362267.7	42	45	49	55	45	46^{en}	56^{s}	51^{den}	43^{n}	42^{n}	42^{n}	49^{en}	45	55	50	44	38	RES
RM10071_RES	377720.3	6362266.7	47	50	54	60^{s}	50	51^{den}	61^{s}	56^{sden}	48^{en}	47^{en}	47^{en}	54^{den}	50	55	50	44	38	RES
RM10072_RES	377634.3	6362265.9	45	48	52	58^{s}	48	49^{en}	59^{s}	54^{den}	46^{en}	45^{en}	45^{en}	52^{den}	48	55	50	44	38	RES
RM10073_RES	377346.3	6362264.2	37	40	44	50	40	41^{n}	51	46^{en}	38	37	37	44^{n}	40	55	50	44	38	RES
RM10074_RES	377733.5	6362261.4	47	50	54	60^{s}	50	51^{den}	61^{s}	56^{sden}	48^{en}	47^{en}	47^{en}	54^{den}	50	55	50	44	38	RES
RM10075_RES	377549.1	6362261.1	43	46	50	56^{s}	46	47^{en}	57^{s}	52^{den}	44^{n}	43^{n}	43^{n}	50^{en}	46	55	50	44	38	RES
RM10076_RES	377647.0	6362255.0	45	48	52	58^{s}	48	49^{en}	59^{s}	54^{den}	46^{en}	45^{en}	45^{en}	52^{den}	48	55	50	44	38	RES
RM10077_RES	377422.7	6362253.9	38	41	45	51	41	42^{n}	52	47^{en}	39^{n}	38	38	45^{en}	41	55	50	44	38	RES
RM10078_RES	377355.6	6362251.8	39	42	46	52	42	43^{n}	53	48^{en}	40^{n}	39^{n}	39^{n}	46^{en}	42	55	50	44	38	RES
RM10079_RES	377436.6	6362250.4	39	42	46	52	42	43^{n}	53	48^{en}	40^{n}	39^{n}	39^{n}	46^{en}	42	55	50	44	38	RES
RM10080_RES	377660.7	6362249.4	45	48	52	58^{s}	48	49^{en}	59^{s}	54^{den}	46^{en}	45^{en}	45^{en}	52^{den}	48	55	50	44	38	RES
RM10081_RES	377561.1	6362247.2	43	46	50	56^{s}	46	47^{en}	57^{s}	52^{den}	44^{n}	43^{n}	43^{n}	50^{en}	46	55	50	44	38	RES
RM10082_RES	377407.5	6362245.6	39	42	46	52	42	43^{n}	53	48^{en}	40^{n}	39^{n}	39^{n}	46^{en}	42	55	50	44	38	RES
RM10083_RES	377450.3	6362246.4	38	41	45	51	41	42^{n}	52	47^{en}	39^{n}	38	38	45^{en}	41	55	50	44	38	RES
RM10084_RES	377465.7	6362240.3	39	42	46	52	42	43^{n}	53	48^{en}	40^{n}	39^{n}	39^{n}	46^{en}	42	55	50	44	38	RES
RM10085_RES	377573.0	6362240.1	42	45	49	55	45	46^{en}	56^{s}	51^{den}	43^{n}	42^{n}	42^{n}	49^{en}	45	55	50	44	38	RES
RM10086_RES	377746.1	6362238.9	47	50	54	60^{s}	50	51^{den}	61^{s}	56^{sden}	48^{en}	47^{en}	47^{en}	54^{den}	50	55	50	44	38	RES
RM10087_RES	377679.4	6362237.9	46	49	53	59^{s}	49	50^{en}	60^{s}	55^{den}	47^{en}	46^{en}	46^{en}	53^{den}	49	55	50	44	38	RES
RM10088_RES	377362.5	6362237.6	38	41	45	51	41	42^{n}	52	47^{en}	39^{n}	38	38	45^{en}	41	55	50	44	38	RES
RM10089_RES	377480.0	6362233.3	40	43	47	53	43	44^{n}	54	49^{en}	41^{n}	40^{n}	40^{n}	47^{en}	43	55	50	44	38	RES
RM10090_RES	377602.4	6362233.3	42	45	49	55	45	46^{en}	56^{s}	51^{den}	43^{n}	42^{n}	42^{n}	49^{en}	45	55	50	44	38	RES
RM10091_RES	377586.8	6362232.8	43	46	50	56^{s}	46	47^{en}	57^{s}	52^{den}	44^{n}	43^{n}	43^{n}	50^{en}	46	55	50	44	38	RES
RM10092_RES	377497.1	6362232.0	40	43	47	53	43	44^{n}	54	49^{en}	41^{n}	40^{n}	40^{n}	47^{en}	43	55	50	44	38	RES
RM10093_RES	377618.0	6362228.4	43	46	50	56^{s}	46	47^{en}	57^{s}	52^{den}	44^{n}	43^{n}	43^{n}	50^{en}	46	55	50	44	38	RES

Notes:

^{s} = exceeds standard hours criteria, ^{d} = exceeds OOHW period 1 day criteria, ^{e} = exceeds OOHW period 1 evening criteria, ^{n} = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10094_RES	378426.8	6362225.0	54	57	61^{s}	67^{s}	57	58^{den}	68^{s}	63^{sden}	55^{den}	54^{en}	54^{en}	61^{sden}	57	59	54	48	40	RES
RM10095_RES	377516.8	6362224.4	41	44	48	54	44	45^{en}	55	50^{en}	42^{n}	41^{n}	41^{n}	48^{en}	44	55	50	44	38	RES
RM10096_RES	377754.0	6362224.3	47	50	54	60^{s}	50	51^{den}	61^{s}	56^{sden}	48^{en}	47^{en}	47^{en}	54^{den}	50	55	50	44	38	RES
RM10097_RES	377373.2	6362224.1	39	42	46	52	42	43^{n}	53	48^{en}	40^{n}	39^{n}	39^{n}	46^{en}	42	55	50	44	38	RES
RM10098_RES	377632.3	6362221.1	44	47	51	57^{s}	47	48^{en}	58^{s}	53^{den}	45^{en}	44^{n}	44^{n}	51^{den}	47	55	50	44	38	RES
RM10099_RES	377648.9	6362221.2	44	47	51	57^{s}	47	48^{en}	58^{s}	53^{den}	45^{en}	44^{n}	44^{n}	51^{den}	47	55	50	44	38	RES
RM10100_RES	377423.4	6362220.9	39	42	46	52	42	43^{n}	53	48^{en}	40^{n}	39^{n}	39^{n}	46^{en}	42	55	50	44	38	RES
RM10101_RES	377532.5	6362216.3	40	43	47	53	43	44^{n}	54	49^{en}	41^{n}	40^{n}	40^{n}	47^{en}	43	55	50	44	38	RES
RM10102_RES	377666.5	6362209.9	44	47	51	57^{s}	47	48^{en}	58^{s}	53^{den}	45^{en}	44^{n}	44^{n}	51^{den}	47	55	50	44	38	RES
RM10103_RES	377375.4	6362208.0	39	42	46	52	42	43^{n}	53	48^{en}	40^{n}	39^{n}	39^{n}	46^{en}	42	55	50	44	38	RES
RM10104_RES	377425.8	6362202.0	39	42	46	52	42	43^{n}	53	48^{en}	40^{n}	39^{n}	39^{n}	46^{en}	42	55	50	44	38	RES
RM10105_RES	377503.8	6362199.8	39	42	46	52	42	43^{n}	53	48^{en}	40^{n}	39^{n}	39^{n}	46^{en}	42	55	50	44	38	RES
RM10106_RES	377748.3	6362196.4	46	49	53	59^{s}	49	50^{en}	60^{s}	55^{den}	47^{en}	46^{en}	46^{en}	53^{den}	49	55	50	44	38	RES
RM10107_RES	377487.3	6362188.4	38	41	45	51	41	42^{n}	52	47^{en}	39^{n}	38	38	45^{en}	41	55	50	44	38	RES
RM10108_RES	377417.2	6362188.1	38	41	45	51	41	42^{n}	52	47^{en}	39^{n}	38	38	45^{en}	41	55	50	44	38	RES
RM10109_RES	377571.0	6362187.4	40	43	47	53	43	44^{n}	54	49^{en}	41^{n}	40^{n}	40^{n}	47^{en}	43	55	50	44	38	RES
RM10110_RES	377743.5	6362179.9	46	49	53	59^{s}	49	50^{en}	60^{s}	55^{den}	47^{en}	46^{en}	46^{en}	53^{den}	49	55	50	44	38	RES
RM10111_RES	377475.8	6362180.1	39	42	46	52	42	43^{n}	53	48^{en}	40^{n}	39^{n}	39^{n}	46^{en}	42	55	50	44	38	RES
RM10112_RES	377412.2	6362176.3	38	41	45	51	41	42^{n}	52	47^{en}	39^{n}	38	38	45^{en}	41	55	50	44	38	RES
RM10113_RES	377588.3	6362175.0	40	43	47	53	43	44^{n}	54	49^{en}	41^{n}	40^{n}	40^{n}	47^{en}	43	55	50	44	38	RES
RM10114_RES	377651.9	6362174.1	42	45	49	55	45	46^{en}	56^{s}	51^{den}	43^{n}	42^{n}	42^{n}	49^{en}	45	55	50	44	38	RES
RM10115_RES	377459.8	6362173.4	39	42	46	52	42	43^{n}	53	48^{en}	40^{n}	39^{n}	39^{n}	46^{en}	42	55	50	44	38	RES
RM10116_RES	377548.5	6362167.3	39	42	46	52	42	43^{n}	53	48^{en}	40^{n}	39^{n}	39^{n}	46^{en}	42	55	50	44	38	RES
RM10117_RES	377728.0	6362165.0	45	48	52	58^{s}	48	49^{en}	59^{s}	54^{den}	46^{en}	45^{en}	45^{en}	52^{den}	48	55	50	44	38	RES
RM10118_RES	377532.9	6362164.0	38	41	45	51	41	42^{n}	52	47^{en}	39^{n}	38	38	45^{en}	41	55	50	44	38	RES
RM10119_RES	377449.1	6362162.7	39	42	46	52	42	43^{n}	53	48^{en}	40^{n}	39^{n}	39^{n}	46^{en}	42	55	50	44	38	RES
RM10120_RES	378561.1	6362162.2	44	47	51	57	47	48^{n}	58	53^{en}	45^{n}	44^{n}	44^{n}	51^{en}	47	59	54	48	40	RES
RM10121_RES	377407.3	6362161.9	38	41	45	51	41	42^{n}	52	47^{en}	39^{n}	38	38	45^{en}	41	55	50	44	38	RES
RM10122_RES	377667.3	6362155.7	40	43	47	53	43	44^{n}	54	49^{en}	41^{n}	40^{n}	40^{n}	47^{en}	43	55	50	44	38	RES

Notes:

^{s} = exceeds standard hours criteria, ^{d} = exceeds OOHW period 1 day criteria, ^{e} = exceeds OOHW period 1 evening criteria, ^{n} = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10123_RES	377523.5	6362153.8	37	40	44	50	40	41[n]	51	46[en]	38	37	37	44[n]	40	55	50	44	38	RES
RM10124_RES	378525.6	6362150.0	43	46	50	56	46	47[n]	57	52[en]	44[n]	43[n]	43[n]	50[en]	46	59	54	48	40	RES
RM10125_RES	377689.9	6362148.7	40	43	47	53	43	44[n]	54	49[en]	41[n]	40[n]	40[n]	47[en]	43	55	50	44	38	RES
RM10126_RES	377441.5	6362148.6	38	41	45	51	41	42[n]	52	47[en]	39[n]	38	38	45[en]	41	55	50	44	38	RES
RM10127_RES	378569.6	6362146.6	44	47	51	57	47	48[n]	58	53[en]	45[n]	44[n]	44[n]	51[en]	47	59	54	48	40	RES
RM10128_RES	377709.8	6362146.2	45	48	52	58[s]	48	49[en]	59[s]	54[den]	46[en]	45[en]	45[en]	52[den]	48	55	50	44	38	RES
RM10129_RES	377494.2	6362140.3	38	41	45	51	41	42[n]	52	47[en]	39[n]	38	38	45[en]	41	55	50	44	38	RES
RM10130_RES	377513.7	6362140.3	40	43	47	53	43	44[n]	54	49[en]	41[n]	40[n]	40[n]	47[en]	43	55	50	44	38	RES
RM10131_RES	378530.3	6362135.9	44	47	51	57	47	48[n]	58	53[en]	45[n]	44[n]	44[n]	51[en]	47	59	54	48	40	RES
RM10132_RES	378579.2	6362136.0	45	48	52	58	48	49[en]	59	54[en]	46[n]	45[n]	45[n]	52[en]	48	59	54	48	40	RES
RM10133_RES	377482.0	6362130.9	38	41	45	51	41	42[n]	52	47[en]	39[n]	38	38	45[en]	41	55	50	44	38	RES
RM10134_RES	378587.8	6362122.1	43	46	50	56	46	47[n]	57	52[en]	44[n]	43[n]	43[n]	50[en]	46	59	54	48	40	RES
RM10135_RES	378536.5	6362120.0	43	46	50	56	46	47[n]	57	52[en]	44[n]	43[n]	43[n]	50[en]	46	59	54	48	40	RES
RM10136_RES	377470.8	6362119.5	39	42	46	52	42	43[n]	53	48[en]	40[n]	39[n]	39[n]	46[en]	42	55	50	44	38	RES
RM10137_RES	377457.4	6362113.1	36	39	43	49	39	40[n]	50	45[en]	37	36	36	43[n]	39	55	50	44	38	RES
RM10138_RES	378539.6	6362106.2	43	46	50	56	46	47[n]	57	52[en]	44[n]	43[n]	43[n]	50[en]	46	59	54	48	40	RES
RM10140_RES	378585.7	6362104.4	43	46	50	56	46	47[n]	57	52[en]	44[n]	43[n]	43[n]	50[en]	46	59	54	48	40	RES
RM10141_RES	378852.2	6362098.2	40	43	47	53	43	44[n]	54	49[en]	41[n]	40	40	47[n]	43	59	54	48	40	RES
RM10142_RES	378602.1	6362095.0	43	46	50	56	46	47[n]	57	52[en]	44[n]	43[n]	43[n]	50[en]	46	59	54	48	40	RES
RM10143_RES	378550.4	6362090.4	42	45	49	55	45	46[n]	56	51[en]	43[n]	42[n]	42[n]	49[en]	45	59	54	48	40	RES
RM10146_RES	378605.2	6362078.0	43	46	50	56	46	47[n]	57	52[en]	44[n]	43[n]	43[n]	50[en]	46	59	54	48	40	RES
RM10148_RES	378552.2	6362076.5	42	45	49	55	45	46[n]	56	51[en]	43[n]	42[n]	42[n]	49[en]	45	59	54	48	40	RES
RM10150_RES	378617.5	6362072.4	38	41	45	51	41	42[n]	52	47[n]	39	38	38	45[n]	41	59	54	48	40	RES
RM10152_RES	378557.4	6362061.8	42	45	49	55	45	46[n]	56	51[en]	43[n]	42[n]	42[n]	49[en]	45	59	54	48	40	RES
RM10153_RES	378597.6	6362061.5	41	44	48	54	44	45[n]	55	50[en]	42[n]	41[n]	41[n]	48[n]	44	59	54	48	40	RES
RM10154_RES	378606.5	6362049.1	41	44	48	54	44	45[n]	55	50[en]	42[n]	41[n]	41[n]	48[n]	44	59	54	48	40	RES
RM10155_RES	378559.6	6362045.7	45	48	52	58	48	49[en]	59	54[en]	46[n]	45[n]	45[n]	52[en]	48	59	54	48	40	RES
RM10156_RES	378575.5	6362028.9	44	47	51	57	47	48[n]	58	53[en]	45[n]	44[n]	44[n]	51[en]	47	59	54	48	40	RES
RM10157_RES	377561.6	6362020.8	40	43	47	53	43	44[n]	54	49[en]	41[n]	40[n]	40[n]	47[en]	43	55	50	44	38	RES

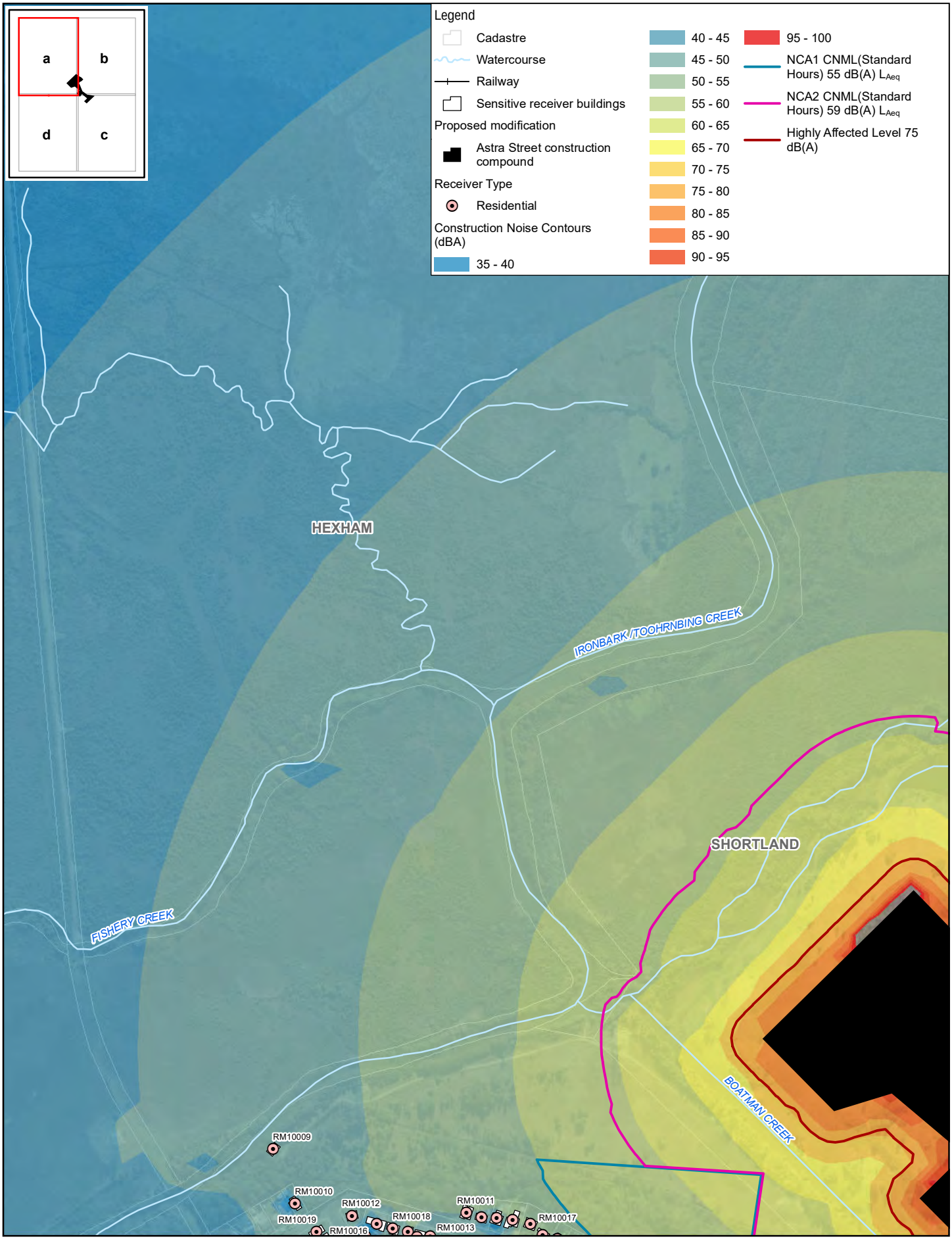
Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
RM10158_RES	378560.2	6362016.7	45	48	52	58	48	49[en]	59	54[en]	46[n]	45[n]	45[n]	52[en]	48	59	54	48	40	RES
RM10159_RES	378543.0	6362008.5	45	48	52	58	48	49[en]	59	54[en]	46[n]	45[n]	45[n]	52[en]	48	59	54	48	40	RES
RM10160_RES	378524.6	6362000.1	45	48	52	58	48	49[en]	59	54[en]	46[n]	45[n]	45[n]	52[en]	48	59	54	48	40	RES
RM10161_RES	377591.3	6361995.4	41	44	48	54	44	45[en]	55	50[en]	42[n]	41[n]	41[n]	48[en]	44	55	50	44	38	RES
RM10162_RES	377606.9	6361985.8	41	44	48	54	44	45[en]	55	50[en]	42[n]	41[n]	41[n]	48[en]	44	55	50	44	38	RES
RM10163_RES	377622.8	6361983.6	41	44	48	54	44	45[en]	55	50[en]	42[n]	41[n]	41[n]	48[en]	44	55	50	44	38	RES
RM10164_RES	377650.6	6361982.8	41	44	48	54	44	45[en]	55	50[en]	42[n]	41[n]	41[n]	48[en]	44	55	50	44	38	RES
RM10165_RES	377636.0	6361980.7	41	44	48	54	44	45[en]	55	50[en]	42[n]	41[n]	41[n]	48[en]	44	55	50	44	38	RES
RM10166_RES	377666.3	6361979.0	41	44	48	54	44	45[en]	55	50[en]	42[n]	41[n]	41[n]	48[en]	44	55	50	44	38	RES
RM10167_RES	377679.9	6361973.2	41	44	48	54	44	45[en]	55	50[en]	42[n]	41[n]	41[n]	48[en]	44	55	50	44	38	RES
RM10168_RES	377631.4	6361935.9	39	42	46	52	42	43[n]	53	48[en]	40[n]	39[n]	39[n]	46[en]	42	55	50	44	38	RES
RM10169_RES	377645.1	6361935.5	40	43	47	53	43	44[n]	54	49[en]	41[n]	40[n]	40[n]	47[en]	43	55	50	44	38	RES
RM10170_RES	377660.0	6361933.1	41	44	48	54	44	45[en]	55	50[en]	42[n]	41[n]	41[n]	48[en]	44	55	50	44	38	RES
RM10171_RES	377673.7	6361926.2	41	44	48	54	44	45[en]	55	50[en]	42[n]	41[n]	41[n]	48[en]	44	55	50	44	38	RES
RM10172_RES	377654.1	6361908.0	38	41	45	51	41	42[n]	52	47[en]	39[n]	38	38	45[en]	41	55	50	44	38	RES
RM10173_RES	378425.8	6361706.9	41	44	48	54	44	45[n]	55	50[en]	42[n]	41[n]	41[n]	48[n]	44	59	54	48	40	RES
RM10174_EDU	378097.8	6361705.4	42	45	49	55[s]	45	46	56[s]	51	43	42	42	49	45	52	52	52	52	EDU
RM10177_RES	378407.5	6361681.9	41	44	48	54	44	45[n]	55	50[en]	42[n]	41[n]	41[n]	48[n]	44	59	54	48	40	RES
RM10178_RES	378399.0	6361675.7	41	44	48	54	44	45[n]	55	50[en]	42[n]	41[n]	41[n]	48[n]	44	59	54	48	40	RES
RM10179_RES	378380.4	6361668.2	41	44	48	54	44	45[n]	55	50[en]	42[n]	41[n]	41[n]	48[n]	44	59	54	48	40	RES
RM10182_RES	378371.7	6361658.3	41	44	48	54	44	45[n]	55	50[en]	42[n]	41[n]	41[n]	48[n]	44	59	54	48	40	RES
RM10183_RES	378355.7	6361653.8	41	44	48	54	44	45[n]	55	50[en]	42[n]	41[n]	41[n]	48[n]	44	59	54	48	40	RES
RM10184_RES	378344.5	6361640.1	41	44	48	54	44	45[n]	55	50[en]	42[n]	41[n]	41[n]	48[n]	44	59	54	48	40	RES
RM10185_RES	378305.0	6361620.1	40	43	47	53	43	44[n]	54	49[en]	41[n]	40	40	47[n]	43	59	54	48	40	RES
RM10186_RES	378288.8	6361606.0	40	43	47	53	43	44[n]	54	49[en]	41[n]	40	40	47[n]	43	59	54	48	40	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria



Paper Size ISO A4

0 30 60 90 120

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

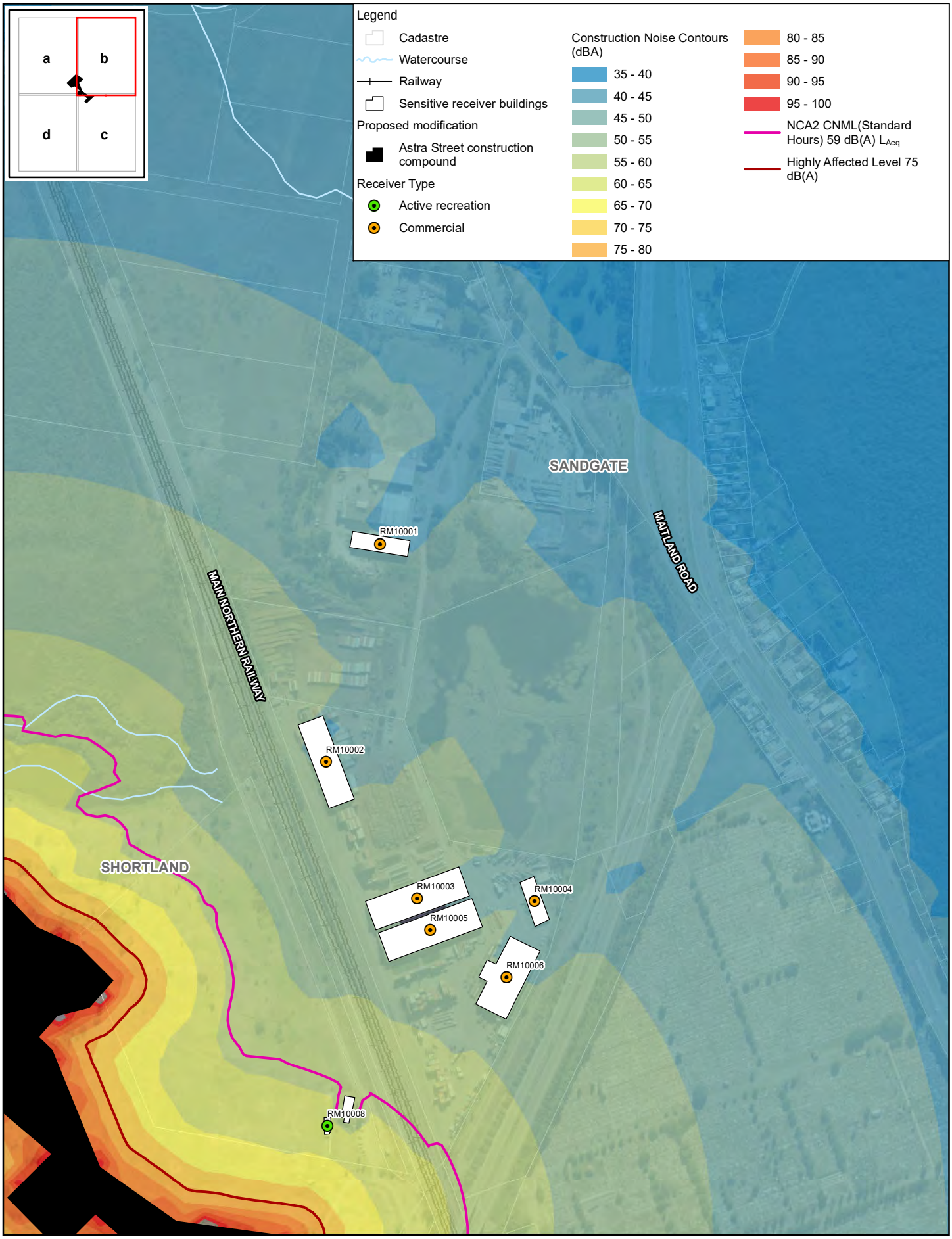
Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Astra Street compound: construction noise contours, MOD12- Construction support activities dB(A),$L_{Aeq\ 15min}$

Project No. 12528155
Revision No. 0
Date 20 May 2021

Figure C.1a

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N005_AppendixC_AstraSt_ShtA_B_DDP_0.mxd
Print date: 20 May 2021 - 10:37



Paper Size ISO A4

0 30 60 90 120

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

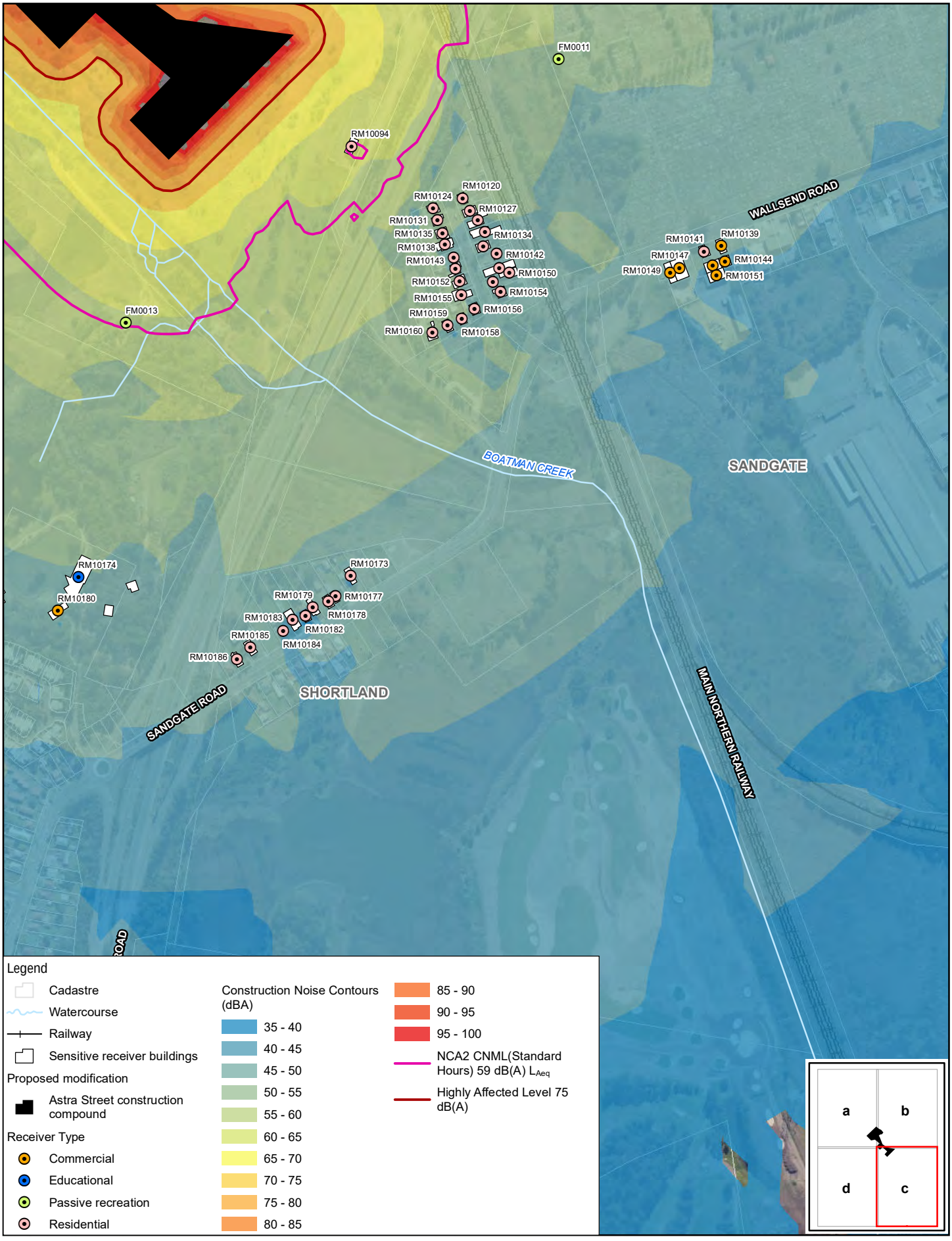
Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Astra Street compound: construction noise contours, MOD12- Construction support activities dB(A),$L_{Aeq\ 15min}$

Project No. 12528155
Revision No. 0
Date 20 May 2021

Figure C.1b

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N005_AppendixC_AstraSt_ShtA_B_DDP_0.mxd
Print date: 20 May 2021 - 10:37



Legend

- Cadastre
- Watercourse
- Railway
- Sensitive receiver buildings

Proposed modification

- Astra Street construction compound

Receiver Type

- Commercial
- Educational
- Passive recreation
- Residential

Construction Noise Contours (dBA)

- 35 - 40
- 40 - 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- 65 - 70
- 70 - 75
- 75 - 80
- 80 - 85
- 85 - 90
- 90 - 95
- 95 - 100
- NCA2 CNML(Standard Hours) 59 dB(A) L_{Aeq}
- Highly Affected Level 75 dB(A)

Paper Size ISO A4

0 30 60 90 120

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

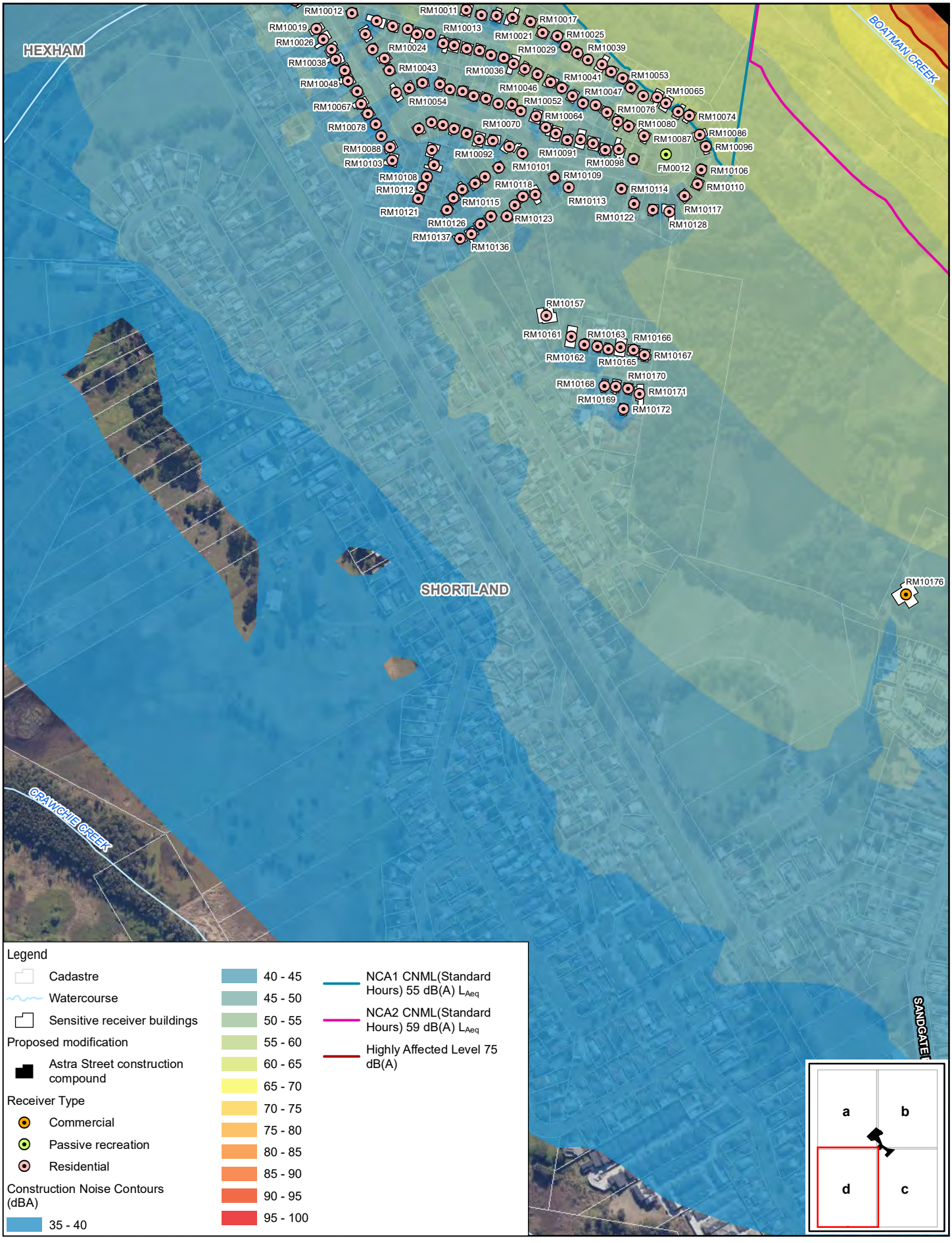
Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Astra Street compound: construction noise contours, MOD12- Construction support activities dB(A),$L_{Aeq\ 15min}$

Project No. 12528155
Revision No. 0
Date 20 May 2021

Figure C.1c

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N005_AppendixC_AstraSt_ShtC_D_DDP_0.mxd
Print date: 20 May 2021 - 10:37



Paper Size ISO A4

0 30 60 90 120

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Astra Street compound: construction noise contours, MOD12- Construction support activities dB(A),$L_{Aeq\ 15min}$

Project No. 12528155
Revision No. 0
Date 20 May 2021

Figure C.1d

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N005_AppendixC_AstraSt_ShtC_D_DDP_0.mxd
Print date: 20 May 2021 - 10:37

Appendix D

Lookout Road noise impacts

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
R2597_RES	377017.6	6356153.4	33	36	40	46	36[n]	37	47	42	34	33	33	40	36	44	39	37	35	RES
R2599_RES	377033.7	6356149.1	33	36	40	46	36[n]	37	47	42	34	33	33	40	36	44	39	37	35	RES
R2614_RES	378135.5	6356096.1	36	39	43	49	39[n]	40	50	45	37	36	36	43	39	66	61	54	38	RES
R2617_RES	377058.3	6356093.9	37	40	44	50	40[n]	41	51	46	38	37	37	44	40	60	55	47	38	RES
R2624_RES	377110.5	6356088.0	37	40	44	50	40[n]	41	51	46	38	37	37	44	40	60	55	47	38	RES
R2625_RES	377129.6	6356085.5	38	41	45	51	41[n]	42	52	47	39	38	38	45	41	60	55	47	38	RES
R2626_RES	377147.6	6356083.5	38	41	45	51	41[n]	42	52	47	39	38	38	45	41	60	55	47	38	RES
R2627_RES	377183.6	6356077.1	38	41	45	51	41[n]	42	52	47	39	38	38	45	41	60	55	47	38	RES
R2629_RES	377165.8	6356075.0	38	41	45	51	41[n]	42	52	47	39	38	38	45	41	60	55	47	38	RES
R2630_RES	377201.5	6356072.7	39	42	46	52	42[n]	43	53	48	40	39	39	46	42	60	55	47	38	RES
R2632_RES	377239.9	6356067.6	39	42	46	52	42[n]	43	53	48	40	39	39	46	42	60	55	47	38	RES
R2633_RES	377219.0	6356067.1	39	42	46	52	42[n]	43	53	48	40	39	39	46	42	60	55	47	38	RES
R2635_RES	377258.7	6356065.5	39	42	46	52	42[n]	43	53	48	40	39	39	46	42	60	55	47	38	RES
R2637_RES	377046.8	6356061.2	37	40	44	50	40[n]	41	51	46	38	37	37	44	40	48	43	40	35	RES
R2638_RES	377277.0	6356061.1	39	42	46	52	42[n]	43	53	48	40	39	39	46	42	60	55	47	38	RES
R2639_RES	377077.0	6356059.8	36	39	43	49	39[n]	40	50	45	37	36	36	43	39	48	43	40	35	RES
R2640_RES	377292.0	6356059.3	39	42	46	52	42[n]	43	53	48	40	39	39	46	42	60	55	47	38	RES
R2644_RES	377309.2	6356052.8	41	44	48	54	44[n]	45	55	50	42	41	41	48	44	60	55	47	38	RES
R2647_RES	377091.1	6356046.9	38	41	45	51	41[en]	42	52	47	39	38	38	45	41	48	43	40	35	RES
R2649_RES	377326.9	6356046.4	40	43	47	53	43[n]	44	54	49	41	40	40	47	43	60	55	47	38	RES
R2651_RES	377124.3	6356040.2	38	41	45	51	41[en]	42	52	47	39	38	38	45	41	48	43	40	35	RES
R2652_RES	377140.4	6356040.1	38	41	45	51	41[en]	42	52	47	39	38	38	45	41	48	43	40	35	RES
R2653_RES	377159.6	6356040.0	38	41	45	51	41[en]	42	52	47	39	38	38	45	41	48	43	40	35	RES
R2654_RES	377056.7	6356039.9	37	40	44	50	40[n]	41	51	46	38	37	37	44	40	48	43	40	35	RES
R2656_RES	377074.9	6356037.9	38	41	45	51	41[en]	42	52	47	39	38	38	45	41	48	43	40	35	RES
R2657_RES	377106.3	6356037.4	38	41	45	51	41[en]	42	52	47	39	38	38	45	41	48	43	40	35	RES
R2658_RES	377177.9	6356036.8	39	42	46	52	42[en]	43	53	48	40	39	39	46	42	48	43	40	35	RES
R2660_RES	377344.5	6356035.5	41	44	48	54	44[n]	45	55	50	42	41	41	48	44	60	55	47	38	RES
R2661_RES	377197.3	6356034.2	39	42	46	52	42[en]	43	53	48	40	39	39	46	42	48	43	40	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
R2662_RES	378160.7	6356033.5	36	39	43	49	39[n]	40	50	45	37	36	36	43	39	66	61	54	38	RES
R2664_RES	377214.9	6356031.5	39	42	46	52	42[en]	43	53	48	40	39	39	46	42	48	43	40	35	RES
R2666_RES	377232.8	6356029.3	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
R2667_RES	377251.1	6356028.3	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
R2668_RES	377270.6	6356024.9	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
R2670_RES	377288.0	6356021.1	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
R2671_RES	377303.2	6356015.7	41	44	48	54	44[den]	45	55	50	42	41	41	48	44	48	43	40	35	RES
R2674_RES	377312.8	6356005.6	42	45	49	55	45[den]	46	56	51	43	42	42	49	45	48	43	40	35	RES
R2675_RES	378072.3	6356004.2	39	42	46	52	42[n]	43	53	48	40	39	39	46	42	66	61	54	38	RES
R2681_RES	377175.6	6355989.8	39	42	46	52	42[en]	43	53	48	40	39	39	46	42	48	43	40	35	RES
R2682_RES	377194.7	6355989.2	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
R2683_RES	377152.9	6355987.4	39	42	46	52	42[en]	43	53	48	40	39	39	46	42	48	43	40	35	RES
R2684_RES	377212.2	6355985.9	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
R2685_RES	377132.6	6355985.2	39	42	46	52	42[en]	43	53	48	40	39	39	46	42	48	43	40	35	RES
R2686_RES	377319.6	6355985.2	42	45	49	55	45[den]	46	56	51	43	42	42	49	45	48	43	40	35	RES
R2688_RES	377230.1	6355982.6	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
R2689_RES	377031.1	6355979.6	35	38	42	48	38[n]	39	49	44	36	35	35	42	38	48	43	40	35	RES
R2690_RES	377056.8	6355977.9	35	38	42	48	38[n]	39	49	44	36	35	35	42	38	48	43	40	35	RES
R2692_RES	377014.2	6355976.2	34	37	41	47	37[n]	38	48	43	35	34	34	41	37	48	43	40	35	RES
R2694_RES	377276.1	6355971.9	41	44	48	54	44[den]	45	55	50	42	41	41	48	44	48	43	40	35	RES
R2695_RES	377247.8	6355970.7	41	44	48	54	44[den]	45	55	50	42	41	41	48	44	48	43	40	35	RES
R2696_RES	377154.6	6355969.9	39	42	46	52	42[en]	43	53	48	40	39	39	46	42	48	43	40	35	RES
R2697_RES	377323.7	6355968.8	42	45	49	55	45[den]	46	56	51	43	42	42	49	45	48	43	40	35	RES
R2701_RES	377173.0	6355963.8	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
R2702_RES	377272.6	6355959.8	41	44	48	54	44[den]	45	55	50	42	41	41	48	44	48	43	40	35	RES
R2703_RES	377191.7	6355955.8	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
R2704_RES	377323.1	6355953.9	42	45	49	55	45[den]	46	56	51	43	42	42	49	45	48	43	40	35	RES
R2705_RES	377085.3	6355952.4	35	38	42	48	38[n]	39	49	44	36	35	35	42	38	48	43	40	35	RES
R2706_RES	377224.8	6355941.9	41	44	48	54	44[den]	45	55	50	42	41	41	48	44	48	43	40	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
R2707_RES	377274.4	6355940.7	41	44	48	54	44[den]	45	55	50	42	41	41	48	44	48	43	40	35	RES
R2708_RES	377103.6	6355940.6	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
R2709_RES	377324.0	6355937.0	42	45	49	55	45[den]	46	56	51	43	42	42	49	45	48	43	40	35	RES
R2710_RES	377121.6	6355935.7	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
R2711_RES	377241.5	6355933.6	41	44	48	54	44[den]	45	55	50	42	41	41	48	44	48	43	40	35	RES
R2712_RES	377136.9	6355926.9	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
R2713_RES	377320.8	6355920.9	43	46	50	56	46[den]	47	57	52	44	43	43	50	46	48	43	40	35	RES
R2714_RES	377155.7	6355918.4	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
R2715_RES	377269.6	6355915.0	42	45	49	55	45[den]	46	56	51	43	42	42	49	45	48	43	40	35	RES
R2716_RES	377172.8	6355913.7	41	44	48	54	44[den]	45	55	50	42	41	41	48	44	48	43	40	35	RES
R2717_RES	377321.3	6355905.0	43	46	50	56	46[den]	47	57	52	44	43	43	50	46	48	43	40	35	RES
R2718_RES	377188.6	6355902.9	41	44	48	54	44[den]	45	55	50	42	41	41	48	44	48	43	40	35	RES
R2719_RES	377203.4	6355896.8	41	44	48	54	44[den]	45	55	50	42	41	41	48	44	48	43	40	35	RES
R2720_RES	377318.7	6355888.4	44	47	51	57	47[den]	48	58	53	45	44	44	51	47	48	43	40	35	RES
R2721_RES	377992.1	6355888.3	40	43	47	53	43[n]	44	54	49	41	40	40	47	43	66	61	54	38	RES
R2722_RES	377217.4	6355888.2	42	45	49	55	45[den]	46	56	51	43	42	42	49	45	48	43	40	35	RES
R2723_RES	377233.2	6355879.2	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
R2724_RES	377316.5	6355872.6	44	47	51	57	47[den]	48	58	53	45	44	44	51	47	48	43	40	35	RES
R2725_RES	377245.8	6355867.7	39	42	46	52	42[en]	43	53	48	40	39	39	46	42	48	43	40	35	RES
R2726_RES	377956.9	6355853.9	40	43	47	53	43[n]	44	54	49	41	40	40	47	43	66	61	54	38	RES
R2727_RES	377258.7	6355851.9	43	46	50	56	46[den]	47	57	52	44	43	43	50	46	48	43	40	35	RES
R2728_RES	377318.0	6355848.1	44	47	51	57	47[den]	48	58	53	45	44	44	51	47	48	43	40	35	RES
R2729_RES	377295.6	6355845.6	44	47	51	57	47[den]	48	58	53	45	44	44	51	47	48	43	40	35	RES
R2730_RES	377276.6	6355844.8	43	46	50	56	46[den]	47	57	52	44	43	43	50	46	48	43	40	35	RES
R2731_RES	377931.9	6355835.6	43	46	50	56	46[n]	47	57	52	44	43	43	50	46	66	61	54	38	RES
R2734_RES	377996.5	6355816.0	38	41	45	51	41[n]	42	52	47	39	38	38	45	41	66	61	54	38	RES
R2737_RES	378037.1	6355794.1	38	41	45	51	41[n]	42	52	47	39	38	38	45	41	66	61	54	38	RES
R2739_RES	377935.9	6355784.0	40	43	47	53	43[n]	44	54	49	41	40	40	47	43	66	61	54	38	RES
R2746_RES	377753.7	6355639.8	47	50	54	60	50[n]	51	61	56	48	47	47	54	50	66	61	54	38	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
R2747_RES	377742.4	6355624.3	49	52	56	62	52^{n}	53	63	58	50	49	49	56	52	66	61	54	38	RES
R2748_RES	377736.0	6355598.3	53	56	60	66	56^{en}	57	67	62	54	53	53	60	56	66	61	54	38	RES
R2749_RES	377721.6	6355574.9	56	59	63	69	59^{en}	60	70	65	57	56	56	63	59	66	61	54	38	RES
R2750_RES	377775.0	6355553.3	47	50	54	60	50^{n}	51	61	56	48	47	47	54	50	66	61	54	38	RES
R2751_RES	377181.9	6355527.3	41	44	48	54	44^{den}	45	55	50	42	41	41	48	44	48	43	40	35	RES
R2752_RES	377539.4	6355504.1	77	80	84	90	80^{sden}	81	91	86	78	77	77	84	80	66	61	54	38	RES
R2753_RES	377178.8	6355494.4	40	43	47	53	43^{en}	44	54	49	41	40	40	47	43	48	43	40	35	RES
R2755_RES	377201.7	6355485.4	35	38	42	48	38^{n}	39	49	44	36	35	35	42	38	48	43	40	35	RES
R2756_RES	377217.5	6355482.3	39	42	46	52	42^{en}	43	53	48	40	39	39	46	42	48	43	40	35	RES
R2758_RES	377237.0	6355476.1	40	43	47	53	43^{en}	44	54	49	41	40	40	47	43	48	43	40	35	RES
R2761_RES	377255.2	6355457.2	41	44	48	54	44^{den}	45	55	50	42	41	41	48	44	48	43	40	35	RES
R2764_RES	377294.0	6355442.4	41	44	48	54	44^{den}	45	55	50	42	41	41	48	44	48	43	40	35	RES
R2766_RES	377183.6	6355436.0	35	38	42	48	38^{n}	39	49	44	36	35	35	42	38	46	41	41	35	RES
R2768_RES	377313.7	6355429.6	39	42	46	52	42^{en}	43	53	48	40	39	39	46	42	48	43	40	35	RES
R2771_RES	377165.0	6355423.0	33	36	40	46	36^{n}	37	47	42	34	33	33	40	36	46	41	41	35	RES
R2773_RES	377332.9	6355418.1	41	44	48	54	44^{den}	45	55	50	42	41	41	48	44	48	43	40	35	RES
R2774_RES	377246.9	6355418.1	34	37	41	47	37^{n}	38	48	43	35	34	34	41	37	46	41	41	35	RES
R2776_RES	377345.4	6355415.2	40	43	47	53	43^{en}	44	54	49	41	40	40	47	43	48	43	40	35	RES
R2777_RES	377361.7	6355411.2	41	44	48	54	44^{den}	45	55	50	42	41	41	48	44	48	43	40	35	RES
R2778_RES	377408.9	6355410.8	43	46	50	56	46^{den}	47	57	52	44	43	43	50	46	48	43	40	35	RES
R2782_RES	377385.5	6355405.2	42	45	49	55	45^{den}	46	56	51	43	42	42	49	45	48	43	40	35	RES
R2786_RES	377410.4	6355387.4	41	44	48	54	44^{den}	45	55	50	42	41	41	48	44	48	43	40	35	RES
R2787_RES	377287.0	6355387.2	35	38	42	48	38^{n}	39	49	44	36	35	35	42	38	46	41	41	35	RES
R2790_RES	377423.1	6355386.2	42	45	49	55	45^{den}	46	56	51	43	42	42	49	45	48	43	40	35	RES
R2792_RES	377160.5	6355380.5	33	36	40	46	36^{n}	37	47	42	34	33	33	40	36	46	41	41	35	RES
R2794_RES	377299.5	6355377.3	34	37	41	47	37^{n}	38	48	43	35	34	34	41	37	46	41	41	35	RES
R2810_RES	377410.3	6355333.4	33	36	40	46	36^{n}	37	47	42	34	33	33	40	36	46	41	41	35	RES
R2817_RES	377440.5	6355306.9	36	39	43	49	39^{n}	40	50	45	37	36	36	43	39	66	61	54	38	RES
R2861_RES	377397.9	6355052.0	34	37	41	47	37^{n}	38	48	43	35	34	34	41	37	46	41	41	35	RES

Notes:

^{s} = exceeds standard hours criteria, ^{d} = exceeds OOHW period 1 day criteria, ^{e} = exceeds OOHW period 1 evening criteria, ^{n} = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
R2868_RES	377439.2	6355034.0	37	40	44	50	40[n]	41	51	46	38	37	37	44	40	66	61	54	38	RES
R2872_RES	377442.0	6355020.2	38	41	45	51	41[n]	42	52	47	39	38	38	45	41	66	61	54	38	RES
R2880_RES	377445.0	6355000.3	38	41	45	51	41[n]	42	52	47	39	38	38	45	41	66	61	54	38	RES
R2884_RES	377413.2	6354987.0	35	38	42	48	38[n]	39	49	44	36	35	35	42	38	46	41	41	35	RES
R2885_RES	377452.7	6354984.9	37	40	44	50	40[n]	41	51	46	38	37	37	44	40	66	61	54	38	RES
R2895_RES	377403.2	6354975.4	35	38	42	48	38[n]	39	49	44	36	35	35	42	38	46	41	41	35	RES
R2899_RES	377388.3	6354969.1	33	36	40	46	36[n]	37	47	42	34	33	33	40	36	46	41	41	35	RES
R2905_RES	377449.8	6354960.1	37	40	44	50	40[n]	41	51	46	38	37	37	44	40	66	61	54	38	RES
R2908_RES	377365.5	6354953.9	34	37	41	47	37[n]	38	48	43	35	34	34	41	37	46	41	41	35	RES
R2912_RES	377456.3	6354939.4	37	40	44	50	40[n]	41	51	46	38	37	37	44	40	66	61	54	38	RES
R2927_RES	377459.7	6354924.9	36	39	43	49	39[n]	40	50	45	37	36	36	43	39	66	61	54	38	RES
R3052_RES	377051.7	6355836.1	34	37	41	47	37[n]	38	48	43	35	34	34	41	37	48	43	40	35	RES
R3053_RES	377100.4	6355831.1	37	40	44	50	40[n]	41	51	46	38	37	37	44	40	48	43	40	35	RES
R3058_RES	377146.5	6355807.6	41	44	48	54	44[den]	45	55	50	42	41	41	48	44	48	43	40	35	RES
R3059_RES	377081.9	6355802.1	37	40	44	50	40[n]	41	51	46	38	37	37	44	40	48	43	40	35	RES
R3060_RES	377113.3	6355799.6	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
R3064_RES	377097.0	6355751.0	37	40	44	50	40[n]	41	51	46	38	37	37	44	40	48	43	40	35	RES
R3065_RES	377129.3	6355747.2	35	38	42	48	38[n]	39	49	44	36	35	35	42	38	48	43	40	35	RES
R3067_RES	377160.3	6355742.6	42	45	49	55	45[den]	46	56	51	43	42	42	49	45	48	43	40	35	RES
R3069_RES	377179.6	6355722.9	42	45	49	55	45[den]	46	56	51	43	42	42	49	45	48	43	40	35	RES
R3070_RES	377104.5	6355704.5	38	41	45	51	41[en]	42	52	47	39	38	38	45	41	48	43	40	35	RES
R3072_RES	377184.6	6355697.0	43	46	50	56	46[den]	47	57	52	44	43	43	50	46	48	43	40	35	RES
R3073_RES	377127.2	6355678.1	38	41	45	51	41[en]	42	52	47	39	38	38	45	41	48	43	40	35	RES
R3074_RES	377185.4	6355676.4	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
R3076_RES	377209.3	6355671.4	43	46	50	56	46[den]	47	57	52	44	43	43	50	46	48	43	40	35	RES
R3077_RES	377229.9	6355660.5	41	44	48	54	44[den]	45	55	50	42	41	41	48	44	48	43	40	35	RES
R3078_RES	377244.1	6355652.5	42	45	49	55	45[den]	46	56	51	43	42	42	49	45	48	43	40	35	RES
R3079_RES	377278.8	6355639.7	42	45	49	55	45[den]	46	56	51	43	42	42	49	45	48	43	40	35	RES
R3080_RES	377165.7	6355636.6	39	42	46	52	42[en]	43	53	48	40	39	39	46	42	48	43	40	35	RES

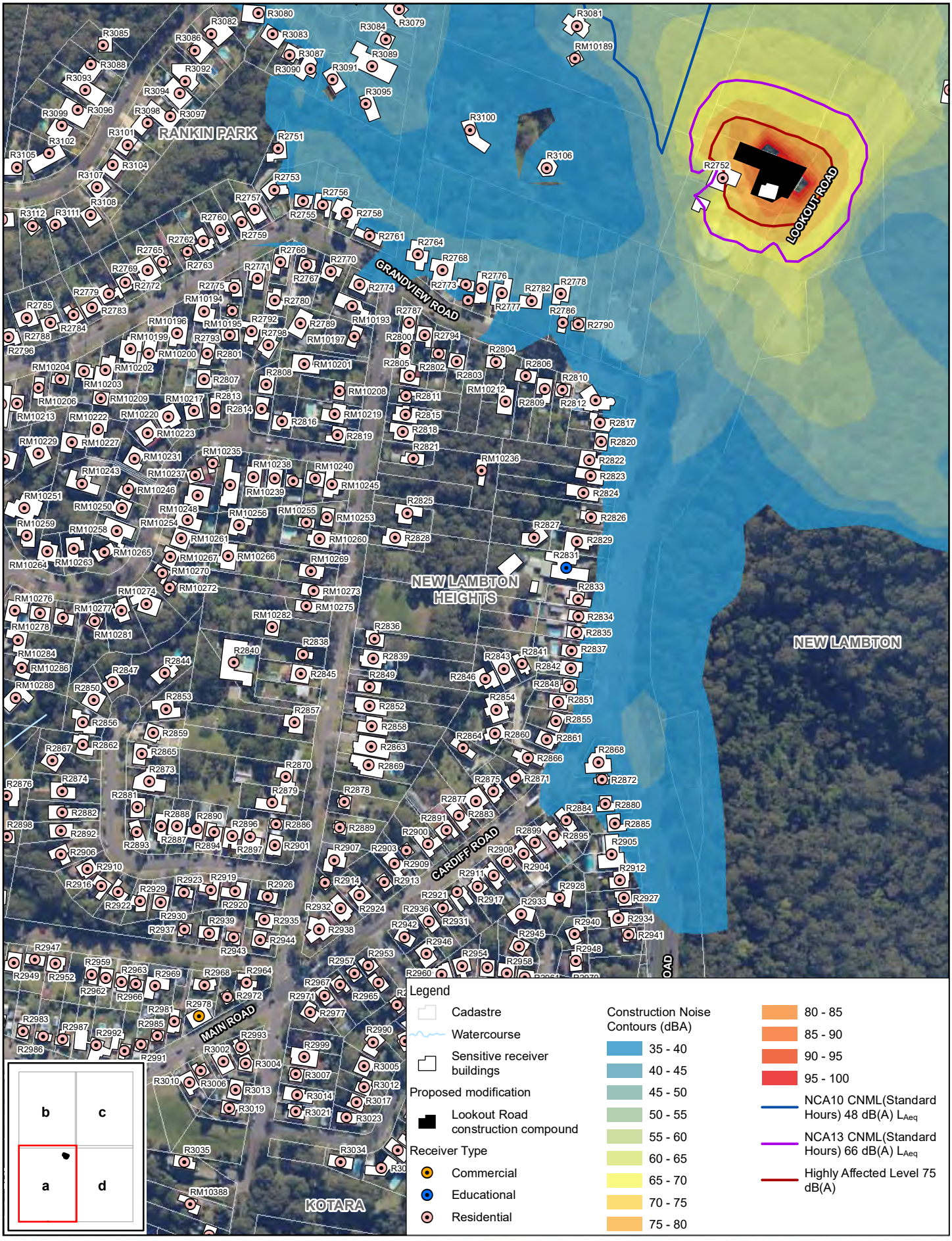
Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria

Receiver ID	Coordinate X	Coortinate Y	MOD01-Establishment of temporary fencing and traffic management	MOD02-Installation of erosion and sediment controls	MOD03-Establishment of construction compound sites	MOD04-Vegetation clearing and grubbing	MOD05-Main compound operation	MOD06-Materials Handling	MOD07-Crushing plant	MOD08-Stockpile Site	MOD09-Batching plant	MOD10-Bridge girder laydown	MOD11-Deliveries	MOD12-Construction support activities	MOD13-Removal of construction compound and site tidy up	CNML Day	CNML Day (OOHW1)	CNML Evening (OOHW1)	CNML Night (OOHW2)	Receiver type
R3081_RES	377422.1	6355626.1	44	47	51	57	47[den]	48	58	53	45	44	44	51	47	48	43	40	35	RES
R3083_RES	377177.5	6355619.4	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
R3084_RES	377268.5	6355615.6	42	45	49	55	45[den]	46	56	51	43	42	42	49	45	48	43	40	35	RES
R3087_RES	377190.9	6355602.7	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
R3089_RES	377257.1	6355593.6	42	45	49	55	45[den]	46	56	51	43	42	42	49	45	48	43	40	35	RES
R3090_RES	377207.6	6355591.3	41	44	48	54	44[den]	45	55	50	42	41	41	48	44	48	43	40	35	RES
R3091_RES	377225.4	6355583.1	41	44	48	54	44[den]	45	55	50	42	41	41	48	44	48	43	40	35	RES
R3095_RES	377252.1	6355563.3	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
R3100_RES	377336.1	6355542.7	37	40	44	50	40[n]	41	51	46	38	37	37	44	40	48	43	40	35	RES
R3106_RES	377397.9	6355512.0	33	36	40	46	36[n]	37	47	42	34	33	33	40	36	48	43	40	35	RES
RM10187_RES	377207.7	6355949.5	40	43	47	53	43[en]	44	54	49	41	40	40	47	43	48	43	40	35	RES
RM10188_RES	377978.8	6355862.7	41	44	48	54	44[n]	45	55	50	42	41	41	48	44	66	61	54	38	RES
RM10189_RES	377420.4	6355600.1	38	41	45	51	41[en]	42	52	47	39	38	38	45	41	48	43	40	35	RES
RM10190_RES	377765.7	6355537.4	48	51	55	61	51[n]	52	62	57	49	48	48	55	51	66	61	54	38	RES
RM10194_RES	377122.3	6355396.6	33	36	40	46	36[n]	37	47	42	34	33	33	40	36	46	41	41	35	RES

Notes:

[s] = exceeds standard hours criteria, [d] = exceeds OOHW period 1 day criteria, [e] = exceeds OOHW period 1 evening criteria, [n] = exceeds OOHW period 2 night criteria



Paper Size ISO A4

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

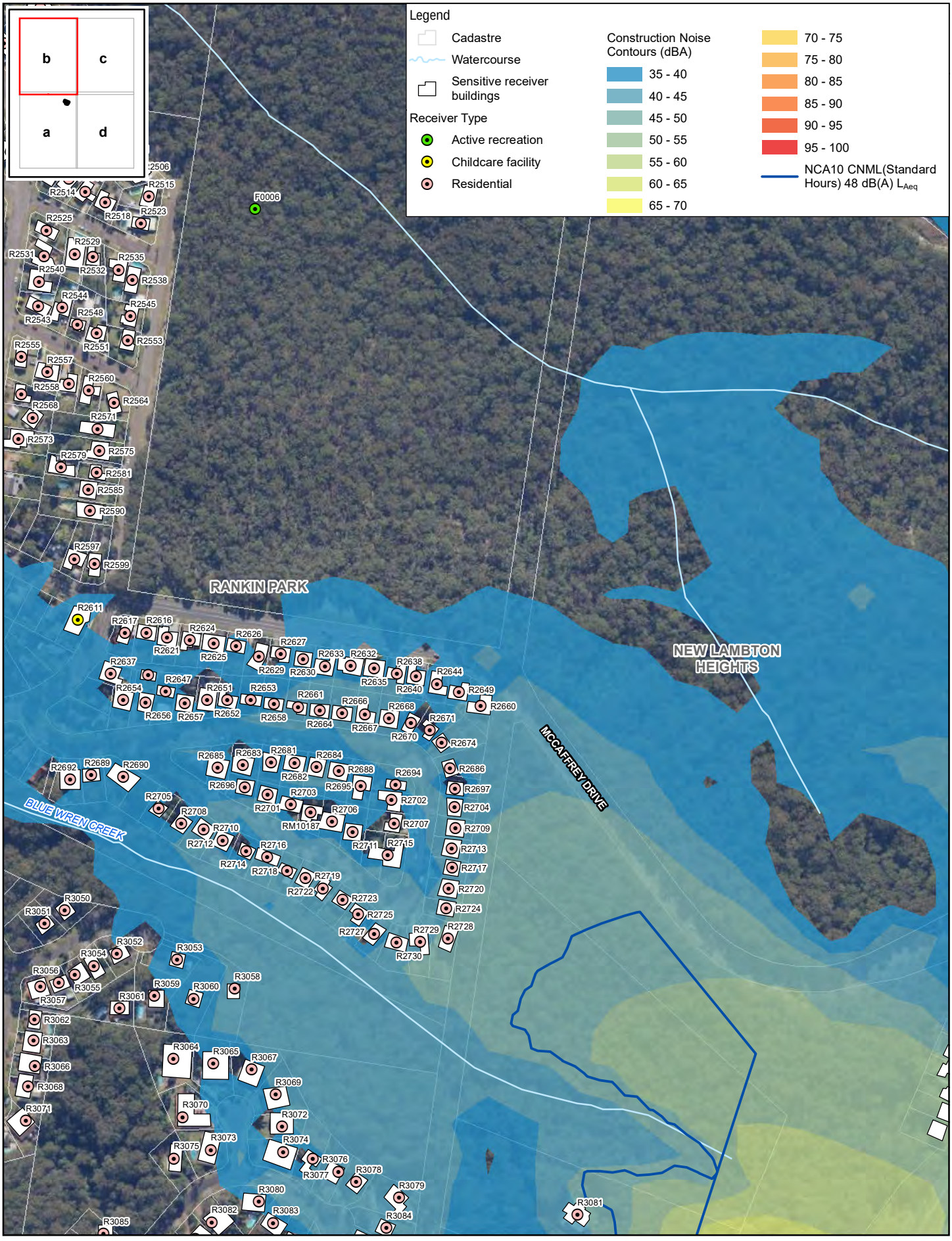
Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Lookout Road compound: construction noise contours, MOD05 - General compound activities dB(A),$L_{Aeq\ 15min}$

Project No. 12528155
Revision No. 0
Date 20 May 2021

Figure D.1a

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N006_AppendixD_LookoutRd_ShtA_D_DDP_0.mxd
Print date: 20 May 2021 - 10:37



Paper Size ISO A4

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

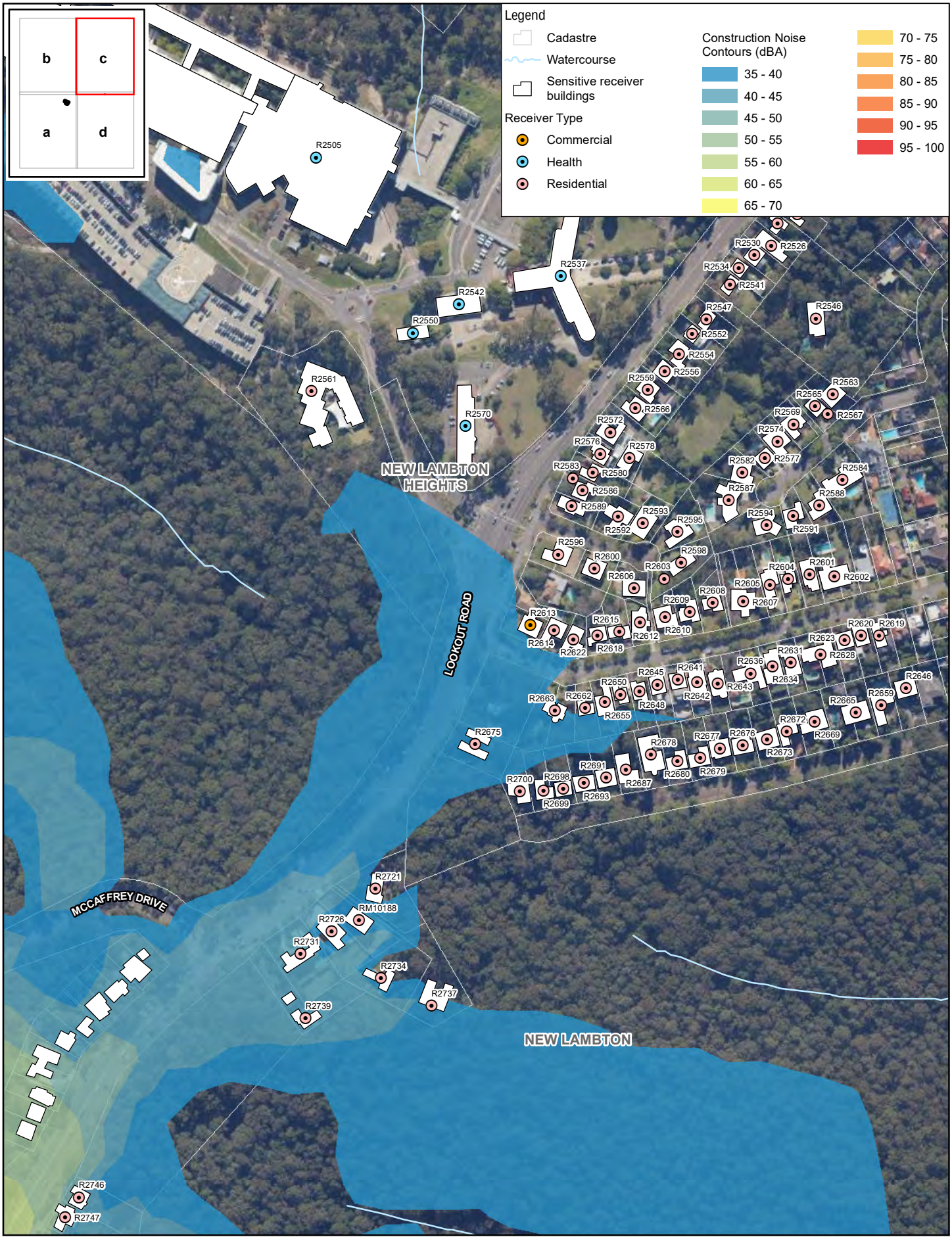
Lookout Road compound: construction noise contours, MOD05 - General compound activities dB(A),$L_{Aeq\ 15min}$

Project No. 12528155
Revision No. 0
Date 20 May 2021

Figure D.1b

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N006_AppendixD_LookoutRd_ShtB_C_DDP_0.mxd
Print date: 20 May 2021 - 10:37

Data source: BOM: Groundwater Dependent Ecosystems, 2020; LPI: DTDB / DCDB, 2017; © Department of Customer Service 2020. Created by: fmackay, tmorton



Paper Size ISO A4

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

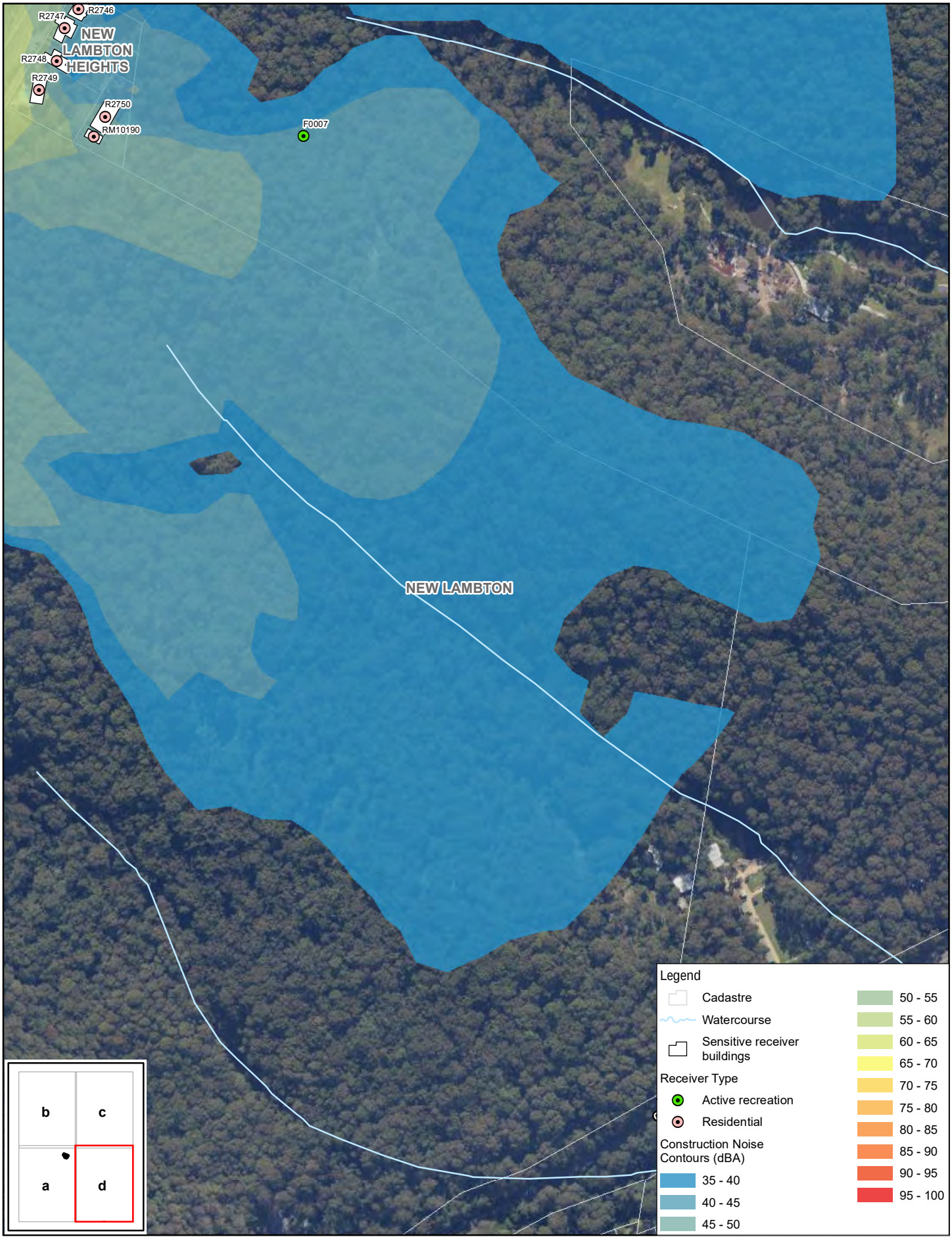
Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Lookout Road compound: construction noise contours, MOD05 - General compound activities dB(A), $L_{Aeq\ 15min}$

Project No. 12528155
Revision No. 0
Date 20 May 2021

Figure D.1c

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N006_AppendixD_LookoutRd_ShtB_C_DDP_0.mxd
Print date: 20 May 2021 - 10:37



Paper Size ISO A4

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Lookout Road compound: construction noise contours, MOD05 - General compound activities dB(A), $L_{Aeq\ 15min}$

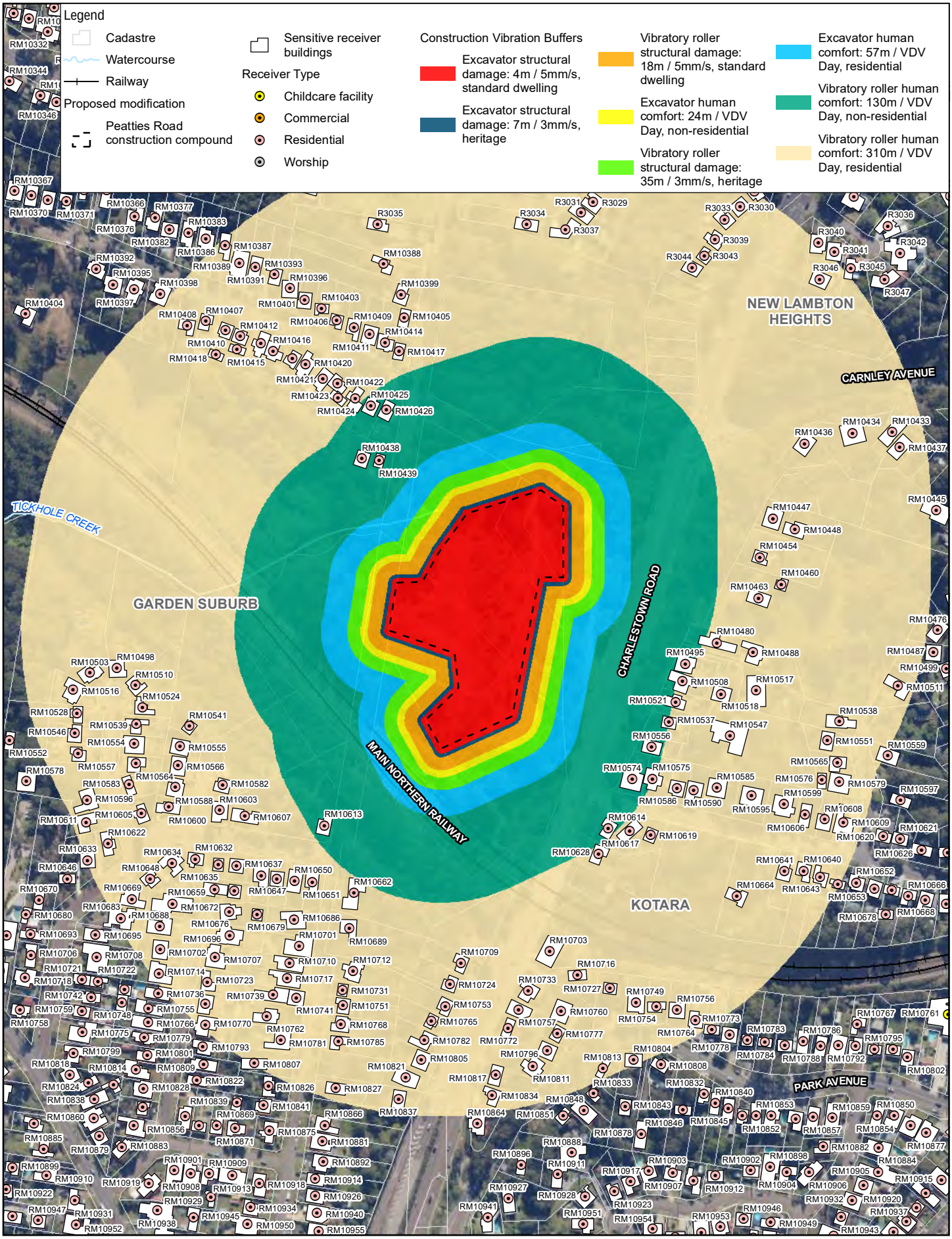
Project No. 12528155
Revision No. 0
Date 20 May 2021

Figure D.1d

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N006_AppendixD_LookoutRd_ShtA_D_DDP_0.mxd
Print date: 20 May 2021 - 10:37

Appendix E

Construction vibration buffers



Paper Size ISO A4

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

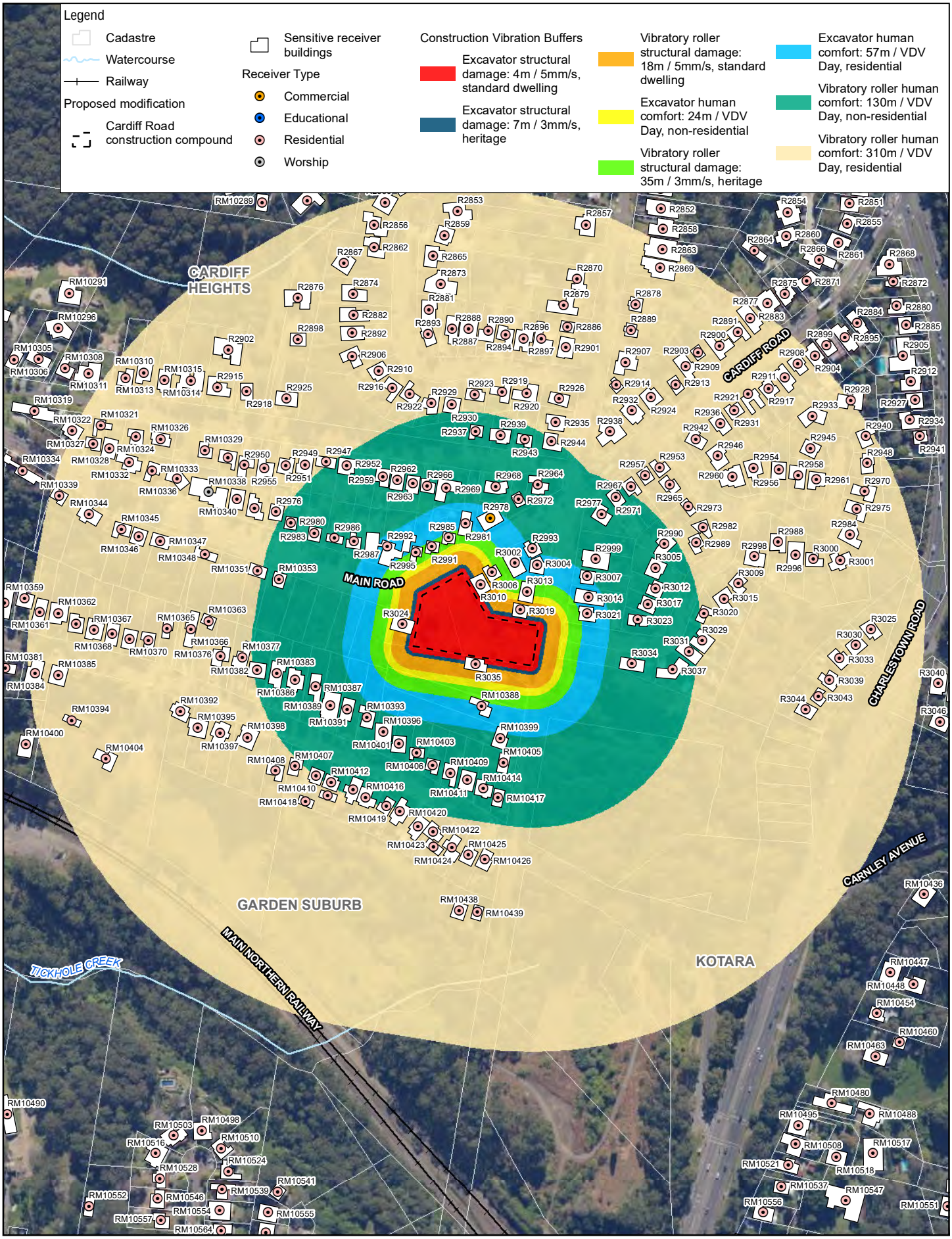
Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Peatties Road compound
Construction vibration buffers

Project No. 12528155
Revision No. 0
Date 20 May 2021

Figure E.1

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N007_AppendixE_Vibration_DDP_0.mxd
Print date: 20 May 2021 - 10:38



Paper Size ISO A4

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Cardiff Road compound
Construction vibration buffers

Project No. 12528155
Revision No. 0
Date 20 May 2021

Figure E.2

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N007_AppendixE_Vibration_DDP_0.mxd
Print date: 20 May 2021 - 10:38

Paper Size ISO A4

0 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Transport for NSW
Newcastle Inner City Bypass
Noise and Vibration Assessment

Astra Street compound
Construction vibration buffers

Project No. 12528155
Revision No. 0
Date 20 May 2021

Figure E.3

G:\22\12528155\GIS\Maps\Deliverables\Noise\12528155_N007_AppendixE_Vibration_DDP_0.mxd
Print date: 20 May 2021 - 10:38

ghd.com

→ The Power of Commitment

Appendix C

Swept path analysis figures

RIGHT IN TO PEATTIES ROAD
22m TRUCK AND DOG

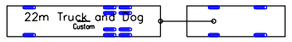
SHEET LEGEND

VEHICLE FEATURES

- VEHICLE BODY
- BODY CLEARANCE
- FRONT TYRES
- VEHICLE BODY (HATCHING)

VEHICLES

22m TRUCK AND DOG



19m PRIME MOVER AND SEMI-TRAILER

NOTES

1. TURN PATHS ARE BASED ON NEARMAP AERIAL IMAGERY ONLY
2. TURNING RADIUS IS BASED ON THE ABSOLUTE MINIMUM RADIUS OF 12.5m AND IS MEASURED TO THE PATH OF THE OUTER FRONT WHEEL

FOR INFORMATION ONLY

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED
0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: D:\Data\Projects\HW23 RP2J - Peatties Rd Site Compound\Peatties - TURNPATHS.dgn				DESIGN LOT CODE: XXXXXXX	DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: FILE NAME ; FILE NAME
EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
				SCALES ON A3 SIZE DRAWING: 0 5 10 15 20 SCALE 1:500m	DRAWINGS / DESIGN PREPARED BY: TECHNICAL SERVICES ROAD DESIGN NEWCASTLE
				CO-ORDINATE SYSTEM: MGA ZONE 56 (GDA94)	HEIGHT DATUM: AHD

PLOT DATE / TIME: 1/01/0001 12:00:00 AM	PLOT BY: cburns3	
TITLE	NAME	DATE
DRAWN	C.BURNS	09.08.21
DRG CHECK	L.MATTSSON	09.08.21
DESIGN	C.BURNS	09.08.21
DESIGN CHECK	L.MATTSSON	09.08.21
DESIGN MNGR	B.SPALDING	09.08.21
PROJECT MNGR	X. X. XXXXXXXX	XX.XX.XX

CLIENT: NSW GOVERNMENT Transport for NSW

A3

HW23 CHARLESTOWN ROAD AND PEATTIES ROAD
TURN CHECK VERIFICATION

PART X

ISSUE X

RIGHT IN TO PEATTIES ROAD
19m PRIME MOVER AND SEMI-TRAILER

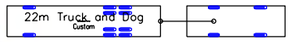
SHEET LEGEND

VEHICLE FEATURES

- VEHICLE BODY
- BODY CLEARANCE
- FRONT TYRES
- VEHICLE BODY (HATCHING)

VEHICLES

22m TRUCK AND DOG



19m PRIME MOVER AND SEMI-TRAILER

NOTES

1. TURN PATHS ARE BASED ON NEARMAP AERIAL IMAGERY ONLY
2. TURNING RADIUS IS BASED ON THE ABSOLUTE MINIMUM RADIUS OF 12.5m AND IS MEASURED TO THE PATH OF THE OUTER FRONT WHEEL

FOR INFORMATION ONLY

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: D:\Data\Projects\HW23 RP2J - Peatties Rd Site Compound\Peatties - TURNPATHS.dgn				DESIGN LOT CODE: XXXXXXX		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: FILE NAME ; FILE NAME		PLOT DATE / TIME: 1/01/0001 12:00:00 AM	PLOT BY: cburns3	CLIENT: NSW GOVERNMENT Transport for NSW	A3
EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING: 0 5 10 15 20 SCALE 1:500m	DRAWINGS / DESIGN PREPARED BY: TECHNICAL SERVICES ROAD DESIGN NEWCASTLE	TITLE / NAME / DATE			HW23 CHARLESTOWN ROAD AND PEATTIES ROAD TURN CHECK VERIFICATION
						CO-ORDINATE SYSTEM: MGA ZONE 56 (GDA94)	HEIGHT DATUM: AHD	DRAWN: C.BURNS	09.08.21		PART: X
								DRG CHECK: L.MATTSSON	09.08.21		
								DESIGN: C.BURNS	09.08.21		
								DESIGN CHECK: L.MATTSSON	09.08.21		ISSUE: X
								DESIGN MNGR: B.SPALDING	09.08.21		
								PROJECT MNGR: X. X. XXXXXXXX	XX.XX.XX		

RIGHT IN TO PEATTIES ROAD
12.5m SINGLE UNIT TRUCK

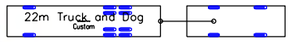
SHEET LEGEND

VEHICLE FEATURES

- VEHICLE BODY
- BODY CLEARANCE
- FRONT TYRES
- VEHICLE BODY (HATCHING)

VEHICLES

22m TRUCK AND DOG



19m PRIME MOVER AND SEMI-TRAILER

NOTES

1. TURN PATHS ARE BASED ON NEARMAP AERIAL IMAGERY ONLY
2. TURNING RADIUS IS BASED ON THE ABSOLUTE MINIMUM RADIUS OF 12.5m AND IS MEASURED TO THE PATH OF THE OUTER FRONT WHEEL

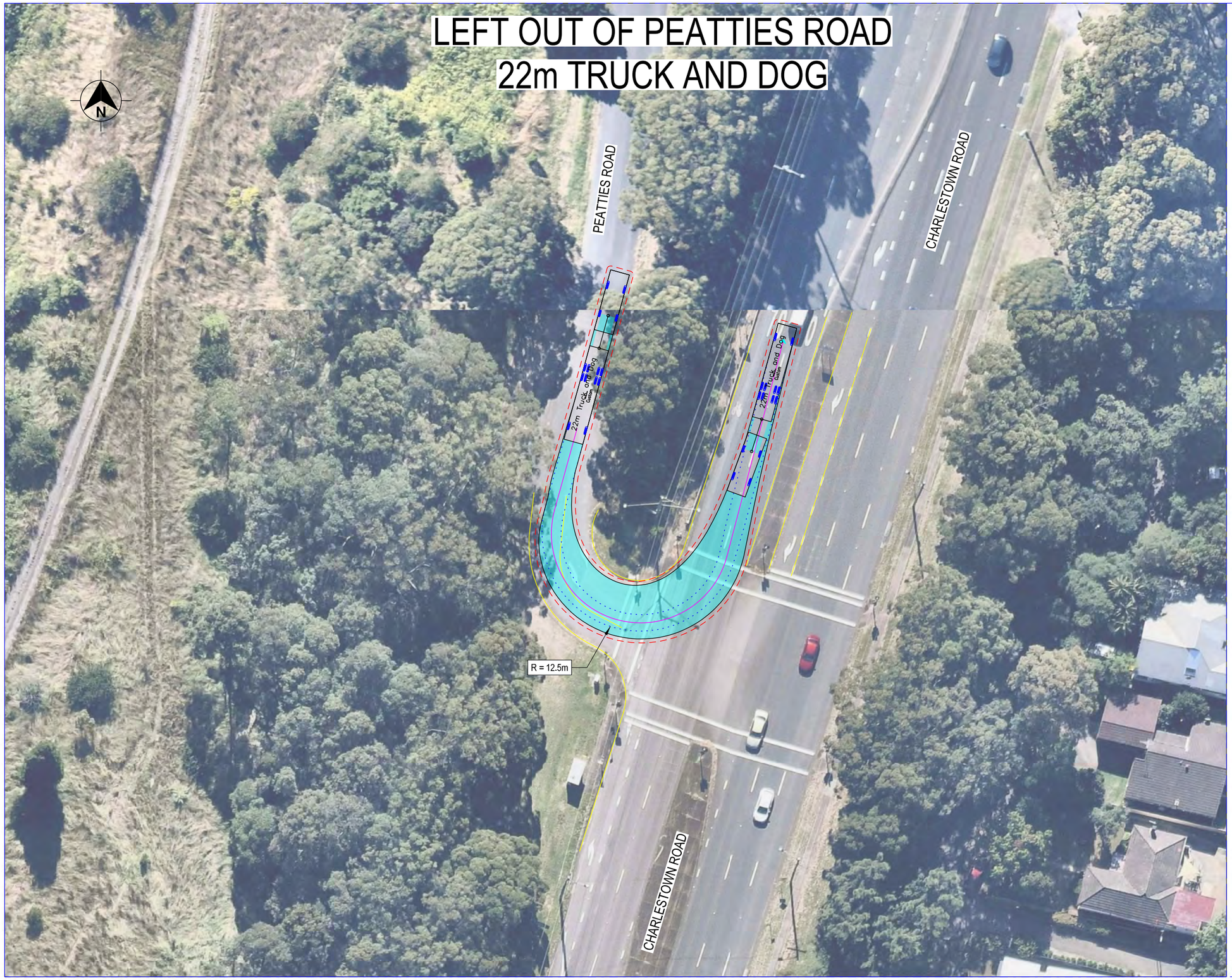
FOR INFORMATION ONLY

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME D:\Data\Projects\HW23 RP2J - Peatties Rd Site Compound\Peatties - TURNPATHS.dgn				DESIGN LOT CODE XXXXXXX		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING FILE NAME ; FILE NAME		PLOT DATE / TIME 1/01/0001 12:00:00 AM		PLOT BY cburns3	CLIENT NSW GOVERNMENT Transport for NSW	A3
EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING 0 5 10 15 20 SCALE 1:500m	DRAWINGS / DESIGN PREPARED BY TECHNICAL SERVICES ROAD DESIGN NEWCASTLE	TITLE	NAME	DATE		HW23 CHARLESTOWN ROAD AND PEATTIES ROAD TURN CHECK VERIFICATION
								DRAWN	C.BURNS	09.08.21		
								DRG CHECK	L.MATTSSON	09.08.21		
								DESIGN	C.BURNS	09.08.21		PART X
								DESIGN CHECK	L.MATTSSON	09.08.21		
								DESIGN MNGR	B.SPALDING	09.08.21		
						CO-ORDINATE SYSTEM MGA ZONE 56 (GDA94)	HEIGHT DATUM AHD	PROJECT MNGR	X. X. XXXXXXXX	XX.XX.XX		ISSUE X

LEFT OUT OF PEATTIES ROAD
22m TRUCK AND DOG



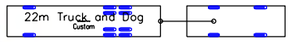
SHEET LEGEND

VEHICLE FEATURES

- VEHICLE BODY
- BODY CLEARANCE
- FRONT TYRES
- VEHICLE BODY (HATCHING)

VEHICLES

22m TRUCK AND DOG



19m PRIME MOVER AND SEMI-TRAILER

NOTES

1. TURN PATHS ARE BASED ON NEARMAP AERIAL IMAGERY ONLY
2. TURNING RADIUS IS BASED ON THE ABSOLUTE MINIMUM RADIUS OF 12.5m AND IS MEASURED TO THE PATH OF THE OUTER FRONT WHEEL

FOR INFORMATION ONLY

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME D:\Data\Projects\HW23 RP2J - Peatties Rd Site Compound\Peatties - TURNPATHS.dgn				DESIGN LOT CODE XXXXXXX		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING FILE NAME ; FILE NAME		PLOT DATE / TIME 1/01/0001 12:00:00 AM		PLOT BY cburns3	CLIENT NSW GOVERNMENT Transport for NSW
EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING 0 5 10 15 20 SCALE 1:500m	DRAWINGS / DESIGN PREPARED BY TECHNICAL SERVICES ROAD DESIGN NEWCASTLE	TITLE	NAME	DATE	
								DRAWN	C.BURNS	09.08.21	
								DRG CHECK	L.MATTSSON	09.08.21	
								DESIGN	C.BURNS	09.08.21	
								DESIGN CHECK	L.MATTSSON	09.08.21	
								DESIGN MNGR	B.SPALDING	09.08.21	
						CO-ORDINATE SYSTEM MGA ZONE 56 (GDA94)	HEIGHT DATUM AHD	PROJECT MNGR	X. X. XXXXXXXX	XX.XX.XX	

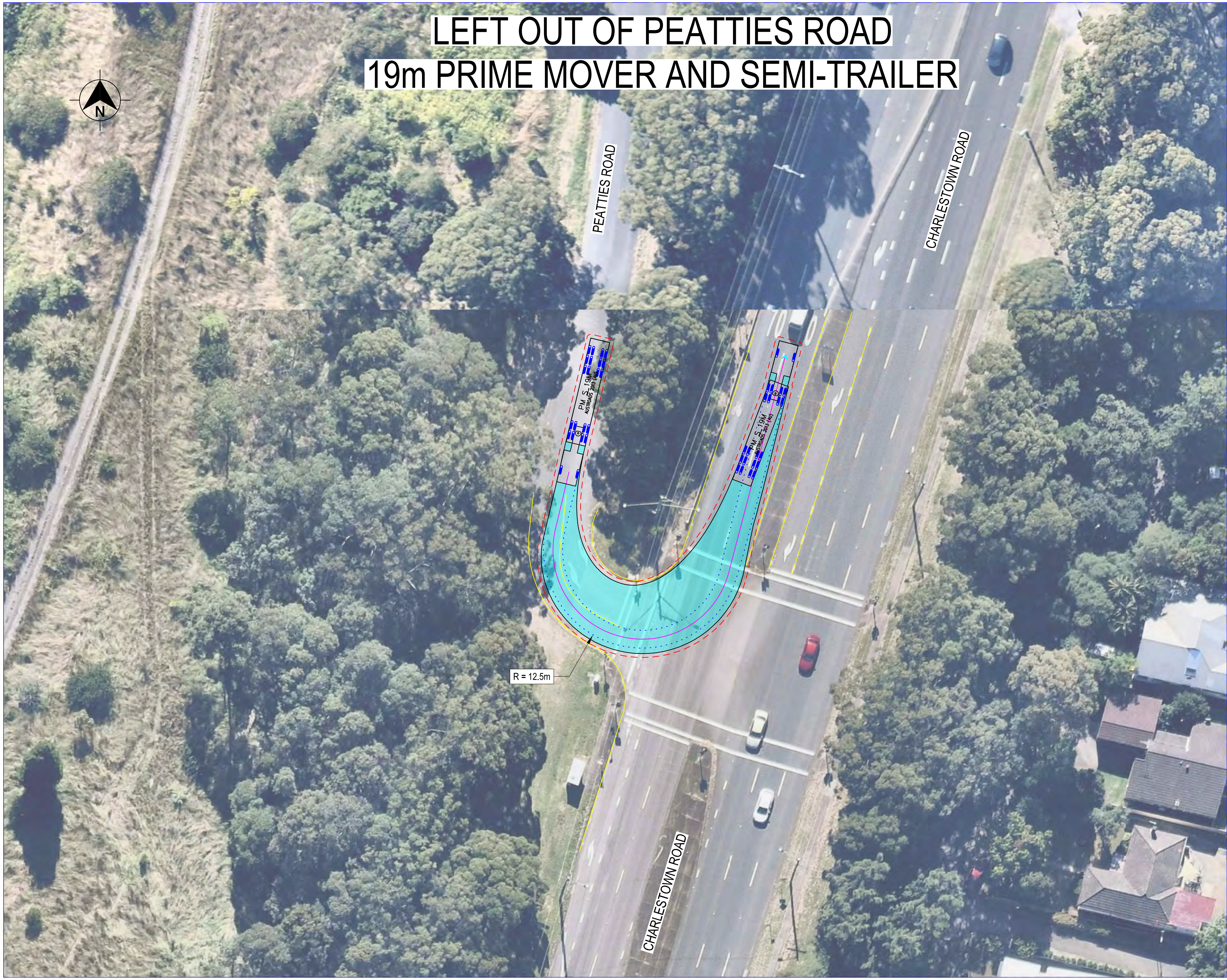
A3

HW23 CHARLESTOWN ROAD AND PEATTIES ROAD
TURN CHECK VERIFICATION

PART X

ISSUE X

LEFT OUT OF PEATTIES ROAD
19m PRIME MOVER AND SEMI-TRAILER



SHEET LEGEND

VEHICLE FEATURES

- VEHICLE BODY
- BODY CLEARANCE
- FRONT TYRES
- VEHICLE BODY (HATCHING)

VEHICLES

22m TRUCK AND DOG

19m PRIME MOVER AND SEMI-TRAILER

NOTES

1. TURN PATHS ARE BASED ON NEARMAP AERIAL IMAGERY ONLY
2. TURNING RADIUS IS BASED ON THE ABSOLUTE MINIMUM RADIUS OF 12.5m AND IS MEASURED TO THE PATH OF THE OUTER FRONT WHEEL

FOR INFORMATION ONLY

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME	D:\Data\Projects\HW23 RP2J - Peatties Rd Site Compound\Peatties - TURNPATHS.dgn
DESIGN LOT CODE	XXXXXXX
DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	FILE NAME ; FILE NAME
EXTERNAL REFERENCE FILES	
REV / DATE / AMENDMENT / REVISION DESCRIPTION / WVR No. / APPROVAL	
SCALES ON A3 SIZE DRAWING	0 5 10 15 20 SCALE 1:500m
CO-ORDINATE SYSTEM	MGA ZONE 56 (GDA94)
HEIGHT DATUM	AHD
DRAWINGS / DESIGN PREPARED BY	TECHNICAL SERVICES ROAD DESIGN NEWCASTLE
PLOT DATE / TIME	1/01/0001 12:00:00 AM
PLOT BY	cburns3
CLIENT	NSW GOVERNMENT Transport for NSW

TITLE	NAME	DATE
DRAWN	C.BURNS	09.08.21
DRG CHECK	L.MATTSSON	09.08.21
DESIGN	C.BURNS	09.08.21
DESIGN CHECK	L.MATTSSON	09.08.21
DESIGN MNGR	B.SPALDING	09.08.21
PROJECT MNGR	X. X. XXXXXXXX	XX.XX.XX

A3

HW23 CHARLESTOWN ROAD AND PEATTIES ROAD TURN CHECK VERIFICATION

PART X

ISSUE X

LEFT OUT OF PEATTIES ROAD
12.5m SINGLE UNIT TRUCK

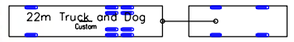
SHEET LEGEND

VEHICLE FEATURES

- VEHICLE BODY
- BODY CLEARANCE
- FRONT TYRES
- VEHICLE BODY (HATCHING)

VEHICLES

22m TRUCK AND DOG



19m PRIME MOVER AND SEMI-TRAILER

NOTES

1. TURN PATHS ARE BASED ON NEARMAP AERIAL IMAGERY ONLY
2. TURNING RADIUS IS BASED ON THE ABSOLUTE MINIMUM RADIUS OF 12.5m AND IS MEASURED TO THE PATH OF THE OUTER FRONT WHEEL

FOR INFORMATION ONLY

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED
0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME D:\Data\Projects\HW23 RP2J - Peatties Rd Site Compound\Peatties - TURNPATHS.dgn				DESIGN LOT CODE XXXXXXX		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING FILE NAME ; FILE NAME		PLOT DATE / TIME 1/01/0001 12:00:00 AM		PLOT BY cburns3	CLIENT NSW GOVERNMENT Transport for NSW
EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING 0 5 10 15 20 SCALE 1:500m	DRAWINGS / DESIGN PREPARED BY TECHNICAL SERVICES ROAD DESIGN NEWCASTLE	TITLE	NAME	DATE	HW23 CHARLESTOWN ROAD AND PEATTIES ROAD TURN CHECK VERIFICATION
						CO-ORDINATE SYSTEM MGA ZONE 56 (GDA94)	HEIGHT DATUM AHD	DRAWN	C.BURNS	09.08.21	A3
								DRG CHECK	L.MATTSSON	09.08.21	
								DESIGN	C.BURNS	09.08.21	PART X
								DESIGN CHECK	L.MATTSSON	09.08.21	
								DESIGN MNGR	B.SPALDING	09.08.21	ISSUE X
								PROJECT MNGR	X. X. XXXXXXXX	XX.XX.XX	

LEFT IN TO PEATTIES ROAD
22m TRUCK AND DOG

SHEET LEGEND

VEHICLE FEATURES

- VEHICLE BODY
- BODY CLEARANCE
- FRONT TYRES
- VEHICLE BODY (HATCHING)

VEHICLES

22m TRUCK AND DOG

19m PRIME MOVER AND SEMI-TRAILER

NOTES

1. TURN PATHS ARE BASED ON NEARMAP AERIAL IMAGERY ONLY
2. TURNING RADIUS IS BASED ON THE ABSOLUTE MINIMUM RADIUS OF 12.5m AND IS MEASURED TO THE PATH OF THE OUTER FRONT WHEEL

FOR INFORMATION ONLY

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME	D:\Data\Projects\HW23 RP2J - Peatties Rd Site Compound\Peatties - TURNPATHS.dgn
DESIGN LOT CODE	XXXXXXX
DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	FILE NAME ; FILE NAME
PLOT DATE / TIME	1/01/0001 12:00:00 AM
PLOT BY	cburns3
CLIENT	NSW GOVERNMENT Transport for NSW
SCALES ON A3 SIZE DRAWING	0 5 10 15 20 SCALE 1:500m
CO-ORDINATE SYSTEM	MGA ZONE 56 (GDA94)
HEIGHT DATUM	AHD
DRAWINGS / DESIGN PREPARED BY	TECHNICAL SERVICES ROAD DESIGN NEWCASTLE

EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL

TITLE	NAME	DATE
DRAWN	C.BURNS	09.08.21
DRG CHECK	L.MATTSSON	09.08.21
DESIGN	C.BURNS	09.08.21
DESIGN CHECK	L.MATTSSON	09.08.21
DESIGN MNGR	B.SPALDING	09.08.21
PROJECT MNGR	X. X. XXXXXXXX	XX.XX.XX

A3

HW23 CHARLESTOWN ROAD AND PEATTIES ROAD TURN CHECK VERIFICATION

PART X

ISSUE X

LEFT IN TO PEATTIES ROAD
19m PRIME MOVER AND SEMI-TRAILER

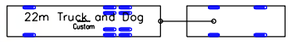
SHEET LEGEND

VEHICLE FEATURES

- VEHICLE BODY
- BODY CLEARANCE
- FRONT TYRES
- VEHICLE BODY (HATCHING)

VEHICLES

22m TRUCK AND DOG



19m PRIME MOVER AND SEMI-TRAILER

NOTES

1. TURN PATHS ARE BASED ON NEARMAP AERIAL IMAGERY ONLY
2. TURNING RADIUS IS BASED ON THE ABSOLUTE MINIMUM RADIUS OF 12.5m AND IS MEASURED TO THE PATH OF THE OUTER FRONT WHEEL

FOR INFORMATION ONLY

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED
0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME D:\Data\Projects\HW23 RP2J - Peatties Rd Site Compound\Peatties - TURNPATHS.dgn				DESIGN LOT CODE XXXXXXX		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING FILE NAME ; FILE NAME		PLOT DATE / TIME 1/01/0001 12:00:00 AM	PLOT BY cburns3
EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING 0 5 10 15 20 SCALE 1:500m	DRAWINGS / DESIGN PREPARED BY TECHNICAL SERVICES ROAD DESIGN NEWCASTLE		
						CO-ORDINATE SYSTEM MGA ZONE 56 (GDA94)	HEIGHT DATUM AHD		

TITLE	NAME	DATE
DRAWN	C.BURNS	09.08.21
DRG CHECK	L.MATTSSON	09.08.21
DESIGN	C.BURNS	09.08.21
DESIGN CHECK	L.MATTSSON	09.08.21
DESIGN MNGR	B.SPALDING	09.08.21
PROJECT MNGR	X. X. XXXXXXXX	XX.XX.XX

CLIENT

NSW GOVERNMENT Transport for NSW

A3

HW23 CHARLESTOWN ROAD AND PEATTIES ROAD
TURN CHECK VERIFICATION

PART X

ISSUE X

SHEET LEGEND

VEHICLE FEATURES

- VEHICLE BODY
- BODY CLEARANCE
- FRONT TYRES
- VEHICLE BODY (HATCHING)

VEHICLES

22m TRUCK AND DOG

22m Truck and Dog
Custom

19m PRIME MOVER AND SEMI-TRAILER

PM S 19M
AUSTROADS 2013 (AU)

NOTES

1. TURN PATHS ARE BASED ON NEARMAP AERIAL IMAGERY ONLY
2. TURNING RADIUS IS BASED ON THE ABSOLUTE MINIMUM RADIUS OF 12.5m AND IS MEASURED TO THE PATH OF THE OUTER FRONT WHEEL

FOR INFORMATION ONLY

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME	D:\Data\Projects\HW23 RP2J - Peatties Rd Site Compound\Peatties - TURNPATHS.dgn
DESIGN LOT CODE	XXXXXXX
DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	FILE NAME ; FILE NAME
EXTERNAL REFERENCE FILES	
SCALES ON A3 SIZE DRAWING	0 5 10 15 20 SCALE 1:500m
DRAWINGS / DESIGN PREPARED BY	TECHNICAL SERVICES ROAD DESIGN NEWCASTLE
CO-ORDINATE SYSTEM	MGA ZONE 56 (GDA94)
HEIGHT DATUM	AHD
PLOT DATE / TIME	1/01/0001 12:00:00 AM
PLOT BY	cburns3

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL

TITLE	NAME	DATE
DRAWN	C.BURNS	09.08.21
DRG CHECK	L.MATTSSON	09.08.21
DESIGN	C.BURNS	09.08.21
DESIGN CHECK	L.MATTSSON	09.08.21
DESIGN MNGR	B.SPALDING	09.08.21
PROJECT MNGR	X. X. XXXXXXXX	XX.XX.XX

CLIENT

NSW GOVERNMENT Transport for NSW

A3

HW23 CHARLESTOWN ROAD AND PEATTIES ROAD TURN CHECK VERIFICATION

PART X

ISSUE X

RIGHT OUT OF PEATTIES ROAD
22m TRUCK AND DOG

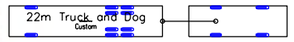
SHEET LEGEND

VEHICLE FEATURES

- VEHICLE BODY
- BODY CLEARANCE
- FRONT TYRES
- VEHICLE BODY (HATCHING)

VEHICLES

22m TRUCK AND DOG



19m PRIME MOVER AND SEMI-TRAILER

NOTES

1. TURN PATHS ARE BASED ON NEARMAP AERIAL IMAGERY ONLY
2. TURNING RADIUS IS BASED ON THE ABSOLUTE MINIMUM RADIUS OF 12.5m AND IS MEASURED TO THE PATH OF THE OUTER FRONT WHEEL

FOR INFORMATION ONLY

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME D:\Data\Projects\HW23 RP2J - Peatties Rd Site Compound\Peatties - TURNPATHS.dgn				DESIGN LOT CODE XXXXXXX		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING FILE NAME ; FILE NAME		PLOT DATE / TIME 1/01/0001 12:00:00 AM	PLOT BY cburns3
EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING 0 5 10 15 20 SCALE 1:500m	DRAWINGS / DESIGN PREPARED BY TECHNICAL SERVICES ROAD DESIGN NEWCASTLE	TITLE / NAME / DATE	
						CO-ORDINATE SYSTEM MGA ZONE 56 (GDA94)	HEIGHT DATUM AHD	DRAWN C.BURNS 09.08.21 DRG CHECK L.MATTSSON 09.08.21 DESIGN C.BURNS 09.08.21 DESIGN CHECK L.MATTSSON 09.08.21 DESIGN MNGR B.SPALDING 09.08.21 PROJECT MNGR X. X. XXXXXXXX XX.XX.XX	

CLIENT: NSW GOVERNMENT Transport for NSW

A3

HW23 CHARLESTOWN ROAD AND PEATTIES ROAD
TURN CHECK VERIFICATION

PART X

ISSUE X

RIGHT OUT OF PEATTIES ROAD
19m PRIME MOVER AND SEMI-TRAILER

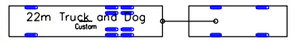
SHEET LEGEND

VEHICLE FEATURES

- VEHICLE BODY
- BODY CLEARANCE
- FRONT TYRES
- VEHICLE BODY (HATCHING)

VEHICLES

22m TRUCK AND DOG



19m PRIME MOVER AND SEMI-TRAILER

NOTES

1. TURN PATHS ARE BASED ON NEARMAP AERIAL IMAGERY ONLY
2. TURNING RADIUS IS BASED ON THE ABSOLUTE MINIMUM RADIUS OF 12.5m AND IS MEASURED TO THE PATH OF THE OUTER FRONT WHEEL

FOR INFORMATION ONLY

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME D:\Data\Projects\HW23 RP2J - Peatties Rd Site Compound\Peatties - TURNPATHS.dgn				DESIGN LOT CODE XXXXXXX		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING FILE NAME ; FILE NAME		PLOT DATE / TIME 1/01/0001 12:00:00 AM		PLOT BY cburns3	CLIENT NSW GOVERNMENT Transport for NSW
EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING 0 5 10 15 20 SCALE 1:500m	DRAWINGS / DESIGN PREPARED BY TECHNICAL SERVICES ROAD DESIGN NEWCASTLE	TITLE	NAME	DATE	HW23 CHARLESTOWN ROAD AND PEATTIES ROAD TURN CHECK VERIFICATION
						CO-ORDINATE SYSTEM MGA ZONE 56 (GDA94)	HEIGHT DATUM AHD	DRAWN	C.BURNS	09.08.21	A3
								DRG CHECK	L.MATTSSON	09.08.21	
								DESIGN	C.BURNS	09.08.21	
								DESIGN CHECK	L.MATTSSON	09.08.21	
								DESIGN MNGR	B.SPALDING	09.08.21	PART X
								PROJECT MNGR	X. X. XXXXXXXX	XX.XX.XX	ISSUE X

RIGHT OUT OF PEATTIES ROAD
12.5m SINGLE UNIT TRUCK

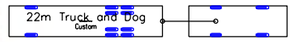
SHEET LEGEND

VEHICLE FEATURES

- VEHICLE BODY
- BODY CLEARANCE
- FRONT TYRES
- VEHICLE BODY (HATCHING)

VEHICLES

22m TRUCK AND DOG



19m PRIME MOVER AND SEMI-TRAILER

NOTES

1. TURN PATHS ARE BASED ON NEARMAP AERIAL IMAGERY ONLY
2. TURNING RADIUS IS BASED ON THE ABSOLUTE MINIMUM RADIUS OF 12.5m AND IS MEASURED TO THE PATH OF THE OUTER FRONT WHEEL

FOR INFORMATION ONLY

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED
0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: D:\Data\Projects\HW23 RP2J - Peatties Rd Site Compound\Peatties - TURNPATHS.dgn	DESIGN LOT CODE: XXXXXXX	DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: FILE NAME ; FILE NAME	PLOT DATE / TIME: 1/01/0001 12:00:00 AM	PLOT BY: cburns3	CLIENT: NSW GOVERNMENT Transport for NSW
EXTERNAL REFERENCE FILES	REV / DATE / AMENDMENT / REVISION DESCRIPTION	WVR No. / APPROVAL	SCALES ON A3 SIZE DRAWING: 0 5 10 15 20 SCALE 1:500m	DRAWINGS / DESIGN PREPARED BY: TECHNICAL SERVICES ROAD DESIGN NEWCASTLE	A3

TITLE	NAME	DATE
DRAWN	C.BURNS	09.08.21
DRG CHECK	L.MATTSSON	09.08.21
DESIGN	C.BURNS	09.08.21
DESIGN CHECK	L.MATTSSON	09.08.21
DESIGN MNGR	B.SPALDING	09.08.21
PROJECT MNGR	X. X. XXXXXXXX	XX.XX.XX

CO-ORDINATE SYSTEM: MGA ZONE 56 (GDA94) HEIGHT DATUM: AHD

HW23 CHARLESTOWN ROAD AND PEATTIES ROAD
TURN CHECK VERIFICATION

PART: X ISSUE: X