

Traffic Management Plan – Site Establishment and Stage 1

N217
BR COP



Project overview

Project Site Address: Hickson Road Barangaroo NSW 2000	BESIX Watpac State Division Address: Level 24, 44 Market Street SYDNEY NSW 2000
Project Commencement Date: 12 March 2021	BESIX Watpac ABN: 71 010 462 816

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00	26/08/2021	Approved for Construction	[REDACTED] / Contractor's Representative

BESIX Watpac Approvals

Name	Role & Title	Signature	Date
[REDACTED]	Issuer Traffic Support Consultant Traffic Support Consultant	[REDACTED]	26/08/2021 26/08/2021
[REDACTED]	Reviewers Senior Project Engineer Construction Manager (Civil) Engineering Manager	[REDACTED]	26/08/2021 26/08/2021 26/08/2021

Name	Role & Title	Signature	Date
[REDACTED]	Checker Senior Construction Manager	[REDACTED]	26/08/2021
[REDACTED]	Approver Project Director	[REDACTED]	26/08/2021

Note: A controlled copy of the Construction Traffic Management Plan (CTMP) will be distributed to the Sydney Metro Principal's Representative, Independent Certifier (IC) and other nominated stakeholders, and it will be made available to all BR COP employees and subcontractors in soft copy format through the project document control system.

The CTMP associated sub-plans and procedures, when printed, will be uncontrolled and it will be the responsibility of each user to confirm the currency of the plan through the project document control system.

Acronym and Definitions

Acronym	Term and/or Definitions
AS/NZS	Australian Standards/ New Zealand Standards
BCA	Building Code of Australia
BR-CODD	Barangaroo 'Construct Only Delivery Deed'
BR-COP	Barangaroo 'Construct Only Package' (also various documents refer to: BZZ Contractor / STME)
CEMP	Construction Environmental Management Plan
COP	Construct Only Project
CMP	Contract Management Plan
CTMF	Construction Traffic Management Framework
CTMP	Construction Traffic Management Plan
GSMoP	General Specification Management of the Project
iNSW	Infrastructure NSW (https://www.infrastructure.nsw.gov.au/projects-nsw/barangaroo/)
NSMS	The BESIX Watpac certified National Safety Management System
OPLINC	Online Planned Incident System (ROL application system)
PS	Particular Specification
ROL	Road Occupancy Licence
SMCSW	Sydney Metro City & Southwest (the overall program of works, which Barangaroo Station is part of)
SWMS	Safe Work Method Statement
SZA	Speed Zoning Authorisation
TCG	Traffic Co-ordination Group
TCP	Traffic Control Plan
TCS	Traffic Control Signal (traffic lights)
TfNSW	Transport for New South Wales (https://www.transport.nsw.gov.au)
TfNSW - ASA	TfNSW - Assets Standards Authority (https://www.transport.nsw.gov.au/industry/asset-standards-authority)
TfNSW - SM	TfNSW - Sydney Metro (https://www.sydneymetro.info)
TfNSW – P&P	TfNSW – Planning and Programs (former RMS, CTMP approver)
TfNSW – CJM	TfNSW – Customer Journey Management
TfNSW - TMC	TfNSW – Transport Management Centre (ROL approver)
TfNSW – CJP	TfNSW – Customer Journey Planning (CTMP endorser)
TMP	Traffic Management Plan
TTLG	Traffic and Transport Liaison Group
VMS	Variable Message Sign (portable or permanent)
WHS	Work Health and Safety

Note: Refer to BR CODD, and to PS (Section 8) and GS (Section 8) for further definitions

Terms and Definitions

Glossary	Definitions and Responsibilities
Contractor	Particular Specification (PS) must be read as a reference to the “BR Contractor” as defined in the BR-CODD
Contractors Activities	Particular Specification and General Specification must be read as a reference to the “BR Contractor’s Activities” as defined in the BR-CODD
Crisis Event	an event that may have an impact on the community, commuters, environment, personnel or subcontractors or has attracted or can reasonably be expected to attract the attention of the media, the Minister for Transport, a local Member of Parliament, local Authority or the local community. This includes emergencies, incidents or crises unrelated to the Contractor’s Activities that may be deemed to be caused by the Contractor’s Activities due to locality.
Design Documentation	Means the “Final Design Documentation” as defined in the BR-CODD.
Emergency Event	A situation in which there is an unacceptable risk, to the health and wellbeing of occupants, staff, or the general public, which needs intervention by staff or emergency services to control, limit escalation, suppress or address the risk and return to normal operations.
Heavy Vehicles	Truck and dogs, concrete agitators, most cranes and semi or flatbed trucks. All these vehicles currently use the road network and operate within road rules and requirements. Vehicles that operate outside current conditions are considered over dimensioned.
Inspection and Test Plan	Inspection and test plans prepared and implemented by the Contractor in accordance with the requirements in AS/NZS ISO 9001 Quality Management systems – Requirements.
Interface Work	Any activities undertaken by an Interface Contractor which interface with or affect, or are affected by, the Contractor’s Activities, the Project Works or the Temporary Works.
Long Term	For more than one shift, installed on one day/night and remains in place for weeks or months but is removed on completion of the project or that specific piece of work, e.g. signage
Network Assurance Committee	The committee with approval responsibility for assurance delegated from the TfNSW Network Assurance Committee (TNAC).
Running Tunnel	All underground spaces through which the rolling stock travels, excluding Station Trackway.
Short Term	For one shift only, work may return the next day/night, but it is set-up and packed-up entirely in one shift, e.g. cones and signs for a lane closure
Station	Particular Specification and General Specification must be read as a reference to the “Barangaroo Station”.
Station Precinct	In respect of Station, the area comprising the Station Plazas and the Streets.

Note: Refer to BR CODD, and to PS (Section 8) and GS (Section 8) for further definitions

Contacts

Stakeholder	Name	Contact Details
City of Sydney Council		02 9265 9333
Infrastructure NSW		9216 5700
TMC		131 700
EPA pollution hotline		131 555
SafeWork NSW		131 050
Fire and Rescue NSW		1300 729 579
Emergency		000

Additional contacts information please refer to the Project Community Communications Strategy and Business Management Plan.

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1 Introduction

1.1 Overview

The Barangaroo Station Contract is a Construct Only Project (COP). BESIX Watpac is responsible for obtaining relevant approvals and delivering the project.

This TMP is a subset of Project's CTMP¹ (BESIX Watpac, 2021) and details how BESIX Watpac will safely manage traffic and pedestrians during the Site Establishment stage and Stage 1 of the COP. The stages are primarily linked to the road work staging along Hickson Road, adjacent to the site (Stages 1-4) and the Northern Shaft (Stages 5-8). The purpose of this staging is to maintain one traffic lane in each direction along Hickson Road. The Project's CTMP (BESIX Watpac, 2021) should be read in conjunction with this CTMP for construction and procedural/ compliance details relating to the overall project.

Any changes made to this TMP would be tabled to the Traffic Control Group (TCG) and managed through the approval process outlined in the Project's CTMP (BESIX Watpac, 2021).

Additional TMPs will be developed for subsequent stages including details on how temporary traffic lane switches will be managed between stages.

This TMP has been prepared and reviewed by engineers who hold the Transport for NSW (TfNSW) Prepare a Works Zone Traffic Management Plan accreditation. Details of the accredited engineers are as follows:

- Ashish Modessa Card No. 0052374421
- Brett Maynard Card No. 0052374425.

1.2 Local Context

Barangaroo Station is located within the road reserve of Hickson Road, between the Dalgety Road/ Argyle Place overbridge (to the north) and the High Street stairs (to the south).

Hickson Road is classified as a Regional Road between Napoleon Street (to the south) and the Sydney Harbour Bridge (to the north). The road becomes a local road southeast of Sydney Harbour Bridge and links to George Street in the centre of the Sydney CBD.

Between Napoleon Street and the Windmill Street overbridge, the road is under the control of Infrastructure NSW (formerly Barangaroo Delivery Authority). Outside this area, the City of Sydney is the responsible road authority.

The road was added to an expanded 40km/h area in August 2019 that covers Sydney CBD, given the high pedestrian volumes.

On-street parking along Hickson Road has temporarily been removed between Watermans Quay (to the south) and the Windmill Street overbridge to facilitate various construction works along the road, including Barangaroo Metro.

There are three bus routes (311, 324 and 325) that use Hickson Road adjacent to the site that operate between Walsh Bay to the north and Sydney CBD (Town Hall), with services extending to Watsons Bay, via Kings Cross further east. The nearest bus stops are currently located on Hickson Road either side of Towns Place.

Since 13 April 2021, pedestrian access along Hickson Road between Dalgety Road overbridge and Watermans Quay has been temporarily removed for the construction works. Pedestrians are directed to use the recently opened foreshore boardwalk and shared path further west.

¹ BESIX Watpac, SMCSWSBR-BWC-SBR-TF-PLN-000001_B_CTMP Revision B dated 11 June 2021

As a result of the ongoing construction works along Hickson Road, there are no dedicated bicycle lanes, with cyclists required to ride in a mixed traffic arrangement.

1.3 Reference

In preparing this report, reference has been made to the following:

- inspections of the site and its surrounds
- Australian Road Rules
- Australian Standard 1742.3-2009 Traffic control devices for works on roads
- Australian Standard 1742 Parts 1 to 14, Manual of uniform traffic control devices (as required)
- AGTM 02-08 Guide to Traffic Management Part 2: Traffic Theory
- AGTM 06-07 Guide to Traffic Management Part 6: Intersections and Crossings – General
- AGRD 04-09 Guide to Road Part 4: Intersections and Crossings – General
- General Specification Management of the Project (MS-GS-MP-2)
- TfNSW Traffic Control at Worksites Manual Ver 6
- TfNSW Delineation Manual March 2008
- TfNSW Road Safety Audit Technical Direction TD2003/RS03, Version 2 – August 2005
- TfNSW Road Occupancy Manual
- TfNSW Regulatory Signs Guide
- TfNSW VMS Policy - Technical Directions TDT 2002/11 and TDT2005/02A
- TfNSW equipment specification P3074A
- TfNSW equipment specification FAS/4
- TfNSW equipment specification PTS/3
- R141 Pavement Marking
- R142 Retro Reflective Raised Pavement Markers
- R3351 Road Marking Paint
- R3353 Glass Beads
- R3354 Adhesives for RRPM Installation
- R3357 Thermoplastic Road Marking Material
- R3359 Profile Thermoplastic Road Marking Material
- Relevant TfNSW (previously RMS) Technical Directions and Guide updates
- SI/TCS/8 Installation of traffic light signals
- Sydney Metro CSW Construction Traffic Management Framework (CTMF)
- BESIX Watpac Construction Traffic Management Plan
- CJP Guide to Traffic and Transport Management for Special Events
- TfNSW Supplements to Australian Standards and AustRoads

2 Construction Overview

2.1 Stage Description

A summary of the works to be completed in the Site Establishment stage and Stage 1 is provided in Table 1.

Table 1 Summary of Construction Activities

Stage	Description of Construction Activities	Duration
Site Establishment	<ul style="list-style-type: none">Site Establishment Works	16 August 2021 to 14 October 2021
1	<ul style="list-style-type: none">Hickson Road Works (Western Portion)	15 October 2021 to February 2022

2.2 Construction Hours of Operation

Detailed information on the construction hours is provided in the Project's CTMP (BESIX Watpac, 2021), with the standard construction hours being:

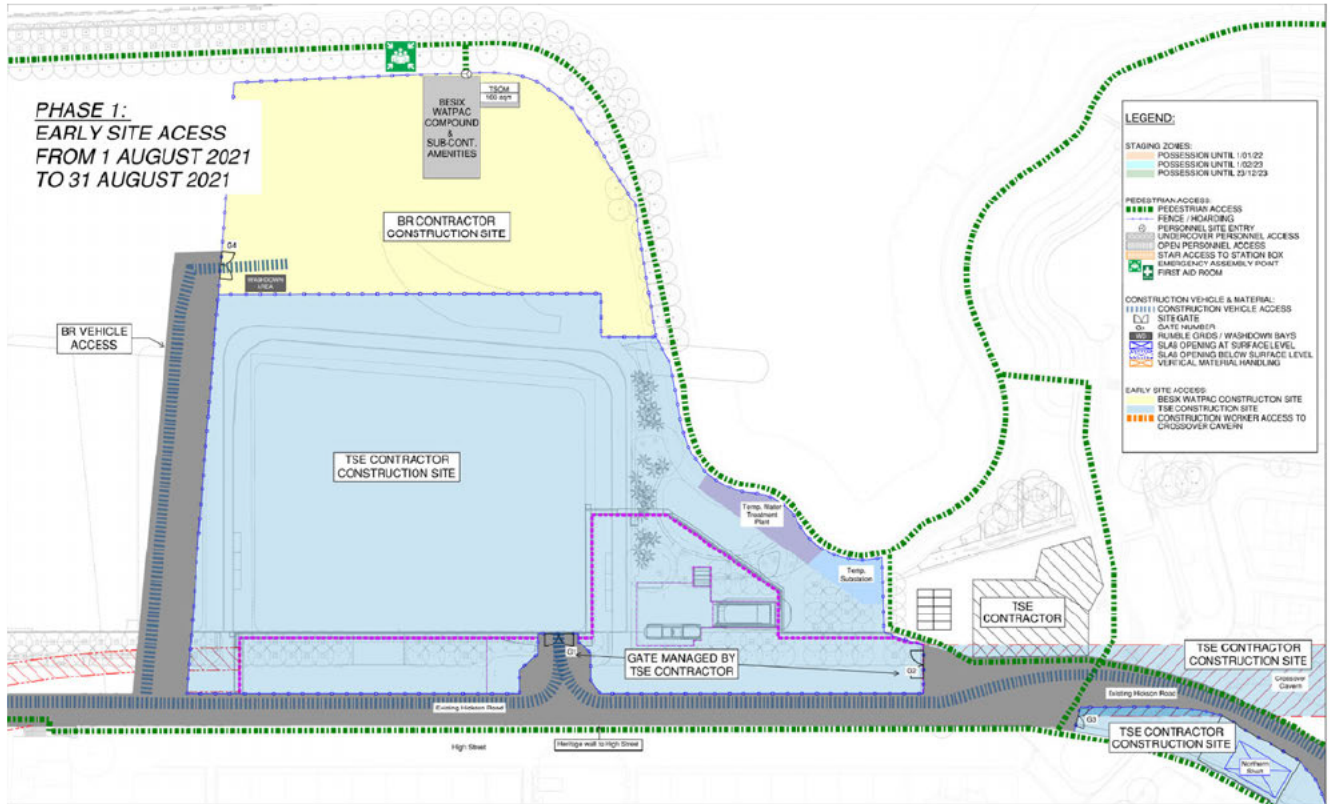
- 7.00 am to 6.00 pm Monday to Friday
- 8.00 am to 1.00 pm Saturday
- No works on a Sunday or public holiday.

2.3 Site Layout

As illustrated in Figure 1, BESIX Watpac will gain access to the western portion of the construction site for Site Establishment (Phase 1), whilst the TSE Contractor completes work elsewhere. Construction vehicle access to the western portion of the site will be via existing Gate H4, located south of the site and currently managed by Lendlease as part of the Barangaroo South development. The TSE Contractor will continue to manage the existing Gate SBR H2 that provides direct access to the site.

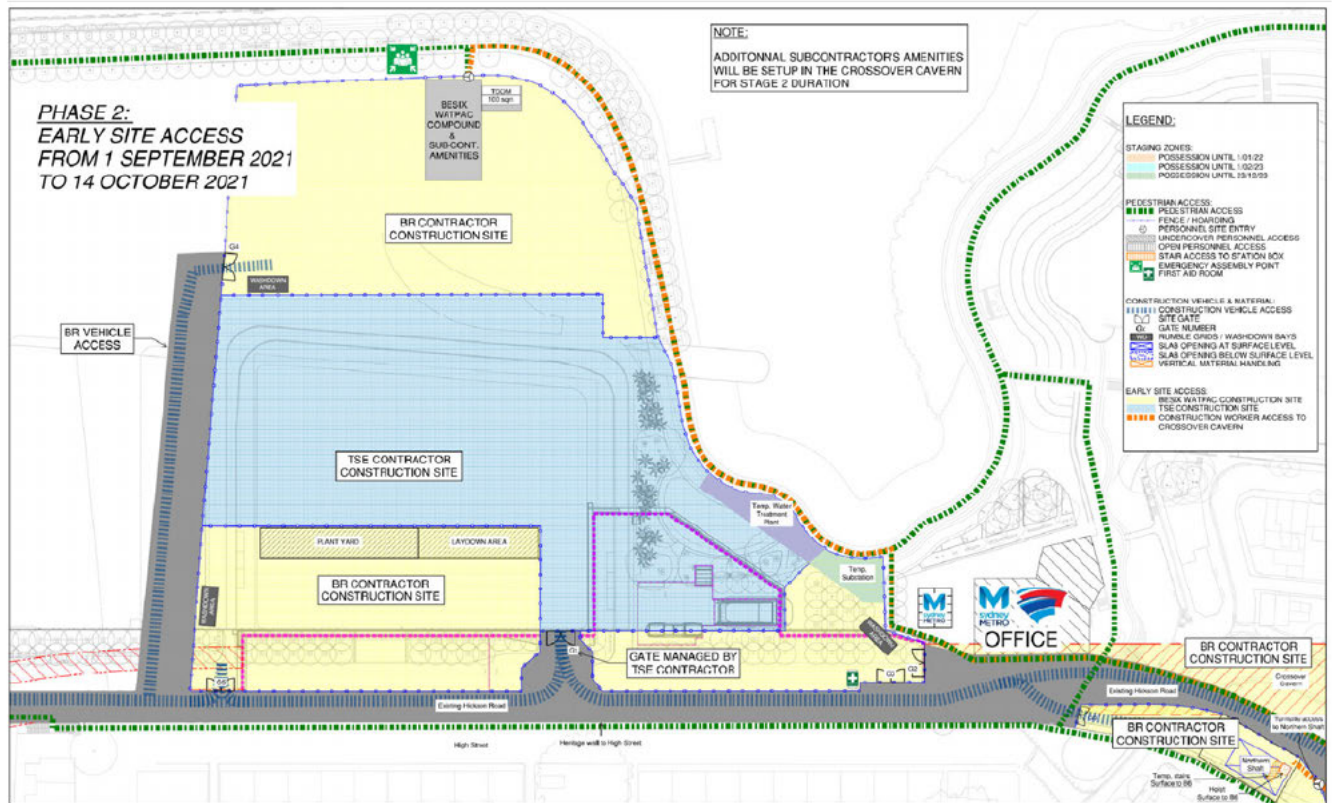
For Site Establishment (Phase 2), BESIX Watpac will also gain access to the eastern portion of the construction site (Hickson Road, Station Box, excluding Sharks Fin area and Block 7). Site gates will be installed, as illustrated in Figure 2 while the TSE Contractor will maintain the access via Gate 1. The BESIX Watpac will also have access to the northern shaft noise enclosure compound, with vehicle access provided by temporary traffic signals installed between the compound and the main construction site.

Figure 1: Site Establishment – Phase 1 (16 August 2021 to 31 August 2021)



Source: BESIX Watpac, BR COP – Site Establishment - Phase 1 dated 24 May 2021

Figure 2: Site Establishment – Phase 2 (1 September 2021 to 14 October 2021)



Source: BESIX Watpac, BR COP – Site Establishment -Phase 2 dated 24 May 2021

Stage 1 is the construction of the western portion of Hickson Road over the station box. Construction vehicle access to the broader construction site will be via Gate SBR H2, as currently used by the TSE Contractor. Figure 3 to Figure 6 illustrate the current arrangement to be retained for these initial stages.

Figure 3: Stage 1 – Hickson Road Works - Western Portion (12 October 2021 to February 2022)

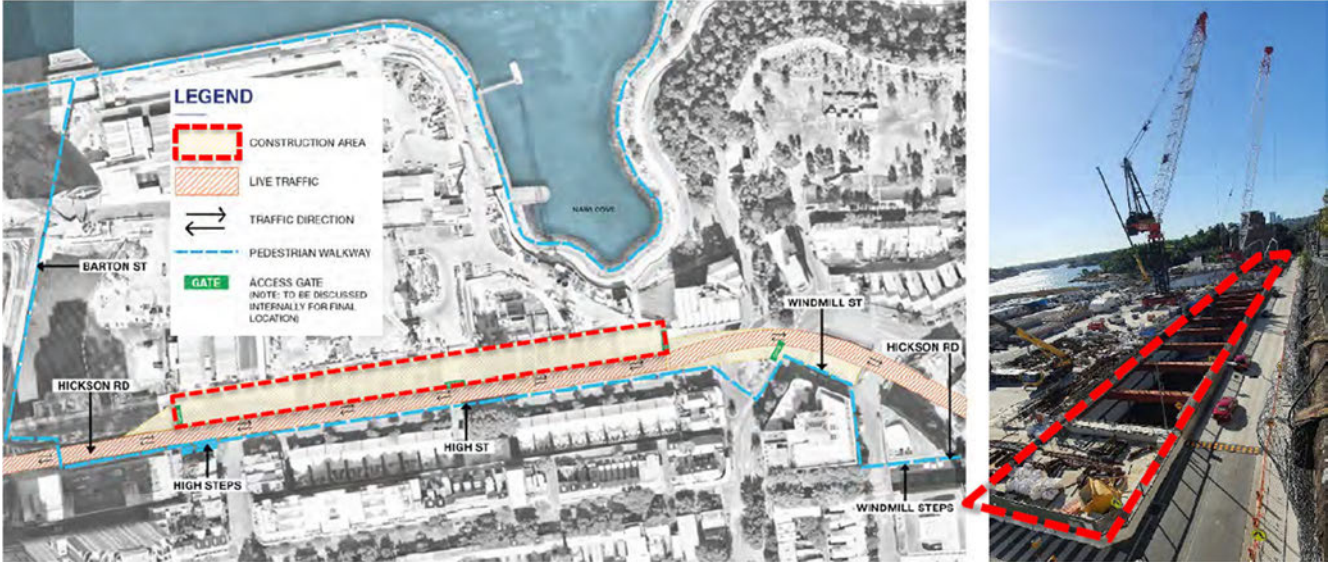


Figure 4: Stage 1 – Hickson Road Works – Current Arrangement Retained (Hickson Road, looking south)

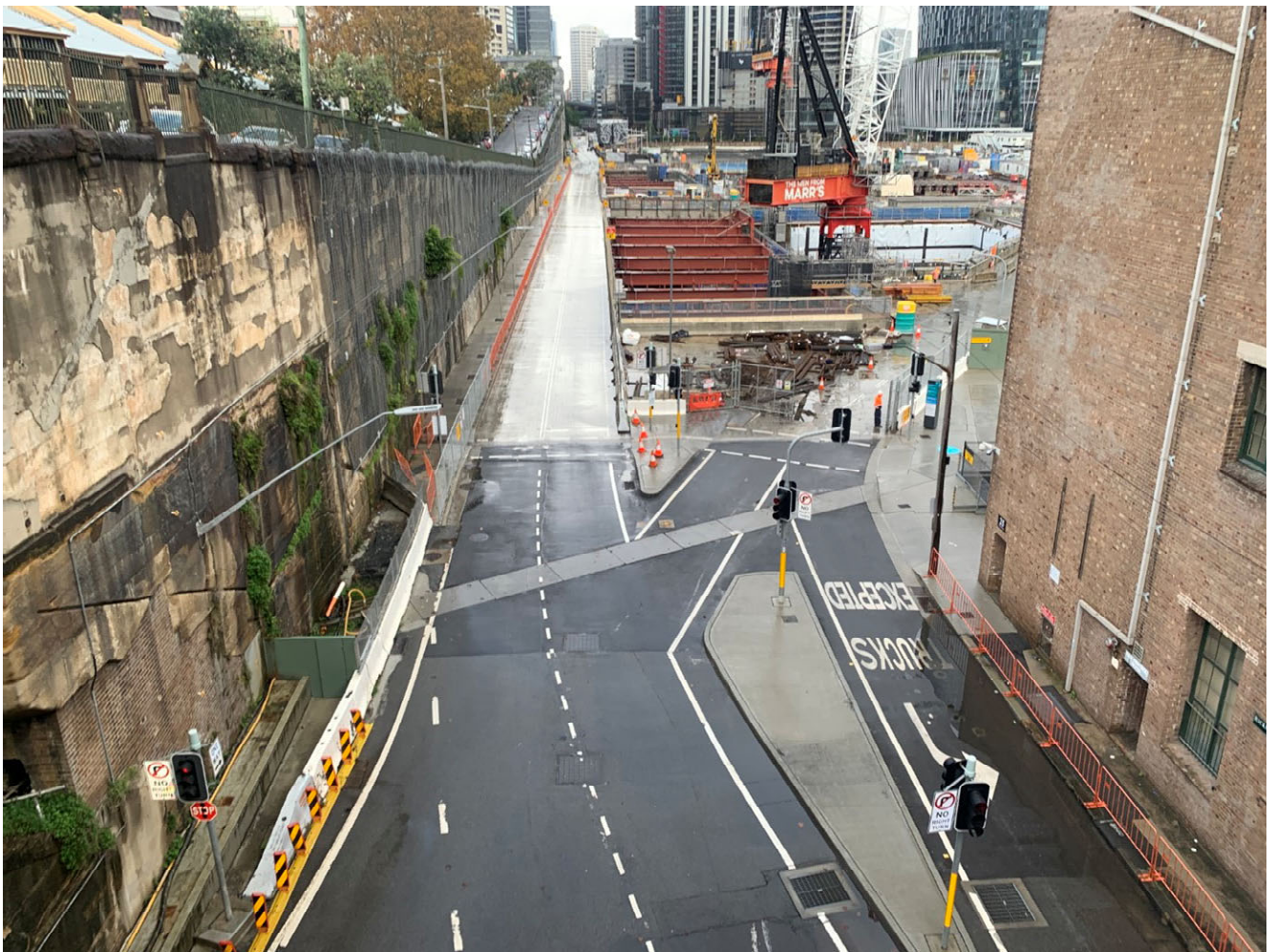


Figure 5: Stage 1 – Hickson Road Works – Current Arrangement Retained (Main Access)



Figure 6: Stage 1 – Hickson Road Works – Current Arrangement Retained (Hickson Road, looking north)



3 Transport Impact Management

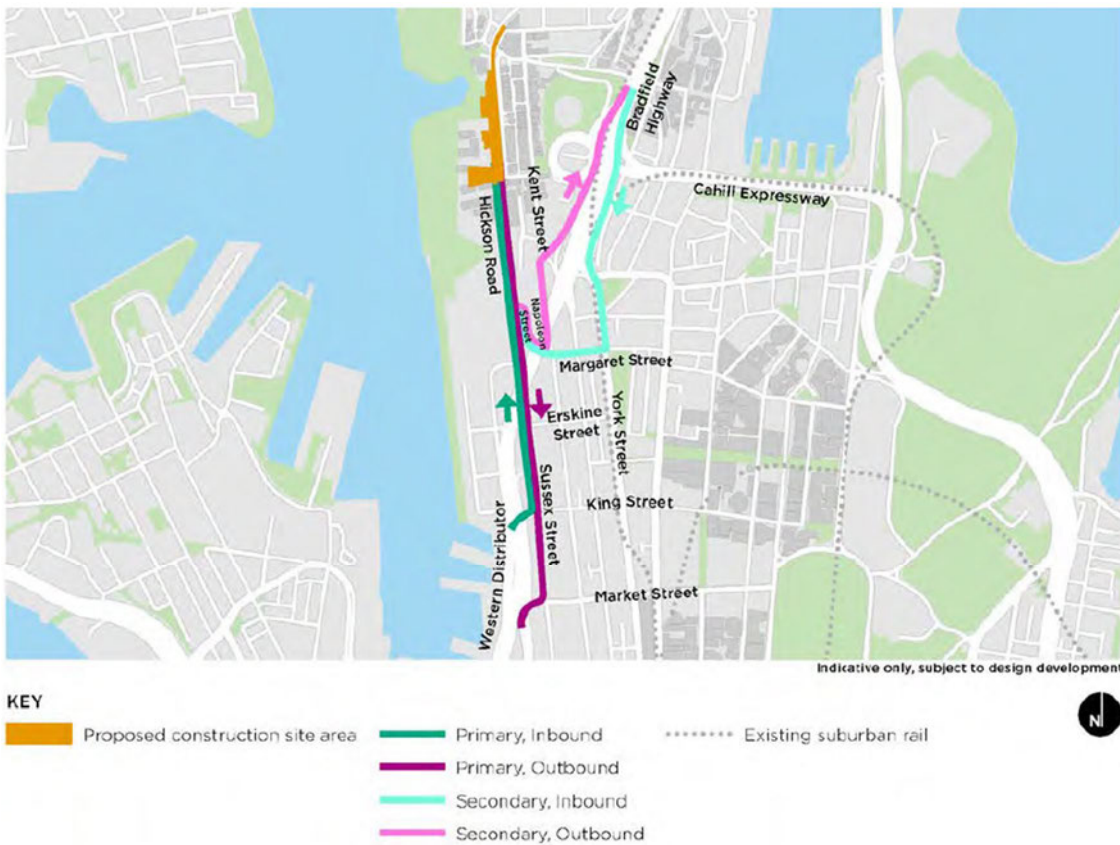
3.1 Construction Traffic

Delivery truck routes to and from the construction site were developed in-line with the GSMoP and the Metro Project EIS (Figure 7), with the view to minimising impacts to local streets while maximising use of state and regional roads. These are proven approach and departure routes that have and continue to be used by many construction sites around Barangaroo over the last 10 years as the area has transformed.

The City of Sydney Standard Requirements for CTMPs states that truck and dog trailers and semi-trailers are only permitted on Local Roads if approval is obtained from the City’s Construction Regulation Unit for a one-off occasion.

Anything larger than a semi-trailer is considered an OSOM and will be managed by P&P’s OSOM approval system, though the routes used will not differ from those used by general construction vehicles (unless P&P OSOM approval states otherwise).

Figure 7: Approved Truck Approach and Departure Routes



Source: Chatswood to Sydenham Environmental Impact Statement – Technical Paper 1: Traffic and Transport, May 2016

Swept path analysis for the largest design vehicles has been completed for the Project’s CTMP (BESIX Watpac, 2021) at select locations approaching the site to verify suitability of the approach and departure routes. Detailed swept paths specifically for Site Establishment (Phases 1 and 2) and Stage 1 site access arrangements are provided in Appendix A.

3.2 General Traffic

Hickson Road has historically always had one traffic lane in each direction adjacent to the site. The existing traffic arrangement will be retained during the Site Establishment and Stage 1.

3.3 Parking

The construction works will have no further impact to on-street car parking supply, noting that public car parking along Hickson Road has already been temporarily removed between Watermans Quay and the Windmill Street overbridge.

3.4 Buses

Existing bus services (311, 324 and 325) will continue to operate along Hickson Road during the construction period. The Site Establishment and Stage 1 works will not impact any bus stops. Sydney Buses will be advised of any necessary temporary lane or road closures with the view for such closures to occur out of bus operating hours (e.g. at night), where practical.

3.5 Pedestrian and Cyclists

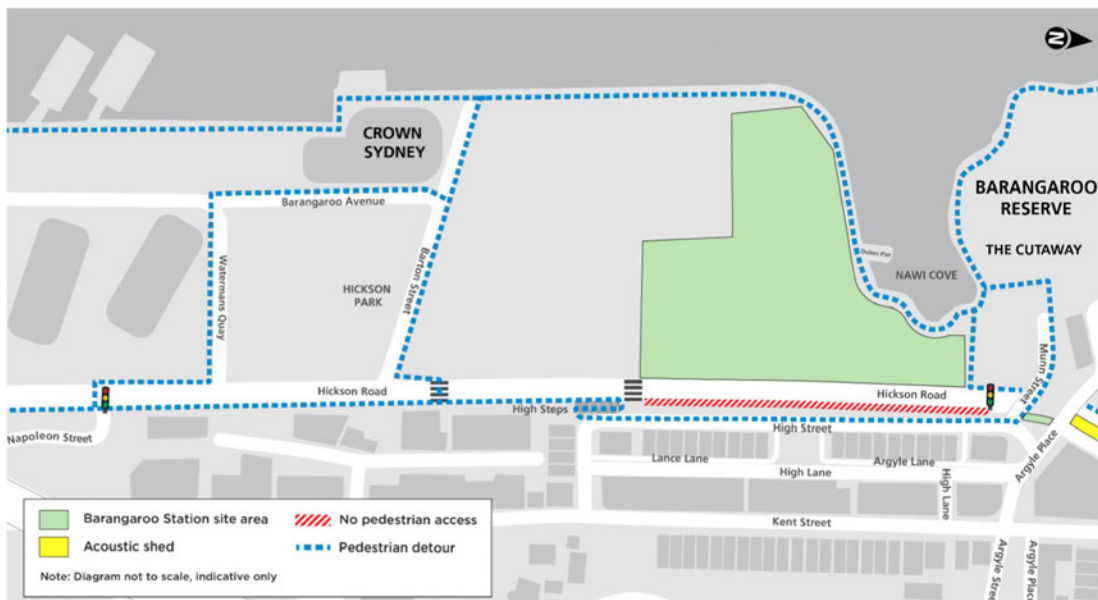
Since mid-April 2021, pedestrian access has been temporarily removed along Hickson Road, adjacent to the site. This has been made possible by the opening of pedestrian access along the foreshore, linking Barangaroo South and Barangaroo Reserve to the north (see Figure 8). Alternatively, pedestrians can use the stairs between Hickson Road and High Street at the southern end of the construction site.

BESIX Watpac will retain the footpath closure along Hickson Road for the duration of the construction works. This would separate construction activities and pedestrian movements, although is reliant on the foreshore access being retained throughout the construction works.

BESIX Watpac will retain existing ‘Footpath Closed’ signs, directional signs and position accredited traffic controllers at footpath closure points to guide pedestrians around the closure, manage pedestrian and vehicle interaction and prevent pedestrians entering the footpath closure.

BESIX Watpac will advise the TTLG, CJP and the relevant road authority (P&P, City of Sydney and/ or Infrastructure NSW) prior to any changes to pedestrian access and facilities along Hickson Road.

Figure 8: Hickson Road Footpath Closure



Source: sydneymetro.info

Bicycle access will continue to be provided along Hickson Road in a mixed traffic arrangement. Alternative access is available along the foreshore and is encouraged to be used, particularly by less experienced cyclists.

3.6 Property Access

There is no property access along Hickson Road, adjacent to the site. As such, the works will not have any impact to property accesses.

3.7 Emergency Services Access

Site Establishment and Stage 1 works are not expected to impact emergency services along Hickson Road.

Liaison would be maintained with the emergency services agencies throughout the construction period and a 24-hour contact would be made available for 'out-of-hours' emergencies and access.

3.8 Traffic Control

3.8.1 Traffic Control Plan

Detailed information for work site operations is contained in the Traffic Control at Work Sites manual (TfNSW, 2020). The control of traffic at work sites must be undertaken with reference to SafeWork NSW requirements and Project's Health and Safety Management Plan.

An overview Traffic Control Plan (TCP) has been developed to inform detailed TCPs to be prepared by the appointed Traffic Control Company and is included in Appendix A that considers the following:

- construction vehicle activity, including the loading/ unloading of trucks to be conducted on site
- detour routes for pedestrians
- clear definition of the road closures with barriers and signage
- all construction vehicles entering and exiting the site in a forward direction
- construction vehicles approaching and departing the site will be assisted by accredited traffic controllers to safely enter and exit the road network
- all construction vehicle activity will be minimised during peak periods, where possible.

The location of all signs on the detailed TCPs will be confirmed on site by an accredited traffic controller including consideration of other signs currently installed for the project and signs for other work sites to minimise conflicting/ contradicting messages.

3.8.2 Signalised Intersections

Site Establishment and Stage 1 are not expected to impact any signalised intersections on approach to the site.

The current temporary traffic signals set up on Hickson Road at the north end of the work site will be retained during Site Establishment and Stage 1 to facilitate access between the work site and northern shaft noise enclosure compound set up below the two overbridges (Dalgety Road and Windmill Street).

An accredited traffic controllers will be positioned south of the northern construction vehicle gate, approximately 20 metres from the temporary traffic signals. The traffic controller can only stop northbound traffic to assist trucks exit the site once the lights are red. A traffic controller will not be positioned to control southbound traffic as traffic control it is not permitted at traffic signals in the TCAWS Issue 6.0. Therefore, trucks exiting this northern gate should only turn right out of the site under traffic control when the signals are red.

3.8.3 Speed Limits

BESIX Watpac does not propose to change the current 40km/h speed zone arrangement along Hickson Road.

3.8.4 Containment Barriers

Existing concrete safety barriers set up along Hickson Road will be retained during Site Establishment and Stage 1.

Pedestrian fencing will be installed along the footpath on the east side of Hickson Road to reinforce the pedestrian path closure along the site frontage.

3.8.5 Variable Message Sign (VMS)

It is not expected that VMS will be required for Site Establishment and Stage 1 as the existing traffic arrangement will be maintained.

3.9 Nearby Construction Sites

BESIX Watpac will plan works to reduce the impact on the road network.

Major works are currently occurring at Barangaroo South and planned to occur at Central Barangaroo, located adjacent to the Station site. These works are expected to occur during the Station contracts. As such, BESIX Watpac will liaise with all nearby construction contractors to reduce cumulative impact wherever possible and ensure synergy in communications.

Interface meetings will be regularly held with all parties that have work sites on Hickson Road, with Infrastructure NSW responsible for the coordination of works and providing permits for works along Hickson Road.

3.10 Special Events

City of Sydney, Infrastructure NSW and TfNSW TMC advised the following planned special events near the construction site during Site Establishment and Stage 1:

- Vivid – August 2021 and May-June 2022 (current plan is that Hickson Road, west of SHB will not be affected).
- Half Marathon – 27 June 2021
- Sydney Harbour 10K – 25 July 2021
- Spring Cycle – 12 September 2021
- Blackmores Running Festival – 19 September 2021
- Oz Day 10K – 26 January 2022.

TfNSW – CJP is responsible for the assessment and coordination of special events, in consultation with event organisers, NSW Police, Infrastructure NSW and City of Sydney.

3.11 Unplanned Incidents

Fully equipped accredited traffic control crew(s) will be in place to install and maintain the temporary traffic control during construction hours. Members of the crews will also be in place to manage pedestrian and construction vehicle movements, as well as maintain vehicle access. All of these crew members will be able to provide an initial response to any unplanned incident. These crew members will not be equipped to remove or resolve breakdowns or accidents; their role would be reporting, monitoring and basic traffic control only (if safe to do so).

4 Other Considerations

4.1 Road Safety Audit

A road safety audit will be completed for Site Establishment and Stage 1 prior to the finalisation of this TMP.

4.2 Authority Approvals

4.2.1 Local Authority Approvals

The following Infrastructure NSW and/ or City of Sydney permits will be applied for as part of the approval process:

- Road Opening Application
- Temporary Works Permit Application
- Crane Works Application.

4.2.2 TfNSW Approvals

The following TfNSW approvals will be applied for as part of the approval process:

- Road Occupancy License.

4.2.3 NHVR Approval

Any NHVR approvals required for these works will be arranged by the subcontractor.

4.3 Inspections and Monitoring

The Traffic and Logistic Manager will monitor the site and surrounding roads daily, along with the accredited traffic control crew.

Any changes required to traffic control plans will be authorised by persons with 'Prepare a Work Zone Traffic Management Plan' accreditation.

4.4 Environmental Management

The works will be completed in accordance with the BESIX Watpac Construction Environmental Management Plan and associated sub-plans including the Construction Noise and Vibration Management Plan.

The NSW Environmental Protection Authority will regulate the works and any works undertaken outside of approved construction hours will require an Environmental Protection License.

5 Community Notification

5.1 Community Engagement

Details of BESIX Watpac commitment to community consultation are described in the Community Communications Strategy (CCS) and Business Management Plan (BMP). Key messaging during the construction works is:

- Sydney Metro is Australia’s biggest public transport project. From the north west, metro rail is being extended under Sydney Harbour, through new underground city stations and beyond to the south west.
- In 2024, Sydney will have 31 metro railway stations and a 66km standalone metro railway system, revolutionising the way Australia’s biggest city travels.
- Barangaroo Station will be an underground station, about 25 metres below ground level. The station will provide new metro rail access to the residents, workers and visitors within Walsh Bay, Millers Point and Barangaroo and ease congestion at Wynyard Station.
- Hickson Road will be upgraded to its final arrangement in a staged approach to retain one traffic lane in each direction.
- Sydney Metro will consult with the local community and stakeholders to ensure an out of hours delivery approach is undertaken that is best for all involved.
- There will be some noise associated with the crane deliveries and erection. Noise will be minimised wherever possible
- For further information on the work, or to make a complaint, visit sydneymetro.info or call 1800 171 386 (24-hour community information line).

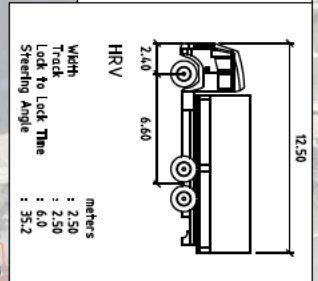
5.2 Stakeholder Consultation

Table 2 is a register of stakeholder consultation that informed the development of this TMP, with ongoing consultation to occur prior to final approval.

Table 2 Stakeholder Consultation Register

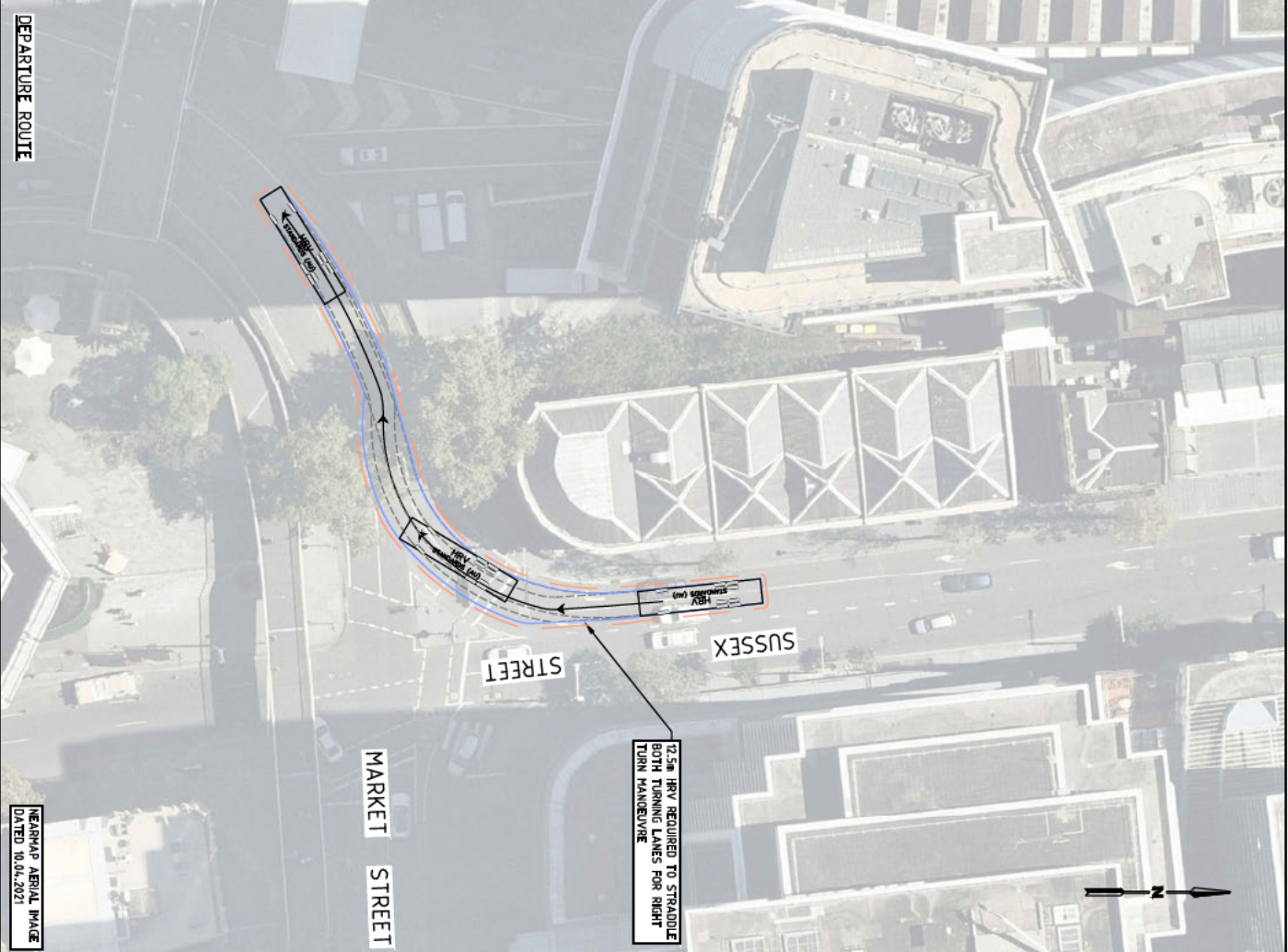
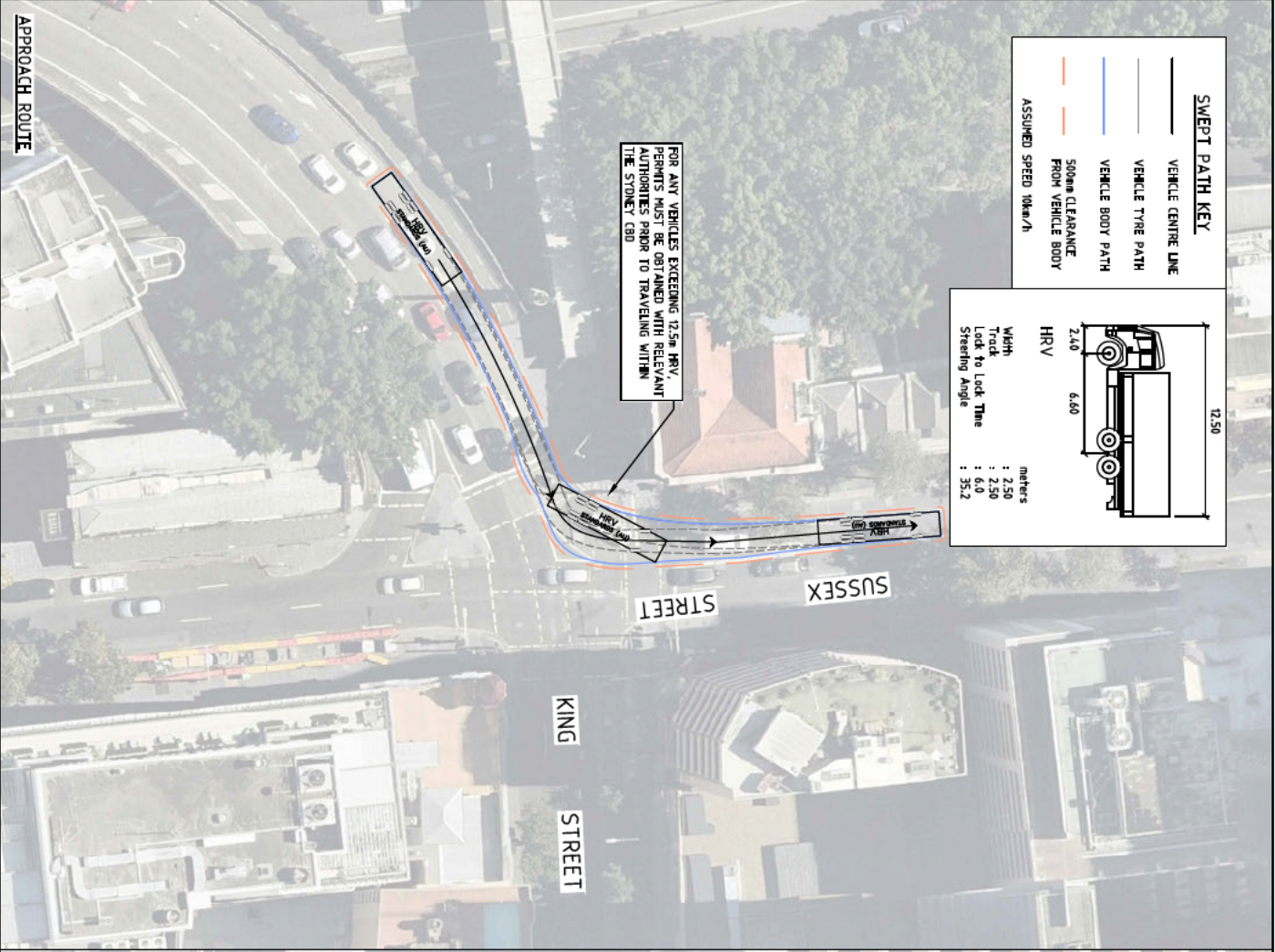
Stakeholder	Date	Consultation	Main Contact People
TCG	11 and 25 May 2021	Presentation of high level timing, site access and Hickson Road traffic arrangements during for the whole of project.	TfNSW/ CoS/ ES
CoS	24 May 2021	CoS provided details on known special events over the next 12 months.	Asad Rajbhoy - Traffic and Transport Planner – Major projects
TTLG	26 May 2021	Presentation of high level timing, site access and Hickson Road traffic arrangements during for the whole of project.	
TCG	8 June 2021	Presentation of timing, site access and Hickson Road traffic arrangements during Site Establishment and Stage 1.	TfNSW/ CoS/ ES

Appendix A Swept Path Analysis



FOR ANY VEHICLES EXCEEDING 12.5m HRV, PERMITS MUST BE OBTAINED WITH RELEVANT AUTHORITIES PRIOR TO TRAVELLING WITHIN THE STREET CSD

12.5m HRV REQUIRED TO STRADDLE BOTH TURNING LANES FOR RIGHT TURN MANOEUVRE

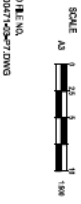


PRELIMINARY PLAN
SUBJECT TO CHANGE WITHOUT NOTICE

WARNING
THE LOCATION OF ANY OBSTACLES OR SERVICES NOT SHOWN ON THIS PLAN IS THE RESPONSIBILITY OF THE USER.

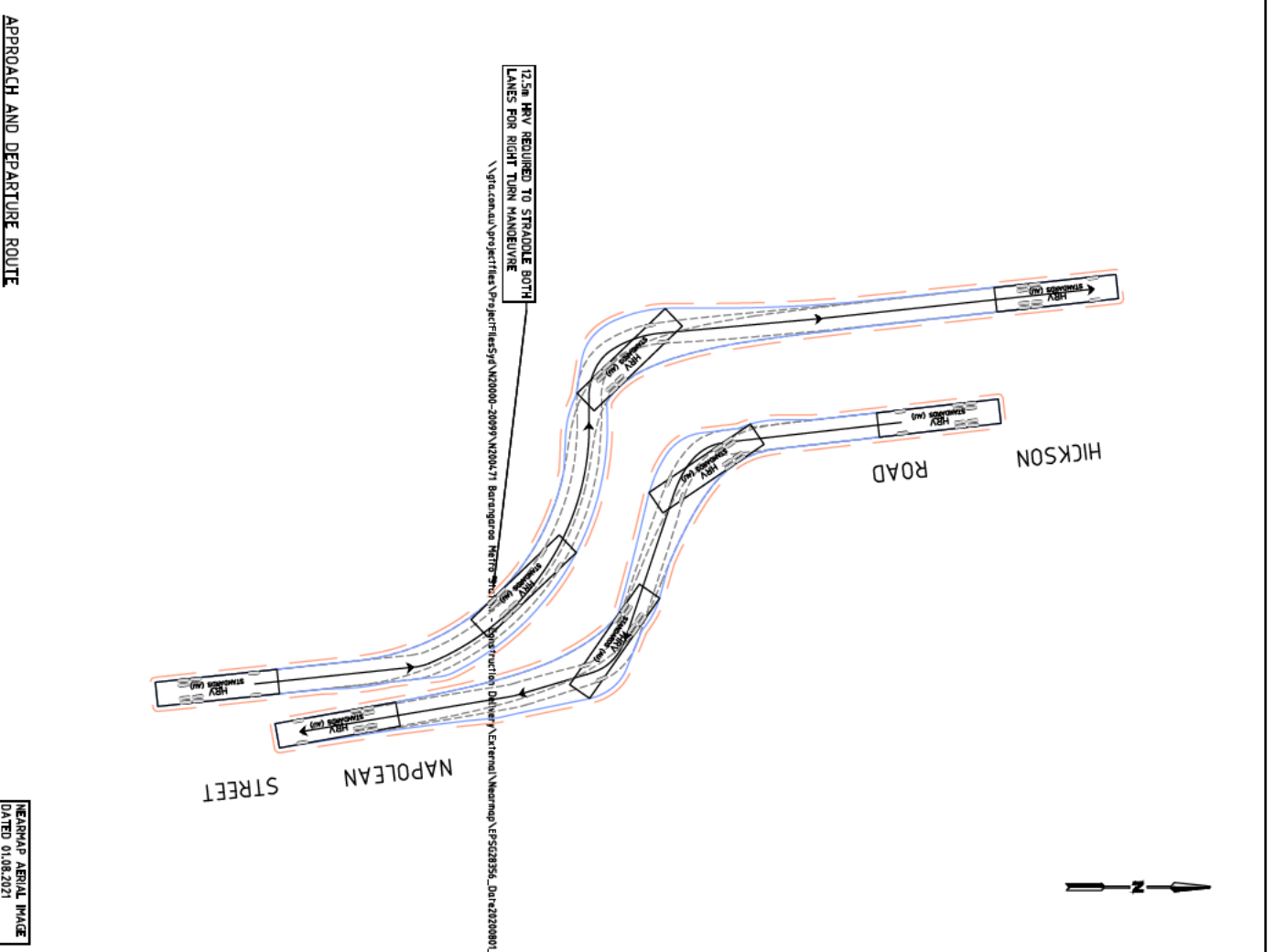
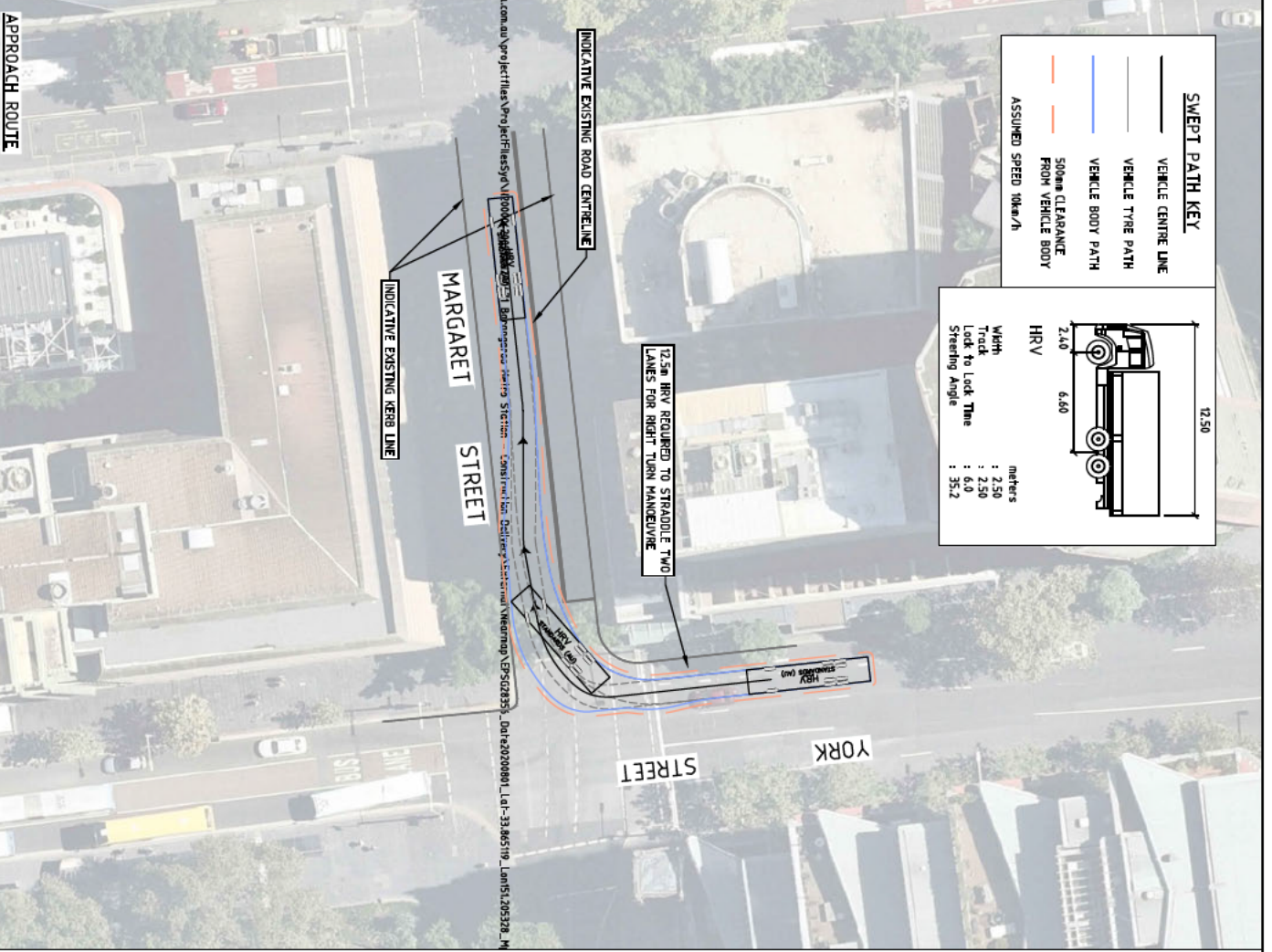
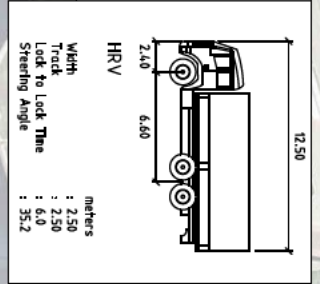
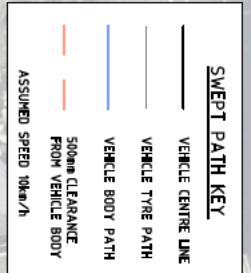
DESIGNED BY: RICHARD WONG
APPROVED BY: (SIGNATURE)

DESIGN CHECK: AMORDESSA
DATE BUILT: 28 JULY 2021



BARANGAROO METRO STATION
APPROACH AND DEPARTURE ROUTE
VEHICLE SWEEP PATH ASSESSMENT
FORMING NO. N200471-03-02
SHEET 02 OF 10

NEARMAP AERIAL IMAGE
DATED 10.04.2021



PRELIMINARY PLAN
THIS PLAN IS A PRELIMINARY DESIGN AND SHOULD NOT BE USED FOR CONSTRUCTION OR AS A BASIS FOR ANY OTHER DESIGN OR CONTRACT.

WARNING
THE INFORMATION CONTAINED HEREIN IS FOR INFORMATIONAL PURPOSES ONLY AND DOES NOT CONSTITUTE AN OFFER OF ANY FINANCIAL PRODUCT OR SERVICE. THE INFORMATION IS NOT INTENDED TO BE USED AS A BASIS FOR ANY INVESTMENT DECISION.

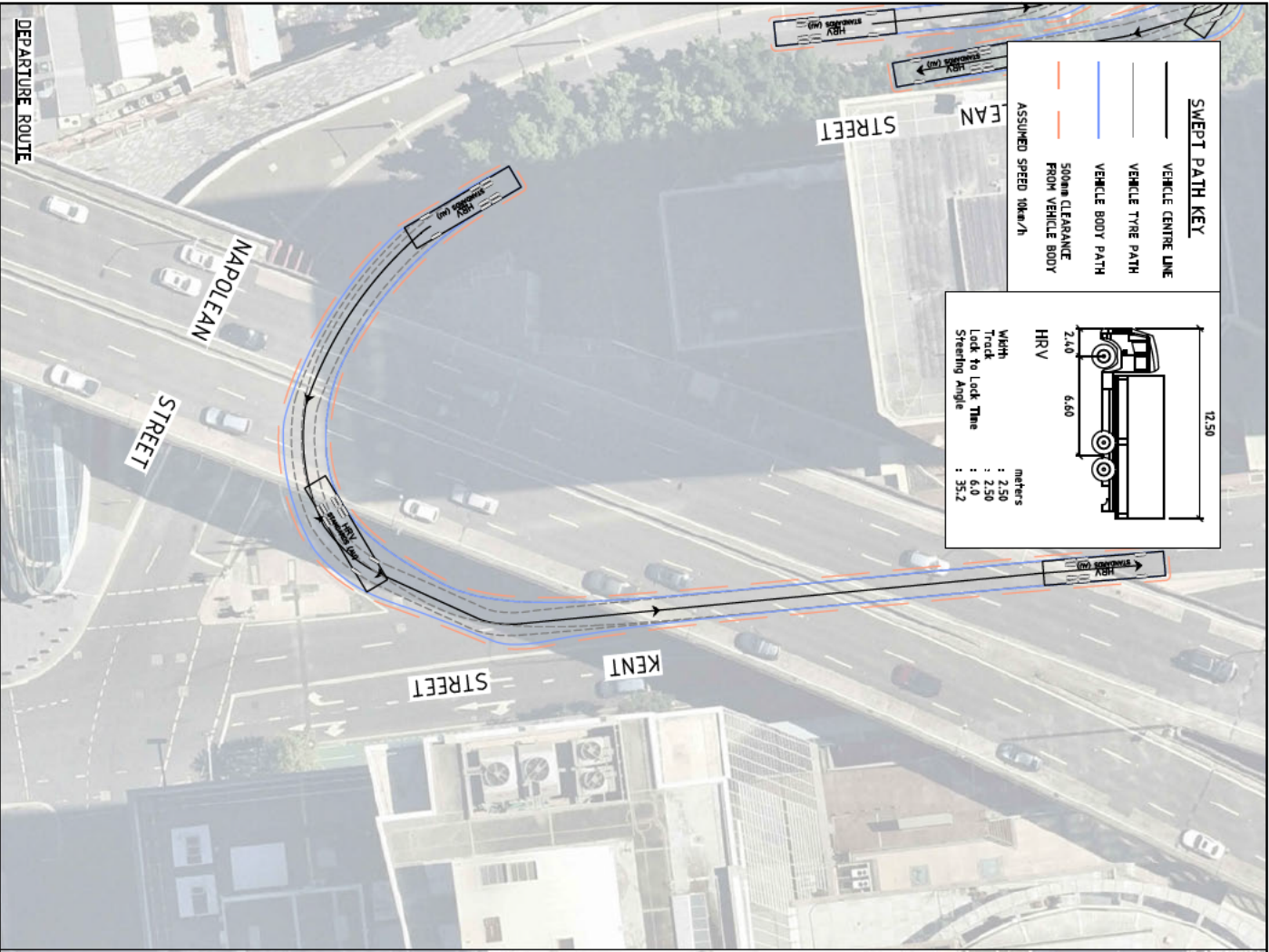
DESIGNED BY: RICHARD
APPROVED BY: (SIGNATURE)

DESIGN CHECK: AMORISSA
DATE REVISION: 28 JULY 2021



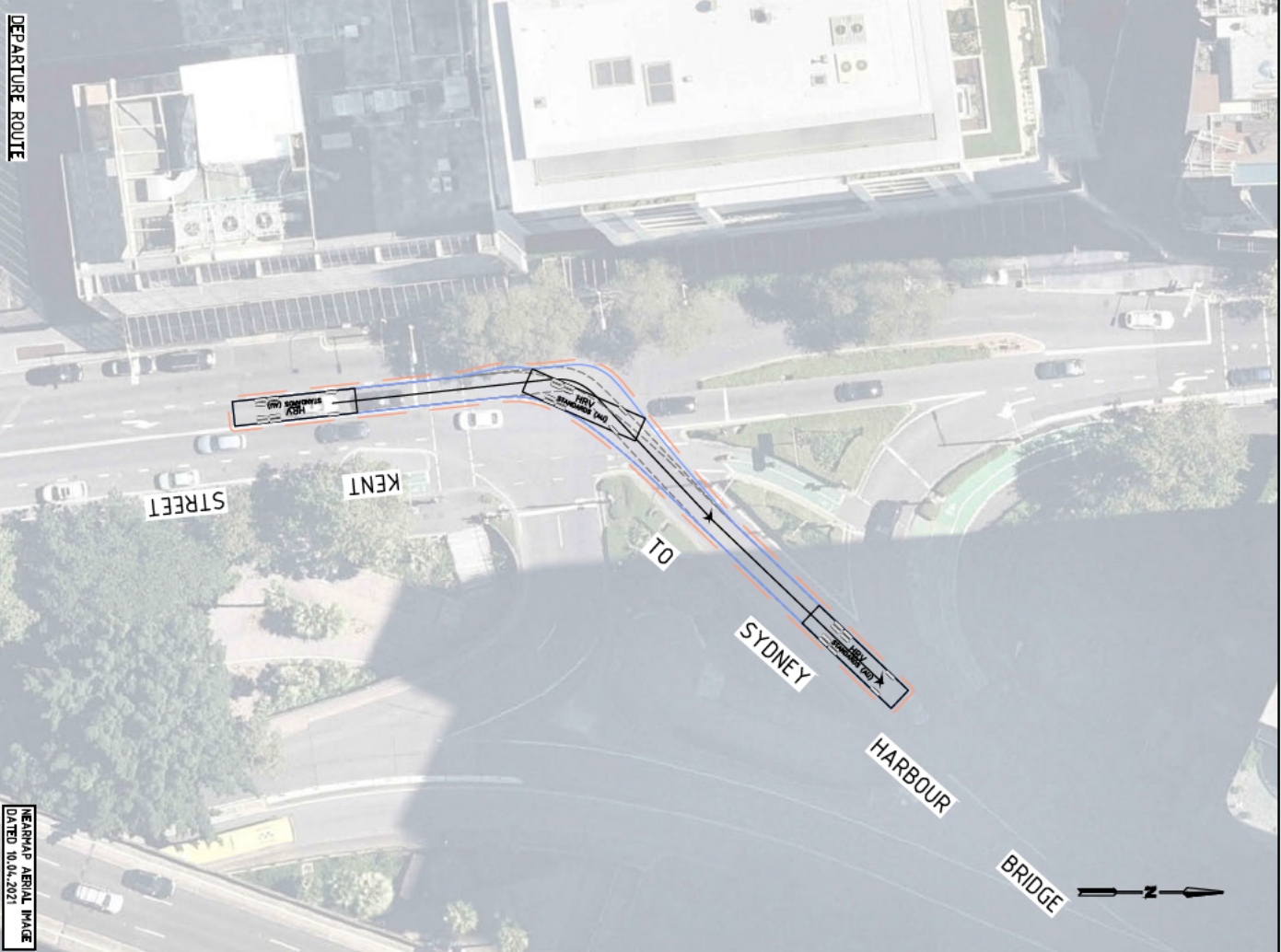
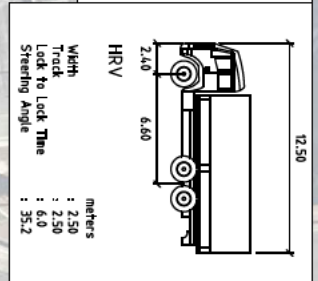
BARANGAROO METRO STATION
APPROACH AND DEPARTURE ROUTE
VEHICLE SWEPT PATH ASSESSMENT
DRAWING NO. N200471-03-03
SHEET 03 OF 10
DATE: 01/08/2021

ISSUE P7



SWEEP PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY
- ASSUMED SPEED 10km/h



DEPARTURE ROUTE

NEARMAP AERIAL IMAGE
DATED 10.04.2021



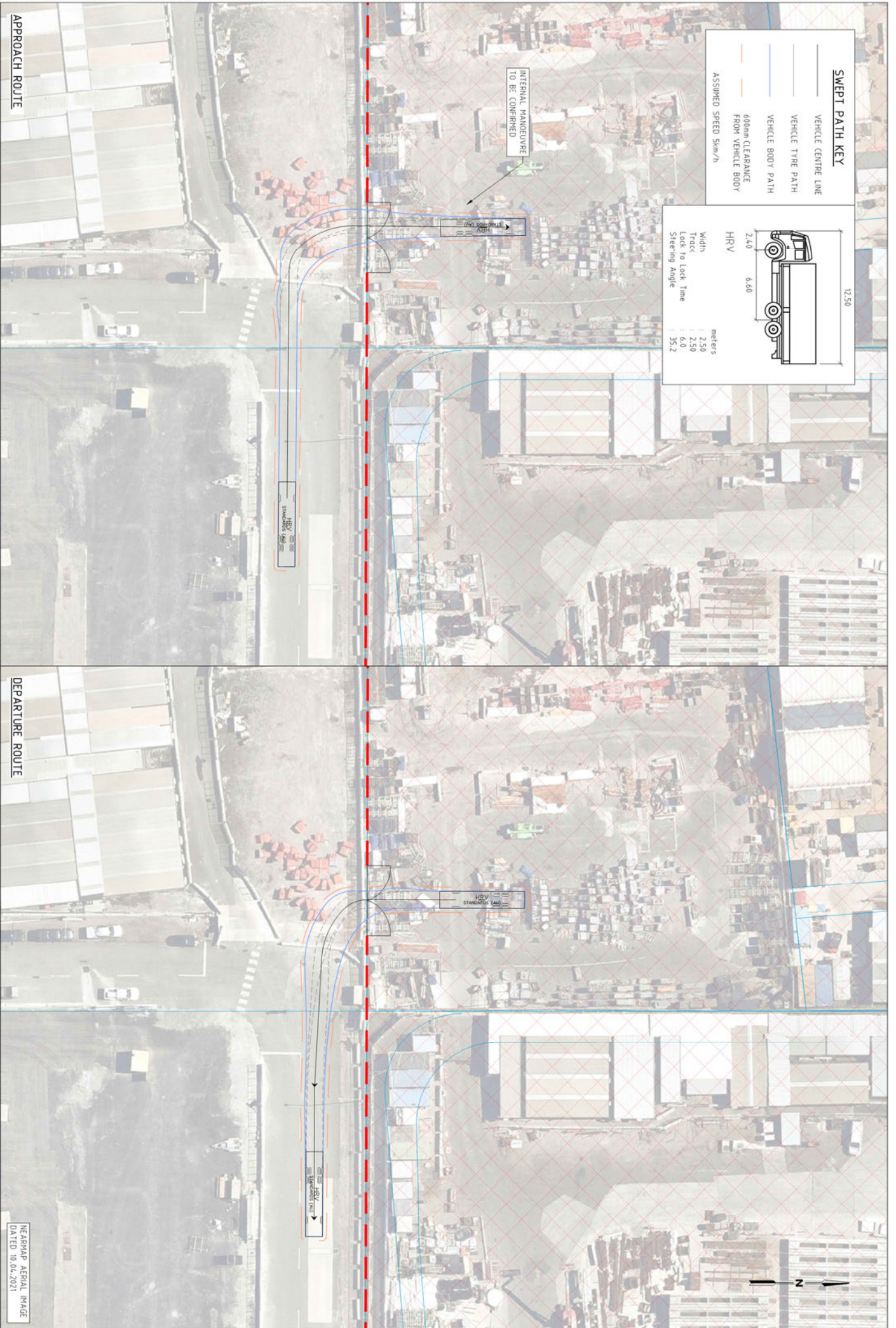
PRELIMINARY PLAN
THIS DOCUMENT IS A PRELIMINARY PLAN AND SHOULD NOT BE USED FOR CONSTRUCTION.

WARNING
THE INFORMATION CONTAINED HEREIN IS FOR INFORMATIONAL PURPOSES ONLY AND DOES NOT CONSTITUTE AN OFFER OF ANY FINANCIAL PRODUCT OR SERVICE.

DESIGNED BY: RIZWAN
APPROVED BY: IQBAL KHAN
DATE REVISION: 28 JULY 2021

SCALE: 1:100
DRAWN BY: N200471-03-P7.DWG

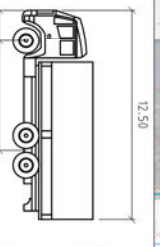
BARANGAROO METRO STATION
DEPARTURE ROUTE
VEHICLE SWEEP PATH ASSESSMENT
FORMING NO. N200471-03-04
SHEET 04 OF 10
PAGE P7



SWEEP PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 600mm CLEARANCE FROM VEHICLE BODY
- ASSUMED SPEED 5km/h

Length	12.50
HRV	2.40
Width	2.50
Track	2.50
Lock to Lock Time	6.0
Steering Angle	35.2



APPROACH ROUTE

DEPARTURE ROUTE



PRELIMINARY PLAN
 THIS DOCUMENT IS NOT FOR CONSTRUCTION AND SHOULD NOT BE USED FOR ANY PURPOSES WITHOUT THE WRITTEN APPROVAL OF G1A CONSULTANTS.

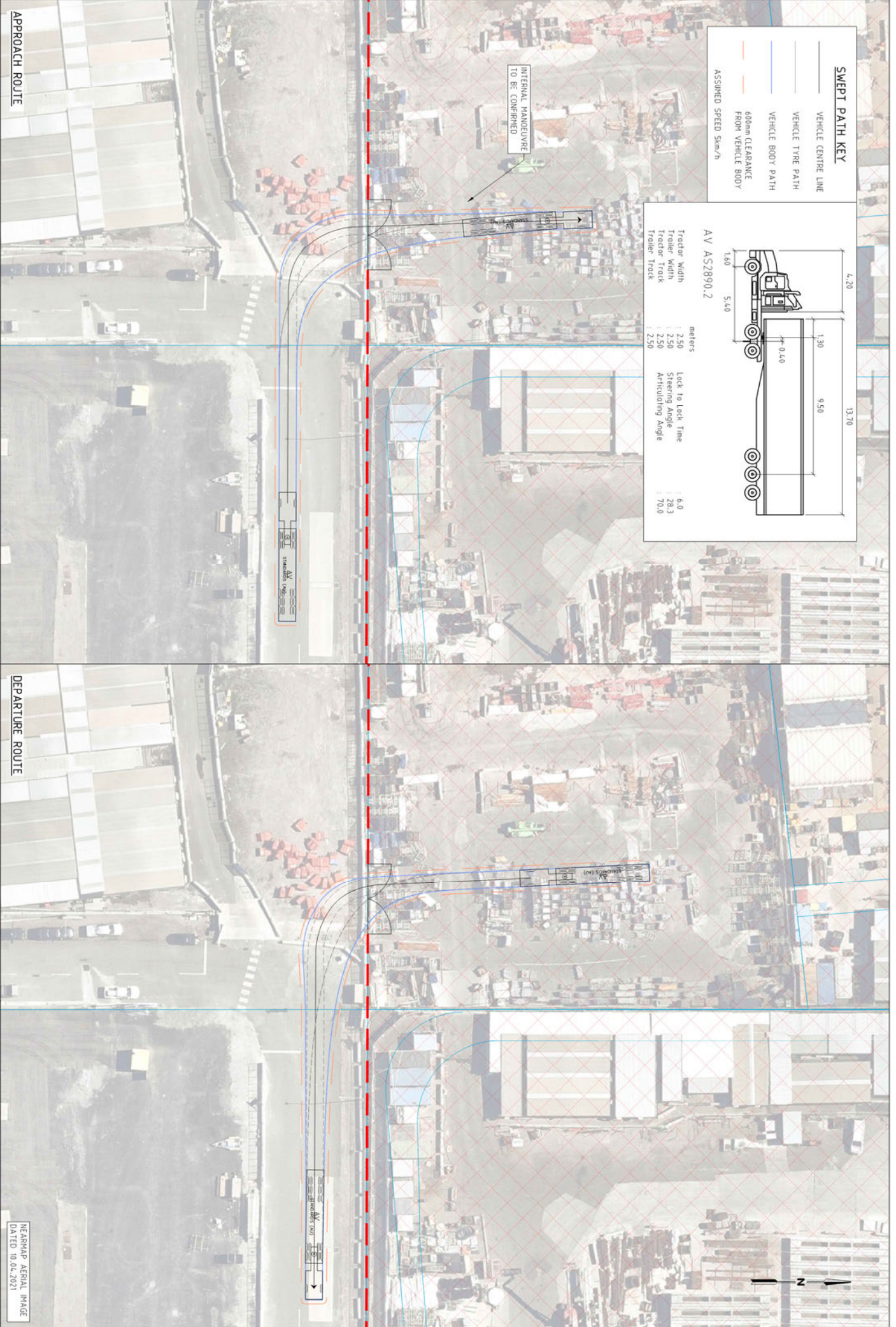
WARNING
 THE LOCATION OF ANY OBSTACLES OR SERVICES NOT SHOWN ON THIS PLAN IS THE RESPONSIBILITY OF THE USER. G1A CONSULTANTS ACCEPTS NO LIABILITY FOR ANY DAMAGE OR INJURY ARISING FROM THE USE OF THIS PLAN.

DESIGNED BY R.ZHANG
 APPROVED BY B.SAMANAND
 DESIGN CHECK A.MORRESSA
 DATE ISSUED 28 JULY 2021

SCALE A1
 1:100
 CAD FILE NO. N200471-03-P7.DWG

BARANGAROO METRO STATION
 APPROACH AND DEPARTURE ROUTE
 VEHICLE SWEEP PATH ASSESSMENT
 DRAWING NO. N200471-03-05
 SHEET 05 OF 10
 ISSUE P7

NEARMAP AERIAL IMAGE
 DATED 10.04.2021

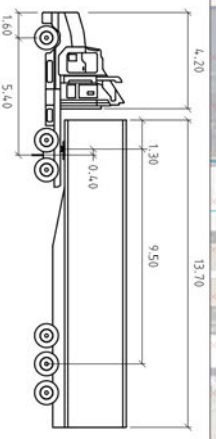


SWEPT PATH KEY

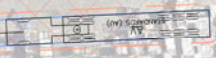
- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 600mm CLEARANCE FROM VEHICLE BODY
- ASSUMED SPEED 5km/h

AV AS2890.2

Tractor Width	2.50	Lock to Lock Time	6.0
Tractor Width	2.50	Steering Angle	28.3
Tractor Track	2.50	Articulating Angle	70.0
Trailer Track	2.50		



INTERNAL MANOEUVRE TO BE CONSIDERED



APPROACH ROUTE

DEPARTURE ROUTE

NEARMAP AERIAL IMAGE DATED 10.04.2021



PRELIMINARY PLAN
THIS DOCUMENT IS FOR INFORMATION ONLY AND IS NOT TO BE USED FOR CONSTRUCTION PURPOSES.

WARNING
THE LOCATION OF ANY OBSTACLES OR SERVICES NOT SHOWN ON THIS PLAN IS NOT GUARANTEED.

DESIGNED BY: R.ZHANG
APPROVED BY: B.SAMANAND

DESIGN CHECK BY: A.AMOROSSA
DATE ISSUED: 28 JULY 2021

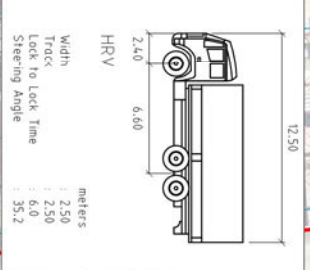
SCALE: A1
CADD FILE NO: N200471-03-P7.DWG

BARANGAROO METRO STATION
APPROACH AND DEPARTURE ROUTE
VEHICLE SWEEP PATH ASSESSMENT
DRAWING NO: N200471-03-06
SHEET 06 OF 10
ISSUE P7



SWEEP PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 600mm CLEARANCE FROM VEHICLE BODY
- ASSUMED SPEED 5km/h



APPROACH ROUTE

DEPARTURE ROUTE



PRELIMINARY PLAN
THIS DOCUMENT IS FOR INFORMATION ONLY AND IS NOT TO BE USED FOR CONSTRUCTION PURPOSES.

WARNING
THE LOCATION AND DIMENSIONS OF THE SWEEP PATHS ARE APPROXIMATE AND SHOULD BE VERIFIED ON THE GROUND.

DESIGNED BY: R.ZHANG

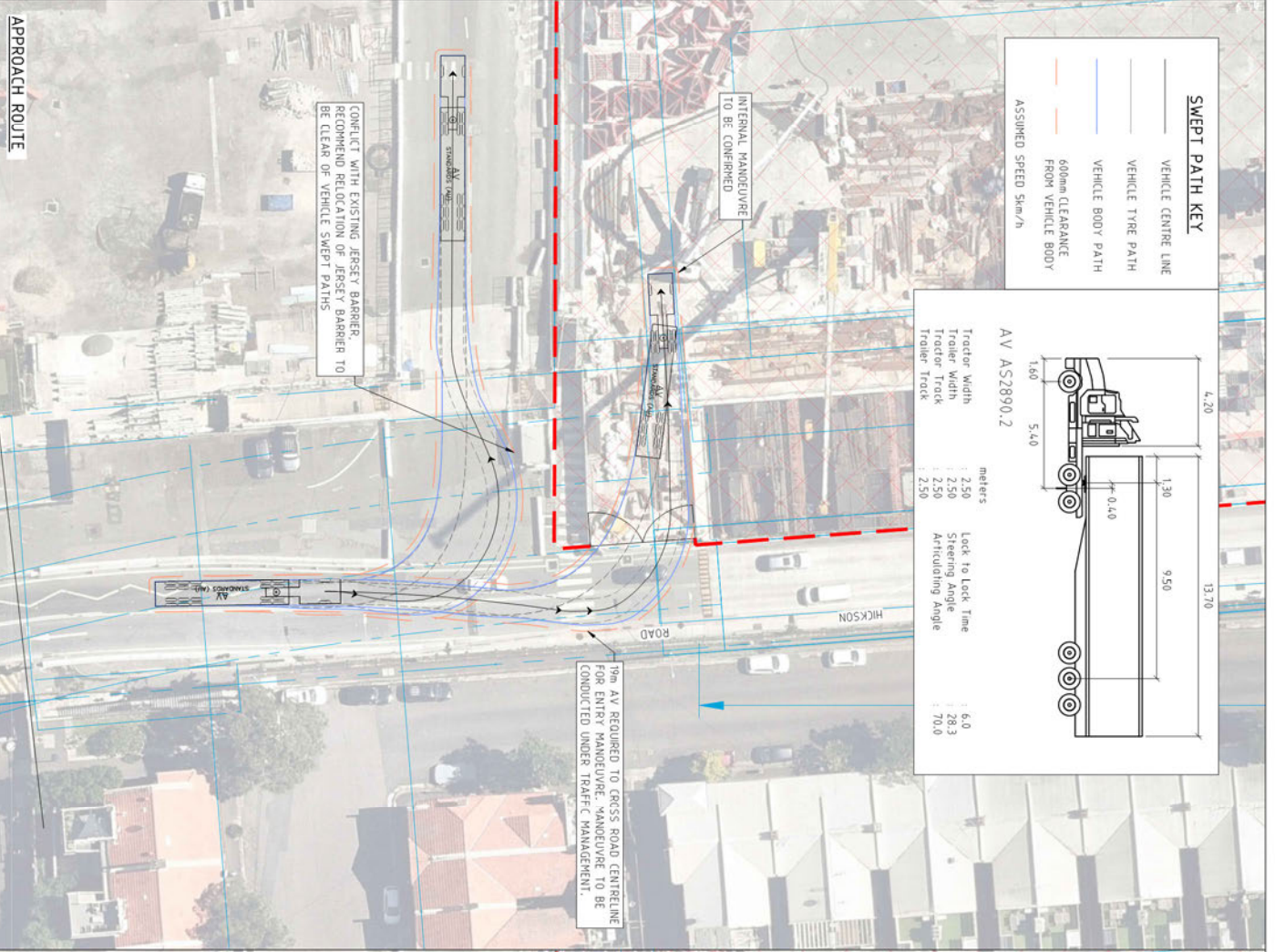
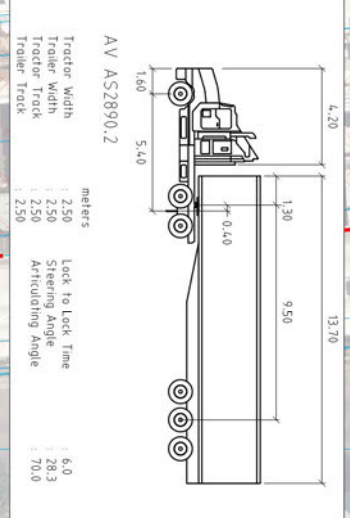
DESIGN CHECK BY: A.MORRESSA

SCALE: A1
1:100

BARANGAROO METRO STATION
APPROACH AND DEPARTURE ROUTE
VEHICLE SWEEP PATH ASSESSMENT
DRAWING NO: N200471-03-07

NEARMAP AERIAL IMAGE
DATED: 10.04.2021

SHEET 07 OF 10
ISSUE P7



NEARMAP AERIAL IMAGE
DATED 10.04.2021



PRELIMINARY PLAN
THIS DOCUMENT IS A PRELIMINARY PLAN AND IS NOT TO BE USED FOR CONSTRUCTION PURPOSES.

WARNING
THE LOCATION AND DIMENSIONS OF THE SWEEP PATHS ARE BASED ON THE ASSUMED SPEED AND VEHICLE CHARACTERISTICS. ANY CHANGES TO THESE PARAMETERS MAY AFFECT THE SWEEP PATHS.

DESIGNED BY: R.ZHANG
APPROVED BY: B.MANNING
DATE ISSUED: 28 JULY 2021

SCALE: A3
DRAWING NO: N200471-03-P7.DWG

BARANGAROO METRO STATION
APPROACH AND DEPARTURE ROUTE
VEHICLE SWEEP PATH ASSESSMENT
DRAWING NO: N200471-03-08
SHEET 08 OF 10
ISSUE P7



SWEEP PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 600mm CLEARANCE FROM VEHICLE BODY
- ASSUMED SPEED 50km/h

12.50	Length
2.40	HRV
6.60	Wheelbase
2.50	Width
2.50	Track
6.0	Lock to Lock Time
35.2	Steering Angle

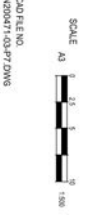


PRELIMINARY PLAN
THIS DOCUMENT IS A PRELIMINARY PLAN AND SHOULD NOT BE USED FOR CONSTRUCTION WITHOUT THE APPROVAL OF THE ENGINEER.

WARNING
THE LOCATION OF ANY OBSTACLES OR SERVICES NOT SHOWN ON THIS PLAN IS THE RESPONSIBILITY OF THE USER. THE USER SHALL VERIFY THE LOCATION OF ANY OBSTACLES OR SERVICES BEFORE CONDUCTING ANY WORK.

DESIGNED BY
R.ZHANG

DESIGN CHECK BY
A.ANDREWS



APPROVED BY
B.SAMUND

DATE ISSUED
28 JULY 2021

DATE FILED
N200471-03-P7.DWG

BARANGAROO METRO STATION
APPROACH AND DEPARTURE ROUTE
VEHICLE SWEEP PATH ASSESSMENT
DRAWING NO. N200471-03-09
SHEET 09 OF 10
ISSUE P7

NEARMAP AERIAL IMAGE
DATED 10.04.2021



SWEEP PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 600mm CLEARANCE FROM VEHICLE BODY
- ASSIGNED SPEED 5km/h

AV AS2890.2

Tractor Width	2.50	meters	Lock to Lock Time	6.0
Tractor Length	2.50		Steering Angle	28.3
Tractor Track	2.50		Articulating Angle	70.0



PRELIMINARY PLAN
THIS DOCUMENT IS NOT FOR CONSTRUCTION AND SHOULD NOT BE USED FOR ANY PURPOSES WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.

WARNING
THE LOCATION OF ANY OBSTACLES OR FEATURES NOT SHOWN ON THIS PLAN IS THE RESPONSIBILITY OF THE USER. THE ENGINEER ACCEPTS NO LIABILITY FOR ANY DAMAGE OR INJURY CAUSED BY THE USE OF THIS PLAN.

DESIGNED BY: R. ZHANG

DESIGN CHECK BY: A. MORRIS

DATE ISSUED: 28 JULY 2021

SCALE: A1
1:100

BARANGAROO METRO STATION
APPROACH AND DEPARTURE ROUTE
VEHICLE SWEEP PATH ASSESSMENT
DRAWING NO: N200471-03-10
SHEET 10 OF 10
ISSUE P7

NEARMAP AERIAL IMAGE
DATED 10.04.2021

Appendix B

Traffic Control

Plans



PRELIMINARY PLAN
THE LOCATION OF ANY TRAFFIC CONTROL DEVICES SHOWN ON THIS PLAN IS ONLY A PRELIMINARY INDICATION AND IS SUBJECT TO CHANGE WITHOUT NOTICE.

WARNING
THE LOCATION OF ANY TRAFFIC CONTROL DEVICES SHOWN ON THIS PLAN IS ONLY A PRELIMINARY INDICATION AND IS SUBJECT TO CHANGE WITHOUT NOTICE.

DESIGNED BY: R.ZHANG
APPROVED BY: B.MANWANG
DATE ISSUED: 28 JULY 2021
DESIGN OFFICE: A.MOESSA

SCALE: A1 - 1/4"
DRAWING NO: N200471-03-P7.DWG

BARANGAROO METRO STATION
SITE ESTABLISHMENT
TRAFFIC CONTROL PLAN
DRAWING NO: N200471-03-01

SHEET 01 OF 10
PILE P7



TSE AND BESX WATPAC CONSTRUCTION SITE WILL VARY ACROSS SITE ESTABLISHMENT STAGE. REFER TO SITE LAYOUT PLANS FOR DETAILED CONSTRUCTION AREAS.

EXISTING CONSTRUCTION GATE

TRAFFIC CONTROLLER TO COORDINATE THE SOUTHERN AND MIDDLE SITE ACCESS POINTS THROUGH TWO-WAY HAND-HELD RADIO

RETAIN EXISTING PEDESTRIAN CROSSING. CONSTRUCTION VEHICLE MANOEUVRE TO BE CONDUCTED UNDER TRAFFIC MANAGEMENT

CONSTRUCTION ACCESS GATES WILL VARY ACROSS SITE ESTABLISHMENT STAGE

TRAFFIC CONTROLLER TO STOP NORTHBOUND TRAFFIC ONLY WHEN THE TRAFFIC SIGNAL TURN RED TO ALLOW CONSTRUCTION VEHICLE TO EXIT FROM THE SITE

MINIMUM 11.4m WIDE OPENING REQUIRED TO ALLOW FOR CONSTRUCTION VEHICLES UP TO 19m AV TO ENTER WITHOUT CROSSING OPPOSING TRAFFIC LANE

CIVIL BASE PLAN IN BLUE
DRAWING CIVI_Combined_JOB-Clean.dwg
PROVIDED BY BESX WATPAC
RECEIVED 13.05.2021
NEARMAP AERIAL IMAGE
DATED 10.04.2021

CERTIFICATION

THE UNDERSIGNED HAS COMPLETED AND OBTAINED:
- PREPARE A WORK ZONE TRAFFIC MANAGEMENT PLAN AND IS SUITABLY EXPERIENCED TO DESIGN, SELECT AND MODIFY TRAFFIC CONTROL PLANS
CERTIFICATE NO. 0039450274
PREPARE A WORK ZONE TMP CARD
ASHISH MOESSA

LEGEND

- SITE AREA
- SIGN POST
- TRAFFIC CONTROLLER
- CONSTRUCTION ACCESS GATE

NOTES:

1. NOT ALL DIMENSIONS SHOWN ARE TO SCALE.
2. LOCATION OF SIGNS ARE TO BE CONFERRED ON-SITE TO ENSURE APPROPRIATE VISIBILITY.
3. ALL SIGNS TO BE MINIMUM SIZE A.
4. ALL SIGNS TO BE CLASS 1 RETROREFLECTIVE.
5. ALL TRAFFIC GUIDANCE SCHEMES ARE TO BE IMPLEMENTED IN ACCORDANCE WITH THE RNS "TRAFFIC CONTROL AT WORK SITES" MANUAL, VER 6 (RNS 2020) AND AUSTRALIAN STANDARDS AS1742.3:2009 MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, PART 3: TRAFFIC CONTROL DEVICES FOR WORKS ON ROADS.
6. THIS TRAFFIC GUIDANCE SCHEME MUST BE SET UP BY A PERSON HOLDING AN "IMPLEMENT TRAFFIC MANAGEMENT PLANS" TICKET AND THE RNS TRAFFIC CONTROL AT WORK SITES CHECKLIST SHALL BE COMPLETED PRIOR TO IMPLEMENTATION.
7. THE ACCREDITED PERSONNEL SHALL IMPLEMENT THE APPROVED TGS BEFORE ANY PHYSICAL WORK COMMENCES AND ENSURE A COPY OF THE TGS IS KEPT ON-SITE. THE ACCREDITED PERSONNEL SHALL ALSO DRIVE THROUGH THE SITE BEFORE WORKS BEGIN TO ENSURE THAT THE TGS HAS BEEN IMPLEMENTED CORRECTLY AND THAT IT WILL WARN, INSTRUCT AND GUIDE ROAD USERS AS DESIGNED. ANY VARIATIONS MADE TO THE PLAN MUST BE MARKED ON THE PLAN AND INITIALED BY THE ACCREDITED PERSONNEL. IT IS THE RESPONSIBILITY OF AN ACCREDITED PERSONNEL WITH A PREPARED WORK ZONE TRAFFIC MANAGEMENT PLAN TICKET TO ENSURE THE FOLLOWING:
- THE INTEGRITY OF ALL TRAFFIC CONTROL MEASURES THROUGH TO THE FINAL REMOVAL. THIS INCLUDES DAILY CHECKS OF ALL SIGNS AND DEVICES. THE CORRESPONDING RECORDS OF CHECKS SHALL BE KEPT ON FILE FOR AUDITING PURPOSES.
- AT ALL TIMES AN UP-TO-DATE COPY OF "TRAFFIC CONTROL AT WORK SITES" SHOULD BE AVAILABLE FOR REFERENCE AND IMPLEMENTATION AS REQUIRED ON-SITE.
- ALL WORKERS WILL BE CONFERRED TO THE DEDICATED WORKS AREA SHOWN ON THE PLAN. IF THE WORKSITE IS LEFT UNATTENDED IT IS THE CONTRACTOR'S DUTY TO ENSURE THAT THE APPROPRIATE MEASURES ARE TAKEN TO PROVIDE A SAFE ENVIRONMENT FOR VEHICLES AND PEDESTRIANS TO RELEVANT AUSTRALIAN STANDARDS.
8. ALL SIGNS ARE TO BE CLEAN, CLEAR, 1 VISIBLE AND NOT OBLSCURED.
9. ROADWORK SIGNS TO BE COVERED OR REMOVED WHEN WORKERS ARE NOT ON SITE.
10. TRAFFIC CONTROLLER (T-3A) AND ONE (ONE) TO STOP (T1-B) SIGNS TO BE COVERED OR REMOVED WHEN TRAFFIC CONTROLLER'S ARE NOT ON SITE.
11. ALL DEVICES BETWEEN SIGNS ARE TO BE IN ACCORDANCE WITH SECTION 2.52 OF AS1742.3:2009.
12. ALL DEVICES MODIFICATIONS CAN BE MADE TO SUIT SITE CONDITIONS.
13. INSTALLATION OF SIGNS TO BE COORDINATED WITH ADJACENT SITES TO ENSURE THAT SIGNS DO NOT OVERLAP OR CONTRADICT.

Appendix C Comments Register

CONTRACT NO.	DOCUMENT NO.	TITLE	VER	STATUS	NO.	DATE	COMPANY	RAISED BY	REVIEW DOC. NO.	DOCUMENT REF.	DEED REF.	COMMENTS /RESPONSE	COMMENT CATEGORY	CLOSED OUT
SBR	SMCSWSBR-BWC-SBR-TF-PLN-000025	Traffic Management Plan for Site Establishment and Road Stage 1	B.01	RWW		14/07/2021	BWC	SMCNAMARA	SMCSWSBR-BWC-SBR-TF-PLN-000025	TMP Document file	N/A	<p>Sec 3.8.2 Signalised Intersections states "Accredited traffic controllers will also be positioned at the temporary traffic signals to hold traffic when trucks are entering or exiting the site."</p> <p>In accordance with TCAWS v6, Section 5.3.3 Working at or close to traffic signals –</p> <ul style="list-style-type: none"> Where permanent traffic signal are still in operation, alternative traffic control arrangements, such as a PTCD or a traffic controller with a manual STOP/SLOW bar must not be used to control traffic <p>Although these signals are noted as "temporary traffic signals", these have been constructed as permanent traffic signals, as opposed to the typical temporary/portable traffic signals. Accordingly, the use of traffic controllers at these traffic signals is not supported.</p>	Potential Non-compliance	
						29/07/2021	BWC	SMCNAMARA				<p>The traffic controller has been removed from north of the traffic signals, therefore it is proposed to only rely on the traffic signals to stop southbound traffic when construction vehicles depart south from the northern construction access gate on Hickson Road. A traffic controller is retained south of this northern gate (positioned approx. 20 metres south of the traffic signals) to stop northbound traffic when construction vehicles are departing the gate. This traffic controller will only stop northbound traffic once the traffic signals are red to reduce any "see through" confusion for motorists.</p>		Y

Appendix D

Road Safety Audit

Road Safety Audit Report

Barangaroo Station



Road/Area	Hickson Road		
Traffic Stage/Phase	Site Establishment and Stage 1	Client	Walpac Construction (NSW) P/L
Audit Stage	Desktop Traffic Guidance Scheme	Client Contact	Joao Ferreira
Report Provider	Road Safety Audits	TMP / Drawings	<ul style="list-style-type: none"> ▪ TGS Plan N200471-03-01 rev P1 with reference to existing cross section of page 22 of the CTMP. ▪ TMP N217 (draft dated 24 May 21') ▪ Swept paths N2000471-03-07 sheet 1-7 rev P1 ▪ CTMP N217 (24 May 21')
Road Safety Auditors	Peter Harris (Level III RMS SRSA 03-0405) Raj Muthusamy (Level III RMS SRSA RSA-03-0106)	Other Reference Material	<ul style="list-style-type: none"> ▪ Austroads Guide to Road Safety – Road Safety Audit ▪ NSW Guidelines for Road Safety Audit Practices AS 1742.3 – 2019 ▪ Austroads Guide to Temporary Traffic Management ▪ RMS Traffic Control at Work Sites ▪ Construction Traffic Management Framework (SM ES-ST-217 -Dec 18)
Report Date	29 July 2021	References	
Road Safety Audits Reference	RSA-11189	Desktop Audit General Scope	The scope of the audit is to assess the plans on their merits and in the context of the road environment, with standards and guidelines as a reference.
		<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Senior Road Safety Auditor CP(Eng, RPEQA, NER, BE (Civil))</p> </div> <div style="width: 45%; background-color: black; color: white; padding: 5px;"> <p>Senior Road Safety Auditor CP(Eng, RPEQA, NER, BE (Civil)), BB (Bus. Admin.)</p> </div> </div>	

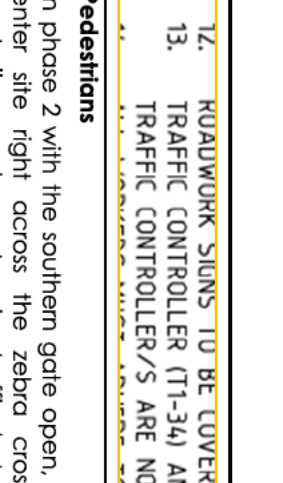
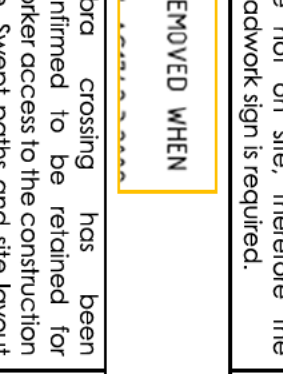
Barangaroo Station Hickson Road Site Establishment and Stage 1

Audit Point		Treatment Option	Walpac Construction (NSW) P/L Responder:	
			Response ^x	Status ^y
1.	<p>Documentation</p> <p>The TGS, TMP and CTMP have a lot of information, but one aspect that was found lacking is a clear indication of the existing conditions by way of a series of photos or schematic showing key elements such as:</p> <ul style="list-style-type: none"> ▪ The existing long-term traffic management including line marking, signage, barriers, speed calming (humps). ▪ The nearest adjacent roadwork / constructions site ▪ The traffic signals <p>i.e. a plan dedicated to showing the traffic and road elements as a whole with this temporary setup overlaid.</p>	<p>This can limit the rigour of the review process.</p> <p>Risk: N/A</p>	<p>Section 2.3 of the TMP has been updated to include photos of current arrangement that will be retained for the initial stages of BESIX Watpac works. This includes the line marking, barriers, speed humps, with all signage to be updated as required.</p>	<p>Closed</p>

Barangaroo Station Hickson Road Site Establishment and Stage 1


Audit Point		Treatment Option		Waipac Construction (NSW) P/L Responder:		Status
2.	<p>Adjacent Sites</p> <p>The CTMP section 6 page 33 states that the Project will ensure that signs are "Not contradictory to existing signs or markings".</p> <p>The intent of this note is to ensure that signs don't overlap with / contradict / clutter with other sites / signs.</p>	<p>Ensure this note has been applied and in particular to the southern end signage (in blue).</p> <p>Risk: Low</p>	<p>The TGS reviewed is an overview version that will form the basis for detailed TGS prepared by the appointed traffic control company. Nonetheless a note has been added to the TGS for signs to be coordinated with other work sites. A similar note has also been added to Section 3.8.1 of the TMP</p>			Closed

Barangaroo Station Hickson Road Site Establishment and Stage 1



Audit Point		Treatment Option		Walpac Construction (NSW) P/L Responder:		Status
3.	<p>The TGS note 13 states that the some of the signs will be covered/removed after work hours, but does not include reference to the symbolic roadworker sign.</p> <p>Guidelines and common industry practice also see this sign being covered outside of work hours. Refer RMS TCWS V 5.0 Section 5.2.3 (and AS1742.3:2019).</p>	Review.		<p>Note 12 on the TGS states: "Roadwork signs to be covered or removed when workers are not on site" – this has been separated from Note 13 as works may continue when traffic controllers are not on site, therefore the Roadwork sign is required.</p>		Closed
4.	<p>12. ROADWORK SIGNS TO BE COVERED OR REMOVED WHEN WORKERS ARE NOT ON SITE.</p> <p>13. TRAFFIC CONTROLLER (T1-34) AND PREPARE TO STOP (T1-18) SIGNS TO BE COVERED OR REMOVED WHEN TRAFFIC CONTROLLER/S ARE NOT ON SITE</p> <p>Pedestrians</p> <p>In phase 2 with the southern gate open, vehicles will enter site right across the zebra crossing. Traffic controllers are shown stopping traffic, but not stopping pedestrians.</p> <p>Based on the pedestrian detour schematic and Section 5.3 of the TMP, it appears that this east-west pedestrian link will be severed, so this won't be a conflict.</p>	<p>Confirm the zebra crossing is redundant. If it is redundant remove all signs / markings.</p> <p>Risk: Likely low</p>				Closed



Barangaroo Station Hickson Road Site Establishment and Stage 1

Audit Point		Treatment Option	Walpac Construction (NSW) P/L Responder:	
			Response ^x	Status ^y
5.	<p>Traffic controllers</p> <p>The traffic controller position at the north end is at traffic signals.</p> <p>One risk is a see-through effect whereby drivers focus on the green lights and less so on a traffic controller on or about to step onto a road.</p> <p>RSA's previous experience at this location was that this worked well here when the strict procedure was set up so that:</p> <p style="padding-left: 40px;">the TC would only stop traffic when the lights were already red, with traffic stopped or approaching a stop position (image 1).</p>	<p>Review specific procedure accordingly.</p> <p>Risk: Medium</p> 	<p>Noted and generally agreed. However, Section 5.3.3 of the Traffic Control at Work Site Manual Issue 6.0 states "where permanent traffic signal are still in operation, alternate traffic control arrangements, such as a PTCD or a traffic controller with a manual STOP/SLOW but must not be used to control traffic.</p> <p>Therefore, the TMP and overview TGS have been updated to remove the TC north of the construction access gate. The TC south of the gate has been retained, who will only be permitted to stop traffic once the traffic signals are red to assist construction vehicle exit right from the gate.</p> <p>The removal of the TC north of the gate is appropriate as long as the gate opening is minimum 11.4 metres wide, which allows construction vehicles up to 19 metre articulated vehicles to turn left into the gate from Hickson Road without needing to cross the centreline (i.e. into opposing traffic lane)</p>	Closed

Barangaroo Station Hickson Road Site Establishment and Stage 1

Audit Point	Treatment Option	Waipac Construction (NSW) P/L Responder: Response ^x	Status ^y
<p>1</p>  <p>TC only presents after signals are red and traffic is calm/stopped</p>	<p>2</p>  <p>After this, the TC can safely 'hold' traffic' even on the green</p>		

Barangaroo Station Hickson Road Site Establishment and Stage 1

Audit Point		Treatment Option	Waipac Construction (NSW) P/L	
			Response ^x Responder:	Status ^y
7.	<p>Signs</p> <p>The CTMP Section 6.3 states:</p> <p>"During construction, BESIX Waipac will utilise portable and permanent VMS to provide advanced warning and changed traffic condition information. The use of VMS and the appropriate message(s) will be incorporated within the detailed TMPs and/ or site-specific TCPs".</p> <p>Hickson Road will be relatively unchanged from the public's perspective, with the minor gate changes inconsequential to the public.</p> <p>Adding signs for the sake of adding signs is potentially detrimental to this site given the scant availability of verge space, and (possibly) already cluttered signage.</p>	<p>Review the strategic intent of the VMS use and consider using it sparingly.</p> <p>Risk: N/A</p>	<p>Section 3.8.5 of the TMP states that the use of VMS for Site Establishment and Stage 1 is not expected as it is retaining current arrangement implemented by TSE Contractor..</p>	<p>Closed</p>
8.	<p>Traffic Controllers</p> <p>In the CTMP, Appendix F, Traffic Safety Risk Register, for the hazard event 'Unsafe Traffic Control' it lists the following for an additional mitigation:</p> <p>"Regular inspection of traffic control lay outs toolbox and team talks to reiterate critical Issues Plan and work to negate the need for traffic control Where possible, work during lowest traffic volume periods".</p>	<p>Consider also adding "use highly experienced traffic controllers at high-risk locations" (such as the traffic signals).</p> <p>Risk: N/A</p>	<p>Risk Register updated to include this additional note..</p>	<p>Closed</p>



Barangaroo Station Hickson Road Site Establishment and Stage 1

Audit Point		Treatment Option	Walpac Construction (NSW) P/L Responder:	
			Response ^x	Status ^y
9.	<p>Safety barriers</p> <p>In the CTMP, Appendix F, Traffic Safety Risk Register, for the hazard event 'Workers hit by traffic', it lists the following for an additional mitigation:</p> <p>"Use shadow vehicles for all works near roads not separated by RMS approved and installed barriers. Install barriers where possible change construction method/ site layout to reduce or remove need to be near road. Seek dispensation and/ or approval from P&P, CJP and CoS as required".</p> <p>Having safety barriers that are RMS approved and installed still leaves vulnerabilities such as the likely absence of barrier length of need (length of barrier in advance of the work zone to contain and redirect an errant vehicle).</p> <p>Workers on foot at the start of the barrier runs could be more exposed to traffic/risk due to them being within the length of need section.</p>	<p>Ensure that risk mitigation is adopted for work on foot towards the start of barrier runs.</p> <p>Risk: Medium</p>	<p>Risk Register updated to include that workers are to remain outside the deflection zone specified for the installed barriers..</p>	<p>Closed</p>



Explanatory Notes

Short Format: This 'short format' report has been pioneered by RSA (Road Safety Audits) since 2008, initiated through requests by clients to assist their processes, for ease with stakeholders, and for timeliness. It is typically confined in use to construction traffic management and typically for discrete packages of plans / areas and often for large projects with repetitive small audit sections. The use of this format assumes that the reader/s know what a road safety audit is and how to respond to it.

Projects: Audit points are often raised in projects in relation to: 1. specific themes (e.g. the use of a safety barrier type), or 2. the treatment of particular locations. Once key issues have been initially raised, they will not necessarily be re-raised in future audits. This will depend on the issue, the RSA's perception of the client's assessment and understanding of the issue, and other factors. Therefore, discrete audits as part of a project should be read and actioned by a **project representative who is familiar with the audit history**.

Responding: Although the client receiving the report does not have to agree to the audit findings/suggestions, the issues and associated risks should be carefully considered. A written response should be made to all of the audit findings raised, then signed off by the responsible person from the project team.

***Response:** The responder should focus on and consider the **audit point**, regardless of whether the audit team's suggested treatment option is feasible / appropriate / agreed to.

***Status:** The status of the issue as it sits with the Project, i.e. 'actioned', 'closed', 'pending information / further guidance'.

Language:

Austroroads Road Safety Audit Part 6 suggests that the organisation responding to the audit provides a risk assessment. However, RSA will at times offer a guide of 'high', 'medium' and 'low' risk, which is based on a professional appraisal of the risk ('severity' and 'frequency') for the responder to use as a guide. Other language commonly used and its intent is as follows:

- o 'Urgent': Needs immediate attention / changes as per RSA suggestion or similar.
- o 'Recommend' / 'Serious' / 'Important': Must be robustly reviewed. Most likely requires a change to avoid a high-risk road environment for one or more user groups.
- o 'Should' / 'Suggest' / 'Significant': Based on the view of the RSA team the suggestion should be done, but it concedes that there could be reasons why inaction or alternative action may be preferred.
- o 'Must be robustly reviewed by contractor and where relevant with key traffic engineering project stakeholders.
- o 'Review' / 'Consider': RSA is raising an observation but has no strong opinion on the outcome and need for changes. Project should review because it's not an immediate and high risk and may not be immediately obvious to RSA the reasons for the practice / setup / behaviour. May need monitoring.
- o 'Minor': Typically, a low road-safety consequence / compliance issues (to guidelines or plans) / administrative controls. Unlikely to increase risk of crash.
- o 'Note': Little or no road safety significance. Typically added to give a complete picture of the design, site, context, analysis, auditors understanding.

Intent of Issues Listing Order: Audit points might be clustered according to location, theme, or time. When this is not done and the audit comprises an uncategoryed list of points, the key issues are often discussed first. However, there is no official ordering of points, and they should all be read on their merits and on the basis of the language guide above.

References: 1. Austroroads Guide to Road Safety – Road Safety Audit – (2019) 6 and 6A; 2. AS 1742.3 – 2019; 3. State specific codes and guidelines re: Traffic Control at Work Sites; and 3. Design: 1. Austroroads guidelines and 2. state-specific supplements and technical publications as relevant.

Safe System: Austroroads GRS-RSA6A encourages practitioners to adopt safe system principles within the road safety audit. Safe system (roads) calls for a design to not allow serious injury and fatalities to occur for the expected road users and the typical crash types expected for that design type. This design-objective is considered within this road safety audit as a good practice objective. However, in practice, safe system-based analysis of risks and treatment options is typically not adopted for traffic management stage audits in the same way as it is in design stage audits.

Process and Quality: RSA's quality assurance process is based on its senior auditors having a rich experience base, but also utilises customised checklists designed for niche areas in traffic engineering/road design (e.g. safety barriers, pavement shaping, CBD traffic management), in conjunction with a four-layer audit process: 1. on-site inspection; 2. media and data capture and review; 3. specialist / second auditor input; and (where warranted) 4. secondary blinded reviews.

Audit Coverage: The audit has attempted to balance the safety needs of all road users. As per Austroroads guidelines, the suggestions provided have attempted to be realistic/feasible and commensurate with the actual risk posed. Suggestions are made from a safety perspective only, and are made in the absence of full project knowledge and design constraints. RSA can provide a detailed risk assessment / issue evaluation report upon request. The audit raises potential safety risks noted / observed / anticipated by the audit team, and in particular the higher-risk issues. However, a road safety audit is undertaken by people, highly influenced by the experience, views and limitations of the individual team members. It is expected that the project team has competence to identify safety issues itself as the project progresses, and to ask the audit team further questions where necessary.