B84 STAGING REPORT

Moorebank Intermodal Precinct – MPW Stage 2 (SSD 7709)

20 FEBRUARY 2025

MOOREBANK LOGISTICS PARK- WEST PRECINCT STAGE 2

SSD 7709

B84 Staging Report

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REVISIONS

Revision	Date	Description	Prepared by	Approved by
1	31/10/2023	Prelim Draft for client review	[redacted]	[redacted]
2	17/01/2024	Updated draft	[redacted]	[redacted]
3	8/02/2024	Final for TfNSW review	[redacted]	[redacted]
4	02/04/2024	Final for ER – includes consultation	[redacted]	[redacted]
5	5/04/2024	Updated following ER comments	[redacted]	[redacted]
6	20/02/2025	Updated to reflect updated delivery program	[redacted]	[redacted]

ACRONYMS AND DEFINITIONS

Acronym/Term	Meaning
CoC	condition(s) of consent
CTAMP	Construction Traffic and Access Management Plan
DPE	Department of Planning and Environment (now the Department of Planning, Housing and Industry)
DPHI	Department of Planning, Housing and Infrastructure (formerly DPE)
MAAI	Moorebank Avenue / Anzac Road intersection
MADR	Moorebank Avenue Diversion Road
MPE	Moorebank Precinct East
MPW	Moorebank Precinct West
OTAMP	Operational Traffic and Access Management Plan
SSD	State significant development
SSD 7709	MPW Stage 2 State significant development consent
TfNSW	Transport for New South Wales
WAD	Works Authorisation Deed

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1 INTRODUCTION

This Staging Report has been prepared by Aspect Environmental Pty Limited on behalf of LOGOS Property Pty Ltd (LOGOS) (the Applicant), in accordance with Condition A44 of the Moorebank Precinct West (MPW) Stage 2 State significant development (SSD) consent (SSD 7709). It provides a plan to align the progressive occupation of warehousing with the approved phased construction and operation of the Moorebank Avenue and Anzac (Road) Intersection (MAAI) upgrade required under condition of consent (CoC) B84.

The completion of the full MAAI upgrade is dependent, in part, on completion of the tie-in of the southern leg of MAAI to the northern extent of the Moorebank Avenue Realignment, once it is completed. This is an externally controlled factor that would not be realised for some time, and so a staged opening approach is sought to allow progressive warehouse operations – within the capacity of the intersection.

This document:

- outlines the MAAI upgrade required under CoC B84
- outlines the rationale and justification for delivering and operating the upgrade in stages based on intersection capacity to accommodate operational traffic
- provides a description of the proposed stages, including anticipated timing, and how they connect to each other
- identifies the applicable conditions of consent to the proposed staging of MAAI and how these conditions are satisfied
- assesses the environmental impacts associated with the proposed MAAI staging.

This report is supported by design of the proposed MAAI stages (Attachment A) and traffic modelling and assessment (Ason Group, 2024).

1.1 Development Ownership

In 2022, LOGOS joined the ESR group of companies and since August 2024, the LOGOS and ESR operations have been integrated to now operate under the name ESR Australia & NZ (ESR). The applicant/ approval holder entity remains unchanged at this stage until further notice and references to LOGOS and LOGOS authored documents and/or plans may continue and remains relevant where LOGOS and ESR are used interchangeably.

2 SSD 7709 ROAD UPGRADE REQUIREMENTS

2.1 Condition B84 Road Upgrade

CoC B84 of SSD 7709 requires:

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B84. The Applicant is to undertake the following road infrastructure upgrades, in accordance with the specified timing requirements as set out in **Table 1**.

Table 1: Required Upgrades and Specified Timing Requirements

Upgrade	Specified Timing Requirements		
	Upgrade requirements	Required timing for 100% design approval by RMS	Required timing for completion of upgrade
Moorebank Avenue and Anzac Road intersection upgrades, road widening and road upgrade works, and associated civil works	Indicative layout plans (RIUW-ARC-CV-SKC-2003-P1 and RIUW-ARC-CV-SKC-1005-P2) included in **Appendix 1**, subject to design development and approval by RMS, and incorporating a bicycle/ pedestrian share path	To be obtained within 12 months of the date of this consent, or prior to the issue of the first Occupation Certificate for warehousing, whichever is the sooner.	Prior to issue of an Occupation Certificate for warehousing in excess of 100,000 m^2 of gross floor area

The full MAAI upgrade works (Figure 1) have received 100% design approval by Transport for NSW (TfNSW) under a Works Authorisation Deed (WAD) (Ref: SYD12/00072/63, June 2022). Given MAAI is a 'live' intersection (that is, it remains online and actively caters for public, construction and operational traffic), the MAAI upgrade works have been approved under the WAD to be completed in phases – to maintain the capacity and serviceability of Moorebank Avenue throughout the construction works.

This approach is consistent with CoC B92 and B104 of SSD 7709, that require Moorebank Avenue to remain open and available for public use during construction and operation of the development, to a standard commensurate to its use prior to the development. Two lanes along Moorebank Avenue are to remain open to the public.

Concurrent with the MAAI upgrades being completed, upgrade works to existing Moorebank Avenue (south of MAAI) are being undertaken under the MPE Stage 2 consent (SSD 7628). A 1.5km temporary diversion road, known as the Moorebank Avenue Diversion Road (MADR), has been constructed in parallel and to the west of Moorebank Avenue to detour traffic around these upgrade works (Figure 2).

MADR maintains north – south serviceability of Moorebank Avenue, consistent with the requirements of CoC B92 and B104, and mitigates potential traffic-related impacts associated with the precinct-related road works. It will remain in place until the final phases of the MAAI upgrade works, when the intersection will subsequently tie into the realigned Moorebank Avenue (SSI 10053). Further details on the phased construction of MAAI are provided in Section 3.

It is noted that following NSW Department of Planning, Housing and Infrastructure (DPHI) approval of this Staging Report, the MAAI WAD would be reviewed to confirm its consistency with the staging and phasing detailed in this Report.

Figure 1: MAAI upgrade works: overall plan (Northrop, 2022)

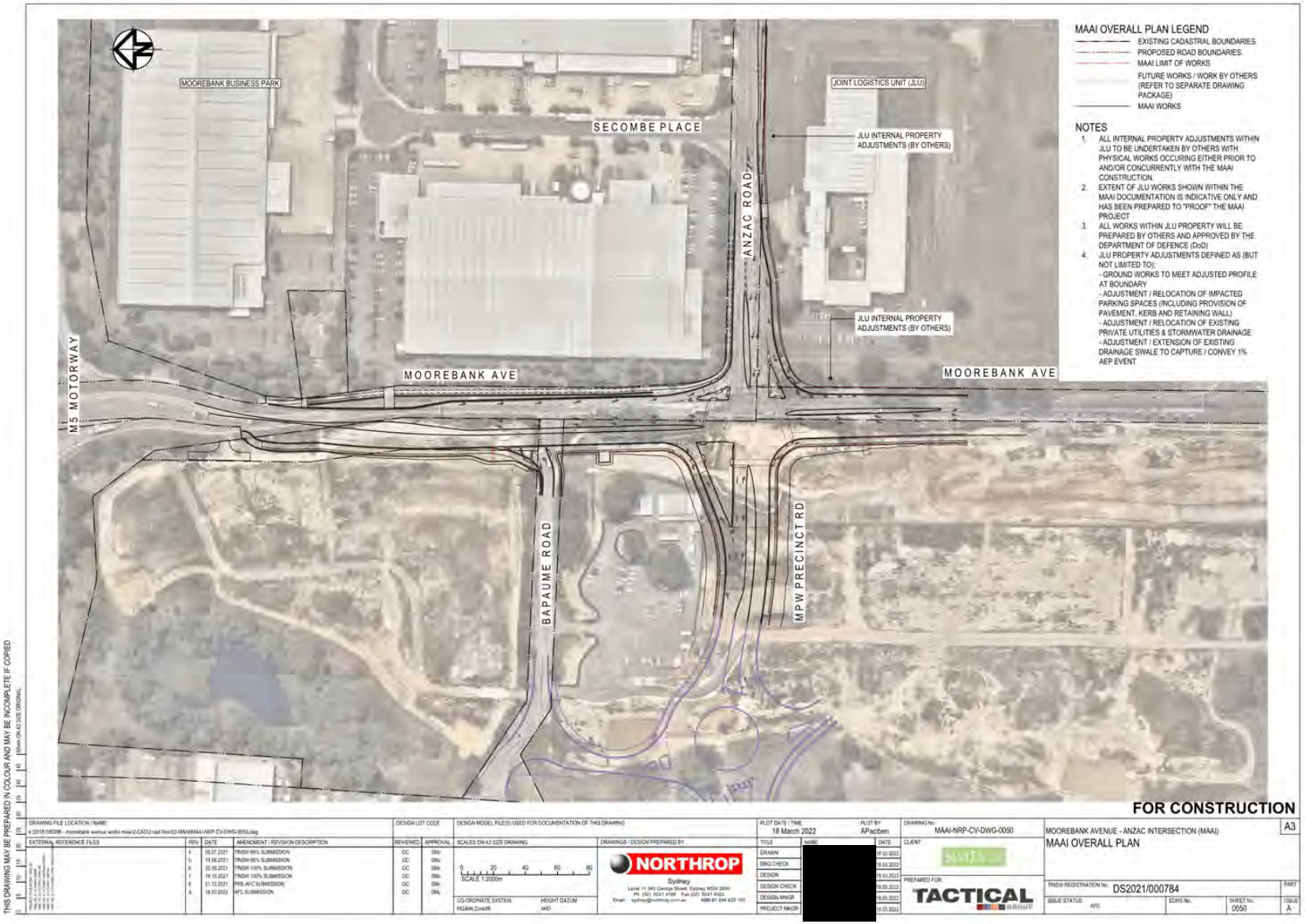
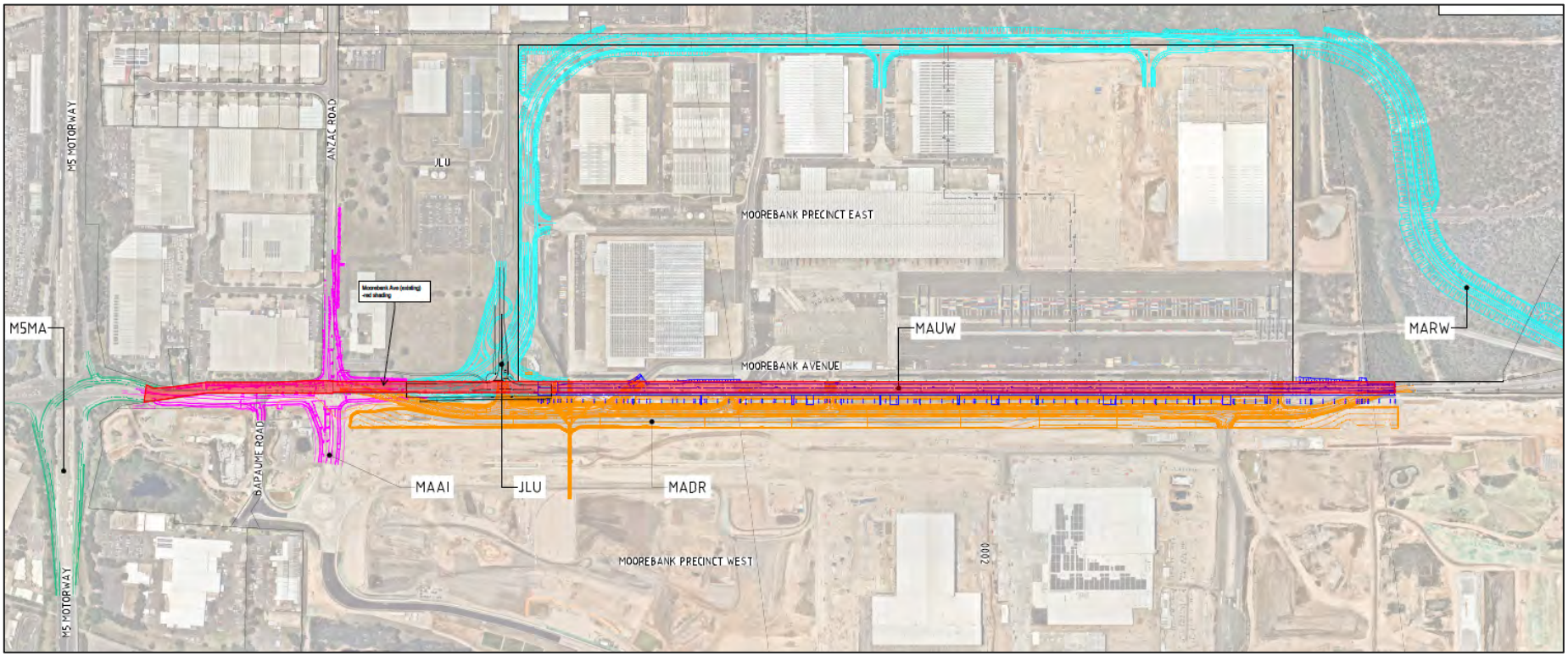


Figure 2: MADR and existing Moorebank Avenue (Source: LOGOS, 2023)



2.2 Current Approved Access Conditions at MAAI

The latest approved update to the MPW Stage 2 Construction Traffic and Access Management Plan (CTAMP) (Rev P, December 2023) includes provision of a construction access point at MAAI, at its western leg ('Bushmaster Avenue'). Construction of Bushmaster Avenue (within the bounds of the MPW Stage 2 Site) has recently been completed.

The approved (December, 2023) MPW Stage 2 Operational Traffic and Access Management Plan (OTAMP) includes interim access provisions, to provide access arrangements into MPW Stage 2 prior to completion of the full MAAI upgrade works. These interim arrangements include utilising Bushmaster Avenue as an access into MPW Stage 2 for operational traffic, as permitted by CoC B110A of SSD 7709 which states (emphasis added in **bold**):

> *110A: Until operational access to the site is provided (that is, as part of the Moorebank Avenue and Anzac Road intersection upgrades required under condition B84), the Applicant must ensure that the operational access point to the site is via the Chatham Avenue/Moorebank Avenue intersection, or* ***any other alternative as agreed by Transport for NSW in writing***

Chatham Avenue intersection has been closed to allow progression of the construction of the rail link for the interstate terminal (INTS). Bushmaster Avenue has been adopted within the OTAMP as the 'alternative' operational access into MPW Stage 2. This arrangement is supported by TfNSW in their endorsement of the OTAMP (August 23, 2023).

Bushmaster Avenue has been approved to be utilised as a construction and operational access into MPW Stage 2 whilst the MAAI upgrade works are progressing to full completion.

2.3 Compliance with CoC B84

In preparing this Staging Report, a consultative process with DPHI and TfNSW was completed to confirm the planning pathway (utilising CoC A44) and traffic modelling and assessment approach was valid.

During this process, DPHI identified that implementation of a Staging Report approach for construction and operation of MAAI would be acceptable with confirmation from TfNSW that CoC B84 would be satisfied on completion of construction of a phase of the intersection in advance of full completion of MAAI. That is, that completion of the 'upgrade works' under CoC B84 is not defined as achieving practical completion of the final intersection, but instead on completion of an earlier phase that is considered, by TfNSW, to satisfactorily provide the upgrade requirements to mitigate traffic related impacts generated by the Development.

A traffic modelling and assessment process was subsequently undertaken, in consultation with TfNSW, to identify the proposed 'stages' of the MAAI upgrade works and demonstrate that each proposed stage has sufficient capacity to accommodate the anticipated traffic utilising the intersection at that time.

On 26 March, 2023 TfNSW confirmed that they were satisfied with the outcomes of the Traffic Assessment (Ason Group, 2024, Appendix C) and modelling prepared to support

the proposed staging of MAAI and the alignment to progressive warehouse occupation (Appendix B). In doing so, TfNSW have confirmed that, on completion of Phase 2A MAAI construction works (the first 'stage' within this Staging Report), the upgrade works as defined under CoC B84 would have been satisfied. The remaining upgrade works (subsequent stages) would be completed in accordance with this Staging Report, as approved by the Planning Secretary under CoC A44, requirements under the TfNSW approved WAD to Practical Completion and consistent with relevant traffic CoC of the SSD 7709 consent (i.e. COC B92 and B104). It is noted that changes to the previously approved MAAI phasing plans triggered by this modelling exercise would be subject to TfNSW review and re-approval as part of an updated WAD.

2.4 Beneficial Outcomes of Staging

The following sections presents the justification for implementation of a Staging Report to align the progressive occupation of warehousing with the phased construction and delivery of MAAI upgrade works.

Avoids Unnecessary Constraint on MPW Operations

Under the consent the MAAI upgrade must be completed prior to the issue of an Occupation Certificate (OC) for warehousing in excess of 100,000m2 of GFA. The trigger value of 100,000m2 has not been based on any analysis of intersection capacity and does not represent a critical threshold in relation to traffic volumes and associated traffic-related impacts.

To date the approach to satisfaction of CoC B84 has been to achieve practical completion of the MAAI upgrade works prior to requiring an occupation certificate (OC) for warehousing in excess of 100,000 m2 GFA.

The requirement for the full MAAI upgrade to be completed is dependent on two externally controlled factors being a) dedication of Commonwealth land; and b) completion of the tie-in of the southern leg of MAAI to the northern extent of the Moorebank Avenue Realignment, once it is completed. The requirement to complete the full extent of MAAI under CoC B84 currently constrains warehouse occupation and operation within the MPW Stage 2 operations footprint.

A number of factors, both within and external to the Development, have resulted in delays in the delivery of MAAI. As a result, it is forecast that warehousing within the MPW Stage 2 operations footprint will be ready for OC and to commence operation prior to practical completion of MAAI being achieved.

Allowing the MAAI road upgrades to be delivered in stages, as outlined in Section 3.0, would allow progressive utilisation of the intersection by operational traffic without the need for constraining progression of warehouse development until full completion of the intersection is achieved.

Implementation of the Staging Report approach is based on the TfNSW acceptance that an earlier phase of the delivery of MAAI upgrade works (completion of Phase 2A) satisfies the requirements of CoC B84. This acceptance from the road authority has been provided on the basis of traffic modelling and assessment demonstrating that at each proposed Stage, the intersection has capacity to accommodate the anticipated traffic volume at that time. The progressive occupation and operation of warehousing can therefore be aligned with the phasing of MAAI upgrade works.

Recognises the Progressive Nature of Operations

Development within MPW Stage 2 is progressive and responsive to market and tenant needs. Once warehouses are leased and occupied, operational activity tends to come online as a 'ramp up' – meaning the anticipated operational traffic volume is not realised for some time after initial occupation and commissioning.

The progressive introduction of warehousing and operational traffic means that the full-build of MAAI upgrade works is not required, from a traffic-impact perspective, when cumulative GFA is < 100,000m2.

Consistent with the TfNSW Phased Approach to MAAI Delivery

Implementation of the Staging Report for completion of the MAAI upgrades would be consistent with the phased construction and delivery approach, approved by TfNSW under the existing MAAI WAD. This approach, currently consisting of 6 phases, recognises that the intersection is 'live' and that capacity of the intersection is to be maintained throughout the upgrade works.

Consistent with Current Approved Access Arrangements for MAAI

To date, MAAI has been approved to be utilised as both a construction access and interim operational access, concurrently with the upgrade works progressing. The management of public, construction and operational streams of traffic utilising the same intersection whilst it is itself under construction has already been successfully implemented.

This Staging Report extends this arrangement – to continue to apply to MPW Stage 2 operations as they come online and as MAAI construction progresses.

Intersection Performance

Intersection performance for both the AM and PM peaks has been assessed for each Stage to confirm the intersection would have sufficient capacity to accommodate the anticipated traffic load without generating adverse impacts on the network. Traffic loads modelled include consideration of operation and construction traffic streams generated by the Precinct, inclusive of MPE, as well as background traffic volumes.

Results of the traffic modelling and assessment are provided in Table 3 2.

Section 3 provides details of the various phases of MAAI upgrade works, proposed Stages of delivery of CoC B84 and supportive traffic modelling and assessment.

3 MAAI STAGING REPORT

3.1 Overview and Objectives

The TfNSW-approved WAD includes phasing of the MAAI upgrade works to maintain Moorebank Avenue serviceability during construction, consistent with CoC B92 and B104 of SSD 7709. As the intersection is progressively upgraded, so too is its capacity to cater for the anticipated traffic utilising the intersection – including background traffic and Development construction and operational traffic streams.

The objective of this Staging Report is to align progressive occupation of warehousing within MPW Stage 2 with the construction of MAAI upgrade works. It outlines how the MAAI upgrade works would be delivered in stages that are able to accommodate the anticipated traffic volume at that time. It would be implemented on the basis that CoC B84 is considered to be satisfied at the completion of Stage 1 (equivalent to Phase 2A in the WAD-approved MAAI phasing), thereby allowing the occupation of warehousing where cumulative GFA exceeds 100,000m^2. Subsequent stages would progress in accordance with the requirements of this Staging Report, and the TfNSW approved WAD for the upgrade works.

3.2 Description and Timing of Stages

The MAAI upgrade works are being phased to maintain capacity and serviceability of Moorebank Avenue throughout construction works, in accordance with CoC B92 and B104. The access and lane configuration of the intersection varies between these phases and have been previously approved by TfNSW via the WAD process.

These phases of MAAI upgrade works have been grouped into four distinct ‘stages’ to align with the timing for the progressive operation of warehousing within MPW Stage 2, as well as the INTS. These stages, associated MAAI construction phasing, and anticipated timing for delivery, are summarised in Table 3-1 and shown in Figure 3.

Table 3-1. MAAI construction Staging Report

Stage	MAAI Construction Phasing Delivered1	Warehouse GFA (m2)	Anticipated Stage Timing
1	Phase 1 - Phase 2A	< 100, 000	Q2 2024
2	Phase 2B – Phase 3	124, 589	Q3 2024
3	Phase 4	215,000	Q4 2025
4	Phase 5 – Phase 6	215, 000	~ 2026 [2]

Note:

[1] MAAI phases identified have been completed during the stage.

[2] Phase 5 & 6 complete MAAI upgrade works by connecting the intersection into the realigned Moorebank Avenue (SSI 10053). Timing may vary depending on the progression of this package of works, being undertaken by National Intermodal (NI). Full capacity of the intersection in catering for the Development plus background growth is provided on completion of Phase 4 during Stage 3.

Figure 3: Anticipated MAAI upgrade works construction timing (ESR, 2025)

Activity	Q3 23	Q4 23	Q1 24	Q2 24	Q3 24	Q4 24	Q1 25	Q2 25	Q3 25	Q4 25
MAAI Construction Phases										
Phase 1A,B,C										
Phase 2A										
Phase 2B										
Phase 3										
Phase 4										
Phase 5 & 6 (TBC ties into MAR)										

3.3 Assessment of Stage Delivery of MAAI

Traffic Volume Assessment

Traffic modelling and assessment of each proposed stage of MAAI construction and completion has been completed (Ason, 2024), to assess the intersection's progressive capacity to accommodate the anticipated traffic volume at that time.

The traffic loads utilised are the cumulative volume of:

- Background traffic – based on TfNSW agreed growth for the area;
- Construction traffic volumes – as approved under the MPW Stage 2 Environmental Impact Statement (Arcadis, 2016); and
- Progressive operational traffic volumes – based on the warehouse and rail terminal elements that are anticipated to be online at that time. Actual operational traffic volumes for warehouses are not fully realised at the time of warehouse completion, but instead a progressive 'ramp up' of operations. Where this 'ramp up' is known it has been adopted and incorporated into modelling. Where this was unknown, actual (full) operational traffic volumes were adopted from the commencement of operations (i.e. at completion of warehouse construction).

Construction and operational traffic volumes include consideration of traffic generated by activities within the Moorebank Precinct East (MPE) Site, in accordance with the requirements of CoC A44 of SSD 7709.

The intersection design at the commencement of each stage is consistent with the associated phasing design. This design has been adopted in the traffic modelling, including lane configuration and signalisation. Following approval of this Staging Report, these designs will form an update to the MAAI WAD, for review and approval by TfNSW.

The completed intersection phased design for MAAI is provided in Attachment A. The Traffic Assessment prepared in support of this Staging Report (Ason Group, 2024) is provided in Attachment C.

Traffic modelling completed for each stage included an assessment of Level of Service (LoS) during both AM and PM peaks, as an indication of intersection capacity. The results of this assessment are summarised in Table 3-2.

Table 3-2. Traffic modelling results: sub-stages of CoC B84 road upgrade delivery

Stage	Warehouse GFA (m^2)	Intersection Level of Service (LoS)	
		AM Peak	PM Peak
1	< 100,000	D	D
2	124, 589	D	D
3	215,000	C	C
4[1]	215,000	C	C

Note:

[1] Stage 4 represents the final MAAI configuration. Modifications are remote of the intersection itself to allow connection to the Moorebank Avenue realignment, and therefore would not materially impact MAAI intersection capacity. Additional modelling for Stage 4 was therefore not undertaken as it was assumed that intersection LoS would be consistent with that achieved for Stage 3.

Traffic modelling (Ason Group, 2024) indicates that during each of the key Stages 1, 2 and 3, the interim MAAI would operate with acceptable average delays during commuter peak hours. Stage 4 works are remote of the intersection itself and therefore would not materially impact the capacity of MAAI. The modelling therefore supports this Staging Report by demonstrating the capacity of the interim phases of MAAI construction is sufficient to accommodate the corresponding traffic demands, including progressive operational demands associated with the MPW Stage 2 development.

All activities would be undertaken in accordance with the approved MPW Stage 2/Stage 3 CEMP, and all other applicable sub-plans – as well as the TfNSW approved WAD (as updated).

On approval of this Staging Report, both the CEMP suite and OEMP suite would be reviewed and updated accordingly to reflect the approved staging for the delivery of MAAI.

4 ASSESSMENT AND MANAGEMENT

Condition A44(e) requires that a Staging Report provides details of relevant conditions of consent from SSD 5066 and SSD 7709 that would be applicable to each proposed stage. Table 4-1 and Table 4-2 identify these conditions within SSD 5066 and SSD 7709 (respectively) and provide an assessment of the proposed staging of the MAAI road upgrade works against them.

Table 4-1 SSD 5066 consistency assessment

Relevant Condition	Requirement	Complies (Y / N / NA)	Comment
6- Limits of Approval	Projects carried out under this staged development consent are to be assessed with the objective of not exceeding the capacity of the transport network, including the local, regional and State road network.	Y	This Staging Report is applicable to MPW Stage 2, for which overall impacts on traffic have already been identified, assessed and approved under SSD 7709. This report demonstrates that a staged approach to delivery of the CoC B84 upgrades does not generate any adverse traffic-related impacts.

Table 4-2 SSD 7709 consistency assessment

Relevant Condition	Requirement	Complies (Y / N / NA)	Comment
A1- Obligation to Minimise Harm to the Environment	In addition to meeting the specific performance measures and criteria in this consent, all reasonable and feasible measures must be implemented to prevent, and if prevention is not reasonable and feasible, minimise, any material harm to the environment that may result from the construction and operation of the development, and any rehabilitation required under this consent.	Y	The proposed staged delivery of MAAI upgrade works has been modelled and assessed for traffic impacts. The outcomes of the assessment indicate that each proposed stage of MAAI has capacity to accommodate the associated anticipated traffic volume at that time.
A3- Terms of Consent	The development may only be carried out: (a) in compliance with the conditions of this consent; (b) in accordance with all written directions of the Planning Secretary; (c) in accordance with the EIS, Response to Submissions (RtS) and Consolidated assessment clarification responses; and (d) in accordance with the management and mitigation measures in Appendix 2	Y	The MAAI upgrade works (including each stage up to and including the full build) would continue to be delivered in accordance with relevant conditions of consent, approval documentation and relevant MPW Stage 2 construction and operation management plans. The TfNSW acceptance that CoC B84 is satisfied at the completion of the Phase 2A upgrade works (i.e. Stage 1) means that the proposed staging of the upgrade works under CoC A44 does not generate any inconsistencies with the consent.
A15A – Operational limits	The development must not generate more than: (a) 2,670 light vehicle movements a day during	N	This Staging Report has been prepared in consideration of the approved traffic generation rates from SSD 7709, as well as Traffic Certificates issued

Relevant Condition	Requirement	Complies (Y / N / NA)	Comment
	operation; and (b) 1,654 heavy vehicle movements a day during operation.		by the Planning Secretary under Chapter 6 of the TISEPP.
A16- Operational limits	The maximum GFAs for the following uses apply: (a) 215,000m^2 for the warehousing and distribution facilities; and (b) 800m^2 for the freight village	Y	This Staging Report has been prepared in consideration of the approved GFAs from SSD 7709.
A44- Staging of Construction	Prior to the commencement of construction, a Staging Report must be submitted to the Planning Secretary for approval where it is proposed to construct and operate warehousing in sub-stages. The Staging Report must include: (a) the revised Development Layout Drawings required under Condition B2; (b) detailed drawings showing warehouses, estate infrastructure and landscaping to be delivered in each substage, and how each sub-stage of estate infrastructure and landscaping connects to other sub-stages including the intermodal terminal facility; (c) details of how the development will relate to concurrent construction on MPE as described in the construction program included in the approved Construction Environmental Management Plan for MPE Stage 2 (SSD 7628); (d) general timing of construction sub-stages that impact upon the timing of the development subject of this consent; and NSW Government 6 Moorebank Intermodal Precinct West - Stage 2 Department of Planning and Environment (SSD 7709) (e) details of the relevant conditions of the Concept Approval (5066) and of this consent that would apply to each sub-stage.	Y	This Staging Report has been prepared as the Applicant intends on delivering the MAAI upgrade in stages, based on the capacity of the intersection to cater for the anticipated traffic volumes. In accordance with this condition: (a) Updates to the B2 Development Layout Drawings are not required, as there is no proposed change in the final built form of MAAI. (b) detailed drawings of the phased delivery of MAAI are provided in Appendix A. These plans, on approval of this Staging Plan, would be subject to TfNSW assessment and approval as part of a WAD update. (c) the assessed staged capacity of MAAI has considered and included traffic generated by the MPE Site. Works remain consistent with the MPE Stage 2 CEMP and associated construction programming. (d) Table 3-1 (Section 3) provides anticipated timing of stages of MAAI delivery and how this would be aligned with the progressive occupation of warehousing within the MPW Stage 2 footprint. (e) Table 4-1 and 4-2 of this Staging Report identifies the conditions of consent applicable to the Report and provides assessment of the proposal against

Relevant Condition	Requirement	Complies (Y / N / NA)	Comment
			them.
B2- Development layout	Prior to commencement of construction, the Applicant must submit revised Development Layout Drawings to the Planning Secretary for approval. The revised Development Layout Drawings must be at a scale of approximately 1:2000 at A1 showing the key development elements including but not limited to estate infrastructure, internal roads, warehouse and associated carpark footprints, the freight village, intermodal terminal facility including the truck waiting area and emergency truck storage area, rail line and rail line vehicle access roads . The revised Development Layout Drawings must show the site, construction and operational boundaries and demonstrate: (a) provision of a riparian corridor, comprising the following: (i) a buffer zone to the most inland of: • 40 metres from the top of bank, as surveyed by a registered surveyor, or • the 1% AEP flood extent, excluding the localised depression at the existing major east-west drainage channel, and (ii) an additional 10 metre extension to the buffer zone established in (i) above, where native vegetation is located on or within 10 metres east of the buffer; (b) the siting of biofiltration/ bioretention areas and OSD basins (with the exception of outlets to the Georges River and associated maintenance access) are outside the riparian corridor and outside the warehouse footprints; (c) no construction or operation works would take	Y	The proposed staged delivery of MAAI has no impact on the current approved B2 plan and the general arrangements of MAAI included within it. Detailed design elements of MAAI will be subject to a WAD update and associated TfNSW approval.

Relevant Condition	Requirement	Complies (Y / N / NA)	Comment
	place inside biodiversity offset areas; (d) compliance with the landscaped setbacks specified in Condition B63; (e) compliance with the percentage of landscaped area specified in Condition B68(a) within the warehouse and freight village area and truck waiting area and emergency truck storage area to be developed under MPW Stage 2; (f) a setback of 8 to 12 m has been provided around the north, south and western perimeters of the development area to accommodate fill batter slopes of a maximum of 1V in 4H; (g) a minimum 3 m wide maintenance access has been provided between the fill slopes and the riparian corridor, the ABB site and at the southern end of the development area, for ongoing maintenance works; (h) provision of a controlled overland flow path through the MPW Stage 2 site as required under Condition B11for conveyance of the major stormwater discharge from the MPE site to the Georges River; (i) identify habitat corridor/s, of adequate dimensions to provide an adequate Koala habitat corridor as supported by a Koala specialist, to provide connectivity both within the Intermodal Precinct area and with other core koala habitat areas, as required under Condition B152. The drawings are to show any required connectivity structures and fencing; (j) provision of a corridor between Moorebank Avenue and the Georges River for a possible future pedestrian connection across the Georges River to Casula Railway Station, of a width that would allow the future construction of a shared path that		

<table>
<tr><th>Relevant Condition</th><th>Requirement</th><th>Complies (Y / N / NA)</th><th>Comment</th></tr>
<tr><td></td><td>complies with the relevant suggested width set out in the Guide to Road Design Part 6A: Paths for Walking and Cycling (Austroads, 2017);

(k) the bushfire asset protection requirements are within the development area; and

(l) setbacks from the surveyed boundary of Lot 2 DP 32998, Lot 3 DP 32998, and Lot 2 DP 547293.</td><td></td><td></td></tr>
<tr><td>B84 – Traffic and Access</td><td>The Applicant is to undertake the following road infrastructure upgrades in accordance with the specified timing requirements as set out in Table 1.

TRAFFIC AND ACCESS
B84. The Applicant is to undertake the following road infrastructure upgrades, in accordance with the specified timing requirements as set out in Table 1.

Table 1: Required Upgrades and Specified Timing Requirements
<table><tr><th>Upgrade</th><th colspan="3">Specified Timing Requirements</th></tr><tr><th></th><th>Upgrade requirements</th><th>Required timing for 100% design approval by RMS</th><th>Required timing for completion of upgrade</th></tr><tr><td>Moorebank Avenue and Anzac Road intersection upgrades, road widening and road upgrade works, and associated civil works</td><td>Indicative layout plans (RIUW-ARC-CV-SKC-2003-P1 and RIUW-ARC-CV-SKC-1005-P2) included in Appendix 1, subject to design development and approval by RMS, and incorporating a bicycle/ pedestrian share path</td><td>To be obtained within 12 months of the date of this consent, or prior to the issue of the first Occupation Certificate for warehousing, whichever is the sooner.</td><td>Prior to issue of an Occupation Certificate for warehousing in excess of 100,000 m^2 of gross floor area</td></tr></table></td><td>Y</td><td>In accepting the Traffic Assessment and associated modelling (Appendix C), TfNSW has agreed that CoC B84 is satisfied at the completion of the upgrade works required under Phase 2A (Stage 1), thereby allowing the occupation of warehousing where cumulative GFA exceeds 100,000m^2.

Each stage identified in this Staging Report has been confirmed as having capacity to accommodate the traffic demand utilising the intersection at that time. The staged delivery of MAAI therefore does not compromise the development’s ability to avoid adverse traffic- related impacts as a result of construction and operation.

Subsequent stages of the MAAI delivery would be completed in accordance with this Staging Report and the TfNSW approved WAD.</td></tr>
<tr><td>B85 – Traffic and Access</td><td>The swept path of the longest vehicle entering and exiting the subject site, as well as manoeuvrability through the site, must be in accordance with Austroads requirements. Prior to commencement of construction of permanent built surface works, a plan must be submitted to the Planning Secretary and RMS for approval, which shows that the proposed development complies with this requirement</td><td>Y</td><td>Each phase of the MAAI upgrade works has been designed to accommodate the swept path of the longest vehicle entering and exiting the site.

Updated swept path analysis would be included within the design package provided to TfNSW as part of the updated WAD package.</td></tr>
</table>

Relevant Condition	Requirement	Complies (Y / N / NA)	Comment
B90 – Traffic and Access	Access to the ABB site must be maintained throughout construction and operation of the development	Y	ABB access is not compromised as a result of the proposed staged delivery of the B84 upgrades.
B91 – Traffic and Access	The Applicant must: (a) consult with the owners/occupiers of the ABB site throughout construction and operation; NSW Government 19 Moorebank Intermodal Precinct West - Stage 2 Department of Planning and Environment (SSD 7709) (b) provide details of construction works adjacent to the ABB site prior those works occurring; and (c) ensure the proposal does not adversely impact overland flow paths or existing stormwater infrastructure on the ABB site.	Y	Consultation with ABB is ongoing on all aspects of the MPW Stage 2 development. On approval of this Staging Report, it will form part of this consultation activity.
B92- Traffic and Access	The Applicant must ensure that the construction and operation of the proposed development will not prevent the public use of Moorebank Avenue to a standard commensurate to its use prior to the development.	Y	The stages for the delivery of the MAAI upgrade works have been modelled and assessed for their capacity to cater for anticipated traffic loads. Modelling and assessment confirm that the staged delivery of MAAI would maintain the existing use and serviceability of Moorebank Avenue, in accordance with the requirements of this condition.

Relevant Condition	Requirement	Complies (Y / N / NA)	Comment
B93- Traffic and Access	The development is to be designed and operated so that: (a) all vehicles are wholly contained on site before being required to stop; (b) adequate parking for heavy vehicles is provided on-site to accommodate any potential delays in schedule time; (c) heavy vehicles and bins associated with the development are not parked on local roads or footpaths in the vicinity of the site; (d) all loading and unloading of materials is carried out on-site; and (e) site roads accommodate buses, bus infrastructure and cyclist use for employees	Y	Staged delivery of MAAI does not compromise the development's compliance with this condition.
B94 – RMS Supplementary Requirements	The civil design and Traffic Control Signal (TCS) plans for the upgrades identified in Table 1 of Condition B84 must be drawn by a suitably qualified person and endorsed by a suitably qualified practitioner. The designs must be in accordance with Austroads Guide to Road Design in association with relevant RMS supplements. The certified copies of the TCS design and civil design plans must be submitted to RMS for approval before the issue of a Construction Certificate and commencement of road works. RMS fees for administration, plan checking, civil works inspections and project management shall be paid by the developer prior to the commencement of works	Y	Civil design and TCS plans would be updated as part of the updated WAD package for TfNSW review and approval, following DPE approval of this Staging Report.
B97 - RMS Supplementary Requirements	The applicant must enter into a Works Authorisation Deed (WAD) with RMS for the works identified in Table 1 of Condition B84. The applicant must also dedicate as public road under the Roads Act 1993 the parts of Lot 2 DP 1197707 (incorporating existing Moorebank Avenue) and any other land	Y	The TfNSW approved WAD remains consistent with the intersection design identified in this Staging Report (Appendix A).

Relevant Condition	Requirement	Complies (Y / N / NA)	Comment
	required to accommodate the road and intersection upgrade works (including associated pathways and services) identified in Table 1 of Condition B84. The WAD must provide for the dedication of the required land as public road under the Roads Act 1993 as a precondition to practical completion of the road and intersection upgrade works being achieved under the WAD. A Construction Certificate cannot be issued for any part of the road and intersection upgrade works unless a WAD has been entered into in compliance with this condition. The road and intersection works identified in Table 1 of Condition B84 cannot be opened for use by traffic unless all required land has been dedicated as public road in accordance with this condition		
B98 - RMS Supplementary Requirements	The Applicant is required to dedicate land as public road for the maintenance of the Traffic Control Signals and associated infrastructure; further details will be included as part of the WAD process	Y	The proposed staged delivery of the MAAI upgrade works does not compromise land dedication activities.
B99 - RMS Supplementary Requirements	Prior to any installation of temporary portable traffic signals and other traffic management measures on Moorebank Avenue or Anzac Road, the Applicant must obtain the relevant approvals from RMS.	Y	Relevant approvals required under this condition from TfNSW / RMS will be obtained or updated (as applicable) to be consistent with the staged delivery of MAAI.
B100 - RMS Supplementary Requirements	All works associated with signposting along Moorebank Avenue must be approved by RMS	Y	Relevant approvals required under this condition from TfNSW / RMS will be obtained or updated (as applicable) to be consistent with the staged delivery of MAAI.
B104 - RMS Supplementary Requirements	The Applicant is to ensure that the construction and operation of the proposed development will not prevent the ongoing use of Moorebank Avenue as a public road to a standard commensurate to its current use prior to the development. A staging plan should be submitted to RMS for approval, as part of the WAD package, to ensure adequate capacity is provided along Moorebank Avenue at all times,	Y	The intersection capacity of the stages of MAAI construction and delivery have been modelled and assessed to confirm Moorebank Avenue would continue to operate at a standard commensurate to its current use. The design maintains two lanes open to traffic along Moorebank Avenue at all times.

Relevant Condition	Requirement	Complies (Y / N / NA)	Comment
	including a requirement to maintain two lanes open to traffic.		
B108 - RMS Supplementary Requirements	A Road Occupancy Licence is to be obtained from the Transport Management Centre for any works that may impact on traffic flows on Moorebank Avenue or the adjoining State road network during construction activities.	Y	Relevant approvals required under this condition from TfNSW / RMS will be obtained or updated (as applicable) to be consistent with the staged delivery of MAAI.
B110A - RMS Supplementary Requirements	Until operational access to the site is provided (that is, as part of the Moorebank Avenue and Anzac Road intersection upgrades required under condition B84), the Applicant must ensure that the operational access point to the site is via the Chatham Avenue/Moorebank Avenue intersection, or any other alternative as agreed by Transport for NSW in writing.	Y	In accordance with the approved MPW Stage 2 OTAMP, Bushmaster Avenue (i.e. the western leg of MAAI) has been approved as an interim operational access point into MPW Stage 2. This arrangement would continue as part of the staged delivery of the upgraded intersection.
B118 – Operational Traffic and Access Management Plan	Prior to commencement of operation, the Applicant must prepare an Operational Traffic and Access Management Plan (OTAMP) and submit it to the Planning Secretary for approval. The OTAMP must be prepared by a suitably qualified and experienced person(s) in consultation with Council(s), TfNSW and RMS.	Y	The MPW Stage 2 OTAMP has been revised and updated to be consistent with this Report. The updated OTAMP (Revision 8, 2024) is submitted with the Staging Report to demonstrate the practical implementation of the MPW Stage 2 access arrangements. It is also submitted to DPHI separately for approval as an updated management plan.

5 CONCLUSION

This Staging Report has been prepared in accordance with CoC A44 of SSD 7709, to provide a description and justifications for the delivery of MAAI upgrade works in stages and on the basis of intersection capacity. It seeks to align progressive warehouse occupancy with the phased approach to delivery of the upgraded intersection.

The completion of the full MAAI upgrade is dependent, in part, on completion of the tie-in of the southern leg of MAAI to the northern extent of the Moorebank Avenue Realignment, once it is completed. This is an externally controlled factor that would not be realised for some time, and so a staged opening approach is sought to allow progressive warehouse operations – within the capacity of the intersection.

In preparing this Staging Report, a consultative process with DPHI and TfNSW was completed to confirm the planning pathway (utilising CoC A44) and traffic modelling and assessment approach was valid.

A traffic modelling and assessment process was undertaken, in consultation with TfNSW, to identify the proposed 'stages' of the MAAI upgrade works and demonstrate that each stage has sufficient capacity to accommodate the anticipated traffic utilising the intersection at that time. As an outcome, TfNSW confirmed that they were accepting of the Traffic Assessment (Appendix C) and associated modelling – that demonstrates that on completion of Phase 2A works (Stage 1), the requirements of CoC B84 would be satisfied. The remaining upgrade works would be completed in accordance with this Staging Report and requirements under the TfNSW approved WAD.

The staged delivery of MAAI is consistent with the current approved phased delivery approach included within the WAD – whereby the stages have been identified on the basis of the capacity of the intersection to accommodate the anticipated traffic volume utilising the intersection. This volume is inclusive of MPW and MPE-related construction and operational traffic, and background traffic.

Delivering the MAAI upgrade works in stages and aligning these stages with progressive warehouse occupation would avoid unnecessary constraints on Precinct operations. Traffic modelling and assessment has confirmed that MAAI is proposed to be delivered in a way that would not generate adverse traffic-related impacts.

To date, MAAI has been approved as a construction access and an interim operational access point within the CTAMP and OTAMP, respectively. Both of these documents have been separately endorsed by TfNSW. Implementation of this Staging Report therefore only seeks to extend the use of the intersection across the full duration of the upgrade works.

Assessment of this Staging Report against relevant conditions within both SSD 5066 and SSD 7709, as required under CoC A44(e), demonstrates it is consistent with the relevant requirements of both consent instruments.

On approval of this Staging Report, both the MPW Stage 2 CEMP suite and OEMP suite would be reviewed and updated accordingly to reflect the approved staging of the delivery of MAAI.

APPENDIX A **MAAI CONSTRUCTION PHASING DESIGN**

PHASE SITEWORKS LEGEND

- EXISTING BOUNDARY LINE
- EXISTING KERB
- ULTIMATE DESIGN
- PROPOSED PHASING WORKS
- PHASE TRAFFIC DIVERSION
- PHASE PEDESTRIAN DIVERSION
- SECURITY FENCING
- KLEMMFIX KERB BARRIER
- BG800 SAFETY BARRIER OR APPROVED EQUAL WITH ABSORB-M SAFETY TERMINAL (U.N.O)
- BARRIER BOARD
- UNDER CONSTRUCTION
- UNDER CONSTRUCTION - NIGHT WORKS / LOCAL TRAFFIC CONTROL
- UNDER CONSTRUCTION - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- UNDER CONSTRUCTION - TEMPORARY RAMP
- CONSTRUCTED - ULTIMATE
- CONSTRUCTED - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- CONSTRUCTED - TEMPORARY RAMP
- NO PERMANENT WORKS WITHIN SEWER RISING MAIN ZONE OF INFLUENCE UNTIL CUTOVER

PHASE 01A
TCS PHASE DURATION

PHASE	APPROX. DURATION	CORROSPONDING TCS PLAN REFERENCE
01A	7 MONTHS	VV3094_TDL1A-1A_DES_R4 20220124

DESIGN SPEED(S)

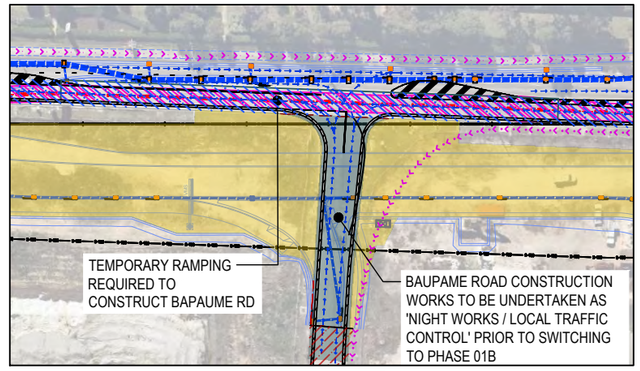
MAINTAINED AS PER EXISTING

NOTES

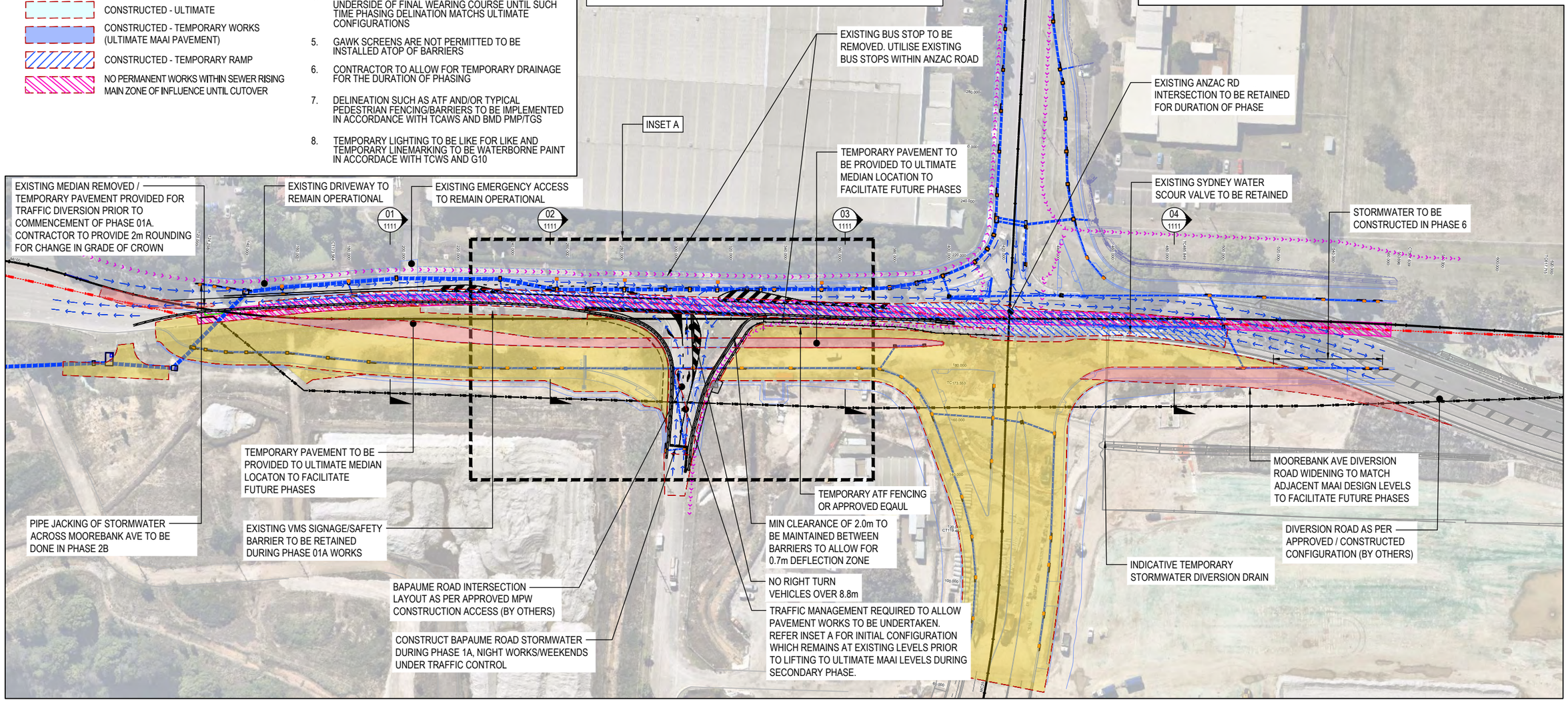
1. DRAWINGS TO BE READ IN CONJUNCTION WITH TMP, TGS AND TFNSW SPECIFICATIONS.
2. SIGNAGE TO BE PREPARED AS PART OF CONTRACTORS TMP
3. BG800 BARRIER DYNAMIC DEFLECTION AS FOLLOWS:
   - 0.7m FLEXIBLE PAVEMENT LOCATIONS
   - 1.66m UNSEALED / VERGE / UNPINNED LOCATIONS
4. PHASING PLANS ASSUME WORKS UNDERTAKEN TO UNDERSIDE OF FINAL WEARING COURSE UNTIL SUCH TIME PHASING DELINATION MATCHS ULTIMATE CONFIGURATIONS
5. GAWK SCREENS ARE NOT PERMITTED TO BE INSTALLED ATOP OF BARRIERS
6. CONTRACTOR TO ALLOW FOR TEMPORARY DRAINAGE FOR THE DURATION OF PHASING
7. DELINEATION SUCH AS ATF AND/OR TYPICAL PEDESTRIAN FENCING/BARRIERS TO BE IMPLEMENTED IN ACCORDANCE WITH TCAWS AND BMD PMP/TGS
8. TEMPORARY LIGHTING TO BE LIKE FOR LIKE AND TEMPORARY LINEMARKING TO BE WATERBORNE PAINT IN ACCORDACE WITH TCWS AND G10

ASSUMPTIONS

1. EXISTING SEWER RISING MAIN (SRM) TO REMAIN IN SERVICE TILL TILL CUT OVER WORKS HAVE BEEN UNDERTAKEN
2. PROPOSED TREATMENT OF REDUNDANT SRM AND ALTERNATE PAVEMENT TYPE TO BE SUBJECT TO SEPARATE ASSESSMENT
3. SRM TO BE GROUT FILLED UNDER THE INTERSECTION POST SRM CUT OVER
4. ACCESS TO BAPAUME ROAD TO MAINTAINED IN COORDINATION WITH ABB
5. PHASE 2A REQUIRES ACCESS TO JLU LAND FOR CONSTRUCTION OF MAAI (SOUTHERN SIDE OF ANZAC ROAD)
6. VMS TO REMAIN ACTIVE AND OPERATION AY ALL TIMES SUBJECT TO CONFIRMATION BY INTERLINK
7. PAVEMENT JOINTS DERIVED BY EXISTING SITE CONSTRAINTS, JOINTS ARE LOCATED MID LANE WHERE POSSIBLE
8. WATER FILLED BARRIERS WILL BE APPROVED BY TfNSW TO PROTECT TEMPORARY SIGNALS ON CONCRETE BLOCKS
9. BAPAUME ROAD ACCESS CONSTRAINED BY:
   - TELSTRA PIT
   - BAPAUME ROAD STORMWATER
   - EXISTING POWER POLES
   - ACCESS TO LOTS 100 & 101 FOR PUBLIC ACCESS



INSET 'A'



NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED
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DRAWING FILE LOCATION / NAME

EXTERNAL REFERENCE FILES:
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JMVP4K_X_DES_R4_DESIGN
JMAIDR_NRP_CV_VR_DESIGN
maai_dg_ck_x_drains
maai_dg_ck_x_drains_01DES
maai_dg_ck_x_ttm
maai_dg_ck_x_signs
maai_dg_ck_x_Retrack_RNS_A3
JMPW4K_X_DES
maai_dg_ck_x_ms_serve
maai_dg_ck_x_street lighting
maai_dg_ck_x_design_proposed layout
maai_dg_ck_x_utilities_proposed
maai_dg_ck_x_design_dtm
maai_dg_ck_x_sewer_ch
maai_dg_ck_x_design control alignment easting
maai_dg_ck_x_site clearance

REV	DATE	AMENDMENT / REVISION DESCRIPTION	REVIEWED	APPROVAL
8	01.04.2022	ISSUED FOR INFORMATION	-	-
9	27.05.2022	ISSUED FOR APPROVAL	-	-
10	17.06.2022	RE-ISSUED FOR APPROVAL	-	-
11	13.07.2022	RE-ISSUED FOR APPROVAL	-	-
12	05.09.2022	RE-ISSUED FOR APPROVAL	-	-
13	07.11.2022	RE-ISSUED FOR APPROVAL	-	-

DESIGN LOT CODE

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING

SCALES ON A3 SIZE DRAWING
0 10 20 30 40 50 60
SCALE 1:1500m

CO-ORDINATE SYSTEM: MGA94 Zone56
HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PLOT DATE / TIME PLOT BY

TITLE	NAME	DATE
DRAWN	[redacted]	7.11.2022
DRG CHECK		7.11.2022
DESIGN		7.11.2022
DESIGN CHECK		7.11.2022
DESIGN MNGR		7.11.2022
PROJECT MNGR		7.11.2022

DRAWING No. MAAI-NRP-CP-DWG-1101

CLIENT: SIMTA

PREPARED FOR: TACTICAL GROUP

MOOREBANK AVENUE WORKS
MOOREBANK AVENUE - ANZAC INTERSECTION (MAAI)

A3

PHASE [01A-SRM] - MAAI SITEWORKS PLAN

TfNSW REGISTRATION No. DS20XX/XXXXXX

PART

ISSUE STATUS: PRE-AFC

EDMS No.

SHEET No. 1101

ISSUE 13

PHASE SITEWORKS LEGEND

- EXISTING BOUNDARY LINE
- EXISTING KERB
- ULTIMATE DESIGN
- PROPOSED PHASING WORKS
- PHASE TRAFFIC DIVERSION
- PHASE PEDESTRIAN DIVERSION
- SECURITY FENCING
- KLEMMFIX KERB BARRIER
- BG800 SAFETY BARRIER OR APPROVED EQUAL WITH ABSORB-M SAFETY TERMINAL (U.N.O)
- BARRIER BOARD
- UNDER CONSTRUCTION
- UNDER CONSTRUCTION - NIGHT WORKS / LOCAL TRAFFIC CONTROL
- UNDER CONSTRUCTION - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- UNDER CONSTRUCTION - TEMPORARY RAMP
- CONSTRUCTED - ULTIMATE
- CONSTRUCTED - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- CONSTRUCTED - TEMPORARY RAMP
- NO PERMANENT WORKS WITHIN SEWER RISING MAIN ZONE OF INFLUENCE UNTIL CUTOVER

PHASE 01B
TCS PHASE DURATION

PHASE	APPROX. DURATION	CORROSPONDING TCS PLAN REFERENCE
01B	1 MONTH	VV3094_TDL1C-1A_DES_R5 20220323

DESIGN SPEED(S)

CONTINUED SPEED REDUCTION OF 40km/h FROM PREVIOUS PHASE FOR DURATION OF PHASE

NOTES

1. DRAWINGS TO BE READ IN CONJUNCTION WITH TMP, TGS AND TFNSW SPECIFICATIONS.
2. SIGNAGE TO BE PREPARED AS PART OF CONTRACTORS TMP
3. BG800 BARRIER DYNAMIC DEFLECTION AS FOLLOWS:
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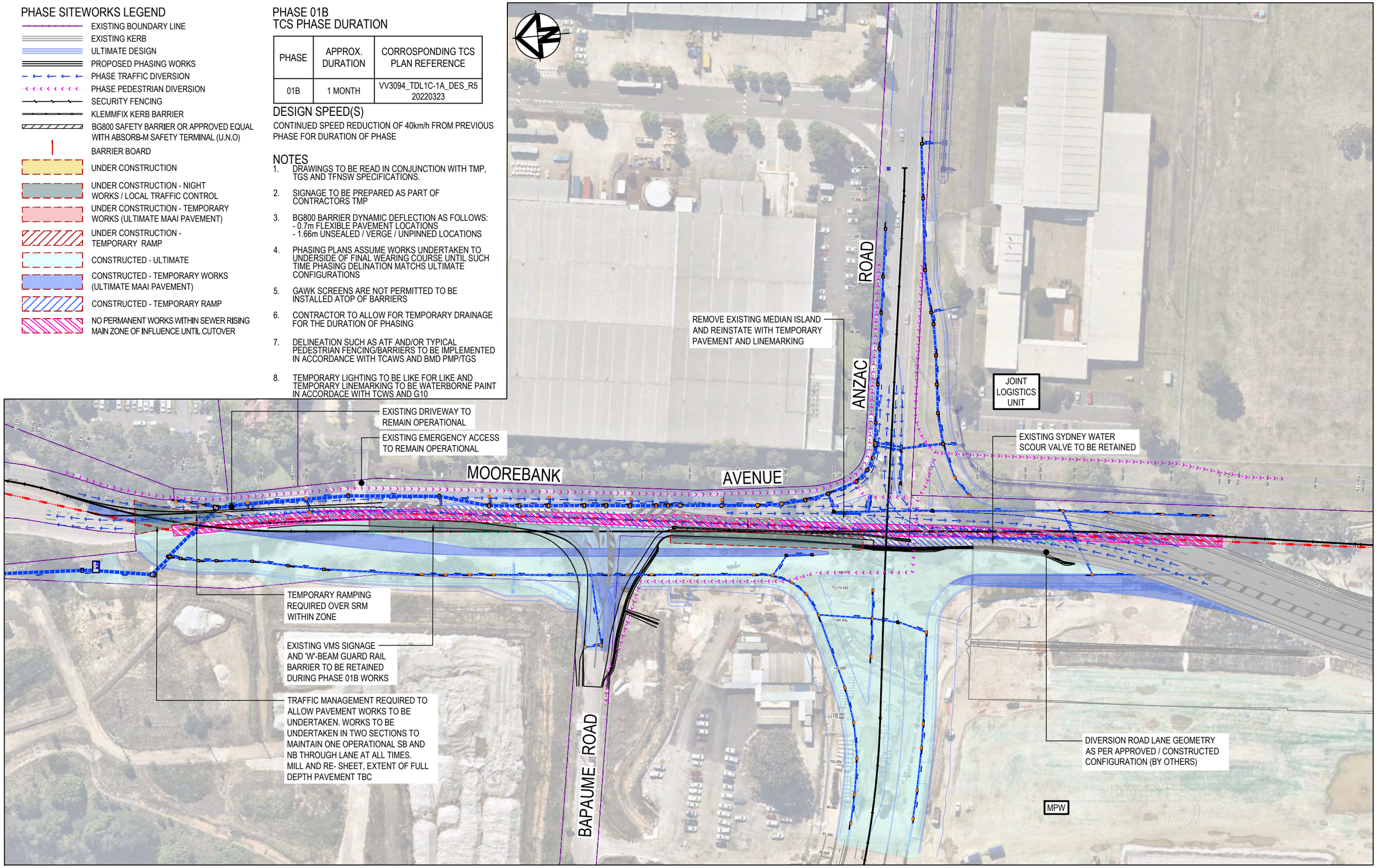
8. TEMPORARY LIGHTING TO BE LIKE FOR LIKE AND TEMPORARY LINEMARKING TO BE WATERBORNE PAINT IN ACCORDACE WITH TCWS AND G10



NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME

EXTERNAL REFERENCE FILES

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REV	DATE	AMENDMENT / REVISION DESCRIPTION	REVIEWED	APPROVAL
8	01.04.2022	ISSUED FOR INFORMATION	-	-
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12	05.09.2022	RE-ISSUED FOR APPROVAL	-	-
13	07.11.2022	RE-ISSUED FOR APPROVAL	-	-

DESIGN LOT CODE

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING

SCALES ON A3 SIZE DRAWING

0 10 20 30 40 50 60
SCALE 1:1500m

CO-ORDINATE SYSTEM	HEIGHT DATUM
MGA94 Zone56	AHD

DRAWINGS / DESIGN PREPARED BY

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Sydney
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PLOT DATE / TIME PLOT BY

	NAME	DATE
DRAWN	D.CHAPMAN	07.11.2022
DRG CHECK	M.SANTIAGO	07.11.2022
DESIGN	D.CHAPMAN	07.11.2022
DESIGN CHECK	G.COLLINS	07.11.2022
DESIGN MNGR	S.McCLELLAND	07.11.2022
PROJECT MNGR	M.RICHARDS	07.11.2022

DRAWING No. MAAI-NRP-CP-DWG-1201

CLIENT SIMTA

PREPARED FOR TACTICAL GROUP

MOOREBANK AVENUE WORKS
MOOREBANK AVENUE - ANZAC INTERSECTION (MAAI)

A3

PHASE [01B-SRM] - MAAI SITEWORKS PLAN

TfNSW REGISTRATION No. DS20XX/XXXXXX

PART

ISSUE STATUS PRE-AFC

EDMS No.

SHEET No. 1201

ISSUE 13

PHASE SITEWORKS LEGEND

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- ULTIMATE DESIGN
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PHASE 01C
TCS PHASE DURATION

PHASE	APPROX. DURATION	CORROSPONDING TCS PLAN REFERENCE
01C	2 WEEKS	VV3094_TDL1B-1A_DES_R4 20220124

DESIGN SPEED(S)

SPEED REDUCTION OF 40km/h TO BE APPLIED WITH JLU INTERSECTION UNDER 24HR MANNED TRAFFIC CONTROL FOR JLU TRAFFIC. ALTERNATIVELY JLU TRAFFIC TO UTILISE ANZAC RD FOR DURATION OF PHASE

NOTES

1. DRAWINGS TO BE READ IN CONJUNCTION WITH TMP, TGS AND TFNSW SPECIFICATIONS.
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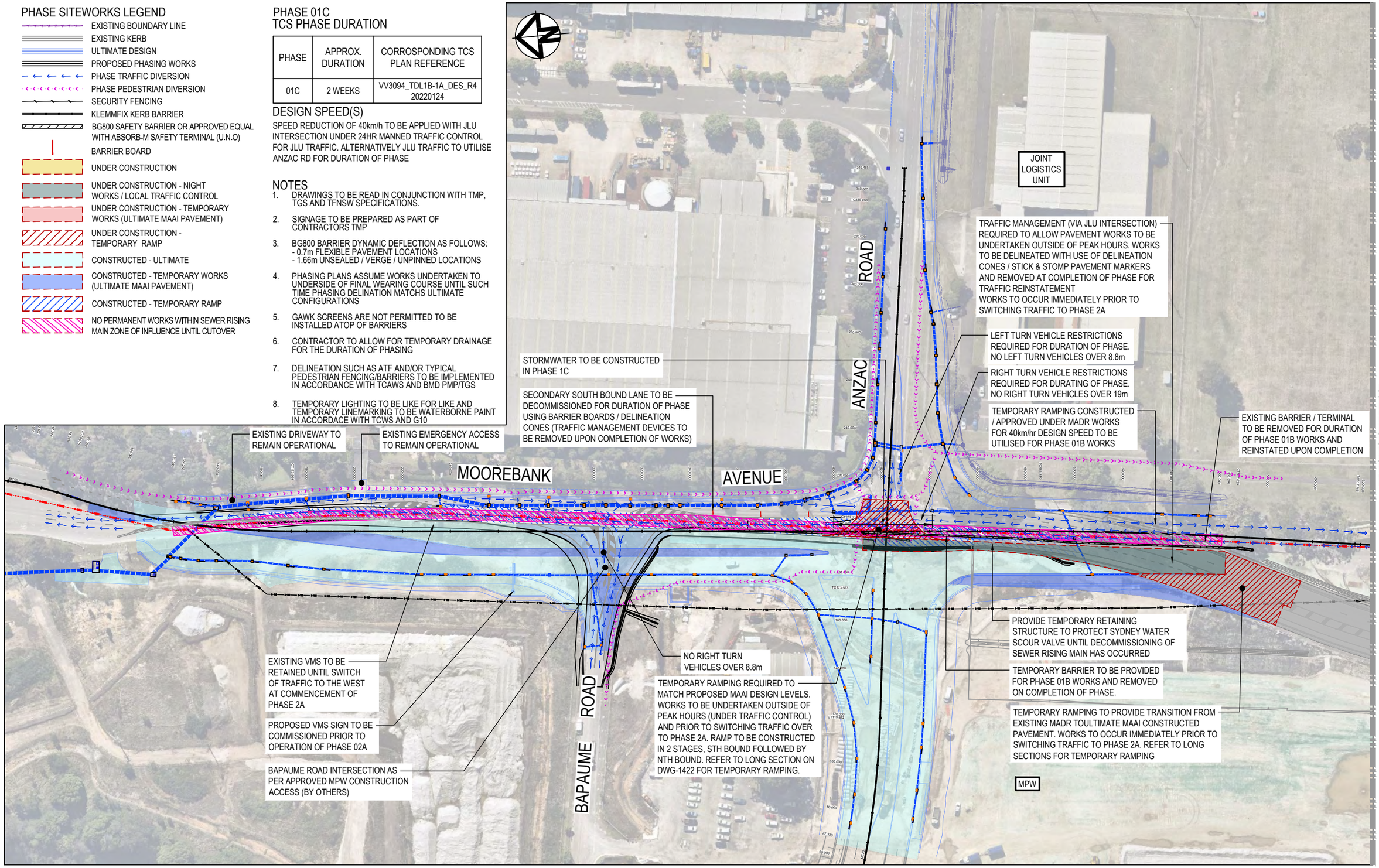

NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME

EXTERNAL REFERENCE FILES

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REV	DATE	AMENDMENT / REVISION DESCRIPTION	REVIEWED	APPROVAL
8	01.04.2022	ISSUED FOR INFORMATION	-	-
9	27.05.2022	ISSUED FOR APPROVAL	-	-
10	17.06.2022	RE-ISSUED FOR APPROVAL	-	-
11	13.07.2022	RE-ISSUED FOR APPROVAL	-	-
12	05.09.2022	RE-ISSUED FOR APPROVAL	-	-
13	07.11.2022	RE-ISSUED FOR APPROVAL	-	-

DESIGN LOT CODE

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING

SCALES ON A3 SIZE DRAWING

0 10 20 30 40 50 60
SCALE 1:1500m

CO-ORDINATE SYSTEM	HEIGHT DATUM
MGA94 Zone56	AHD

DRAWINGS / DESIGN PREPARED BY

NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PLOT DATE / TIME PLOT BY

TITLE	NAME	DATE
DRAWN	[redacted]	07.11.2022
DRG CHECK		07.11.2022
DESIGN		07.11.2022
DESIGN CHECK		07.11.2022
DESIGN MNGR		07.11.2022
PROJECT MNGR		07.11.2022

DRAWING No. MAAI-NRP-CP-DWG-1301

CLIENT SIMTA

PREPARED FOR TACTICAL GROUP

MOOREBANK AVENUE WORKS
MOOREBANK AVENUE - ANZAC INTERSECTION (MAAI)

A3

PHASE [01C-SRM] - MAAI SITEWORKS PLAN SHEET 01

TfNSW REGISTRATION No. DS20XX/XXXXXX

PART

ISSUE STATUS	EDMS No.	SHEET No.	ISSUE
PRE-AFC		1301	13

PHASE SITEWORKS LEGEND

- EXISTING BOUNDARY LINE
- EXISTING KERB
- ULTIMATE DESIGN
- PROPOSED PHASING WORKS
- PHASE TRAFFIC DIVERSION
- PHASE PEDESTRIAN DIVERSION
- SECURITY FENCING
- KLEMMFIX KERB BARRIER
- BG800 SAFETY BARRIER OR APPROVED EQUAL WITH ABSORB-M SAFETY TERMINAL (U.N.O)
- WATER FILLED BARRIER
- BARRIER BOARD
- UNDER CONSTRUCTION
- UNDER CONSTRUCTION - NIGHT WORKS / LOCAL TRAFFIC CONTROL
- UNDER CONSTRUCTION - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- UNDER CONSTRUCTION - TEMPORARY RAMP
- CONSTRUCTED - ULTIMATE
- CONSTRUCTED - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- CONSTRUCTED - TEMPORARY RAMP
- NO PERMANENT WORKS WITHIN SEWER RISING MAIN ZONE OF INFLUENCE UNTIL CUTOVER

PHASE 02A
TCS PHASE DURATION

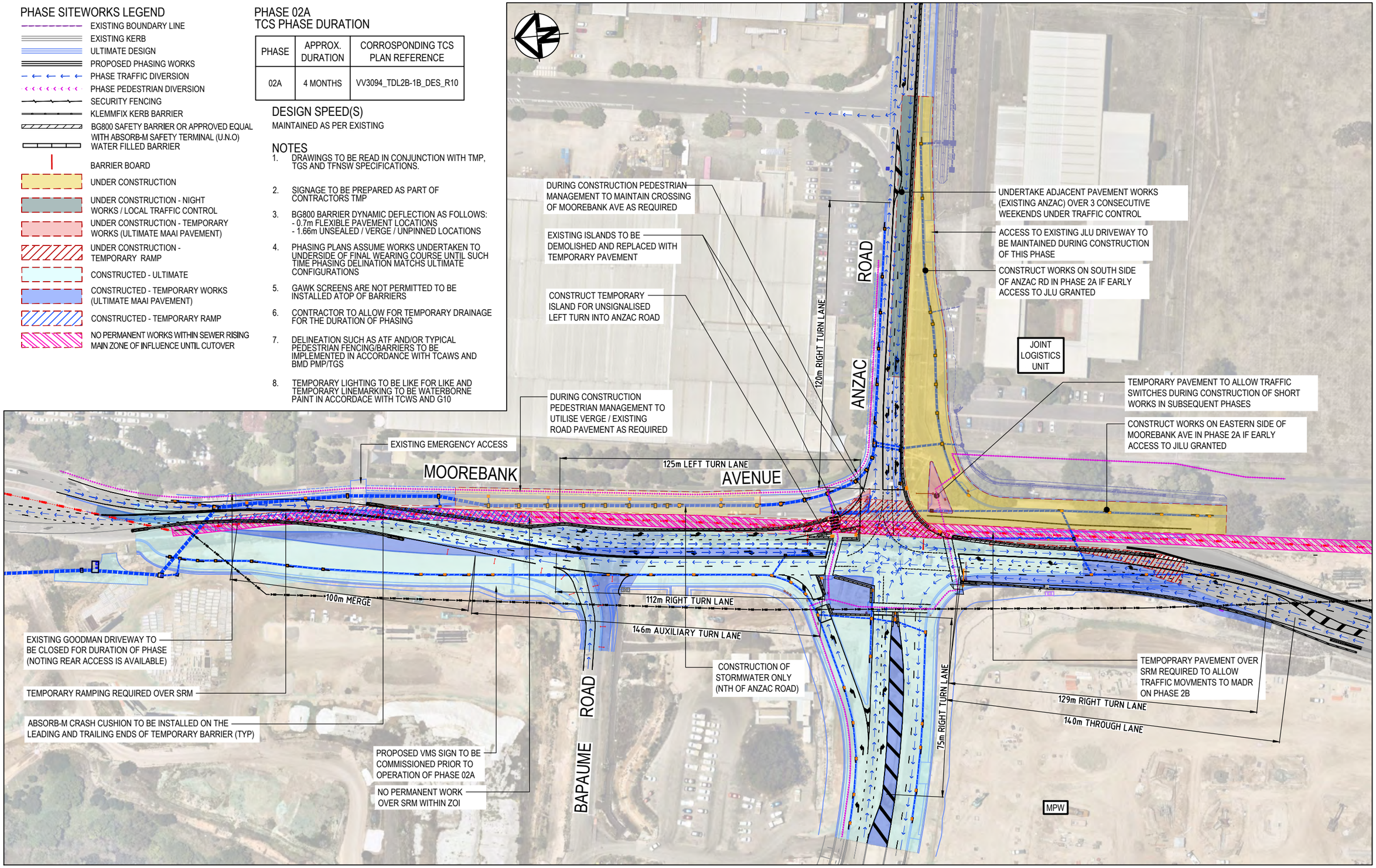
PHASE	APPROX. DURATION	CORROSPONDING TCS PLAN REFERENCE
02A	4 MONTHS	VV3094_TDL2B-1B_DES_R10

DESIGN SPEED(S)

MAINTAINED AS PER EXISTING

NOTES

1. DRAWINGS TO BE READ IN CONJUNCTION WITH TMP, TGS AND TFNSW SPECIFICATIONS.
2. SIGNAGE TO BE PREPARED AS PART OF CONTRACTORS TMP
3. BG800 BARRIER DYNAMIC DEFLECTION AS FOLLOWS:
   - 0.7m FLEXIBLE PAVEMENT LOCATIONS
   - 1.66m UNSEALED / VERGE / UNPINNED LOCATIONS
4. PHASING PLANS ASSUME WORKS UNDERTAKEN TO UNDERSIDE OF FINAL WEARING COURSE UNTIL SUCH TIME PHASING DELINATION MATCHS ULTIMATE CONFIGURATIONS
5. GAWK SCREENS ARE NOT PERMITTED TO BE INSTALLED ATOP OF BARRIERS
6. CONTRACTOR TO ALLOW FOR TEMPORARY DRAINAGE FOR THE DURATION OF PHASING
7. DELINEATION SUCH AS ATF AND/OR TYPICAL PEDESTRIAN FENCING/BARRIERS TO BE IMPLEMENTED IN ACCORDANCE WITH TCAWS AND BMD PMP/TGS
8. TEMPORARY LIGHTING TO BE LIKE FOR LIKE AND TEMPORARY LINEMARKING TO BE WATERBORNE PAINT IN ACCORDACE WITH TCWS AND G10



NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME

EXTERNAL REFERENCE FILES

maai_nrs_ca_e_sheets
_PWM_MAP_CV_DS_DESIGN
MAAI_MAP_CV_DS_DESIGN
maai_nrs_ca_e_survey
maai_nrs_ca_e_phase01 DS
maai_nrs_ca_e_DBI
maai_nrs_ca_e_layout
maai_nrs_ca_e_phase01 RMS_A3
maai_nrs_ca_e_phase02 DS
maai_nrs_ca_e_phase 04 DS OPTION 01
maai_nrs_ca_e_swept_path
maai_nrs_ca_e_phase04_layout
maai_nrs_ca_e_design loadlayout
maai_nrs_ca_e_design loadlayout
maai_nrs_ca_e_design control alignment code

DESIGN LOT CODE

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING

REV	DATE	AMENDMENT / REVISION DESCRIPTION	REVIEWED	APPROVAL
8	01.04.2022	ISSUED FOR INFORMATION	-	-
9	27.05.2022	ISSUED FOR APPROVAL	-	-
10	17.06.2022	RE-ISSUED FOR APPROVAL	-	-
11	13.07.2022	RE-ISSUED FOR APPROVAL	-	-
12	05.09.2022	RE-ISSUED FOR APPROVAL	-	-
13	09.11.2023	RE-ISSUED FOR APPROVAL	-	-

SCALES ON A3 SIZE DRAWING

0 10 20 30 40 50 60
SCALE 1:1500m

CO-ORDINATE SYSTEM: MGA94 Zone56
HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

NORTHROP
Sydney
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Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PLOT DATE / TIME / PLOT BY

TITLE	NAME	DATE
DRAWN	[redacted]	09.11.2023
DRG CHECK		09.11.2023
DESIGN		09.11.2023
DESIGN CHECK		09.11.2023
DESIGN MNGR		09.11.2023
PROJECT MNGR		09.11.2023

DRAWING No. MAAI-NRP-CP-DWG-1401

CLIENT: SIMTA

PREPARED FOR: TACTICAL GROUP

MOOREBANK AVENUE WORKS
MOOREBANK AVENUE - ANZAC INTERSECTION (MAAI)

A3

PHASE [02A-SRM] - MAAI SITEWORKS PLAN

TfNSW REGISTRATION No. DS2021/000784

PART

ISSUE STATUS: AFC

EDMS No.

SHEET No. 1401

ISSUE 13

PHASE SITEWORKS LEGEND

- EXISTING BOUNDARY LINE
- EXISTING KERB
- ULTIMATE DESIGN
- PROPOSED PHASING WORKS
- PHASE TRAFFIC DIVERSION
- PHASE PEDESTRIAN DIVERSION
- SECURITY FENCING
- KLEMMFIX KERB BARRIER
- BG800 SAFETY BARRIER OR APPROVED EQUAL WITH ABSORB-M SAFETY TERMINAL (U.N.O)
- BARRIER BOARD
- UNDER CONSTRUCTION
- UNDER CONSTRUCTION - NIGHT WORKS / LOCAL TRAFFIC CONTROL
- UNDER CONSTRUCTION - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- UNDER CONSTRUCTION - TEMPORARY RAMP
- CONSTRUCTED - ULTIMATE
- CONSTRUCTED - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- CONSTRUCTED - TEMPORARY RAMP
- NO PERMANENT WORKS WITHIN SEWER RISING MAIN ZONE OF INFLUENCE UNTIL CUTOVER

PHASE 02B
TCS PHASE DURATION

PHASE	APPROX. DURATION	CORROSPONDING TCS PLAN REFERENCE
02B	3 MONTHS	VV3094_TDL2C-1A_DES_R5 20220323

DESIGN SPEED(S)

MAINTAINED AS PER EXISTING

NOTES

1. DRAWINGS TO BE READ IN CONJUNCTION WITH TMP, TGS AND TFNSW SPECIFICATIONS.
2. SIGNAGE TO BE PREPARED AS PART OF CONTRACTORS TMP
3. BG800 BARRIER DYNAMIC DEFLECTION AS FOLLOWS:
   - 0.7m FLEXIBLE PAVEMENT LOCATIONS
   - 1.66m UNSEALED / VERGE / UNPINNED LOCATIONS
4. PHASING PLANS ASSUME WORKS UNDERTAKEN TO UNDERSIDE OF FINAL WEARING COURSE UNTIL SUCH TIME PHASING DELINATION MATCHS ULTIMATE CONFIGURATIONS
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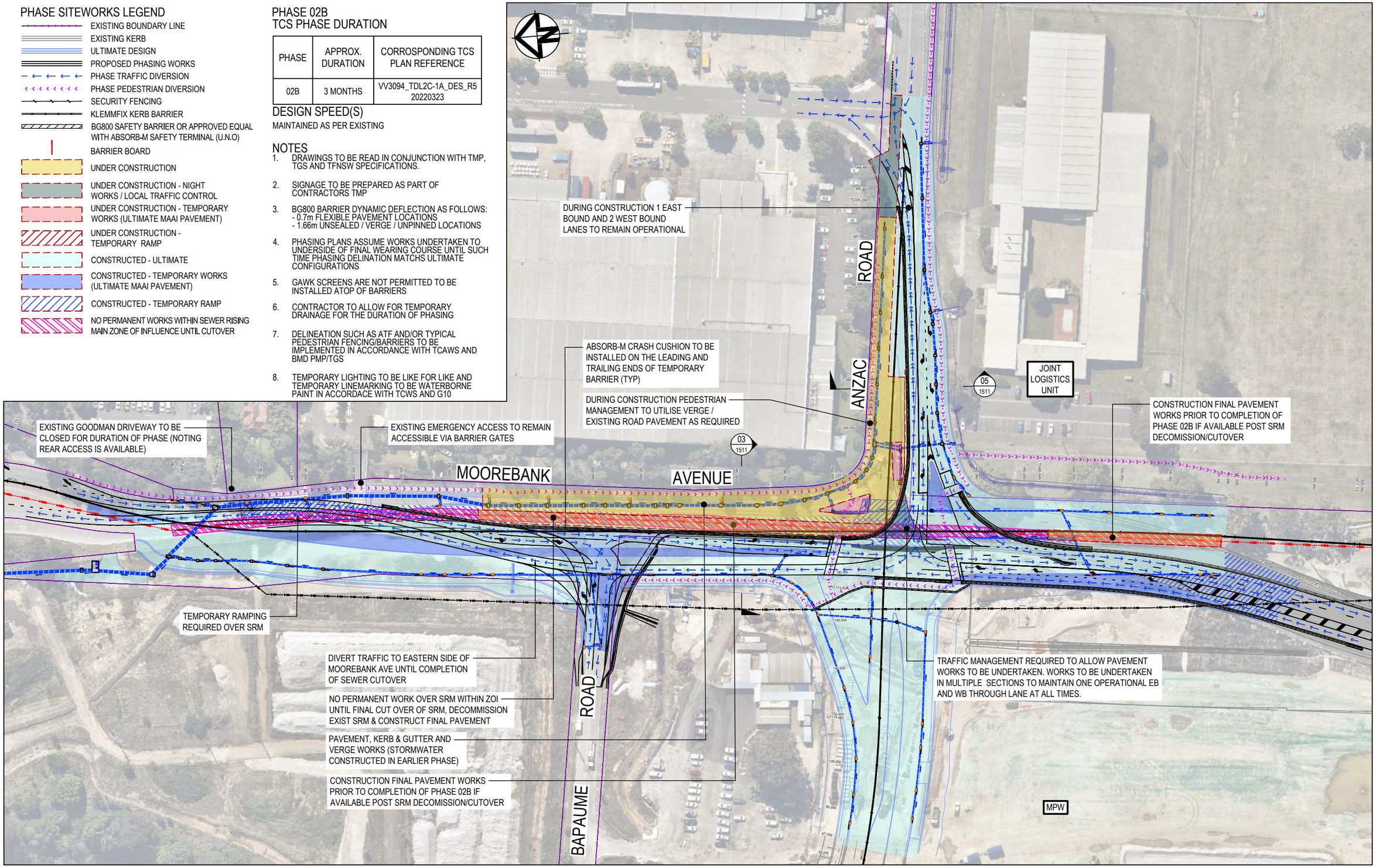
7. DELINEATION SUCH AS ATF AND/OR TYPICAL PEDESTRIAN FENCING/BARRIERS TO BE IMPLEMENTED IN ACCORDANCE WITH TCAWS AND BMD PMP/TGS
8. TEMPORARY LIGHTING TO BE LIKE FOR LIKE AND TEMPORARY LINEMARKING TO BE WATERBORNE PAINT IN ACCORDACE WITH TCWS AND G10



NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME

EXTERNAL REFERENCE FILES

maai_nrp_cs_xf_design road layout
maai_nrp_cs_xf_phase 02B DESIGN
maai_nrp_cv_xf_MAIN_NRP_CV_XR_DESIGN
maai_nrp_cs_xf_phase01 DES
maai_nrp_cs_xf_dtm
maai_nrp_cs_xf_aerial
maai_nrp_cs_xf_Blocks_RMS_A3
maai_nrp_cs_xf_phase02 DES
maai_nrp_cs_xf_phase03 DES
maai_nrp_cs_xf_phase04 DES
maai_nrp_cs_xf_Proj_aerial
maai_nrp_cs_xf_dtmss_SRM
maai_nrp_cv_xf_design overlay layout
maai_nrp_cv_xf_design contour alignment scale 50

REV	DATE	AMENDMENT / REVISION DESCRIPTION	DESIGN LOT CODE REVIEWED	DESIGN LOT CODE APPROVAL
8	01.04.2022	ISSUED FOR INFORMATION	-	-
9	27.05.2022	ISSUED FOR APPROVAL	-	-
10	17.06.2022	RE-ISSUED FOR APPROVAL	-	-
11	13.07.2022	RE-ISSUED FOR APPROVAL	-	-
12	05.09.2022	RE-ISSUED FOR APPROVAL	-	-

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING

SCALES ON A3 SIZE DRAWING

0 10 20 30 40 50 60
SCALE 1:1500m

CO-ORDINATE SYSTEM: MGA94 Zone56
HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PLOT DATE / TIME: 05.09.2022 PLOT BY

	NAME	DATE
DRAWN	[redacted]	05.09.2022
DRG CHECK		05.09.2022
DESIGN		05.09.2022
DESIGN CHECK		05.09.2022
DESIGN MNGR		05.09.2022
PROJECT MNGR		05.09.2022

DRAWING No. MAAI-NRP-CP-DWG-1501

CLIENT: SIMTA

PREPARED FOR: TACTICAL GROUP

MOOREBANK AVENUE WORKS
MOOREBANK AVENUE - ANZAC INTERSECTION (MAAI)

A3

PHASE [02B-SRM] - MAAI SITEWORKS PLAN

TINSW REGISTRATION No. DS20XX/XXXXXX

PART

ISSUE STATUS	EDMS No.	SHEET No.	ISSUE
PRE-AFC		1501	12

PHASE SITEWORKS LEGEND

- EXISTING BOUNDARY LINE
- EXISTING KERB
- ULTIMATE DESIGN
- PROPOSED PHASING WORKS
- PHASE TRAFFIC DIVERSION
- PHASE PEDESTRIAN DIVERSION
- SECURITY FENCING
- KLEMMFIX KERB BARRIER
- BG800 SAFETY BARRIER OR APPROVED EQUAL WITH ABSORB-M SAFETY TERMINAL (U.N.O)
- BARRIER BOARD
- UNDER CONSTRUCTION
- UNDER CONSTRUCTION - NIGHT WORKS / LOCAL TRAFFIC CONTROL
- UNDER CONSTRUCTION - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- UNDER CONSTRUCTION - TEMPORARY RAMP
- CONSTRUCTED - ULTIMATE
- CONSTRUCTED - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- CONSTRUCTED - TEMPORARY RAMP

PHASE 02C
TCS PHASE DURATION

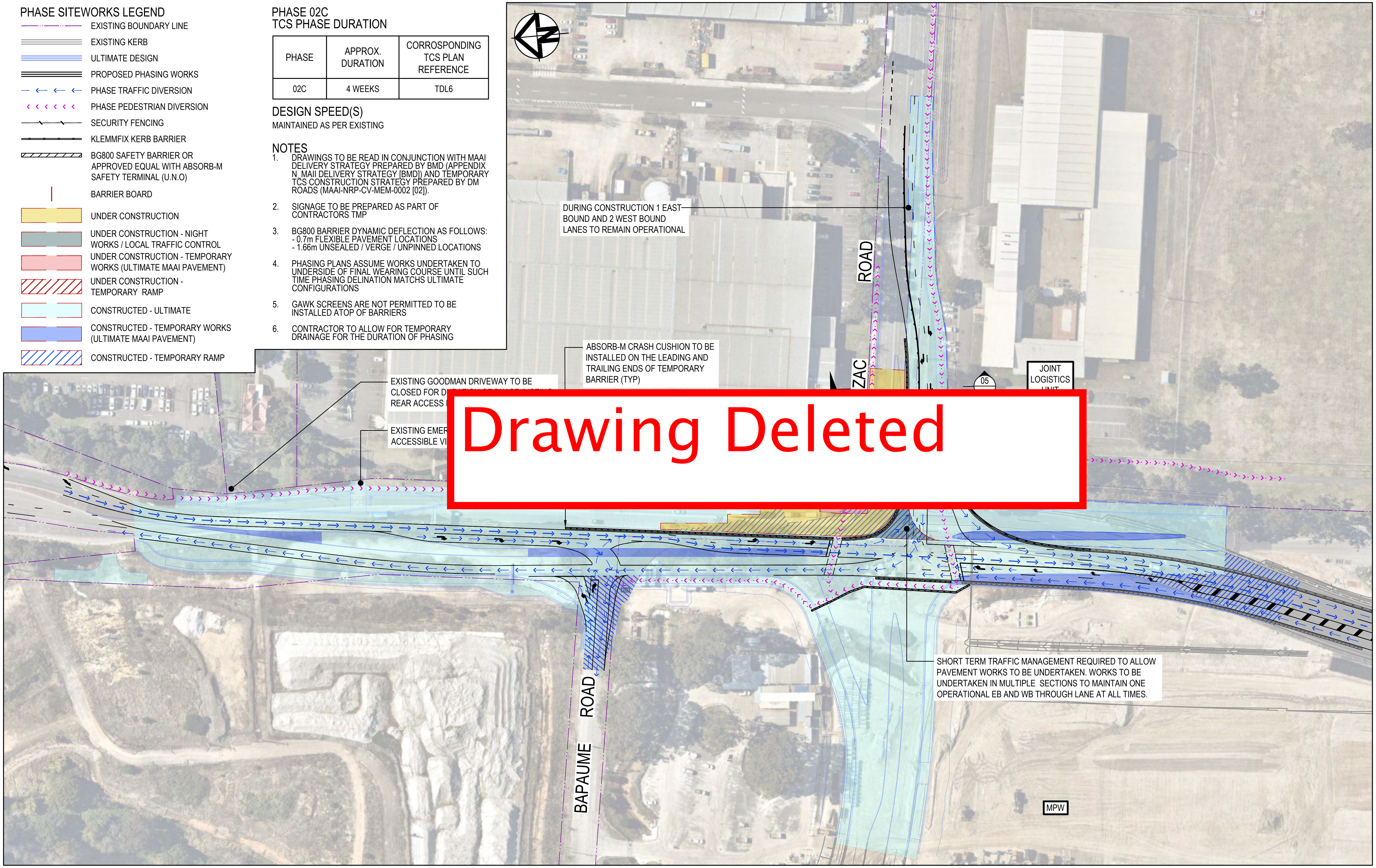
PHASE	APPROX. DURATION	CORROSPONDING TCS PLAN REFERENCE
02C	4 WEEKS	TDL6

DESIGN SPEED(S)

MAINTAINED AS PER EXISTING

NOTES

1. DRAWINGS TO BE READ IN CONJUNCTION WITH MAAI DELIVERY STRATEGY PREPARED BY BMD (APPENDIX N_MAII DELIVERY STRATEGY [BMD]) AND TEMPORARY TCS CONSTRUCTION STRATEGY PREPARED BY DM ROADS (MAAI-NRP-CV-MEM-0002 [02]).
2. SIGNAGE TO BE PREPARED AS PART OF CONTRACTORS TMP
3. BG800 BARRIER DYNAMIC DEFLECTION AS FOLLOWS:
   - 0.7m FLEXIBLE PAVEMENT LOCATIONS
   - 1.66m UNSEALED / VERGE / UNPINNED LOCATIONS
4. PHASING PLANS ASSUME WORKS UNDERTAKEN TO UNDERSIDE OF FINAL WEARING COURSE UNTIL SUCH TIME PHASING DELINATION MATCHS ULTIMATE CONFIGURATIONS
5. GAWK SCREENS ARE NOT PERMITTED TO BE INSTALLED ATOP OF BARRIERS
6. CONTRACTOR TO ALLOW FOR TEMPORARY DRAINAGE FOR THE DURATION OF PHASING



THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

50mm ON A3 SIZE ORIGINAL

NOT FOR CONSTRUCTION

DRAWING FILE LOCATION / NAME

EXTERNAL REFERENCE FILES

REV	DATE	AMENDMENT / REVISION DESCRIPTION	REVIEWED	APPROVAL
2	23.08.2021	TfNSW 85% SUBMISSION	GC	MR
3	24.08.2021	TfNSW 85% SUBMISSION	GC	MR
4	12.10.2021	TfNSW 100% SUBMISSION	GC	MR
5	22.10.2021	TfNSW 100% SUBMISSION	GC	MR
6	21.12.2021	PRE-AFC SUBMISSION	GC	MR
7	18.03.2022	AFC SUBMISSION	GC	MR

DESIGN LOT CODE

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING

SCALES ON A3 SIZE DRAWING: 0 10 20 30 40 50 60 — SCALE 1:1500m

CO-ORDINATE SYSTEM: MGA94 Zone56

HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PLOT DATE / TIME

PLOT BY

TITLE	NAME	DATE
DRAWN	[redacted]	18.03.2022
DRG CHECK		18.03.2022
DESIGN		18.03.2022
DESIGN CHECK		18.03.2022
DESIGN MNGR		18.03.2022
PROJECT MNGR		18.03.2022

DRAWING No. MAAI-NRP-CS-DWG-1601

CLIENT: SIMTA

PREPARED FOR: TACTICAL GROUP

MOOREBANK AVENUE WORKS
MOOREBANK AVENUE - ANZAC INTERSECTION (MAAI)

PHASE [02C] - MAAI SITEWORKS PLAN

A3

TfNSW REGISTRATION No. DS2021/000784

PART

ISSUE STATUS: AFC

EDMS No.

SHEET No. 1601

ISSUE 7

PHASE SITEWORKS LEGEND

- EXISTING BOUNDARY LINE
- EXISTING KERB
- ULTIMATE DESIGN
- PROPOSED PHASING WORKS
- PHASE TRAFFIC DIVERSION
- PHASE PEDESTRIAN DIVERSION
- SECURITY FENCING
- KLEMMFIX KERB BARRIER
- BG800 SAFETY BARRIER OR APPROVED EQUAL WITH ABSORB-M SAFETY TERMINAL (U.N.O)
- BARRIER BOARD
- UNDER CONSTRUCTION
- UNDER CONSTRUCTION - NIGHT WORKS / LOCAL TRAFFIC CONTROL
- UNDER CONSTRUCTION - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- UNDER CONSTRUCTION - TEMPORARY RAMP
- CONSTRUCTED - ULTIMATE
- CONSTRUCTED - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- CONSTRUCTED - TEMPORARY RAMP
- NO PERMANENT WORKS WITHIN SEWER RISING MAIN ZONE OF INFLUENCE UNTIL CUTOVER

PHASE 03
TCS PHASE DURATION

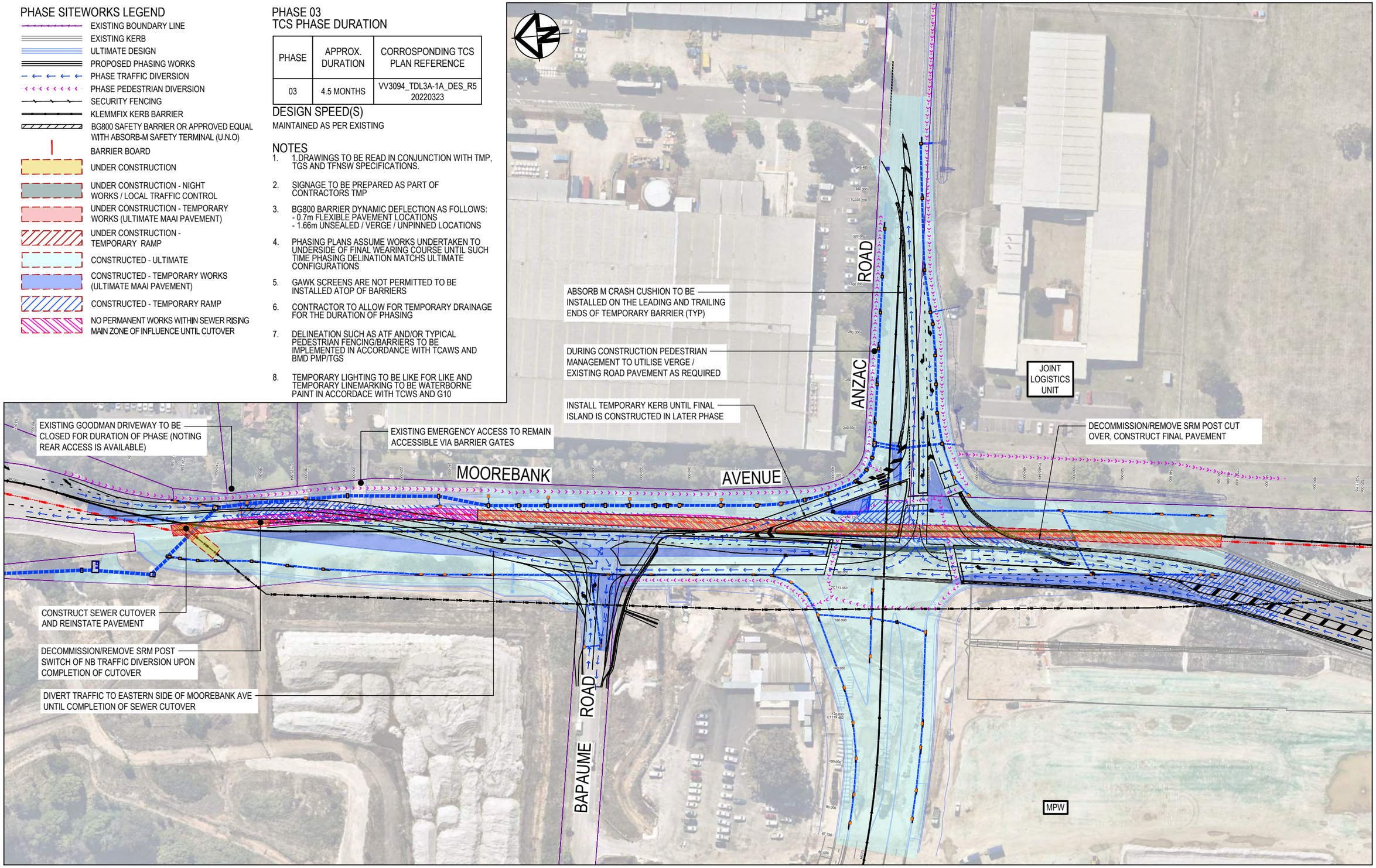
PHASE	APPROX. DURATION	CORROSPONDING TCS PLAN REFERENCE
03	4.5 MONTHS	VV3094_TDL3A-1A_DES_R5 20220323

DESIGN SPEED(S)

MAINTAINED AS PER EXISTING

NOTES

1. 1.DRAWINGS TO BE READ IN CONJUNCTION WITH TMP, TGS AND TFNSW SPECIFICATIONS.
2. SIGNAGE TO BE PREPARED AS PART OF CONTRACTORS TMP
3. BG800 BARRIER DYNAMIC DEFLECTION AS FOLLOWS:
   - 0.7m FLEXIBLE PAVEMENT LOCATIONS
   - 1.66m UNSEALED / VERGE / UNPINNED LOCATIONS
4. PHASING PLANS ASSUME WORKS UNDERTAKEN TO UNDERSIDE OF FINAL WEARING COURSE UNTIL SUCH TIME PHASING DELINATION MATCHS ULTIMATE CONFIGURATIONS
5. GAWK SCREENS ARE NOT PERMITTED TO BE INSTALLED ATOP OF BARRIERS
6. CONTRACTOR TO ALLOW FOR TEMPORARY DRAINAGE FOR THE DURATION OF PHASING
7. DELINEATION SUCH AS ATF AND/OR TYPICAL PEDESTRIAN FENCING/BARRIERS TO BE IMPLEMENTED IN ACCORDANCE WITH TCAWS AND BMD PMP/TGS
8. TEMPORARY LIGHTING TO BE LIKE FOR LIKE AND TEMPORARY LINEMARKING TO BE WATERBORNE PAINT IN ACCORDACE WITH TCWS AND G10



NOT FOR CONSTRUCTION

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

EXTERNAL REFERENCE FILES

maai_nrp_cs_e_dwgs road layout
maai_nrp_cs_e_phase
maai_nrp_cs_e_phase_DESIGN
MAQR_NRP_CV_XR_DESIGN
maai_nrp_cs_e_phase
maai_nrp_cs_e_phase01.DES
maai_nrp_cs_e_phase
maai_nrp_cs_e_plan
maai_nrp_cs_e_plan_layout
maai_nrp_cs_e_plotblocks_RMS_A3
maai_nrp_cs_e_phase02.DES
maai_nrp_cs_e_phase03.DES
maai_nrp_cs_e_phase04.DES
maai_nrp_cs_e_phase05.DES
maai_nrp_cs_e_phase06.DES
maai_nrp_cs_e_proj_area
maai_nrp_cs_e_plan_layout
maai_nrp_cs_e_plotsc_25M
maai_nrp_cs_e_dwgs drainage layout
maai_nrp_cs_e_dwgs standard signs and details

DESIGN LOT CODE

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING

REV	DATE	AMENDMENT / REVISION DESCRIPTION	REVIEWED	APPROVAL
8	01.04.2022	ISSUED FOR INFORMATION	-	-
9	27.05.2022	ISSUED FOR APPROVAL	-	-
10	17.06.2022	RE-ISSUED FOR APPROVAL	-	-
11	13.07.2022	RE-ISSUED FOR APPROVAL	-	-
12	05.09.2022	RE-ISSUED FOR APPROVAL	-	-

SCALES ON A3 SIZE DRAWING

0 10 20 30 40 50 60
SCALE 1:1500m

CO-ORDINATE SYSTEM: MGA94 Zone56
HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

	NAME	DATE
PLOT DATE / TIME	PLOT BY	
DRAWN	[redacted]	05.09.2022
DRG CHECK		05.09.2022
DESIGN		05.09.2022
DESIGN CHECK		05.09.2022
DESIGN MNGR		05.09.2022
PROJECT MNGR		05.09.2022

DRAWING No. MAAI-NRP-CP-DWG-1701

CLIENT: SIMTA

PREPARED FOR: TACTICAL GROUP

MOOREBANK AVENUE WORKS
MOOREBANK AVENUE - ANZAC INTERSECTION (MAAI)

A3

PHASE [03-SRM] - MAAI SITEWORKS PLAN

TINSW REGISTRATION No. DS20XX/XXXXXX

PART

ISSUE STATUS	EDMS No.	SHEET No.	ISSUE
PRE-AFC		1701	12

PHASE SITEWORKS LEGEND

- EXISTING BOUNDARY LINE
- EXISTING KERB
- ULTIMATE DESIGN
- PROPOSED PHASING WORKS
- PHASE TRAFFIC DIVERSION
- PHASE PEDESTRIAN DIVERSION
- SECURITY FENCING
- KLEMMFIX KERB BARRIER
- BG800 SAFETY BARRIER OR APPROVED EQUAL WITH ABSORB-M SAFETY TERMINAL (U.N.O)
- BARRIER BOARD
- UNDER CONSTRUCTION
- UNDER CONSTRUCTION - NIGHT WORKS / LOCAL TRAFFIC CONTROL
- UNDER CONSTRUCTION - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- UNDER CONSTRUCTION - TEMPORARY RAMP
- CONSTRUCTED - ULTIMATE
- CONSTRUCTED - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- CONSTRUCTED - TEMPORARY RAMP

PHASE 03B
TCS PHASE DURATION

PHASE	APPROX. DURATION	CORROSPONDING TCS PLAN REFERENCE
03B	3 WEEKS	TDL8

DESIGN SPEED(S)

MAINTAINED AS PER EXISTING

NOTES

1. DRAWINGS TO BE READ IN CONJUNCTION WITH MAAI DELIVERY STRATEGY PREPARED BY BMD (APPENDIX N_MAII DELIVERY STRATEGY [BMD]) AND TEMPORARY TCS CONSTRUCTION STRATEGY PREPARED BY DM ROADS (MAAI-NRP-CV-MEM-0002 [02]).
2. SIGNAGE TO BE PREPARED AS PART OF CONTRACTORS TMP
3. BG800 BARRIER DYNAMIC DEFLECTION AS FOLLOWS:
   - 0.7m FLEXIBLE PAVEMENT LOCATIONS
   - 1.66m UNSEALED / VERGE / UNPINNED LOCATIONS
4. PHASING PLANS ASSUME WORKS UNDERTAKEN TO UNDERSIDE OF FINAL WEARING COURSE UNTIL SUCH TIME PHASING DELINATION MATCHS ULTIMATE CONFIGURATIONS
5. GAWK SCREENS ARE NOT PERMITTED TO BE INSTALLED ATOP OF BARRIERS
6. CONTRACTOR TO ALLOW FOR TEMPORARY DRAINAGE FOR THE DURATION OF PHASING

SHORT TERM TRAFFIC MANAGEMENT REQUIRED TO ALLOW PAVEMENT WORKS TO BE UNDERTAKEN. WORKS TO BE UNDERTAKEN IN MULTIPLE SECTIONS TO MAINTAIN ONE OPERATIONAL EB AND WB THROUGH LANE AT ALL TIMES.

EXISTING GOODMAN DRIVEWAY TO BE CLOSED FOR DURATION OF PHASE (NOTING REAR ACCESS IS AVAILABLE)

EXISTING EMERGENCY ACCESS TO REMAIN ACCESSIBLE VIA BARRIER GATES

INSTALL TEMPORARY MEDIAN KERB UNTIL FINAL MEDIAN IS CONSTRUCTED IN LATER PHASE

INSTALL TEMPORARY KERB UNTIL FINAL ISLAND IS CONSTRUCTED IN LATER PHASE

ANZAC ROAD

MOOR

BAPAUME ROAD

JOINT LOGISTICS UNIT

MPW

Drawing Deleted

NOT FOR CONSTRUCTION

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

maa_rtp_cs_x_dwgs.mwl layout
maa_rtp_cs_x_pwks
maa_rtp_cs_x_REF DESIGN _MADI_NRP_CV_VR_DESIGN
maa_rtp_cs_x_survey
maa_rtp_cs_x_survey11 0S3
maa_rtp_cs_x_tpy
maa_rtp_cs_x_typical
maa_rtp_cs_x_tMelrose_RMS_A3
maa_rtp_cs_x_phase02 0S3
maa_rtp_cs_x_phase03 0S3
maa_rtp_cs_x_phase05 0S3
maa_rtp_cs_x_phase06 0S3
maa_rtp_cs_x_phase04 0S3
maa_rtp_cs_x_phase08 0S3
maa_rtp_cs_x_phase07 0S3
maa_rtp_cs_x_prg_arrel

DESIGN LOT CODE

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING

PLOT DATE / TIME

PLOT BY

DRAWING No. MAAI-NRP-CS-DWG-1801

EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	REVIEWED	APPROVAL
	2	23.08.2021	TfNSW 85% SUBMISSION	GC	MR
	3	24.08.2021	TfNSW 85% SUBMISSION	GC	MR
	4	12.10.2021	TfNSW 100% SUBMISSION	GC	MR
	5	22.10.2021	TfNSW 100% SUBMISSION	GC	MR
	6	21.12.2021	PRE-AFC SUBMISSION	GC	MR
	7	18.03.2022	AFC SUBMISSION	GC	MR

SCALES ON A3 SIZE DRAWING: 0 10 20 30 40 50 60 — SCALE 1:1500m

CO-ORDINATE SYSTEM: MGA94 Zone56 — HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

	TITLE	NAME	DATE
DRAWN		[redacted]	18.03.2022
DRG CHECK			18.03.2022
DESIGN			18.03.2022
DESIGN CHECK			18.03.2022
DESIGN MNGR			18.03.2022
PROJECT MNGR			18.03.2022

CLIENT: SIMTA

PREPARED FOR: TACTICAL GROUP

MOOREBANK AVENUE WORKS
MOOREBANK AVENUE - ANZAC INTERSECTION (MAAI)

A3

PHASE [03B] - MAAI SITEWORKS PLAN

TfNSW REGISTRATION No. DS2021/000784 — PART

ISSUE STATUS: AFC — EDMS No. — SHEET No. 1801 — ISSUE 7

PHASE SITEWORKS LEGEND

- EXISTING BOUNDARY LINE
- EXISTING KERB
- ULTIMATE DESIGN
- PROPOSED PHASING WORKS
- PHASE TRAFFIC DIVERSION
- PHASE PEDESTRIAN DIVERSION
- SECURITY FENCING
- KLEMMFIX KERB BARRIER
- BG800 SAFETY BARRIER OR APPROVED EQUAL WITH ABSORB-M SAFETY TERMINAL (U.N.O)
- BARRIER BOARD
- UNDER CONSTRUCTION
- UNDER CONSTRUCTION - NIGHT WORKS / LOCAL TRAFFIC CONTROL
- UNDER CONSTRUCTION - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- UNDER CONSTRUCTION - TEMPORARY RAMP
- CONSTRUCTED - ULTIMATE
- CONSTRUCTED - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- CONSTRUCTED - TEMPORARY RAMP
- NO PERMANENT WORKS WITHIN SEWER RISING MAIN ZONE OF INFLUENCE UNTIL CUTOVER

PHASE 04
TCS PHASE DURATION

PHASE	APPROX. DURATION	CORROSPONDING TCS PLAN REFERENCE
04	3 MONTHS	VV3094_TDL4-1A_DES_R4 20220715

DESIGN SPEED(S)

MAINTAINED AS PER EXISTING

NOTES

1. 1.DRAWINGS TO BE READ IN CONJUNCTION WITH TMP, TGS AND TFNSW SPECIFICATIONS.
2. SIGNAGE TO BE PREPARED AS PART OF CONTRACTORS TMP
3. BG800 BARRIER DYNAMIC DEFLECTION AS FOLLOWS:
   - 0.7m FLEXIBLE PAVEMENT LOCATIONS
   - 1.66m UNSEALED / VERGE / UNPINNED LOCATIONS
4. PHASING PLANS ASSUME WORKS UNDERTAKEN TO UNDERSIDE OF FINAL WEARING COURSE UNTIL SUCH TIME PHASING DELINATION MATCHS ULTIMATE CONFIGURATIONS
5. GAWK SCREENS ARE NOT PERMITTED TO BE INSTALLED ATOP OF BARRIERS
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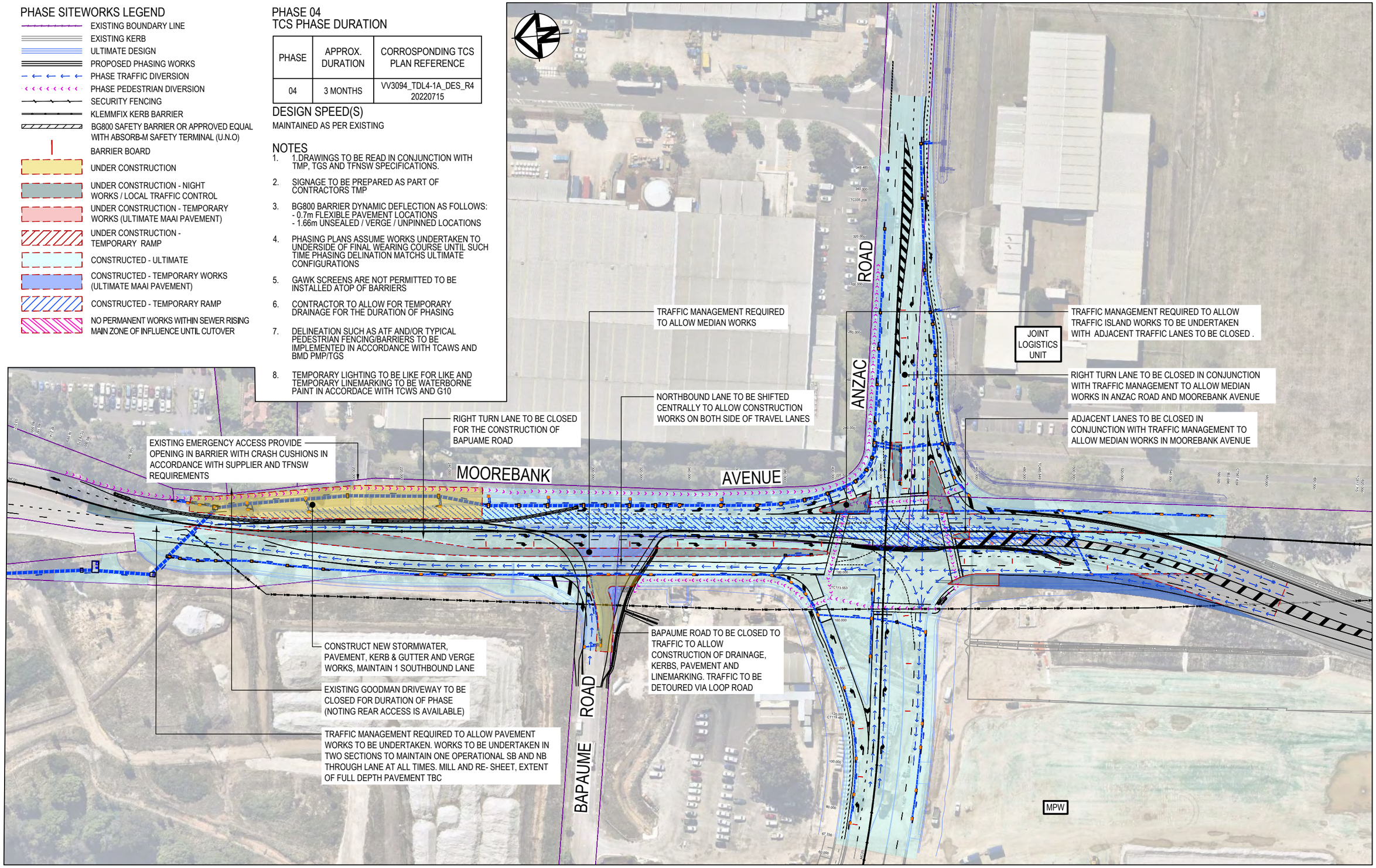
7. DELINEATION SUCH AS ATF AND/OR TYPICAL PEDESTRIAN FENCING/BARRIERS TO BE IMPLEMENTED IN ACCORDANCE WITH TCAWS AND BMD PMP/TGS
8. TEMPORARY LIGHTING TO BE LIKE FOR LIKE AND TEMPORARY LINEMARKING TO BE WATERBORNE PAINT IN ACCORDACE WITH TCWS AND G10



THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

50mm ON A3 SIZE ORIGINAL

NOT FOR CONSTRUCTION

DRAWING FILE LOCATION / NAME

EXTERNAL REFERENCE FILES

maai_nrp_cs_e_design road layout
maai_nrp_cs_e_phase
maai_nrp_cs_e_phase00_CV_DESIGN
maai_nrp_cs_e_phase00_DES
maai_nrp_cs_e_phase01.DES
maai_nrp_cs_e_phase02
maai_nrp_cs_e_phase03
maai_nrp_cs_e_phase04_Blocks_RMS_A3
maai_nrp_cs_e_phase04.DES
maai_nrp_cs_e_phase05.DES
maai_nrp_cs_e_phase06.DES
maai_nrp_cs_e_phase07.DES
maai_nrp_cs_e_phase08.DES
maai_nrp_cs_e_PSI_MOM
maai_nrp_cv_e_detailed_drainage layout
maai_nrp_cs_e_design control alignment table 300

REV	DATE	AMENDMENT / REVISION DESCRIPTION	DESIGN LOT CODE REVIEWED	DESIGN LOT CODE APPROVAL
8	01.04.2022	ISSUED FOR INFORMATION	-	-
9	27.05.2022	ISSUED FOR APPROVAL	-	-
10	17.06.2022	RE-ISSUED FOR APPROVAL	-	-
11	13.07.2022	RE-ISSUED FOR APPROVAL	-	-
12	05.09.2022	RE-ISSUED FOR APPROVAL	-	-

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING

SCALES ON A3 SIZE DRAWING

0 10 20 30 40 50 60
SCALE 1:1500m

CO-ORDINATE SYSTEM: MGA94 Zone56
HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

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Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PLOT DATE / TIME: 05.09.2022 — PLOT BY

	NAME	DATE
DRAWN	[redacted]	05.09.2022
DRG CHECK		05.09.2022
DESIGN		05.09.2022
DESIGN CHECK		05.09.2022
DESIGN MNGR		05.09.2022
PROJECT MNGR		05.09.2022

DRAWING No. MAAI-NRP-CP-DWG-1901

CLIENT: SIMTA

PREPARED FOR: TACTICAL GROUP

MOOREBANK AVENUE WORKS
MOOREBANK AVENUE - ANZAC INTERSECTION (MAAI)

A3

PHASE [04-SRM] - MAAI SITEWORKS PLAN

TINSW REGISTRATION No. DS20XX/XXXXXX

PART

ISSUE STATUS	EDMS No.	SHEET No.	ISSUE
PRE-AFC		1901	12

PHASE SITEWORKS LEGEND

- EXISTING BOUNDARY LINE
- EXISTING KERB
- ULTIMATE DESIGN
- PROPOSED PHASING WORKS
- PHASE TRAFFIC DIVERSION
- PHASE PEDESTRIAN DIVERSION
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- UNDER CONSTRUCTION - TEMPORARY RAMP
- CONSTRUCTED - ULTIMATE
- CONSTRUCTED - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- CONSTRUCTED - TEMPORARY RAMP
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PHASE 05
TCS PHASE DURATION

PHASE	APPROX. DURATION	CORROSPONDING TCS PLAN REFERENCE
05	N/A	VV3094_7A_DES_R15 20220207

DESIGN SPEED(S)

MAINTAINED AS PER EXISTING

NOTES

1. 1.DRAWINGS TO BE READ IN CONJUNCTION WITH TMP, TGS AND TFNSW SPECIFICATIONS.
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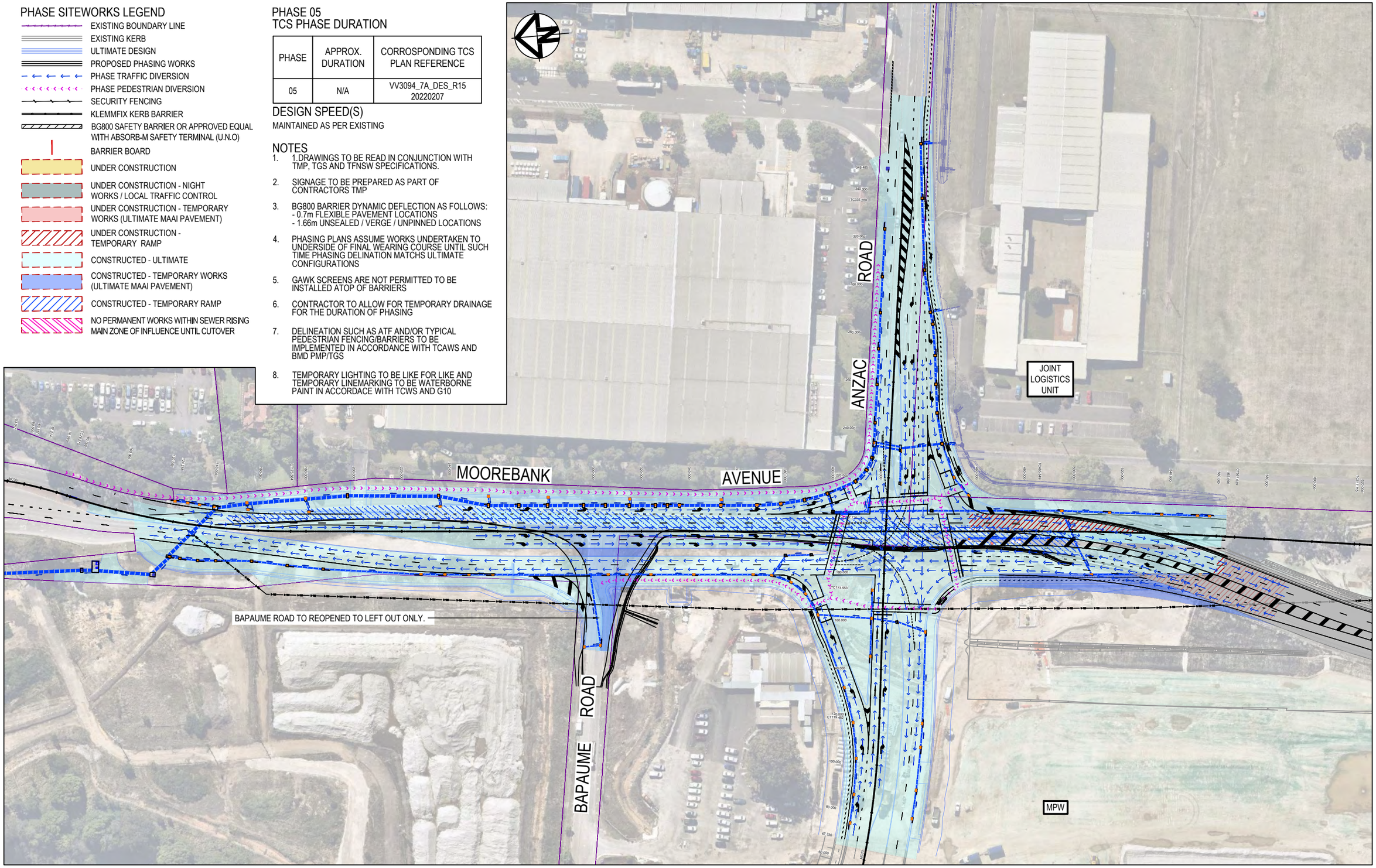
8. TEMPORARY LIGHTING TO BE LIKE FOR LIKE AND TEMPORARY LINEMARKING TO BE WATERBORNE PAINT IN ACCORDACE WITH TCWS AND G10



NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED 150mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME

EXTERNAL REFERENCE FILES

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maai_nrp_cs_e_pave_DESIGN
MAIN_NRP_CV_XX_DESIGN
maai_nrp_cs_e_pave
maai_nrp_cs_e_phase01.DES
maai_nrp_cs_e_qty
maai_nrp_cs_e_report
maai_nrp_cs_e_MMook_RMS_A3
maai_nrp_cs_e_phase02.DES
maai_nrp_cs_e_phase03.DES
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maai_nrp_cs_e_phase05.DES
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maai_nrp_cs_e_phase10.DES
maai_nrp_cs_e_phase11.DES
maai_nrp_cs_e_utilities_3BM
maai_nrp_cs_e_drainage layout
maai_nrp_cs_e_design control alignment scale 500.

DESIGN LOT CODE

REVIEWED	APPROVAL
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-	-
-	-
-	-
-	-

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING

REV	DATE	AMENDMENT / REVISION DESCRIPTION
8	01.04.2022	ISSUED FOR INFORMATION
9	27.05.2022	ISSUED FOR APPROVAL
10	17.06.2022	RE-ISSUED FOR APPROVAL
11	13.07.2022	RE-ISSUED FOR APPROVAL
12	05.09.2022	RE-ISSUED FOR APPROVAL

SCALES ON A3 SIZE DRAWING

0 10 20 30 40 50 60
SCALE 1:1500m

CO-ORDINATE SYSTEM	HEIGHT DATUM
MGA94 Zone56	AHD

DRAWINGS / DESIGN PREPARED BY

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Sydney
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Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PLOT DATE / TIME PLOT BY

TITLE	NAME	DATE
DRAWN	[redacted]	05.09.2022
DRG CHECK		05.09.2022
DESIGN		05.09.2022
DESIGN CHECK		05.09.2022
DESIGN MNGR		05.09.2022
PROJECT MNGR		05.09.2022

DRAWING No. MAAI-NRP-CP-DWG-2001

CLIENT SIMTA

PREPARED FOR TACTICAL GROUP

MOOREBANK AVENUE WORKS
MOOREBANK AVENUE - ANZAC INTERSECTION (MAAI)

A3

PHASE [05-SRM] - MAAI SITEWORKS PLAN

TINSW REGISTRATION No. DS20XX/XXXXXX

PART

ISSUE STATUS	EDMS No.	SHEET No.	ISSUE
PRE-AFC		2001	12

PHASE SITEWORKS LEGEND

- EXISTING BOUNDARY LINE
- EXISTING KERB
- ULTIMATE DESIGN
- PROPOSED PHASING WORKS
- PHASE TRAFFIC DIVERSION
- PHASE PEDESTRIAN DIVERSION
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- CONSTRUCTED - TEMPORARY RAMP
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PHASE 06
TCS PHASE DURATION

PHASE	APPROX. DURATION	CORROSPONDING TCS PLAN REFERENCE
06	-	VV3094_7A_DES_R15 20220207

DESIGN SPEED(S)

MAINTAINED AS PER EXISTING

NOTES

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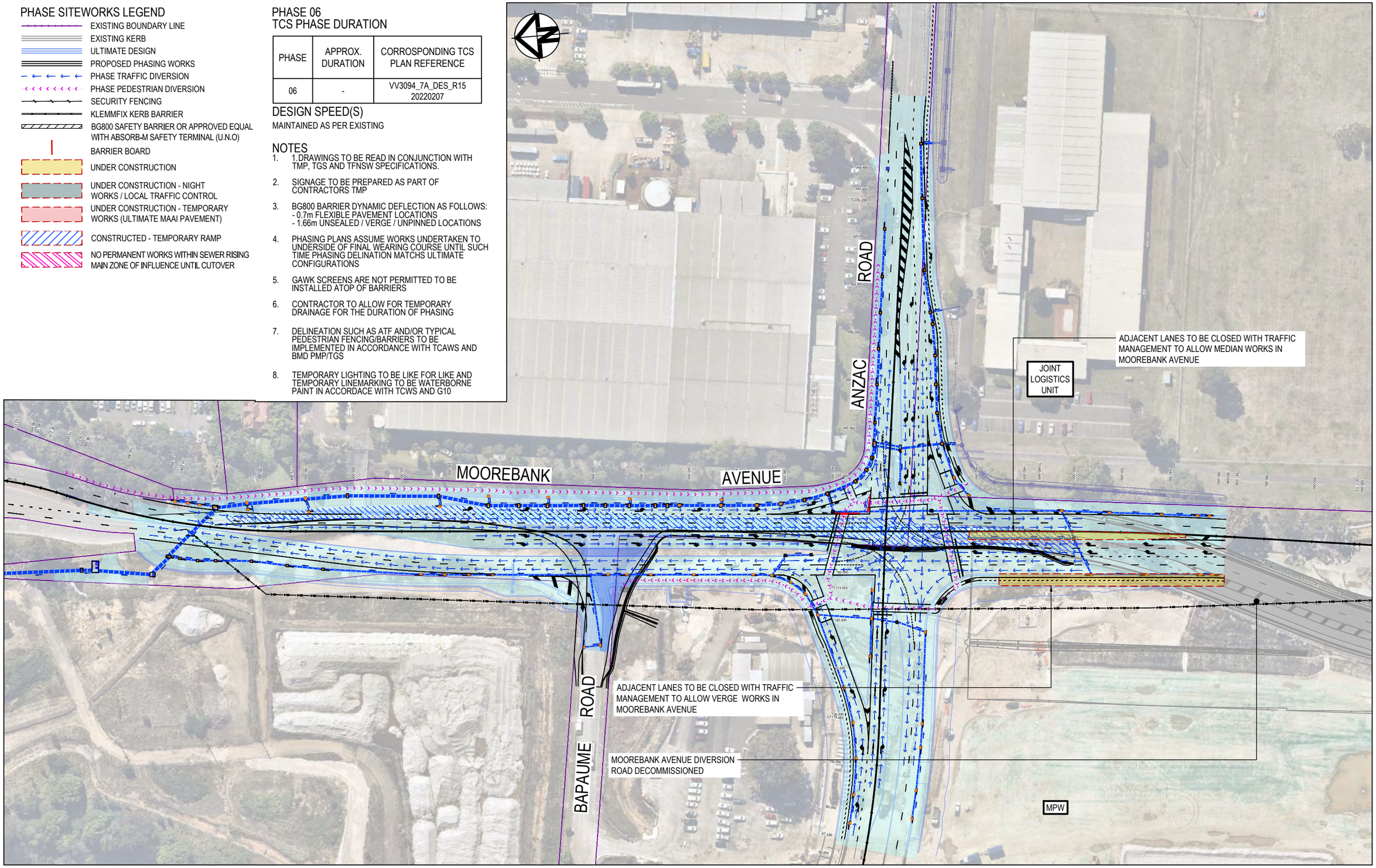

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

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NOT FOR CONSTRUCTION

DRAWING FILE LOCATION / NAME

EXTERNAL REFERENCE FILES

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maai_nrp_ca_xr_phase 02.DES
maai_nrp_ca_xr_pvmt
maai_nrp_ca_xr_pvmtxxx_RMS_A3
maai_nrp_ca_xr_phase 02.DES
maai_nrp_ca_xr_phase 03.DES
maai_nrp_ca_xr_phase 04.DES
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maai_nrp_ca_xr_phase 11.DES
maai_nrp_ca_xr_phase 12.DES
maai_nrp_ca_xr_phase13
maai_nrp_ca_xr_utilities_SRM
maai_nrp_ca_xr_drainage layout
maai_nrp_ca_xr_design control alignment scale 500

DESIGN LOT CODE

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING

REV	DATE	AMENDMENT / REVISION DESCRIPTION	REVIEWED	APPROVAL
8	01.04.2022	ISSUED FOR INFORMATION	-	-
9	27.05.2022	ISSUED FOR APPROVAL	-	-
10	17.06.2022	RE-ISSUED FOR APPROVAL	-	-
11	13.07.2022	RE-ISSUED FOR APPROVAL	-	-
12	05.09.2022	RE-ISSUED FOR APPROVAL	-	-

SCALES ON A3 SIZE DRAWING

0 10 20 30 40 50 60
SCALE 1:1500m

CO-ORDINATE SYSTEM: MGA94 Zone56
HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

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Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PLOT DATE / TIME PLOT BY

TITLE	NAME	DATE
DRAWN	[redacted]	05.09.2022
DRG CHECK		05.09.2022
DESIGN		05.09.2022
DESIGN CHECK		05.09.2022
DESIGN MNGR		05.09.2022
PROJECT MNGR		05.09.2022

DRAWING No. MAAI-NRP-CP-DWG-2101

CLIENT SIMTA

PREPARED FOR TACTICAL GROUP

MOOREBANK AVENUE WORKS
MOOREBANK AVENUE - ANZAC INTERSECTION (MAAI)

A3

PHASE [06-SRM] - MAAI SITEWORKS PLAN

TINSW REGISTRATION No. DS20XX/XXXXXX

PART

ISSUE STATUS: PRE-AFC

EDMS No.

SHEET No. 2101

ISSUE 12

APPENDIX B **TFNSW ACCEPTANCE OF SATISFICATION OF COC B84 AT PHASE 2A**

TfNSW Operational Transport Forecasting Team

MAAI Staging Plan Transport Assessment
SIDRA Modelling
Asongroup
14 March, 2024

The following sections comprise a summary of TfNSW operational traffic modelling team's review comments for the 'SIDRA Modelling', prepared by Asongroup for the 'MAAI Staging Plan Transport Assessment' project.

To provide clarity on the scale of issues identified, a categorisation approach to the review will be used based on the following three level criteria:
→ ***Major*** *– issue needs addressing before using the model and will have an impact on model analysis and recommendations.*
→ ***Medium*** *– issues are localised and are likely to result in a small variation of the model analysis and recommendations but would not impact on the decision process.*
→ ***Minor*** *– issues are minor or remote to main area of investigation and would not be expected to impact on model analysis and should be considered for correction at subsequent updates.*
→ ***Note*** *- A note provided by the reviewer where no action is required.*
This approach ensures that the review has captured the likely impact of issues identified and prioritises them to help in formulating corrective actions. In isolation, medium or minor issues would not have considerable impacts on the modelling results, but combined they have the potential to impact the model's performance.

The specific documents and traffic model(s) provided for the review are outlined in Table 1.
Table 1: Reviewed Materials

Material	File Description	Received date	File Name
SIDRA Model	Stage 1 to 3 Models	14-Feb-24	p2126m02v1 - MAAI Staging Plan - SIDRA Modelling.sip9
Report	Traffic Assessment	14-Feb-24	P2126r02v1_MAAI Staging Plan, Transport Assessment, Issue I.pdf

Table 2 provides a summary of the review comments for both the model and report.

Table 2: summary of the review comments for both the model and report.

Item	Material	Section	Comment	Priority	Modeller Response	Reviewer Response
1	Report	1.2	Stage 4 (Phase 5&6) represents the final MAAI configuration, is ANZAC road intersection layout remain the same as in stage 3? Will new connection attracting additional traffic from other area (e.g. via Cambridge Ave). If traffic demand will be changed, stage 4 model should also be provided to confirm the performance.	Minor	ANZAC Road intersection will remain the same in Stage 3 (Phase 4). The TA presents modelling of interim MAAI layouts (referred to as Phases) to demonstrate the acceptability of the interim phases until the approved 'ultimate' MAAI layout is completed; the ultimate MAAI layout is already approved and therefore does not require modelling as part of this staging plan exercise.	
2	Report	4.1	In phase 4 stage 3 - Q2 2025 model (both AM and PM), there is few movements are already at LoS E and very close to LoS F criteria. For example at ANZAC Rd - East approach, it is at 68sec delay in AM peak which mean any additional traffic will worsen the intersection performance and will extend the congestion / delay significantly.	Medium	Stage 3 (Phase 4) the overall intersection (i.e. all movements) is forecast to have average delays during the morning and evening peak periods of 38 to 39 seconds (Level of Service C) and the overall intersection is forecast to have a Degree of Saturation of 0.82 to 0.85. The results demonstrate that for the 4-5 months that Stage 3 is to be implemented, the overall intersection is forecast to operate satisfactorily and has capacity (if needed) for additional traffic demand, with optimising sharing any additional individual movement demand around the intersection. The intersection was modelled with a 120-second cycle time to align with the main intersection of the local road network, the M5 motorway interchange to the north of MAAI. Item 2 references longer delay for individual movements, delays that are above the acceptable delay forecast for all movements. This is to be expected for an intersection that has a relatively long cycle time, as is the case here where the 120-second cycle time equates to more than double the 56/57 second threshold for level of service D/E. By optimising delay for all movements, it is inevitable (and acceptable) that some individual movements will have higher delays and therefore lower levels of service. This principle applies to the modelling of all stages/phases of the TA study. In summary, for the 4-5 months that it will be implemented, Stage 3 (Phase 4) is forecast to operate with acceptable average delays, levels of service and degrees of saturation for the overall intersection during both peak periods and the results indicate that Stage 3 has capacity for additional traffic demands.	
3	Report	4.3	Based on Phase 4 - stage 3 - Q2 2025 model results, 95th percentile queue of right turn movement at ANZAC Rd will be approx 86m and 99m long in AM and PM which close to and longer than proposed 90m long right turn bay.	Medium	Item 3 references 95th-percentile queuing length on the Anzac Road (East) Approach. It is noteworthy that 95th-percentile queue analysis is largely a road safety consideration (short lane queues spilling into adjacent lanes), and capacity is not generally affected until median (50th-percentile queues) extend beyond the short lane queuing capacity. TfNSW acknowledges the critical forecast queue length is 99 metres, which occurs during the evening peak hour (the forecast queue of 86 metres would be accommodated by the 90-metres of queuing space). The evening peak hour model has been rerun and it is determined that the 86th-percentile queue of 89.7 metres can be accommodate within the 90 metres of queuing space. This means that for the 120-cycle time modelled, there would be 30 cycles per hour and theoretically 30 queues generated during that hour. At a high-level, the analysis suggests that approximately 4 (14%) of the 30 queues during the evening peak hour would extend beyond the 90 metres of queuing space. This still represents a low incidence of queue spillage and combined with the low-speed environment of the area (due to road works traffic management that will be in place) the forecast queuing is considered acceptable. Notwithstanding, to provide a more detailed assessment of the queuing during the evening peak, the lane summary results have been extracted from the SIDRA model. The results show the combined right-turn queuing capacity for the right-turn movement is 165 metres, which theoretically accommodates the combined 95th-percentile forecast queue demand of 156 metres. In summary, it is expected the Stage 3 (Phase 4) layout – which is to be implemented for just 4-5 months under low-speed road works traffic management measures – would accommodate queues on the Anzac Road approach satisfactorily and the incidence of queue spillage would remain low.	

Thursday, March 28, 2024 at 09:55:43 Australian Eastern Daylight Time

Subject: FW: RE: MAAI Staging Report
Date: Thursday, 28 March 2024 at 9:55:28 am Australian Eastern Daylight Time
From: [redacted]
To: [redacted]
Attachments: image002.png, image003.jpg, image005.png, image006.png

From: [redacted]
Sent: Tuesday, March 26, 2024 2:45 PM
To: [redacted]
Cc: [redacted]
Subject: RE: MAAI Staging Report

Hi [redacted]

TfNSW considers all comments been closed.

Regards

[redacted]
Project Manager
Greater Sydney
Transport for NSW
[redacted]

OFFICIAL

From: [redacted]
Sent: Friday, March 22, 2024 9:46 AM
To: [redacted]
Cc: [redacted]
Subject: RE: MAAI Staging Report

[redacted]

Find attached responses to TfNSW comments.

Thanks in advance.

[redacted]
Technical Manager
M [redacted]

[redacted]
Level 46, Gateway, 1 Macquarie Place
Sydney NSW 2000 Australia

LOGOS

[redacted]
Senior Development Manager
| **T.** [redacted]
Level 46, Gateway, 1 Macquarie Place
Sydney NSW 2000 Australia

LOGOS

OFFICIAL

From: [redacted]
Sent: Friday, March 15, 2024 2:58 PM
To: [redacted]
Cc: [redacted]
Subject: RE: MAAI Staging Report

Hi [redacted]

Some minor/medium comments for your consideration.

Please let me know if you need any clarification.

Kind regards

[redacted]
Project Manager
Greater Sydney
Transport for NSW
[redacted]

From: [redacted]
Sent: Friday, February 9, 2024 2:23 PM
To: [redacted]
Cc: [redacted]
Subject: MAAI Staging Report
Importance: High

[redacted]

As discussed at our briefing meeting last Monday please find the following for review:

1. MPW 2 B84 Staging Plan.
2. Corresponding Transport Assessment, and
3. Associated SIDRA modelling.

The slide pack from Monday's meeting will be sent in a separate email due size for context.

We're seeking TfNSW's 'no objections' to the proposed, a pathway for DPHI's approval of the Staging Plan.

We understand and acknowledge agreed review times under the WAD, however we seek an earlier response from TfNSW if possible.

As always, we're happy to meet to answer any questions at your convenience.

Thank you in advance,

[redacted]
Technical Manager
[redacted]
[redacted]
Level 46, Gateway, 1 Macquarie Place
Sydney NSW 2000 Australia

LOGOS

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From: [redacted]
Subject: RE: MAAI Staging Report
Date: 18 March 2024 at 11:45 am
To: [redacted]
Cc: [redacted]

Hi [redacted]

TfNSW prefers the comments to be addressed, before the staging plan can be accepted.

Also, could you please copy [redacted] in all related emails.

Please note, once the above been accepted, we will need to discuss changes (if any) to the WAD.

Regards

[redacted]
Project Manager
Greater Sydney
Transport for NSW
[redacted]

NSW GOVERNMENT | Transport for NSW

OFFICIAL

From: [redacted]
Sent: Friday, March 15, 2024 3:04 PM
To: [redacted]
Cc: [redacted]
Subject: RE: MAAI Staging Report

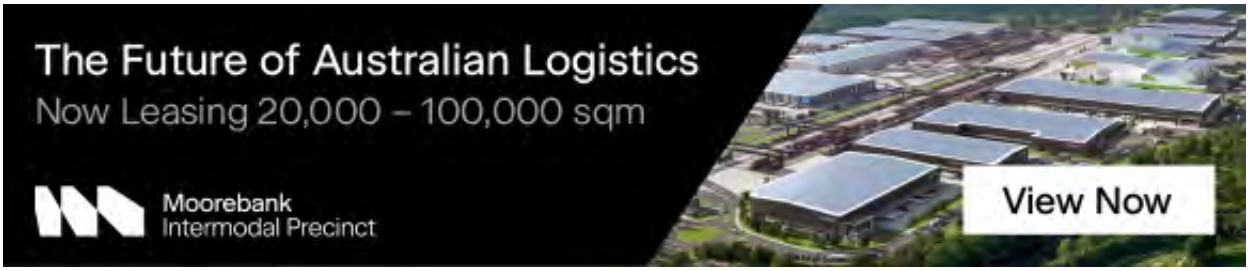
[redacted]

Thank you, we'll review it and respond accordingly.

Given the relative low level (medium/low) of commentary, would it be possible to obtain a 'no objections' from TfNSW on the overall Staging Plan Report ?

[redacted]
Technical Manager
[redacted]
[redacted]
Level 46, Gateway, 1 Macquarie Place
Sydney NSW 2000 Australia

LOGOS



[redacted]
Senior Development Manager
| **T.** [redacted]
Level 46, Gateway, 1 Macquarie Place
Sydney NSW 2000 Australia

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OFFICIAL

From: [redacted]
Sent: Friday, March 15, 2024 2:58 PM
To: [redacted]
Cc: [redacted]
Subject: RE: MAAI Staging Report

Hi [redacted]

Some minor/medium comments for your consideration.

Please let me know if you need any clarification.

Kind regards

[redacted]
Project Manager
Greater Sydney
Transport for NSW
[redacted]

OFFICIAL

From: [redacted]
Sent: Friday, February 9, 2024 2:23 PM
To: [redacted]
Cc: [redacted]
Subject: MAAI Staging Report
Importance: High

[redacted]

As discussed at our briefing meeting last Monday please find the following for review:

1. MPW 2 B84 Staging Plan.
2. Corresponding Transport Assessment, and
3. Associated SIDRA modelling.

The slide pack from Monday's meeting will be sent in a separate email due size for

The slide pack from Monday's meeting will be sent in a separate email due size to context.

We're seeking TfNSW's 'no objections' to the proposed, a pathway for DPHI's approval of the Staging Plan.

We understand and acknowledge agreed review times under the WAD, however we seek an earlier response from TfNSW if possible.

As always, we're happy to meet to answer any questions at your convenience.

Thank you in advance,

[redacted]
Technical Manager
[redacted]
[redacted]
Level 46, Gateway, 1 Macquarie Place
Sydney NSW 2000 Australia

LOGOS

From: [redacted]
Subject: RE: MAAI Staging Report
Date: 22 February 2024 at 8:52 am
To: [redacted]
Cc: [redacted]

[redacted]

The model and transport assessment report are with TfNSW SMEs for review. I will send you the outcome of the review process when available.

In the meantime, could you please inform what changes (if any) are proposed to both the SSD and the WAD documents and if Logos would like to arrange any discussion with the legal team.

Regards

[redacted]
Project Manager
Greater Sydney
Transport for NSW
[redacted]

OFFICIAL

From: [redacted]
Sent: Friday, February 9, 2024 2:23 PM
To: [redacted]
Cc: [redacted]
Subject: MAAI Staging Report
Importance: High

[redacted],

As discussed at our briefing meeting last Monday please find the following for review:

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2. Corresponding Transport Assessment, and
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Thank you in advance,

[redacted]
Technical Manager
[redacted]
[redacted]
Level 46, Gateway, 1 Macquarie Place
Sydney NSW 2000 Australia

LOGOS

APPENDIX C **TRAFFIC ASSESSMENT (ASON GROUP, 2024)**

MAAI Staging Plan – Transport Assessment

Moorebank Precinct West – Stage 2, Moorebank Intermodal Precinct

LOGOS Pty Ltd

08 February 2023

P2126r02v1

info@asongroup.com.au
+61 2 9083 6601
Suite 17.02, Level 17,
1 Castlereagh Street,
Sydney, NSW 2000

Document Control

Project No	P2126
Project	MAAI Staging Plan – Modelling Assessment
Client	LOGOS Pty Ltd
File Reference	P2126r02v1_MAAI Staging Plan, Transport Assessment, Issue I.docx

Revision History

Revision No.	Date	Details	Author	Approved by
-	18 December 2023	Draft	[redacted]	[redacted]
1	08 February 2024	Issue I	[redacted]	[redacted]

contents

contents continued

Figures

Tables

APPENDICES

Glossary

Abbreviation	Description
CIC	Classified Intersection Count
CoC	Condition of Consent
GFA	Gross Floor Area
HV	Heavy Vehicle
IMEX	Import Export Terminal
INTS	Interstate Terminal
LGA	Local Government Area
LOGOS	LOGOS Property Pty Ltd
LOS	Level of Service
LV	Light Vehicle
MAAI	Moorebank Avenue / Anzac Road Intersection
MARW	Moorebank Avenue Realignment Works
MIP	Moorebank Intermodal Precinct
MPW	Moorebank Precinct West
MPE	Moorebank Precinct East
NDC	National Distribution Centre
OD	Origin-Destination
PCU	Passenger Car Units
RDC	Regional Distribution Centre
SSD	State Significant Development
TA	Transport Assessment
TEU	Twenty-foot Equivalent Unit
TfNSW	Transport for NSW
TN	Technical Note
WAD	Works Authorisation Deed

1 Introduction

1.1 Background

Ason Group has been engaged by LOGOS Property Pty Ltd (LOGOS) to provide traffic and transport services for the Moorebank Intermodal Precinct (MIP), Moorebank within the LGA of Liverpool City Council. As part of these services, Ason Group has undertaken assessments of the existing signalised T-intersection of Moorebank Avenue with Anzac Road, and the proposed upgrade of this intersection with the inclusion of a fourth western approach to the intersection – Bushmaster Avenue – that will provide access to the MIP's Moorebank Precinct West (MPW).

Approval of the design and works associated with the Moorebank Avenue and Anzac (Road) Intersection (MAAI) upgrade has been issued by TfNSW under a Works Authorisation Deed (WAD) agreement. More recently, the performance of MAAI throughout its various phases of construction has been assessed to confirm its progressive performance and capacity to cater for predicted traffic volumes. This analysis has involved traffic modelling of background and construction traffic volumes (predominantly related to MPW) for each of the 6 proposed interim layouts for the intersection during construction, referred to as Phases 2A, 2B, 3, 4, 5 & 6.

The following summarises relevant reports submitted to TfNSW in relation to the phased construction:

- *Staging of MAAI Construction Transport Assessment, Issue I* dated 11 October 2021 (ref: P1735tn02v1, referred to herein as the **2021 TN**), which documented a preliminary assessment of 11 'potential' phases (including phases 2A, 2B, 3, 4, 5 & 6) of MAAI construction.
- *Stage B, Phases 2A, 2B and 3, MAAI Construction Traffic Assessment, Issue I* dated 6 March 2023 (ref: P2126tn01, referred to herein as the **2023 TN**), which documented an assessment of revised layouts for phases 2A, 2B & 3 providing construction access to MPW via the signalised intersection of MAAI.

Additionally, the report of *SSD 5066 MOD1 & SSD 7709 MOD1, Janus Regional and National Distribution Facilities Transport Assessment, Issue I* dated 27 May 2020 (ref: P1255r01v3, referred to herein as the **MOD1 TA**) assessed the Woolworths MPW warehouses now referred to as the National Distribution Centre (NDC) and Regional Distribution Centre (RDC), both of which are planned to become operational in 2024.

Based on the work undertaken, interim intersection layouts for the 6 key construction phases have been approved by TfNSW, as per the MAAI WAD, to accommodate background and construction related traffic.

1.2 B84 Staging Report

A Staging Report has been prepared by Aspect Environmental Pty Limited on behalf of LOGOS, in accordance with Condition A44 of the Moorebank Precinct West Stage 2 State SSD consent 7709. It provides a plan to align the progressive occupation of warehousing with the approved phased construction and operation of the MAAI upgrade required under condition of consent B84.

The Staging Report:

- outlines the MAAI upgrade required under CoC B84.
- outlines the rationale and justification for delivering and operating the upgrade in stages based on intersection capacity to accommodate operational traffic.
- provides a description of the proposed stages, including anticipated timing, and how they connect to each other.

- identifies the applicable conditions of consent to the proposed staging of MAAI and how these conditions are satisfied.
- assesses the environmental impacts associated with the proposed MAAI staging.

The Staging Report groups the 6 phases (that use Bushmaster Avenue for access to MPW) into 4 distinct stages to align with the timing for the progressive occupation, and operation, of warehousing within MPW Stage 2, as well as the Interstate Terminal (INTS). These stages, associated MAAI construction phasing, and anticipated timing, are summarised in **Table 1**.

TABLE 1: MAAI CONSTRUCTION STAGING PLAN

Stage	MAAI Construction Phasing Delivered	Warehouse GFA (m^2)	Anticipated Stage Commencement
1	(Phase 1 –) Phase 2A	< 100,000	~ 2023
2	Phases 2A, 2B & 3	124, 589	Q2 2024
3	Phase 4	215,000	Q1 2025
4	Phase 5 & 6	215,000	~Q2/Q3 2025

It is noted that the Staging Plan adopted officially includes a Phase 1; however, this phase (which is the active phase at the time of writing) provides access to MPW wholly via Bapaume Road, that is, it does not include access via the future Bushmaster Avenue access, which only comes into use from Phase 2A onwards.

In addition, Stage 4 (Phases 5 & 6) represents the final MAAI configuration. Modifications are remote of the intersection itself to allow connection to the Moorebank Avenue realignment and therefore would not materially impact the capacity of MAAI.

The Staging Report includes a construction program for the MAAI interim phases; this program is presented in **Figure 1**, which has been updated to include a timeline for the proposed stages of the Staging Plan.

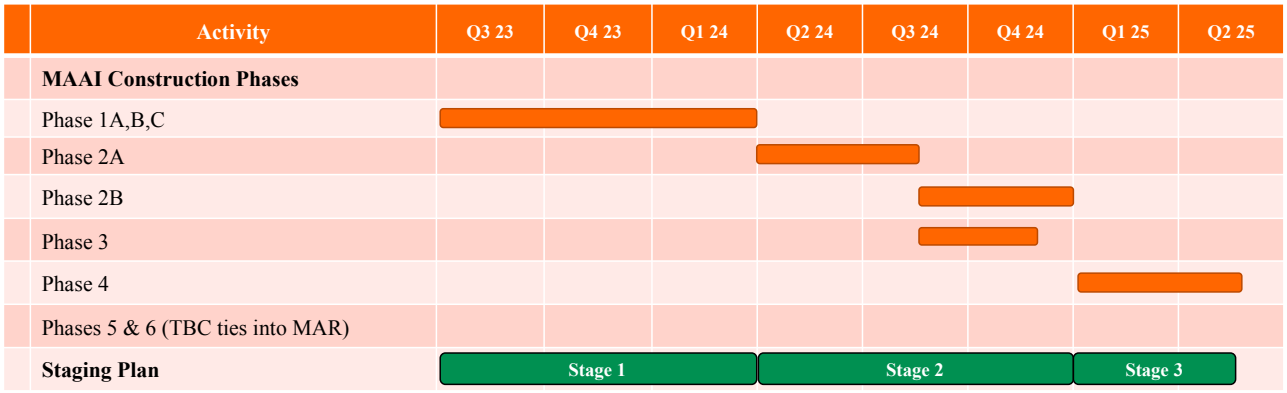


Figure 1: Target MAAI Construction Program with Staging Plan Timeline

The program above illustrates the key interim phases of Phase 2A, 2B, 3 & 4 are to be implemented for a period of about 15 months, from late Q1 2024 through to mid Q2 2025. At a higher level, the Staging Plan timeline (stages 1-3 that cover the 4 key phases), aligns with 6 quarterly periods, Q1 to Q4 of 2024 and Q1 & Q2 of 2025.

1.3 Project Objective

The objective of this Staging Plan Transport Assessment (TA) is to evaluate the performance of the interim construction phases against the forecast traffic demands – background, construction and (importantly) progressive operational – for each of the associated stages, using SIDRA Network modelling software.

As mentioned, Phases 5 & 6 officially complete the MAAI upgrade works by connecting the southern approach of the intersection into the realigned Moorebank Avenue (SSI 10053, also referred to as the Moorebank Avenue Realignment Works), work that is essentially remote of the location of MAAI itself. Timing may vary depending on the progression of this package of works, being undertaken by National Intermodal. However, practical completion of the MAAI upgrade works – at the location of the intersection itself – occurs with the completion of Phase 4 & Stage 3 and therefore at the commencement of Phase 5 and Stage 4, the MAAI upgrade has effectively been delivered.

Accordingly, the modelling undertaken for this Staging Plan TA has focused on 'critical' Phases 2A, 2B, 3 & 4 of associated Stages 1, 2 & 3, with consideration for the construction, operational and background traffic conditions during each of the 6 quarter periods of Q1 2024 to Q2 2025.

1.4 Study Assumptions

2024 background traffic demands, and construction traffic demands have been established by earlier assessments (and subsequent approvals), specifically those documented most recently in the 2023 TN. These demands are maintained as part of this Staging Plan TA.

The differentiating traffic demand between the 3 subject Stages is the forecast volume of operational traffic both at MPE (where the IMEX and MPE warehouses are already largely operational) but more specifically at MPW. Regarding MPW, the forecast operational traffic consists of:

- **Operational (interim)** – this represents operational traffic demands from container movement between both the INTS and the MPE Import Export Terminal (IMEX) intermodals and the surrounding warehouses that are facilitated on-road for an interim period prior to the completion of the approved MARW, after which these container movements will be internalised within MIP and have no impact on the public road network. These movements consist of:
  - IMEX to/from MPW warehouse, and
  - INTS to/from MPE warehouse.
- **Operational to/from Road** – this represents operational traffic demands that are – and will continue to be – direct to/from the road network. These movements consist of:
  - MPW warehouses to/from road, and
  - INTS intermodal to/from road.

In terms of committed MPW warehouse development, there are currently 4 warehouses at various stages of completion that are expected to become operational in 2024. These warehouses will generate both to/from road and operational (interim) traffic; the following summarises the details of these warehouses:

- N1 warehouse: 21,989 m² of GFA
- N2 warehouse: 17,037 m² of GFA
- NDC warehouse: 45,934 m² of GFA

- RDC warehouse: 39,384 m^2 of GFA

The MPW Stage 2 consent approved 215,000 m^2 of warehouse GFA. To remain consistent with the approval, the warehouse GFA for the Stage 3 scenario sums to 215,000 m^2, which – in addition to committed warehouses N1, N2, NDC and RDC – includes 90,656 m^2 of what is referred to herein as the 'residual' warehouse GFA.

Furthermore, the INTS intermodal is expected to be operating at a throughput of up to 144,000 TEU in 2024 and 2025. Again, this will generate both to/from road and operational (interim) traffic.

Based on information provided by LOGOS, which include details supplied by QUBE (the operator of the intermodal facilities) and details supplied by Woolworths Logistics (for the NDC & RDC facilities), **Table 2** summarises relevant operational parameters that influence traffic generated by the warehouses and intermodals. These parameters include (as a minimum) GFA and TEU; however, for the Woolworths NDC and RDC facilities, these details include forecasts of operational traffic at certain times relative to 100% full operations. These details account for Woolworths' expectation that operational traffic will 'ramp up' over a period of about 1-year for both facilities as operations are progressively transferred from existing facilities to the new Moorebank MIP facilities.

TABLE 2: MPW OPERATIONAL TRAFFIC GENERATING PARAMETERS

Stage (cumulative GFA)	Quarter	Operational to/from Road		Operational (Interim)	
		MPW Operational Warehouse (% of full operations)	INTS to/from Road (TEU per annum)	INTS to/from MPE (TEU per annum)	IMEX to/from MPW (TEU per annum)
1 (84,960 m^2)	**Q1 2024**	N1: 100% N2: 100% NDC: 35% RDC: 0%	100,800	43,200	18,270
2 (124,344 m^2)	**Q2 2024**	N1: 100% N2: 100% NDC: 45% RDC: 5%	100,800	43,200	18,270
	Q3 2024	N1: 100% N2: 100% NDC: 55% RDC: 15%	100,800	43,200	18,270
	Q4 2024	N1: 100% N2: 100% NDC: 100% RDC: 45%	100,800	43,200	18,270
3 (215,000 m^2)	**Q1 2025**	N1: 100% N2: 100% NDC: 100% RDC: 85% Residual: 100%	100,800	43,200	43,333
	Q2 2025	N1: 100% N2: 100% NDC: 100% RDC: 100% Residual: 100%	100,800	43,200	43,333

1.5 Report Outline

The remainder of this report is structured as follows:

- Section 2: Provides a project description and study network.
- Section 3: Presents the input data and traffic demand analysis.
- Section 4: Presents SIDRA modelling inputs parameters and output results.
- Section 5: Provides a summary of conclusions.

2 Project Description

2.1 Study Network

The study network comprises the following 2 intersections:

- Moorebank Avenue / Bapaume Road, and
- Moorebank Avenue / Anzac Road (MAAI, with the addition of the Bushmaster Avenue west approach).

2.2 Key Road / Connectivity

Moorebank Avenue provides a north-south link between Liverpool and Glenfield, and forms a grade separated interchange with the M5 Motorway to the north of the study network. Moorebank Avenue provides primary access to the Moorebank Intermodal Precinct and is currently an undivided road between the M5 Interchange and Cambridge Avenue to the south of the MIP.

Anzac Road is an east-west oriented local road that connects Moorebank Avenue in the west to Heathcote Road in the east and provides access to the residential area of Wattle Grove as well as commercial/warehouse development immediately east of its intersection with Moorebank Avenue. Anzac Road is generally a two-lane undivided road. It is a B-Double route only as far as the intersection with Yulong Close within 500 metres of Moorebank Avenue.

Bapaume Road runs in an east-west direction to the west of its intersection with Moorebank Avenue and provides access to existing commercial / warehouse development. Moorebank Avenue / Bapaume Road is a priority-controlled T-intersection located approximately 100 metres north of the Moorebank Avenue signalised intersection with Anzac Road and approximately 315 metres south of the M5 Motorway interchange. Historically Bapaume Road has operated as a 'No-through' road; however, it is currently connected to MPW and used to provide construction traffic access to MPW, and Bapaume Road is an approved operational egress point under MPW Stage 2. As part of the MAAI upgrade works, Bapaume Road will remain connected to MPW; however, the movements at the intersection with Moorebank Avenue will be reduced to just left-out only movements, with right-out and all inbound movements transferring to the upgraded MAAI.

Bushmaster Avenue is the proposed western approach to the existing Moorebank Avenue / Anzac Road intersection. After opening, Bushmaster Avenue would provide the main construction traffic and interim operational access to / from MPW, as approved under the MPW Stage 2 CTAMP and OTAMP, respectively.

2.3 Proposed Intersection Geometry

Since the issue of 2023 TN, the project team has collaborated to update and revise the interim phase layouts. These revisions have had consideration for the potential to accommodate operational traffic but have also been undertaken based on feedback from the road construction head contractor and a general desire to maximise the performance and efficiency of the network.

The latest concept designs for the key MAAI construction phases 2A, 2B, 3, 4, 5 & 6 prepared by Northrop are attached in **Appendix A**.

3 Input Data / Assumptions

The following sections present the relevant traffic demand development methodology & assumptions adopted for each stage of this current assessment. It is noted that the methodology / assumptions are based on – or indeed maintain – the assumptions adopted as part of the earlier 2021 TN and 2023 TN studies.

3.1 Traffic Demand

For this assessment, 3 main traffic components have been considered, as follows:

- Background Traffic: refers to the traffic conditions on the network. This comprises surveyed traffic on the network excluding traffic entering and exiting MPW, which has been removed from the study network.
- Construction Traffic: refers to the MIP construction traffic demand.
- Operational Traffic: forecast MIP operational (to/from Road & interim) traffic.

The following sections provide details of these 3 traffic components, enabling a comprehensive understanding of the role of each on the overall traffic assessment.

3.2 Background Traffic

In accordance with the 2023 TN study, Classified Intersection Counts and Origin-Destination surveys for a period of 2 weekdays of 17 & 18 August 2022 have been used for this study. The surveys covered 24 hours and were undertaken at the 2 intersections that comprise the study network. An 'average weekday' traffic dataset has been developed from the 2 days of survey data. Based on this data, the commuter peak hours are:

- Morning peak (AM): 7.45 – 8:45 AM
- Evening peak (PM): 3.45 – 4.45 PM

The 2022 Background traffic is presented for the overall study network in **Figure 2**.

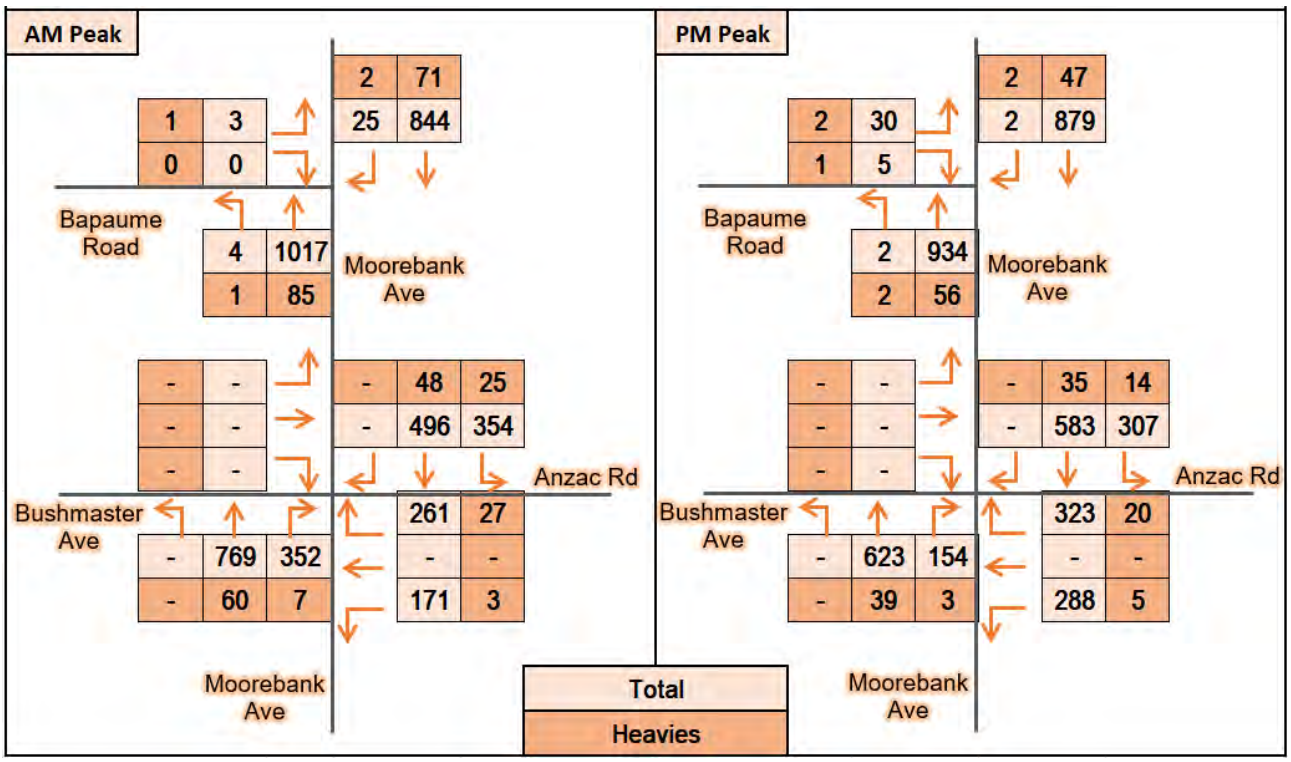


Figure 2: 2022 Background Peak Hour Traffic

Consistent with the 2021 TN and 2023 TN studies, a linear growth rate of 1.3% has been applied to the 2022 background traffic volumes to forecast 2024 and 2025 volumes. The reassignment of Bapaume Road traffic to Bushmaster Avenue – arising from the reduction of Bapaume Road to left-out only – has also been accounted for. The forecast 2024 and 2025 background traffic volumes are shown in **Figure 3** and **Figure 4**.

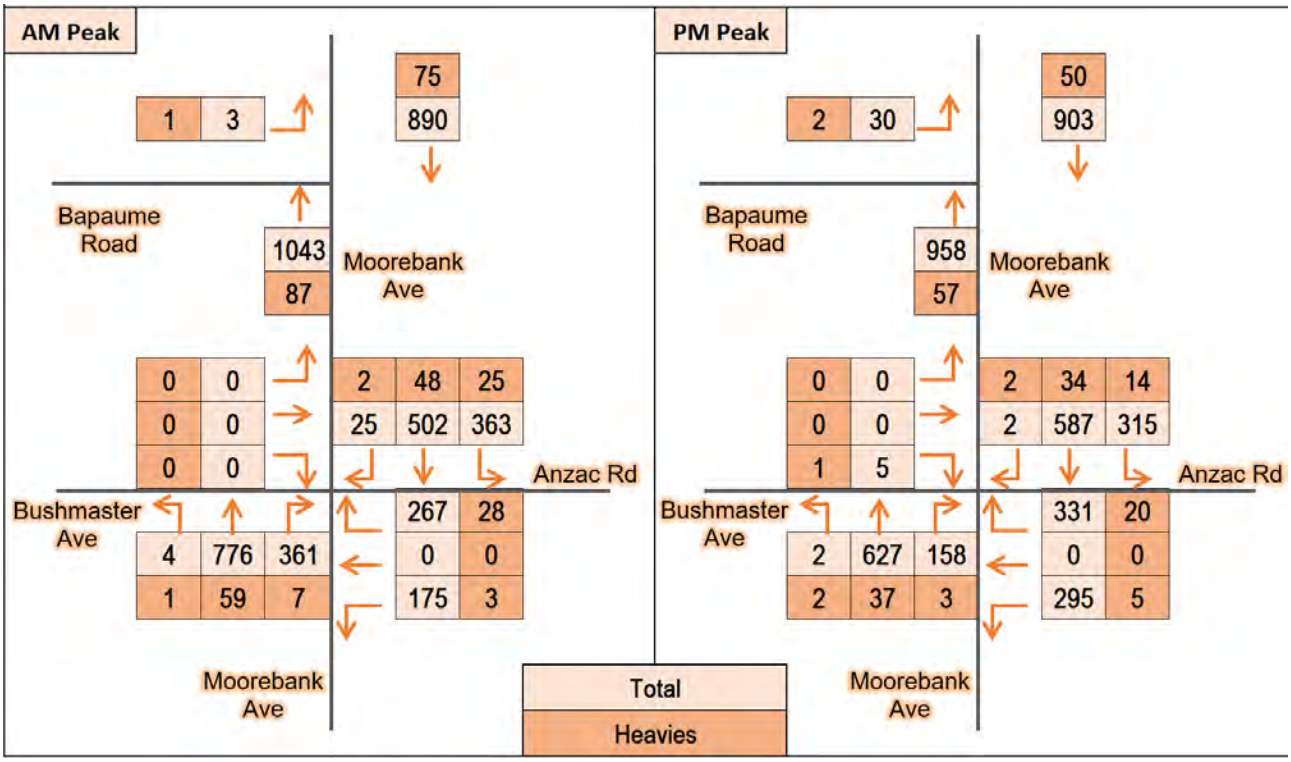


Figure 3: Forecasted 2024 Background Peak Hour Traffic

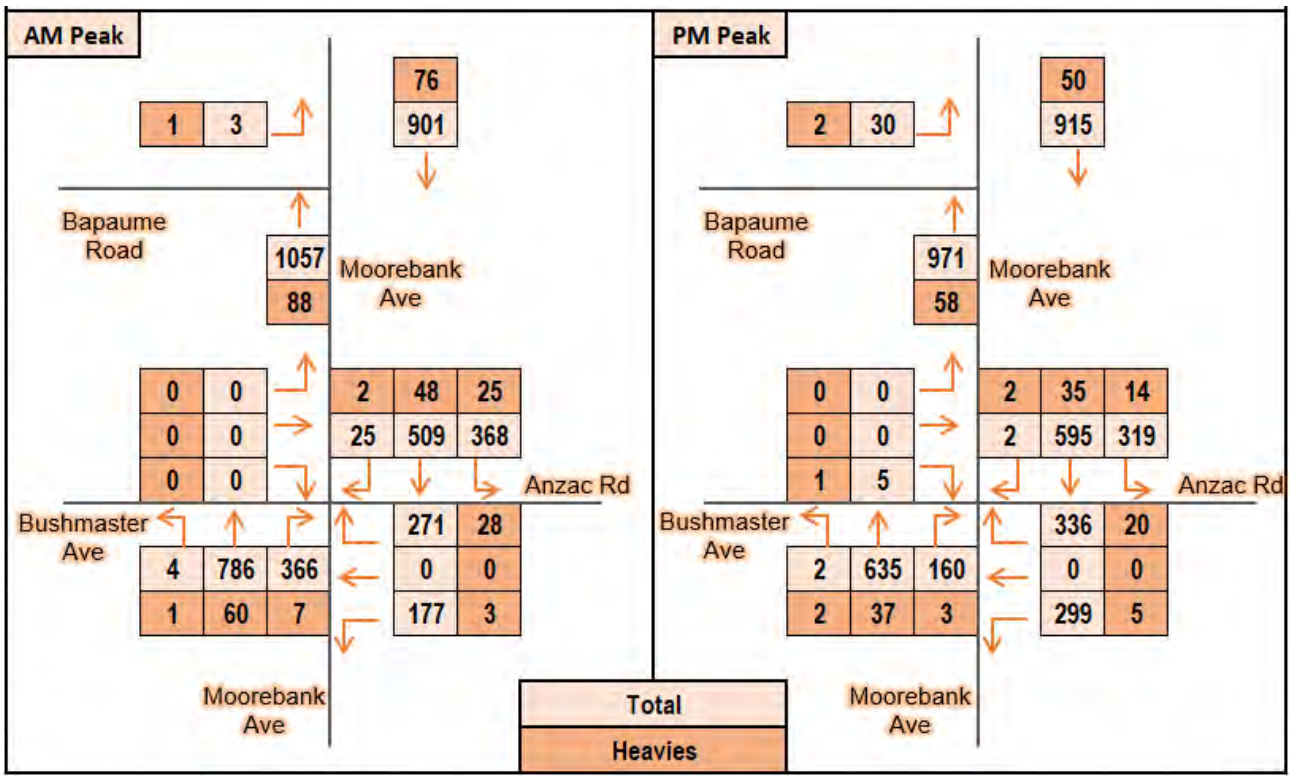


Figure 4: Forecasted 2025 Background Peak Hour Traffic

3.3 Construction Traffic

For all 3 Stages within this study the same source of construction traffic has been used, as adopted by both the 2021 TN and 2023 TN studies that informed the approval of the MAAI WAD, namely Figures 16 and 17 of the *MPE Stage 2 Proposal – Construction Traffic Impact Assessment* prepared by Arcadis and dated December 2016 (the **MPEs2-CTIA**).

Figures 16 and 17 of MPEs2-CTIA have been extracted from the report and are attached at **Appendix B**, while the inbound and outbound MPW construction trips are summarised in **Table 3**. To expand the daily construction profile beyond the morning and evening peak hour construction traffic, the data from MPWs2-CTIA's daily construction profile has been used and forecasted daily construction movements are also shown in Table 3.

TABLE 3: MPW CONSTRUCTION TRAFFIC MOVEMENTS

Vehicle Class	AM Peak	PM Peak	Daily
LV	0	138	575
HV	70	70	700

3.4 Operational Traffic

The forecasts for MPW operational traffic during the MAAI staging plan period were primarily derived from 2 sources:

1. The memorandum prepared by Parsons Brinckerhoff (PB – now WSP) titled, *Moorebank Intermodal Precinct: Traffic Generation and Underlying Assumptions*, dated 01 September 2016 (the **PB Memo**). The PB Memo assessed MPW and MPE as a single intermodal facility servicing 1,500,000 TEU[1] per annum and providing 850,000 m^2 of warehouse GFA. The PB Memo provides traffic generation assumptions as well as forecast operational traffic volumes (total plus inbound & outbound) for 11 hour-long periods as well as daily forecasts, split between warehouse and terminal (intermodal) traffic. Using this information, traffic profiles and generic trip generation rates for warehouse (on a per 100 m^2 GFA basis) and for intermodal facilities (on a per 1,000 TEU per annum) have been derived to forecast the operational trip generation for generic warehousing, INTS and IMEX at MPW.
2. Operational data supplied direct from Woolworths Logistics. This data includes the forecast daily (LV and HV) operational traffic on a month-by-month basis through to the end of 2024, as well as forecasts of operations into 2025. This data, combined with the 100% operational traffic forecast from the MOD1 TA, has been used to provide daily forecasts for the combined NDC & RDC Woolworths facility.

The following sections provide the calculated trip generation and distribution details for warehouses, INTS and IMEX operations across each stage – and each relevant quarter – using the above data to forecast MPW operational (to/from road & interim) traffic.

3.4.1 Combined Woolworths (NDC & RDC) Facility

For the Woolworths warehouses, the calculations of morning peak hour, evening peak hour and daily traffic movements are based on the data provided by Woolworths Logistics, in conjunction with traffic profile assumptions outlined in the PB Memo. As mentioned, Woolworths Logistics expects operations to ramp up over a period of about 1-year as operations are progressively transferred from existing facilities to the new Moorebank MIP facilities. **Figure 5** presents graphically the adopted daily traffic forecast profile for the

[1] The PB Memo assessed 1.50M TEU per annum; however, the subsequent MIP concept plan approval was for 1.55M TEU.

combined Woolworths facility, which clearly illustrates the ramp up of operational traffic expected following the commencement of operations at NDC (circa February 2024) and RDC (circa May 2024).

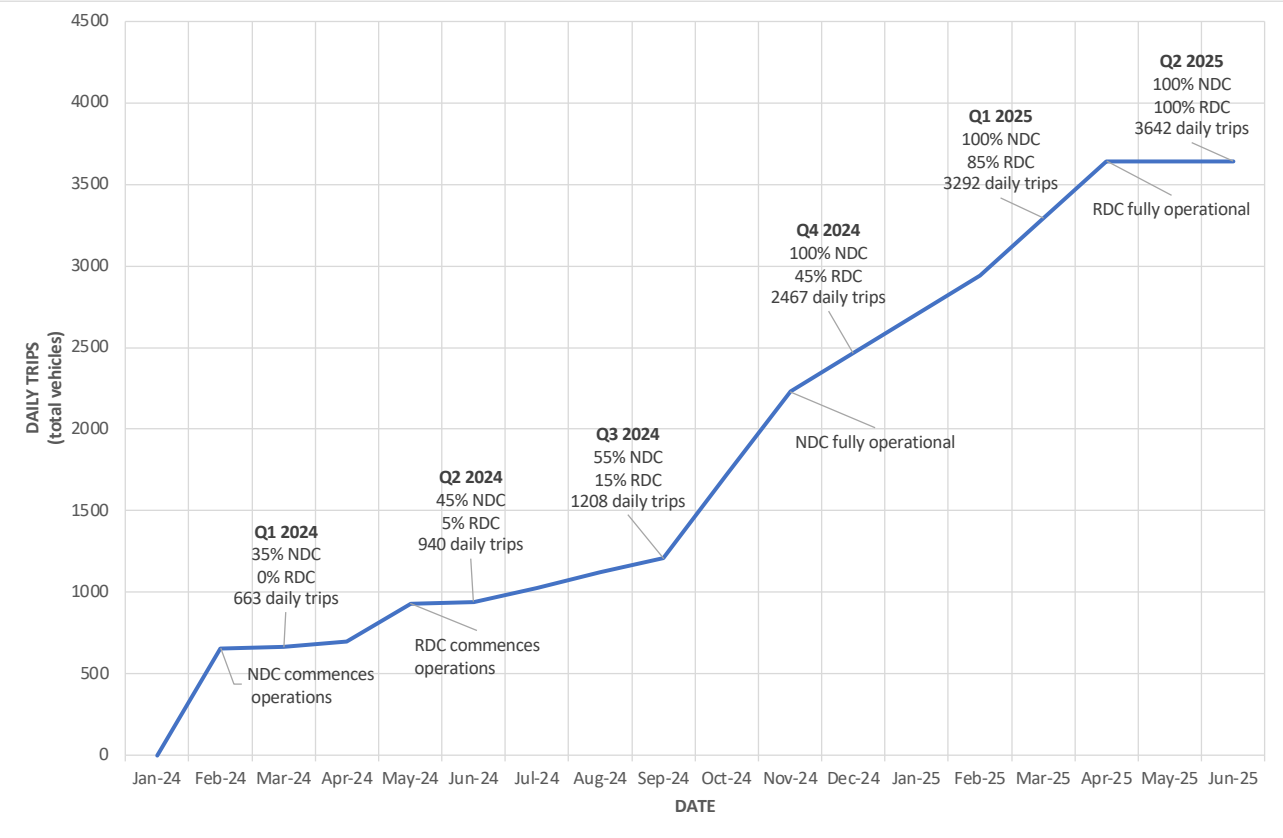


Figure 5: Combined Woolworths Forecast Operational Traffic Profile

These traffic movements are summarised in **Table 4**, along with the corresponding Stage scenarios the operational traffic applies.

TABLE 4: WOOLWORTHS FACILITY, FORECAST OPERATIONAL TRAFFIC

		Stage 1	Stage 2			Stage 3	
		Q1 2024	Q2 2024	Q3 2024	Q4 2024	Q1 2025	Q2 2025
Operations (% of full operations)	NDC	35%	45%	55%	100%	100%	100%
	RDC	0%	5%	15%	45%	85%	100%
Combined Forecast Traffic (Total Vehicle)	AM Peak	22	34	56	136	197	223
	PM Peak	20	30	44	100	140	157
	Daily	663	940	1,208	2,467	3,292	3,642

3.4.2 N1 & N2 & Residual GFA Warehousing

100% operational traffic movements for warehouses N1 and N2 (across all 3 stages) and the residual warehouse of 90,656 m² (exclusively for Stage 3), during morning and evening peak hours – and daily – have been forecast using the trip rates derived from the PB Memo. These forecast traffic movements, and their applicable stages are summarised in **Table 5**.

TABLE 5: N1, N2 & RESIDUAL WAREHOUSES, FORECAST OPERATIONAL TRAFFIC

Use	Vehicle Class	AM Peak	PM Peak	Daily	Stage 1	Stage 2			Stage 3	
					Q1 2024	Q2 2024	Q3 2024	Q4 2024	Q1 2025	Q2 2025
N1	LV	8	7	244	✓	✓	✓	✓	✓	✓
	HV	3	3	44						
N2	LV	6	6	188	✓	✓	✓	✓	✓	✓
	HV	3	2	34						
Residual warehouse (90,656 m²)	LV	29	28	1,002	-	-	-	-	✓	✓
	HV	15	9	184						

3.4.3 INTS to/from Road

Traffic movements for INTS to/from Road, which include morning peak hour, evening peak hour, and daily forecasts, are based on an annual throughput of 100,800 TEU (refer to Section 1.4). These volumes are derived using the trip rates derived from the PB Memo. The details of these traffic movements and their relevant stages are presented in **Table 6**.

TABLE 6: INTS TO/FROM ROAD TRAFFIC GENERATION

Use	Vehicle Class	AM Peak	PM Peak	Daily	Stage 1	Stage 2			Stage 3	
					Q1 2024	Q2 2024	Q3 2024	Q4 2024	Q1 2025	Q2 2025
INTS to/from Road (100,800TEU per annum)	LV	0	0	17	✓	✓	✓	✓	✓	✓
	HV	23	29	350						

3.4.4 INTS to/from MPE

Interim traffic movements for INTS to/from Road, which include morning peak hour, evening peak hour, and daily forecasts, are based on an annual throughput of 43,200 TEU (refer to Section 1.4). These volumes are derived using the trip rates derived from the PB Memo. The details of these traffic movements and their relevant stages are presented in **Table 7**.

TABLE 7: INTS TO/FROM MPE TRAFFIC GENERATION

Use	Vehicle Class	AM Peak	PM Peak	Daily	Stage 1	Stage 2			Stage 3	
					Q1 2024	Q2 2024	Q3 2024	Q4 2024	Q1 2025	Q2 2025
INTS to/from MPE (43,200TEU per annum)	LV	0	0	7	✓	✓	✓	✓	✓	✓
	HV	10	13	150						

3.4.5 IMEX to/from MPW

Interim traffic movements for IMEX to/from MPW, which include morning peak hour, evening peak hour, and daily, are forecasted based on the assumptions outlined in Section 1.4 and the trip rates derived from the PB Memo. The details of these traffic movements and their relevant stages are presented in **Table 8**.

TABLE 8: IMEX TO/FROM MPW TRAFFIC GENERATION

Use	Vehicle Class	AM Peak	PM Peak	Daily	Stage 1	Stage 2			Stage 3	
					Q1 2024	Q2 2024	Q3 2024	Q4 2024	Q1 2025	Q2 2025
IMEX to/from MPW (18,270 TEU per annum)	LV	0	0	0	✓	✓	✓	✓	-	-
	HV	5	6	64						
IMEX to/from MPW (43,333 TEU per annum)	LV	0	0	0	-	-	-	-	✓	✓
	HV	10	13	152						

3.4.6 Forecast Stage Traffic Generation

By combining the forecast operational traffic movements for each of the 6 quarter periods of Q1 2024 to Q2 2025 from the tables above, the cumulative forecast operational traffic movements for each quarter period are summarised in **Table 9**.

TABLE 9: OPERATIONAL TRAFFIC MOVEMENTS

Operational Trip Generator		Vehicle Class	AM Peak	PM Peak	Daily
Stage 1	**Q1 2024**	LV	32	31	1,082
		HV	48	55	679
Stage 2	**Q2 2024**	LV	38	37	1,292
		HV	54	59	746
	Q3 2024	LV	40	58	1,368
		HV	74	71	938
	Q4 2024	LV	59	58	2,010
		HV	135	108	1,555
Stage 3	**Q1 2025**	LV	97	95	3,316
		HV	207	155	2,348
	Q2 2025	LV	101	99	3,446
		HV	229	168	2,568

The traffic volumes above clearly demonstrated the ramping up of development traffic that is expected as the operational traffic demands increase from Stage 1, through Stage 2 to Stage 3.

3.4.7 Operational Trip Distribution

Inbound & outbound directional split assumptions have also been derived from the PB Memo and these directional splits have been applied to the traffic forecasts above to determine inbound and outbound traffic movements during the morning and evening peak hours.

Regarding trip distribution on the local network, it is noted the MPW Stage 2 approval includes a condition that prohibits truck (HV) traffic from heading south of the MIP and using the road network to the south, such as Cambridge Avenue. Furthermore, Anzac Road has truck restrictions. Accordingly, all truck operational traffic has been distributed from / to the north and via the M5 interchange. The only exception to the truck traffic distribution is for vehicles turning right from Bushmaster Avenue onto Moorebank Avenue and left from Moorebank Avenue onto Bushmaster Avenue. These interim operational turns are the designated routes for truck traffic travelling between the IMEX and MPW, as well as between INTS and MPE.

Regarding the distribution of car (LV) operational traffic on the local network, which has no conditional restrictions, based on CIC and OD survey data collected in the area for various MIP projects, the following car trip distribution has been adopted:

- 70% of trips from / to the north, M5 Motorway
- 10% of trips from / to the east, Anzac Road
- 20% of trips from / to the south

The distributed operational traffic during the interim access period on the study network is attached to **Appendix C**.

By combining background, MPW construction and MPW operational (to/from Road & interim) traffic calculated in the sections above, the total forecast traffic using MAAI during the 6 quarters of the 2024 and 2025 assessment period has been calculated and is presented in **Appendix D**.

3.5 Pedestrian Demand

The survey data shows the number of pedestrians on any leg of the Moorebank Avenue / Anzac Road Intersection is less than 4 pedestrians in each of the morning and evening peak hours. Consistent with the 2021 TN and 2023 TN, 10 pedestrians at each crossing during each peak has been used in the SIDRA assessment.

4 Modelling Inputs / Outcomes

4.1 Modelling Scenarios

Only 4 construction phases – 2A, 2B, 3 & 4 – are considered critical in terms of layout and performance of MAAI during the staging plan period from late Q1 2024 through to mid Q2 2025.

With reference to the Proposed Intersection Geometry section 2.3, 4 SIDRA layouts for phases 2A, 2B, 3 & 4 have been analysed:

- Phase 2A layout is presented in **Figure 6**.
- Phase 2B layout is presented in **Figure 7**.
- Phase 3 layout is presented in **Figure 8**.
- Phase 4 layout is presented in **Figure 9**.

The study network consists of 2 Moorebank Avenue intersections, with Bapaume Road in the north and with Anzac Road in the south and under the existing arrangement where the Bapaume Road intersection caters for all movements, the operation of the Bapaume Road intersection affects the performance of the neighbouring Anzac Road intersection, and vice versa.

However, prior to the interim access period, Bapaume Road would be reduced to a priority controlled left-out only intersection. Under that arrangement, the Bapaume Road intersection would operate satisfactorily and would no longer affect the performance of the Anzac Road intersection. Accordingly, the following SIDRA analysis focuses solely on assessing the performance of MAAI to evaluate the adequacy of the construction and interim operational access arrangement proposed by critical phases 2A, 2B, 3 & 4 during the 6 quarter periods of Q1 2024 to Q2 2025.

The 4 adopted modelling scenarios are summarised in **Table 10**.

TABLE 10: MODELLING SCENARIOS

Scenario #	Northrop Design Reference	Quarter	Stage
1	Phase 2A	Q1 2024	1
2	Phase 2A	Q2 2024	2
3	Phase 2A	Q3 2024	
4	Phase 2B		
5	Phase 3		
6	Phase 2B	Q4 2024	
7	Phase 3		
8	Phase 4	Q1 2025	3
9	Phase 4	Q2 2025	

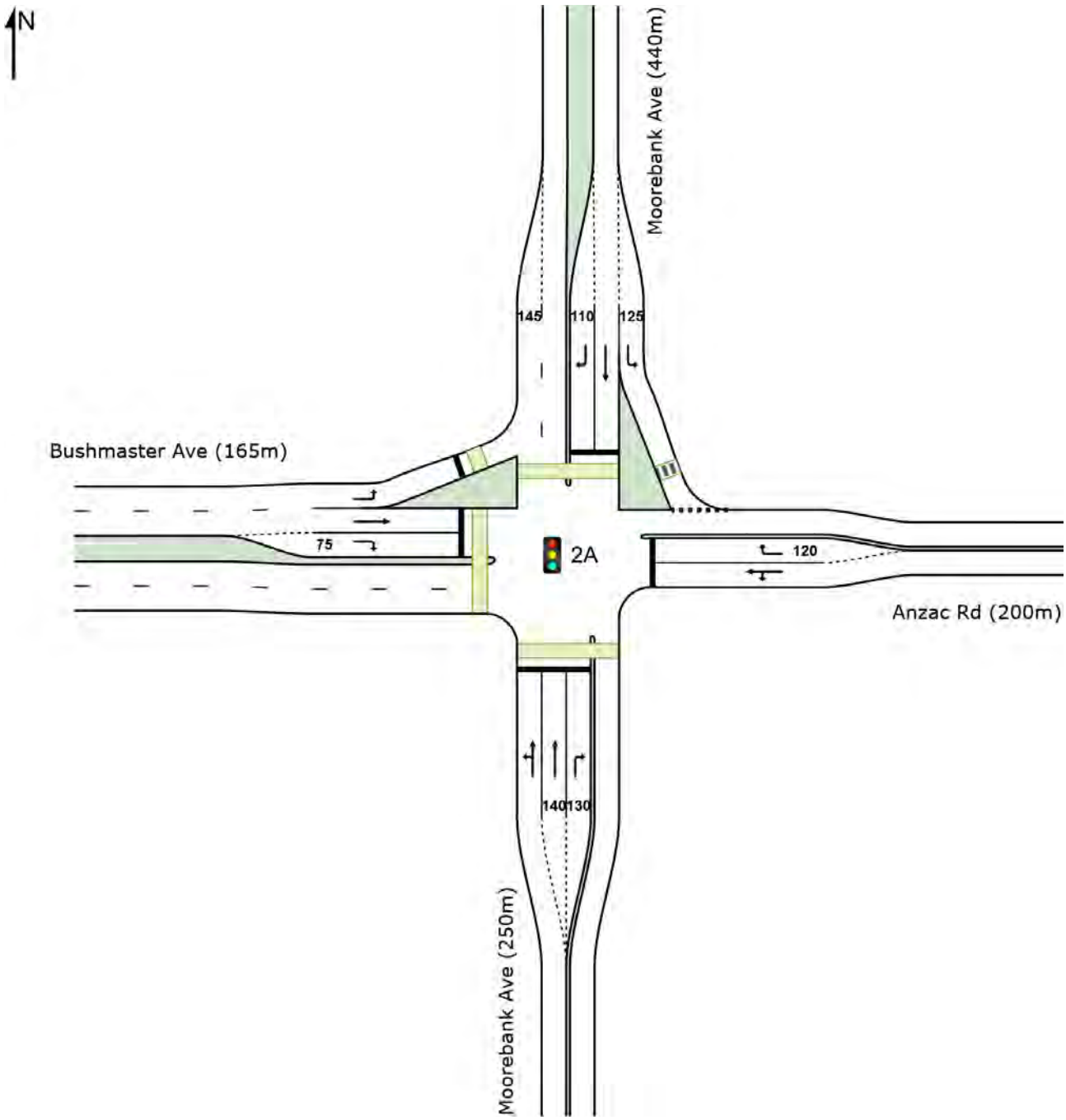


Figure 6: SIDRA Layout – Proposed Construction Access – Phase 2A

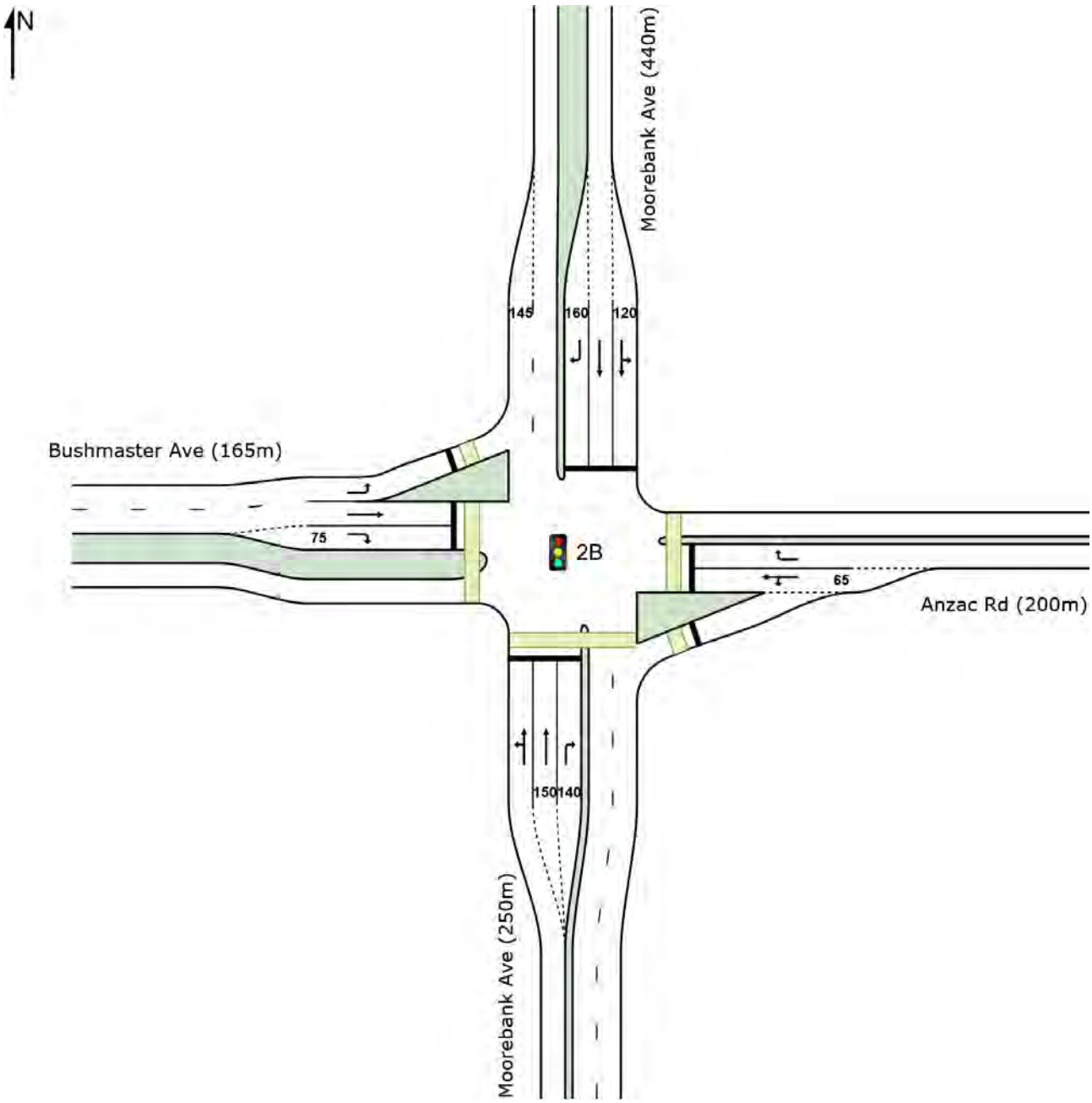


Figure 7: SIDRA Layout – Proposed Construction Access – Phase 2B

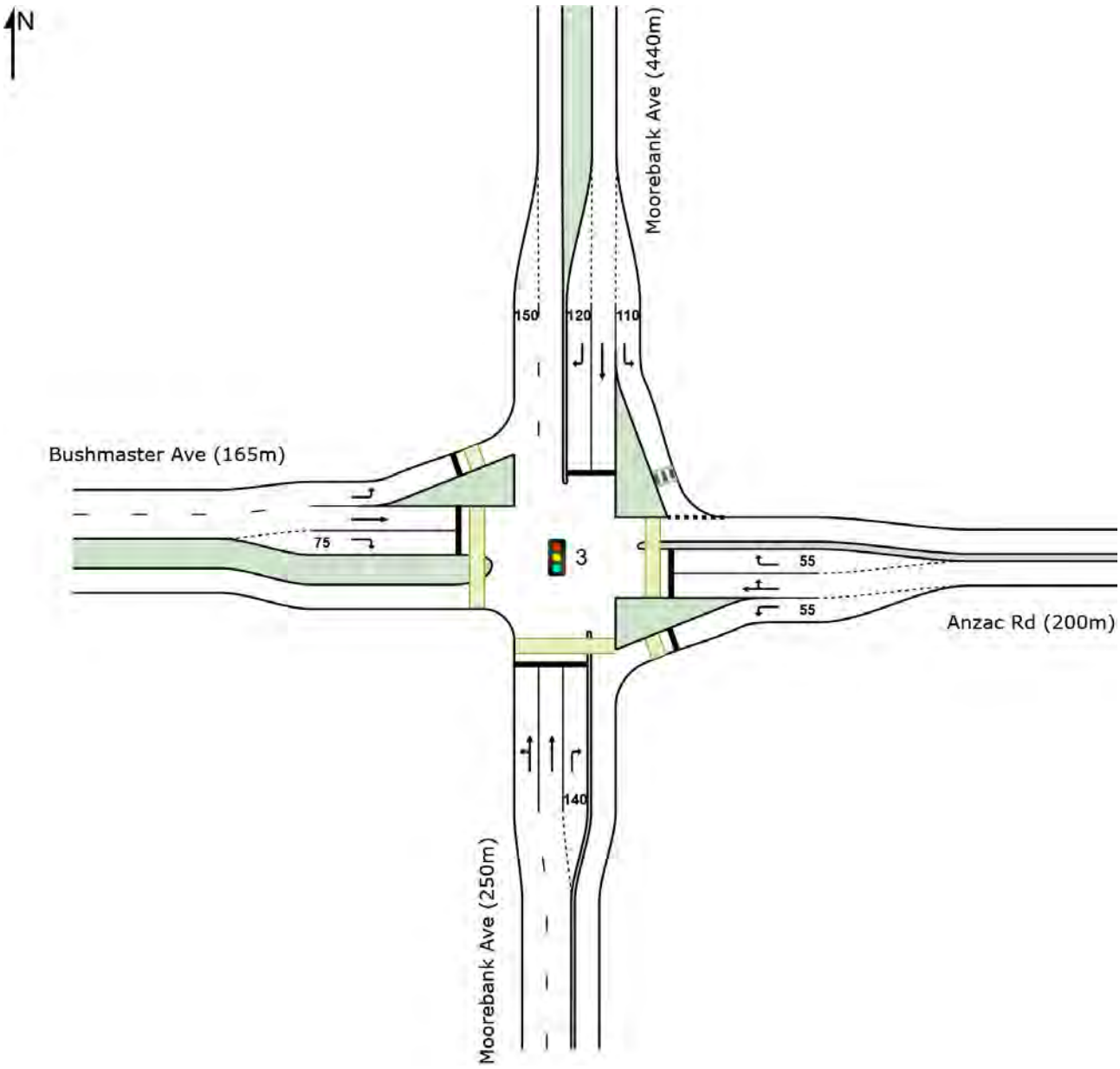


Figure 8: SIDRA Layout – Proposed Construction Access – Phase 3

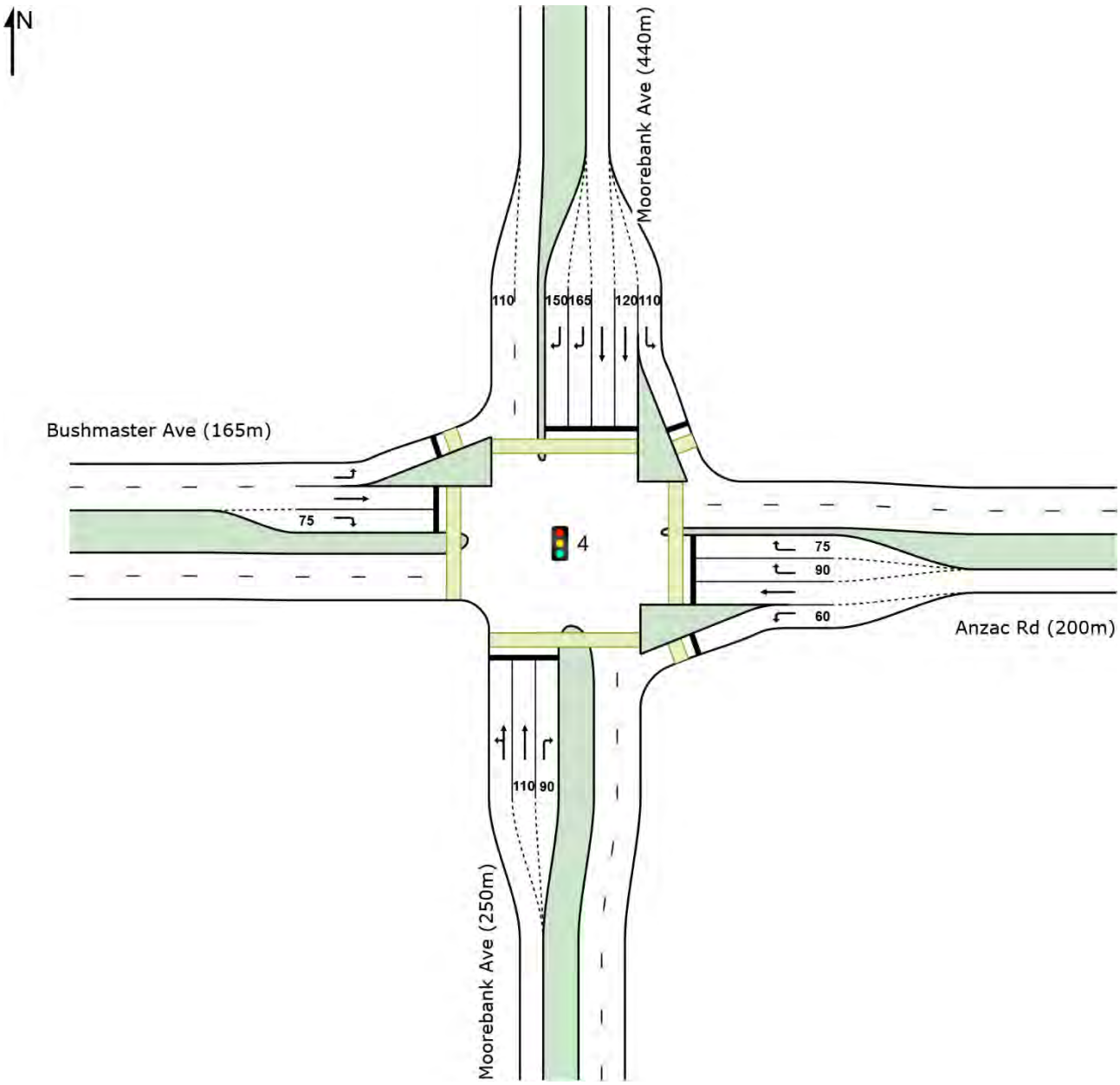


Figure 9: SIDRA Layout – Proposed Construction Access – Phase 4

4.2 Adjusted Parameters

The 2021 TN and 2023 TN studies were revised in response to the comments received from TfNSW on the earlier versions of the TNs. To maintain consistency with these studies, several model parameters have been adjusted from the SIDRA default values. The details of these adjustments are as follows:

- PCUs (passenger car units) for HVs has been increased to 3.0pcu from the SIDRA default value of 1.65pcu.
- The speed of Bushmaster Avenue has been set to 40km/h to reflect the construction zone conditions for all three phases.
- Signalised pedestrian crossing speed has been decreased to 1.2 m/s.

- The parameter 'Minor Phase Actuation' for the through movement on the Anzac Road approach has been modified from 'None' to 'Program'. This change is based on the expectation of a maximum traffic flow of 4 light vehicles per hour during morning and evening peak hours for this specific movement.
- A 120-second cycle time has been implemented for the MAAI intersection, given its location 440 metres south of the M5 Motorway / Moorebank Avenue signalised interchange, which also operates on a 120-second cycle.

4.3 SIDRA Results

SIDRA modelling results of MAAI in construction phase 2A, 2B, 3 & 4 are presented in **Table 11**, with detailed SIDRA results (including layouts) attached at **Appendix E**.

TABLE 11: SIDRA RESULTS

Quarter	Phase	Peak	DoS	Average Delay (s)	LoS
Stage 1					
Q1 2024	Phase 2A	AM	0.98	55	D
		PM	0.98	53	D
Stage 2					
Q2 2024	Phase 2A	AM	0.98	55	D
		PM	0.98	55	D
Q3 2024	Phase 2A	AM	0.98	55	D
		PM	0.98	56	D
	Phase 2B	AM	0.91	52	D
		PM	0.82	44	D
	Phase 3	AM	0.94	44	D
		PM	0.86	36	C
Q4 2024	Phase 2B	AM	0.91	53	D
		PM	0.86	44	D
	Phase 3	AM	0.95	46	D
		PM	0.86	37	C
Stage 3					
Q1 2025	Phase 4	AM	0.84	39	C
		PM	0.78	38	C
Q2 2025	Phase 4	AM	0.85	38	C
		PM	0.82	39	C

The SIDRA modelling results for all 4 critical phases show that MAAI would operate with acceptable average delays (Level of Service D or better) during Stage 1 (Phase 2A), Stage 2 (Phases 2A, 2B & 3) and Stage 3 (Phase 4). Furthermore, from a geometric perspective, the Phase 4 layout delivers a material increase in capacity due to the extra lanes compared with the preceding phases. This increase in capacity is confirmed by the SIDRA results, which show improvements in LOS, DoS and reductions in delay.

5 Conclusion

Ason Group has undertaken a traffic assessment of the proposed MAAI Staging Plan and the acceptability of MAAI to provide operational access to MPW warehousing above 100,000 m^2 of GFA prior to the full completion of MAAI. The main objective of this assessment is to evaluate the performance of the interim construction phases against the forecast traffic demands – background, construction and progressive operational – for each of the associated stages. The 4 critical phases of 2A, 2B, 3 & 4, associated with Stages 1, 2 & 3, are programmed for implementation over a 15-month period. This timeline aligns with 6 quarterly periods, Q1 to Q4 of 2024 and Q1 & Q2 of 2025; these 6 quarters are the focus of this assessment.

Much of the analysis that informs this TA study builds upon – and is consistent with – earlier studies that have informed the approval of the interim construction phase layouts. Operational traffic data has been provided by tenants and operators, such as Qube and Woolworths. The data provided by Woolworths aligns with expectations that operational traffic will ramp up over a period of about 1-year for both NDC & RDC as operations are progressively transferred from existing facilities to the new Moorebank MIP facilities.

The SIDRA modelling indicates that during each of the 6 quarters from Q1 2024 to Q2 2025 – and therefore for each of the key Stages 1, 2 & 3 of the proposed Staging Plan – interim MAAI would operate with acceptable average delays (LOS D or better) during the commuter peak hours. Stage 4 (Phases 5 & 6) represents the final MAAI configuration. Modifications are remote of the intersection itself to allow connection to the Moorebank Avenue realignment and therefore would not materially impact the capacity of MAAI.

In conclusion, this TA study supports the proposed Staging Plan by demonstrating the capacity of the interim phases is sufficient to accommodate the corresponding traffic demands, including progressive operational demands under the staged delivery of MPW Stage 2 development.

Appendix A. Concept Design

PHASE SITEWORKS LEGEND

- EXISTING BOUNDARY LINE
- EXISTING KERB
- ULTIMATE DESIGN
- PROPOSED PHASING WORKS
- PHASE TRAFFIC DIVERSION
- PHASE PEDESTRIAN DIVERSION
- SECURITY FENCING
- KLEMMFIX KERB BARRIER
- BG800 SAFETY BARRIER OR APPROVED EQUAL WITH ABSORB-M SAFETY TERMINAL (U.N.O)
- WATER FILLED BARRIER
- BARRIER BOARD
- UNDER CONSTRUCTION
- UNDER CONSTRUCTION - NIGHT WORKS / LOCAL TRAFFIC CONTROL
- UNDER CONSTRUCTION - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- UNDER CONSTRUCTION - TEMPORARY RAMP
- CONSTRUCTED - ULTIMATE
- CONSTRUCTED - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- CONSTRUCTED - TEMPORARY RAMP
- NO PERMANENT WORKS WITHIN SEWER RISING MAIN ZONE OF INFLUENCE UNTIL CUTOVER

PHASE 02A
TCS PHASE DURATION

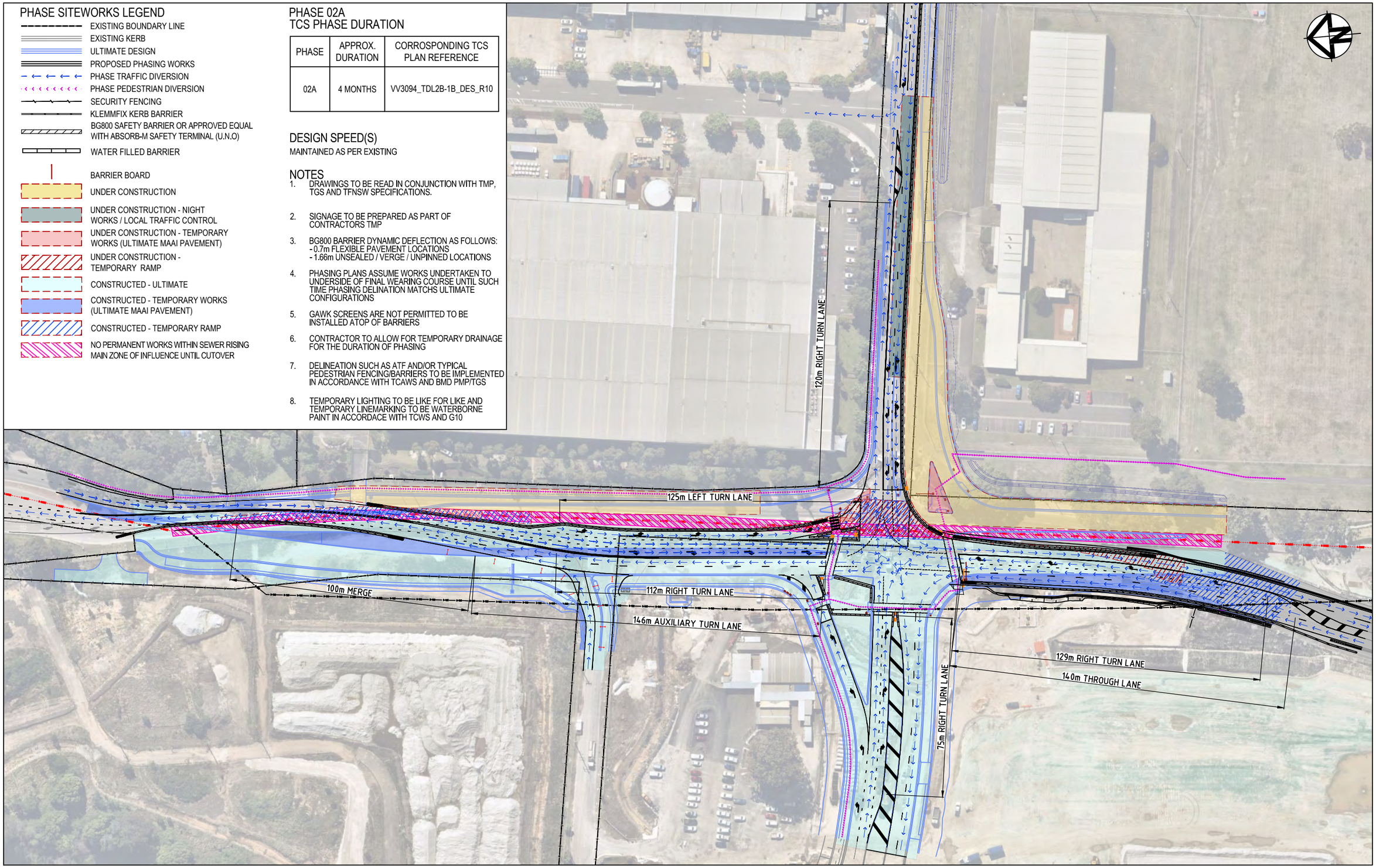
PHASE	APPROX. DURATION	CORROSPONDING TCS PLAN REFERENCE
02A	4 MONTHS	VV3094_TDL2B-1B_DES_R10

DESIGN SPEED(S)

MAINTAINED AS PER EXISTING

NOTES

1. DRAWINGS TO BE READ IN CONJUNCTION WITH TMP, TGS AND TFNSW SPECIFICATIONS.
2. SIGNAGE TO BE PREPARED AS PART OF CONTRACTORS TMP
3. BG800 BARRIER DYNAMIC DEFLECTION AS FOLLOWS:
   - 0.7m FLEXIBLE PAVEMENT LOCATIONS
   - 1.66m UNSEALED / VERGE / UNPINNED LOCATIONS
4. PHASING PLANS ASSUME WORKS UNDERTAKEN TO UNDERSIDE OF FINAL WEARING COURSE UNTIL SUCH TIME PHASING DELINATION MATCHS ULTIMATE CONFIGURATIONS
5. GAWK SCREENS ARE NOT PERMITTED TO BE INSTALLED ATOP OF BARRIERS
6. CONTRACTOR TO ALLOW FOR TEMPORARY DRAINAGE FOR THE DURATION OF PHASING
7. DELINEATION SUCH AS ATF AND/OR TYPICAL PEDESTRIAN FENCING/BARRIERS TO BE IMPLEMENTED IN ACCORDANCE WITH TCAWS AND BMD PMP/TGS
8. TEMPORARY LIGHTING TO BE LIKE FOR LIKE AND TEMPORARY LINEMARKING TO BE WATERBORNE PAINT IN ACCORDACE WITH TCWS AND G10



MAAI-NRP-CP-SKC-9110

MAAI CONSTRUCTION PHASING

PHASE 2A: ACCESS VIA WEST LEG

REVISION G

DATE : 31.10.23

REF : SY210326

NORTHROP

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SCALE 1:1500m

MAAI-NRP-CP-SKC-9110_PHASE 2A.dwg

PHASE SITEWORKS LEGEND

- EXISTING BOUNDARY LINE
- EXISTING KERB
- ULTIMATE DESIGN
- PROPOSED PHASING WORKS
- PHASE TRAFFIC DIVERSION
- PHASE PEDESTRIAN DIVERSION
- SECURITY FENCING
- KLEMMFIX KERB BARRIER
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- BARRIER BOARD
- UNDER CONSTRUCTION
- UNDER CONSTRUCTION - NIGHT WORKS / LOCAL TRAFFIC CONTROL
- UNDER CONSTRUCTION - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- UNDER CONSTRUCTION - TEMPORARY RAMP
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- CONSTRUCTED - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- CONSTRUCTED - TEMPORARY RAMP
- NO PERMANENT WORKS WITHIN SEWER RISING MAIN ZONE OF INFLUENCE UNTIL CUTOVER

PHASE 02B
TCS PHASE DURATION

PHASE	APPROX. DURATION	CORROSPONDING TCS PLAN REFERENCE
02B	3 MONTHS	VV3094_TDL2C-1B_DES_R8 20231009

DESIGN SPEED(S)

MAINTAINED AS PER EXISTING

NOTES

1. DRAWINGS TO BE READ IN CONJUNCTION WITH TMP, TGS AND TFNSW SPECIFICATIONS.
2. SIGNAGE TO BE PREPARED AS PART OF CONTRACTORS TMP
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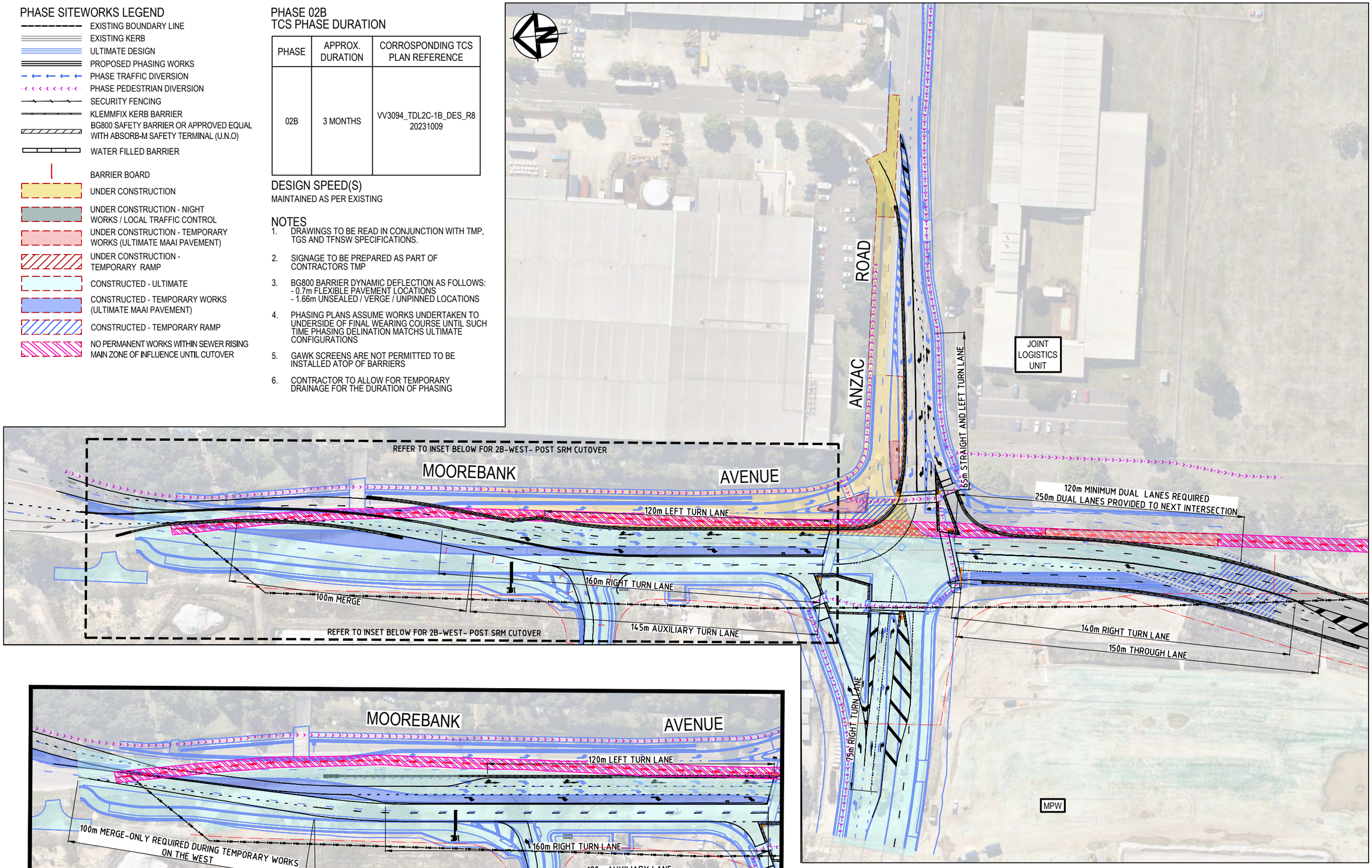
5. GAWK SCREENS ARE NOT PERMITTED TO BE INSTALLED ATOP OF BARRIERS
6. CONTRACTOR TO ALLOW FOR TEMPORARY DRAINAGE FOR THE DURATION OF PHASING



PHASE 2B WEST- POST SRM CUTOVER

MAAI-NRP-CP-SKC-9120 **REVISION E**

MAAI CONSTRUCTION PHASING

DATE : 02.11.23

PHASE 2B: ACCESS VIA WEST LEG [ALTERNATIVE]

REF : SY210326

NORTHROP

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SCALE 1:1500m

MAAI-NRP-CP-SKC-9120_PHASE 2B.dwg

PHASE SITEWORKS LEGEND

- EXISTING BOUNDARY LINE
- EXISTING KERB
- ULTIMATE DESIGN
- PROPOSED PHASING WORKS
- PHASE TRAFFIC DIVERSION
- PHASE PEDESTRIAN DIVERSION
- SECURITY FENCING
- KLEMMFIX KERB BARRIER
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- BARRIER BOARD
- UNDER CONSTRUCTION
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- UNDER CONSTRUCTION - TEMPORARY RAMP
- CONSTRUCTED - ULTIMATE
- CONSTRUCTED - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
- CONSTRUCTED - TEMPORARY RAMP
- NO PERMANENT WORKS WITHIN SEWER RISING MAIN ZONE OF INFLUENCE UNTIL CUTOVER

PHASE 03
TCS PHASE DURATION

PHASE	APPROX. DURATION	CORROSPONDING TCS PLAN REFERENCE
03	4.5 MONTHS	~~VV3094_TDL3A-1A_DES_R5 20220323~~

DESIGN SPEED(S)

MAINTAINED AS PER EXISTING

NOTES

1. 1.DRAWINGS TO BE READ IN CONJUNCTION WITH TMP, TGS AND TFNSW SPECIFICATIONS.
2. SIGNAGE TO BE PREPARED AS PART OF CONTRACTORS TMP
3. BG800 BARRIER DYNAMIC DEFLECTION AS FOLLOWS:
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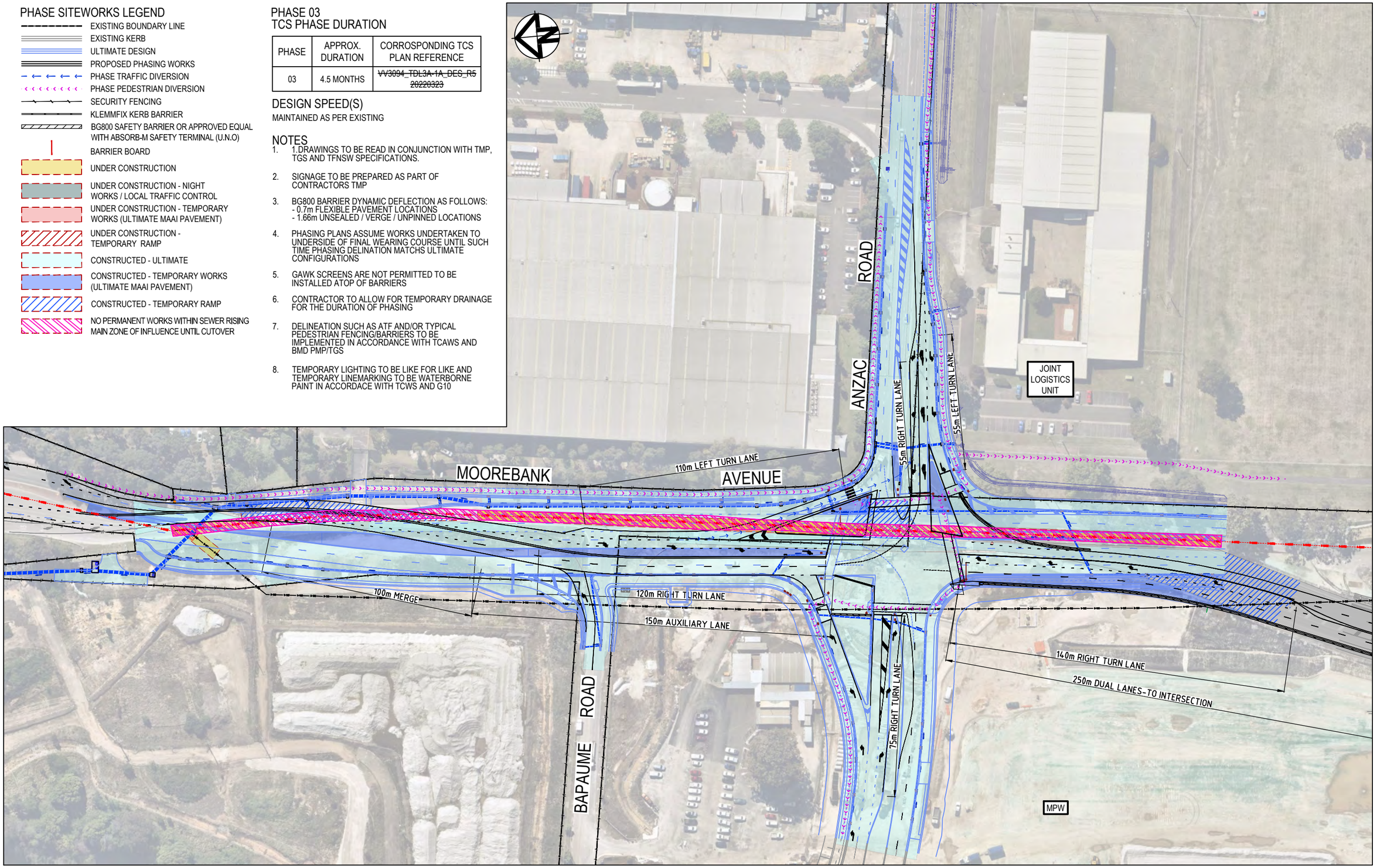
8. TEMPORARY LIGHTING TO BE LIKE FOR LIKE AND TEMPORARY LINEMARKING TO BE WATERBORNE PAINT IN ACCORDACE WITH TCWS AND G10



MAAI-NRP-CP-SKC-9130

MAAI CONSTRUCTION PHASING

PHASE 3: ACCESS VIA WEST LEG

REVISION D

DATE : 02.11.23

REF : SY210326

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PHASE SITEWORKS LEGEND

- EXISTING BOUNDARY LINE
- EXISTING KERB
- ULTIMATE DESIGN
- PROPOSED PHASING WORKS
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- CONSTRUCTED - TEMPORARY WORKS (ULTIMATE MAAI PAVEMENT)
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PHASE 04
TCS PHASE DURATION

PHASE	APPROX. DURATION	CORROSPONDING TCS PLAN REFERENCE
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DESIGN SPEED(S)

MAINTAINED AS PER EXISTING

NOTES

1. 1.DRAWINGS TO BE READ IN CONJUNCTION WITH TMP, TGS AND TFNSW SPECIFICATIONS.
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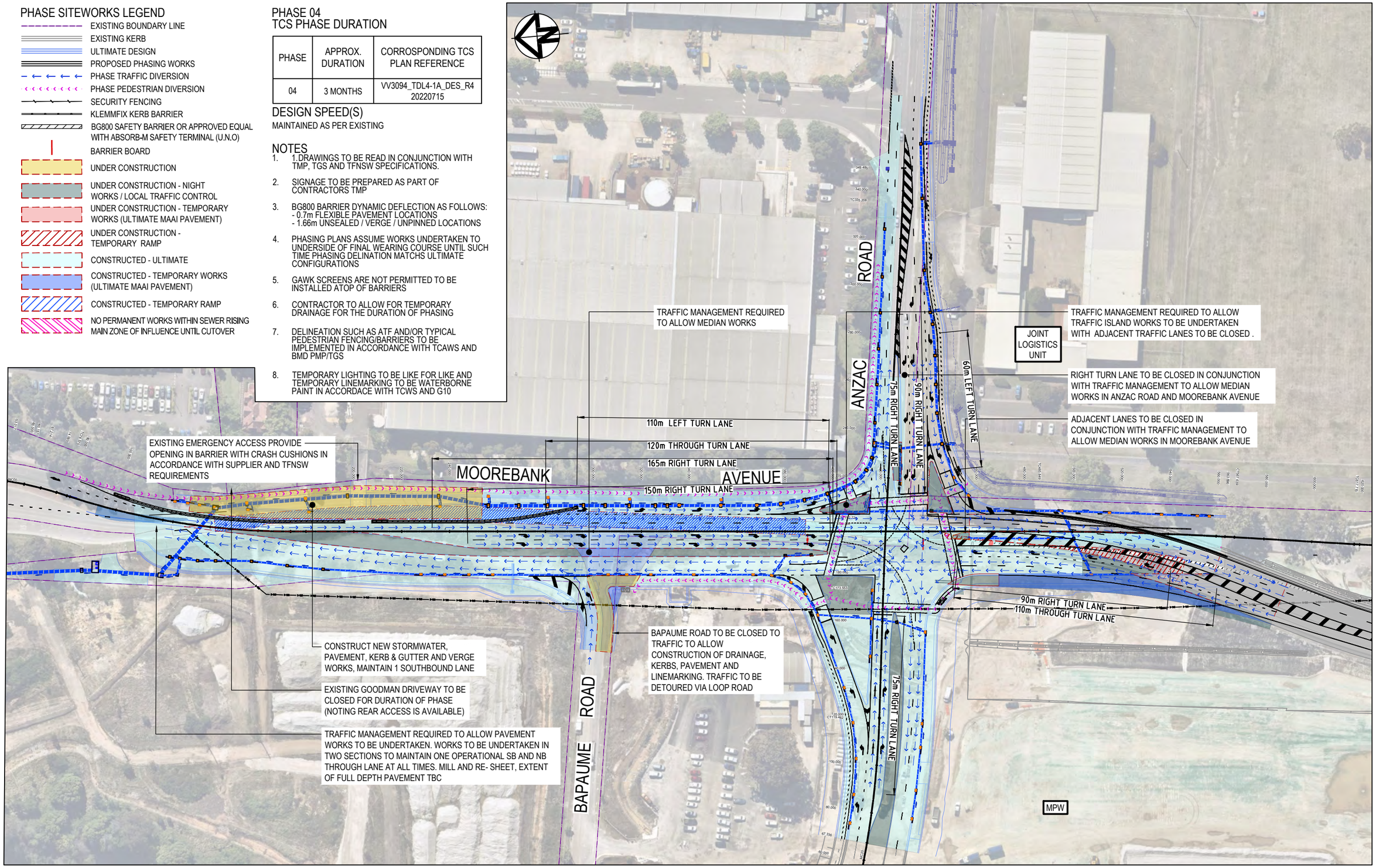
8. TEMPORARY LIGHTING TO BE LIKE FOR LIKE AND TEMPORARY LINEMARKING TO BE WATERBORNE PAINT IN ACCORDACE WITH TCWS AND G10



NOT FOR CONSTRUCTION

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50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME

EXTERNAL REFERENCE FILES

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DESIGN LOT CODE

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING

REV	DATE	AMENDMENT / REVISION DESCRIPTION	REVIEWED	APPROVAL
8	01.04.2022	ISSUED FOR INFORMATION	-	-
9	27.05.2022	ISSUED FOR APPROVAL	-	-
10	17.06.2022	RE-ISSUED FOR APPROVAL	-	-
11	13.07.2022	RE-ISSUED FOR APPROVAL	-	-
12	05.09.2022	RE-ISSUED FOR APPROVAL	-	-
13	02.11.2023	RE-ISSUED FOR APPROVAL	-	-

SCALES ON A3 SIZE DRAWING

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SCALE 1:1500m

CO-ORDINATE SYSTEM: MGA94 Zone56
HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

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PLOT DATE / TIME PLOT BY

	NAME	DATE
TITLE		
DRAWN	D.CHAPMAN	02.11.2023
DRG CHECK	M.SANTIAGO	02.11.2023
DESIGN	D.CHAPMAN	02.11.2023
DESIGN CHECK	G.COLLINS	02.11.2023
DESIGN MNGR	S.McCLELLAND	02.11.2023
PROJECT MNGR	M.RICHARDS	02.11.2023

DRAWING No. MAAI-NRP-CP-DWG-1901

CLIENT: SIMTA

PREPARED FOR: TACTICAL GROUP

MOOREBANK AVENUE WORKS
MOOREBANK AVENUE - ANZAC INTERSECTION (MAAI)

A3

PHASE [04-SRM] - MAAI SITEWORKS PLAN

TINSW REGISTRATION No. DS2021/000784

PART

ISSUE STATUS	EDMS No.	SHEET No.	ISSUE
AFC		1901	13

Appendix B. Construction Traffic Demand – MPE Stage 2 CTIA

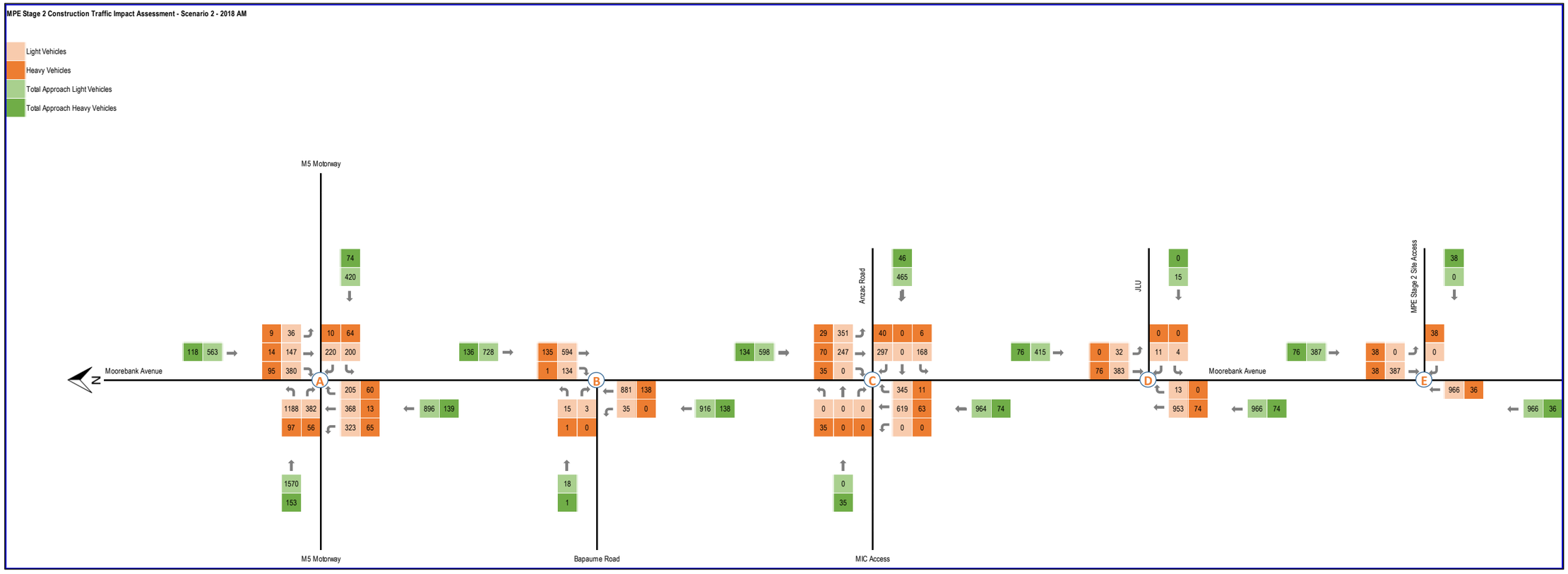


Figure 16 MPE Stage 2 construction – Background + Scenario 2 AM peak one hour traffic volumes

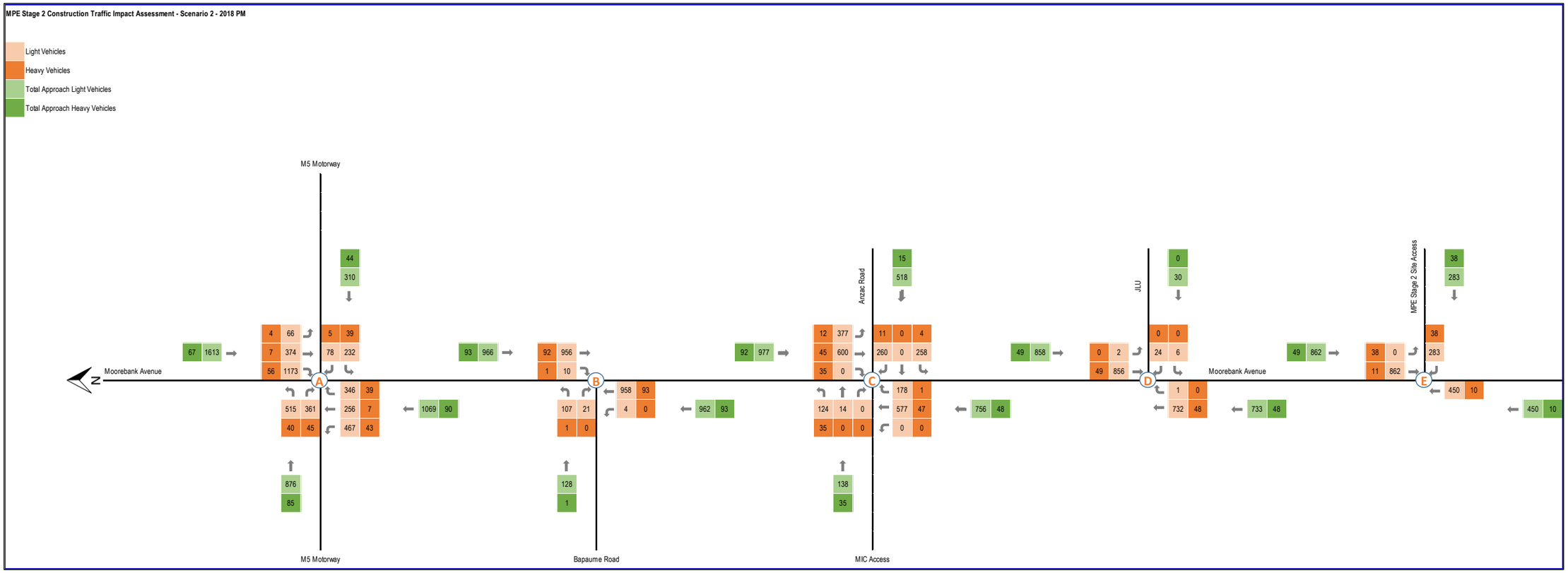
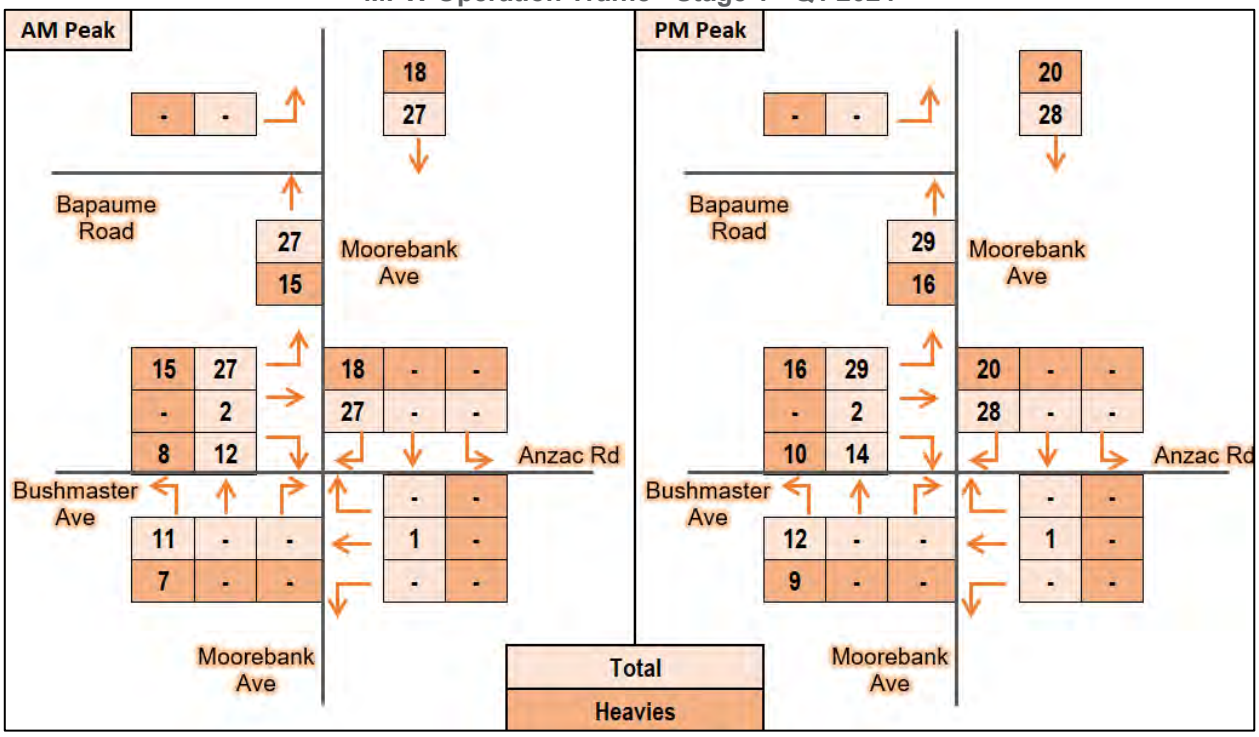


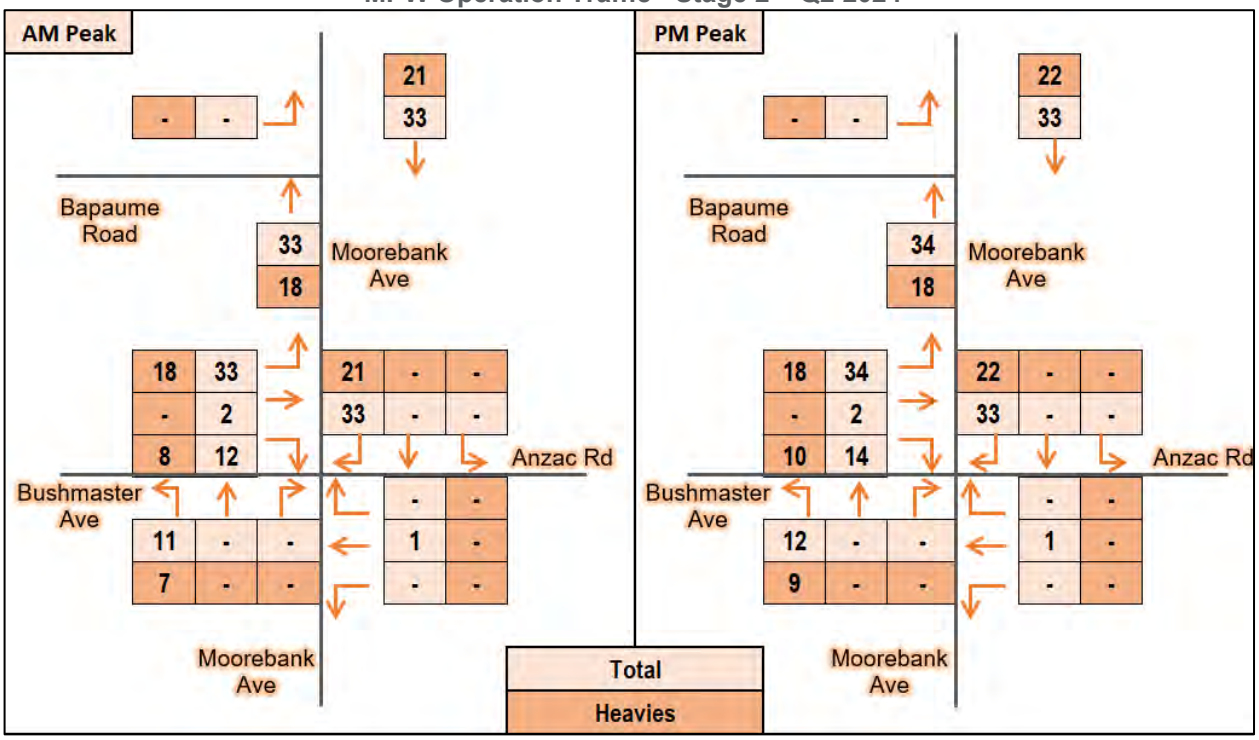
Figure 17 MPE Stage 2 construction – Background + Scenario 2 PM peak one hour traffic volumes

Appendix C. MPW Operational Traffic

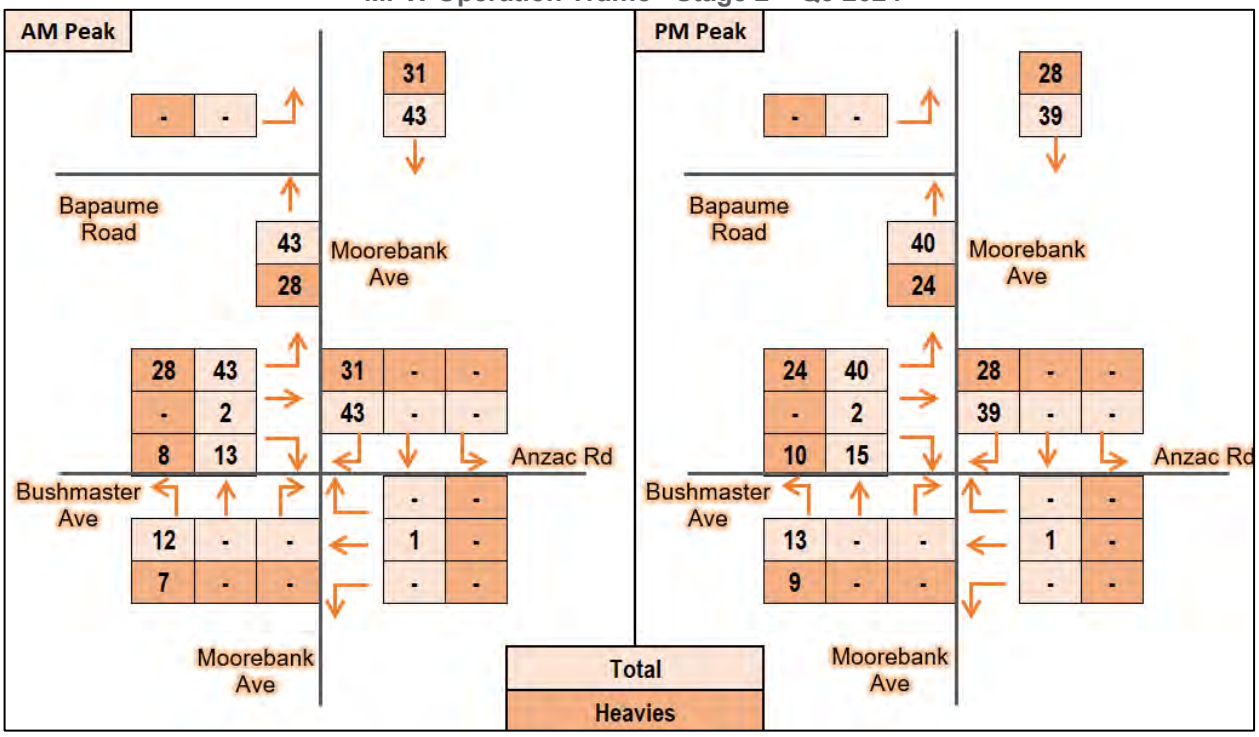
MPW Operation Traffic - Stage 1 - Q1 2024



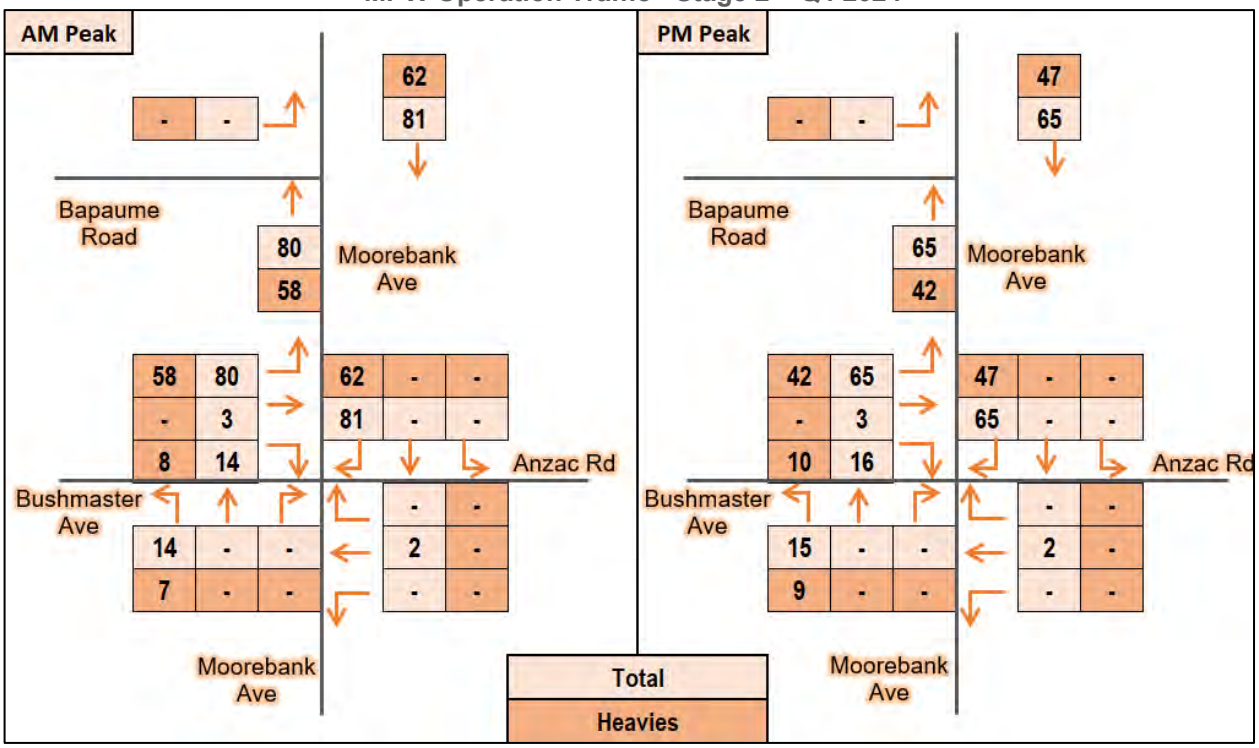
MPW Operation Traffic - Stage 2 – Q2 2024



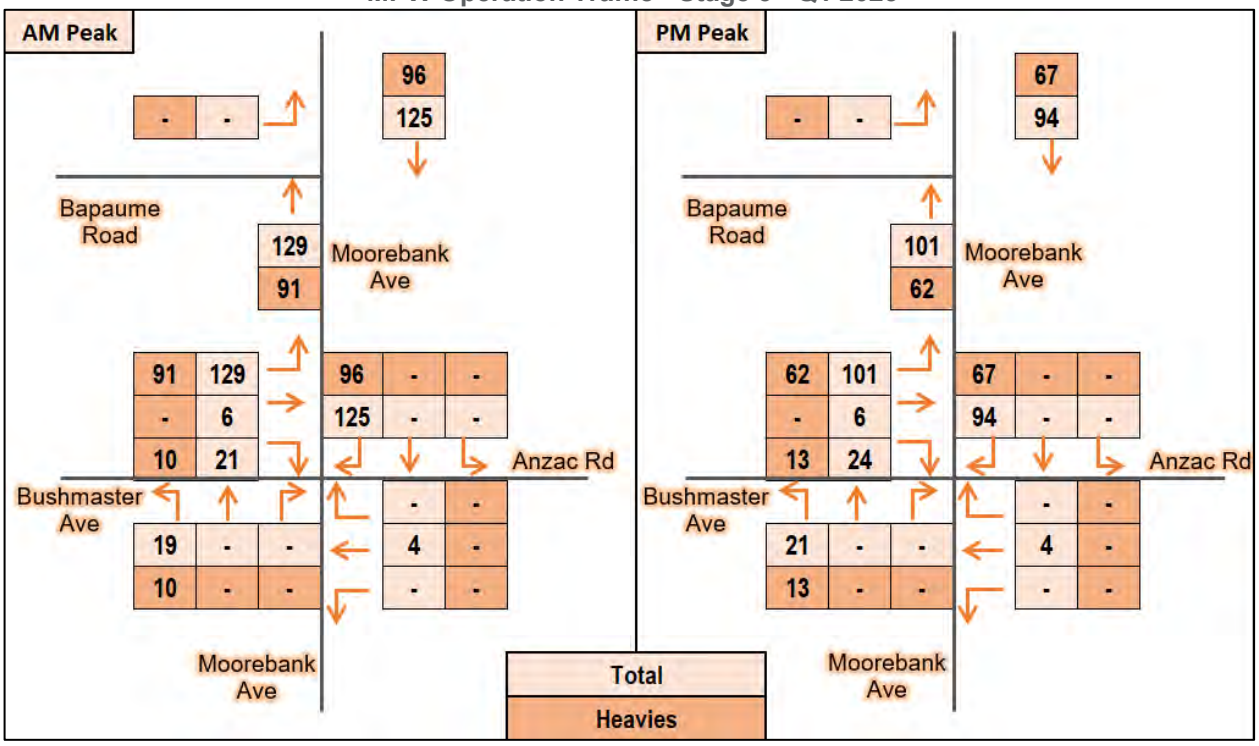
MPW Operation Traffic - Stage 2 – Q3 2024



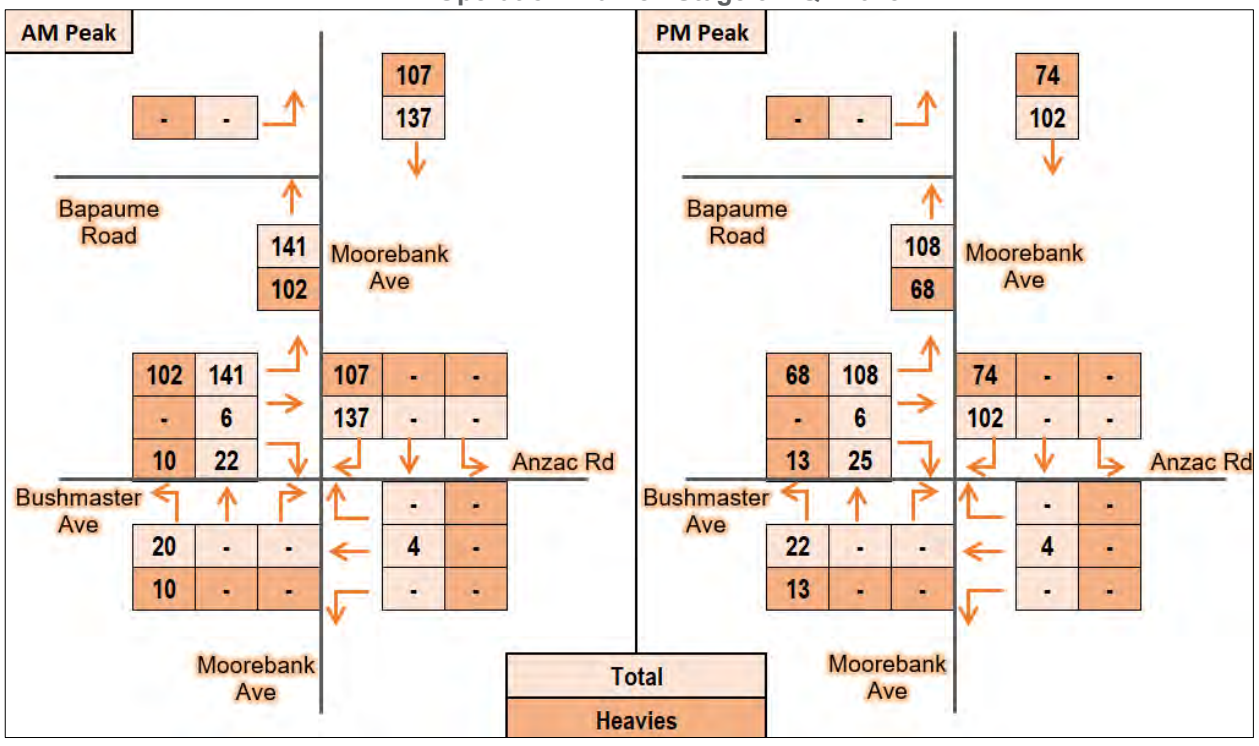
MPW Operation Traffic - Stage 2 – Q4 2024



MPW Operation Traffic - Stage 3 - Q1 2025

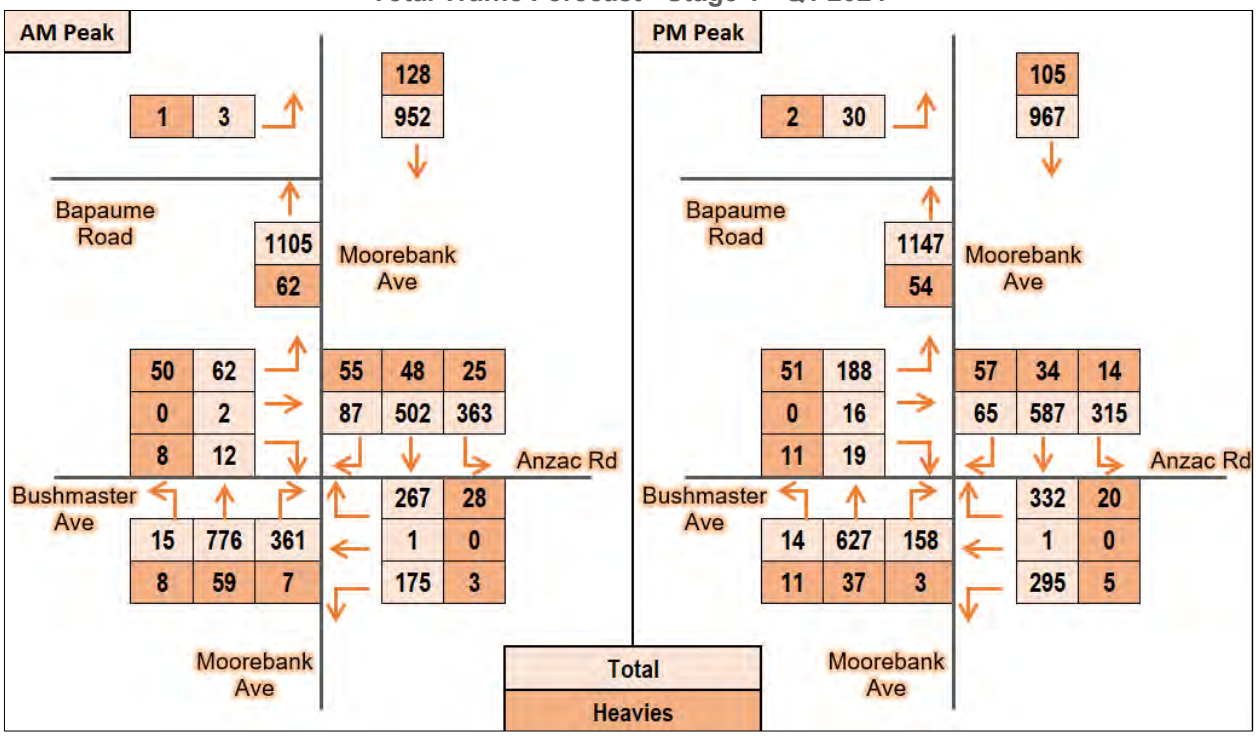


MPW Operation Traffic - Stage 3 – Q2 2025

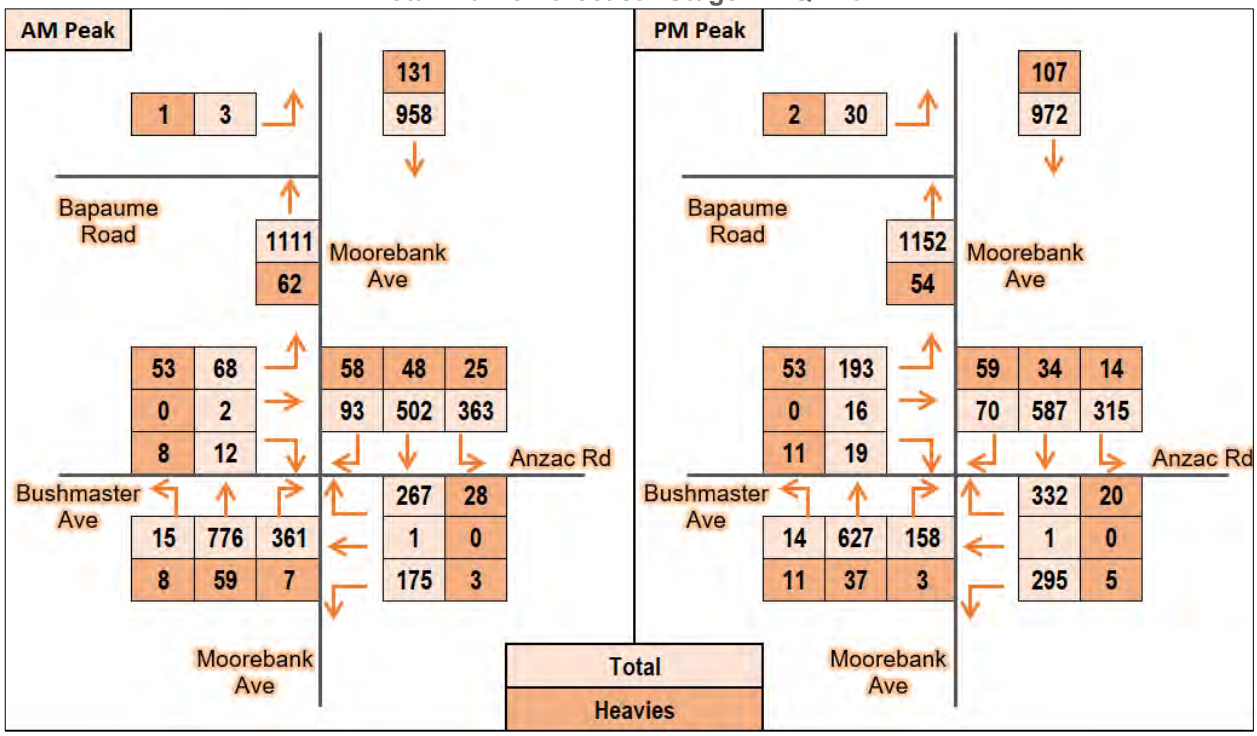


Appendix D. 2024 & 2025 Total Traffic Forecast

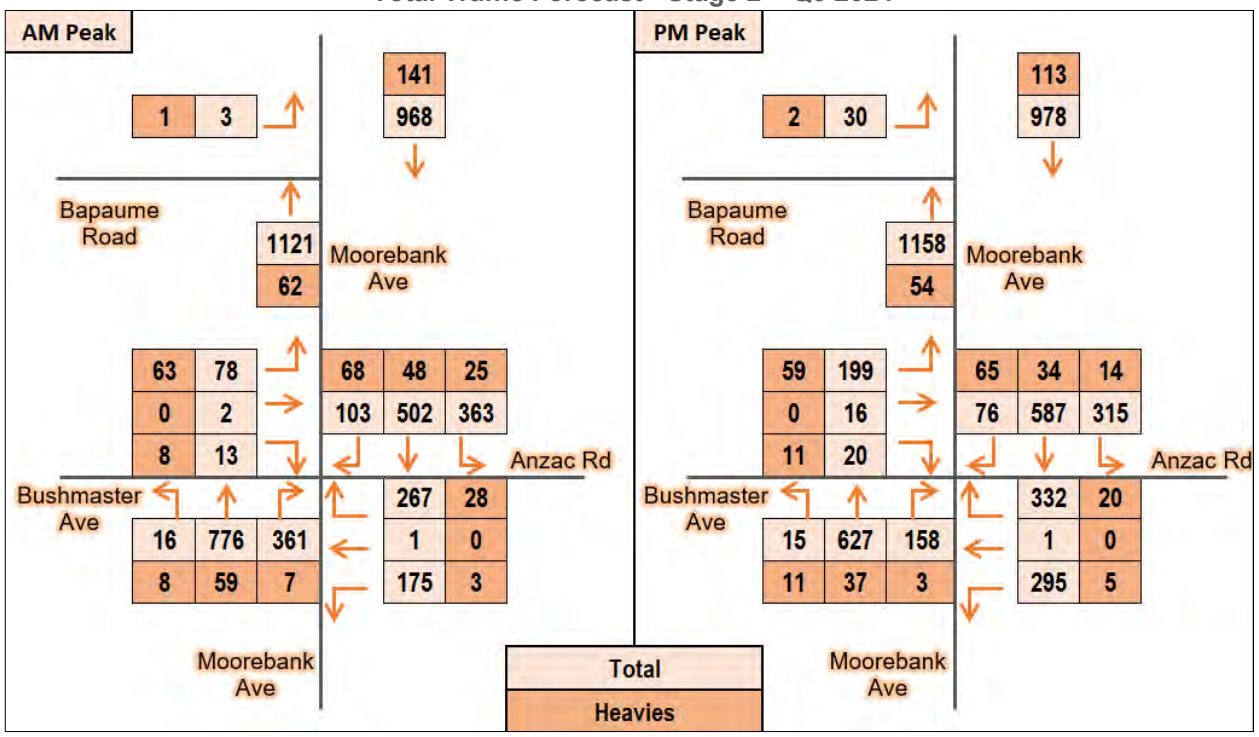
Total Traffic Forecast - Stage 1 - Q1 2024



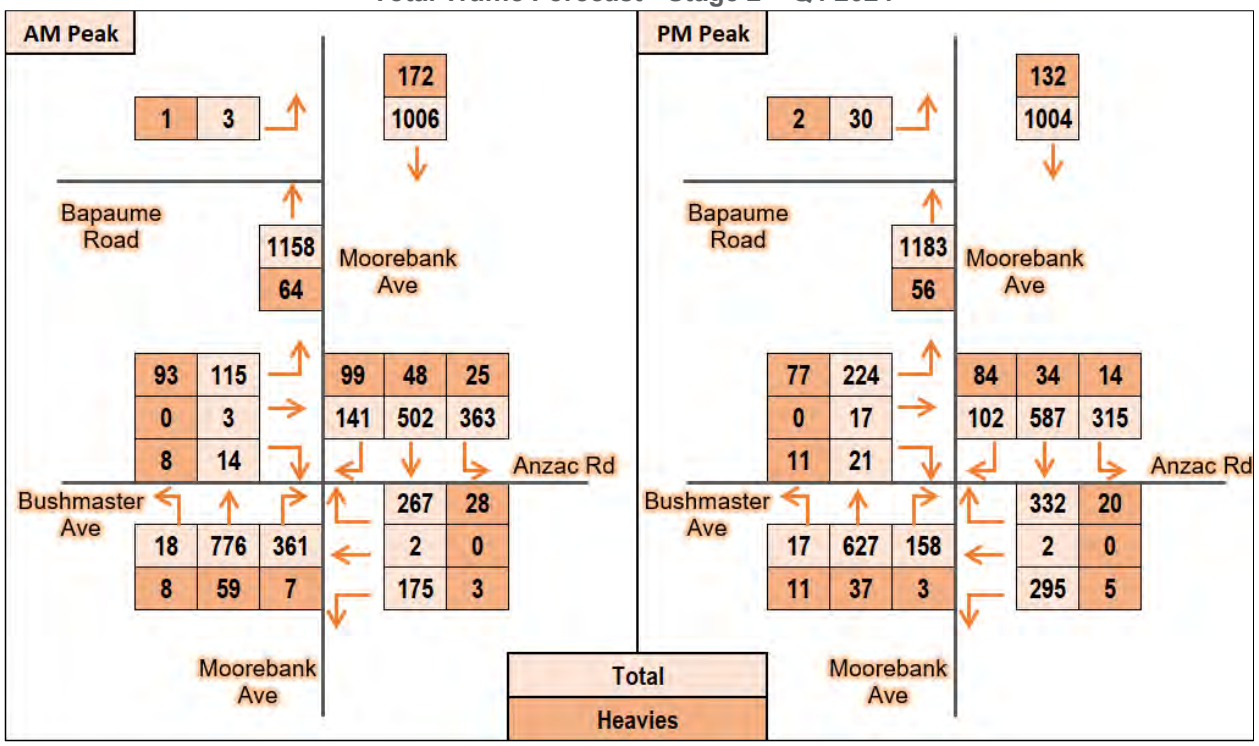
Total Traffic Forecast - Stage 2 – Q2 2024



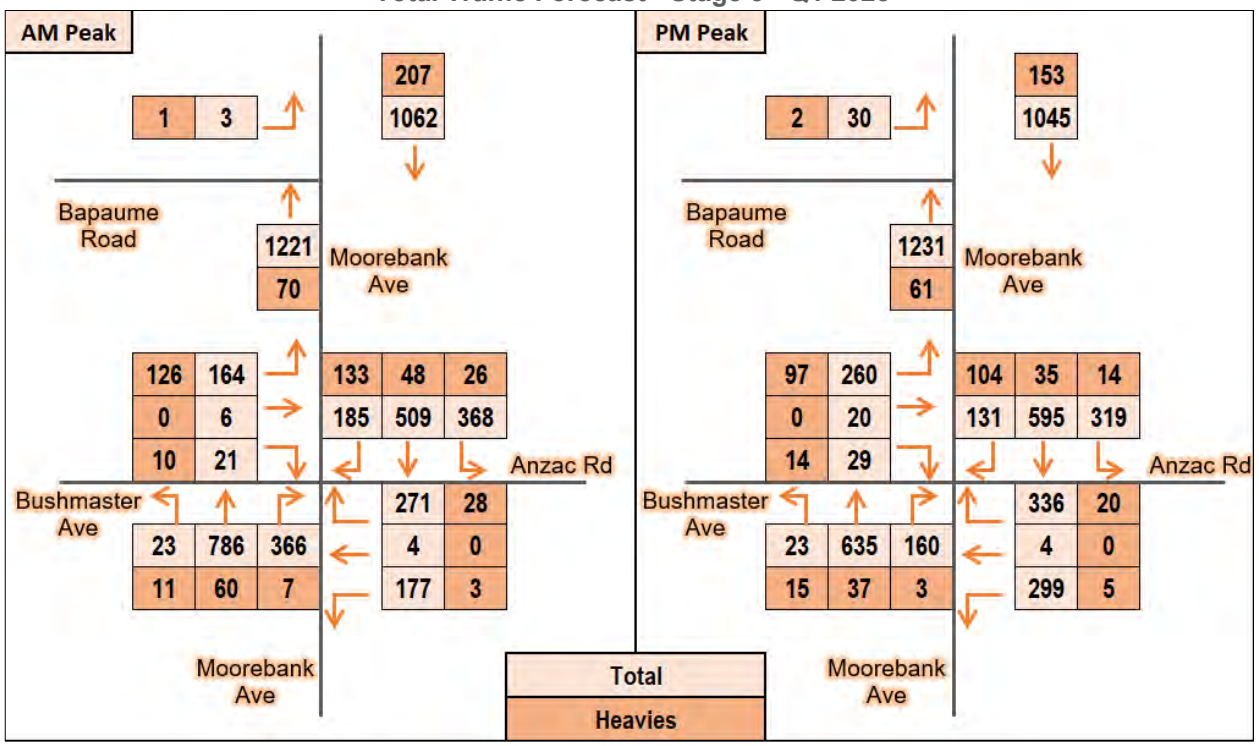
Total Traffic Forecast - Stage 2 – Q3 2024



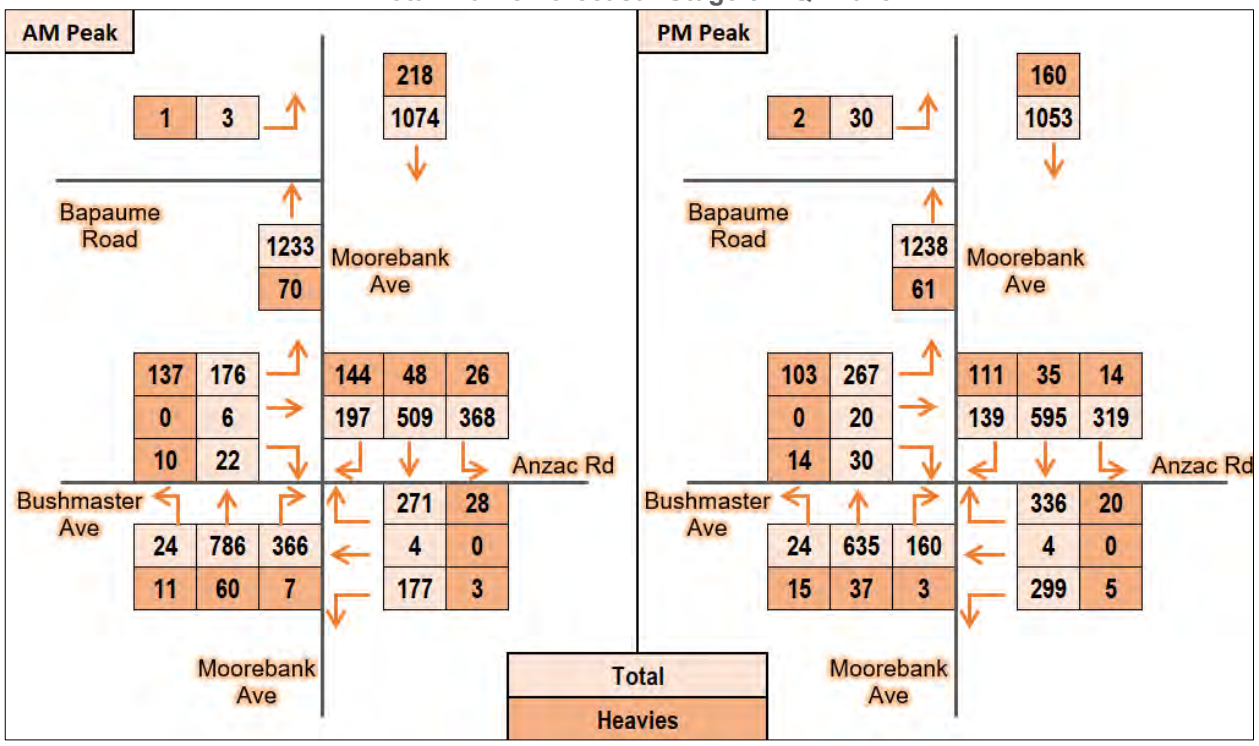
Total Traffic Forecast - Stage 2 – Q4 2024



Total Traffic Forecast - Stage 3 - Q1 2025



Total Traffic Forecast - Stage 3 – Q2 2025



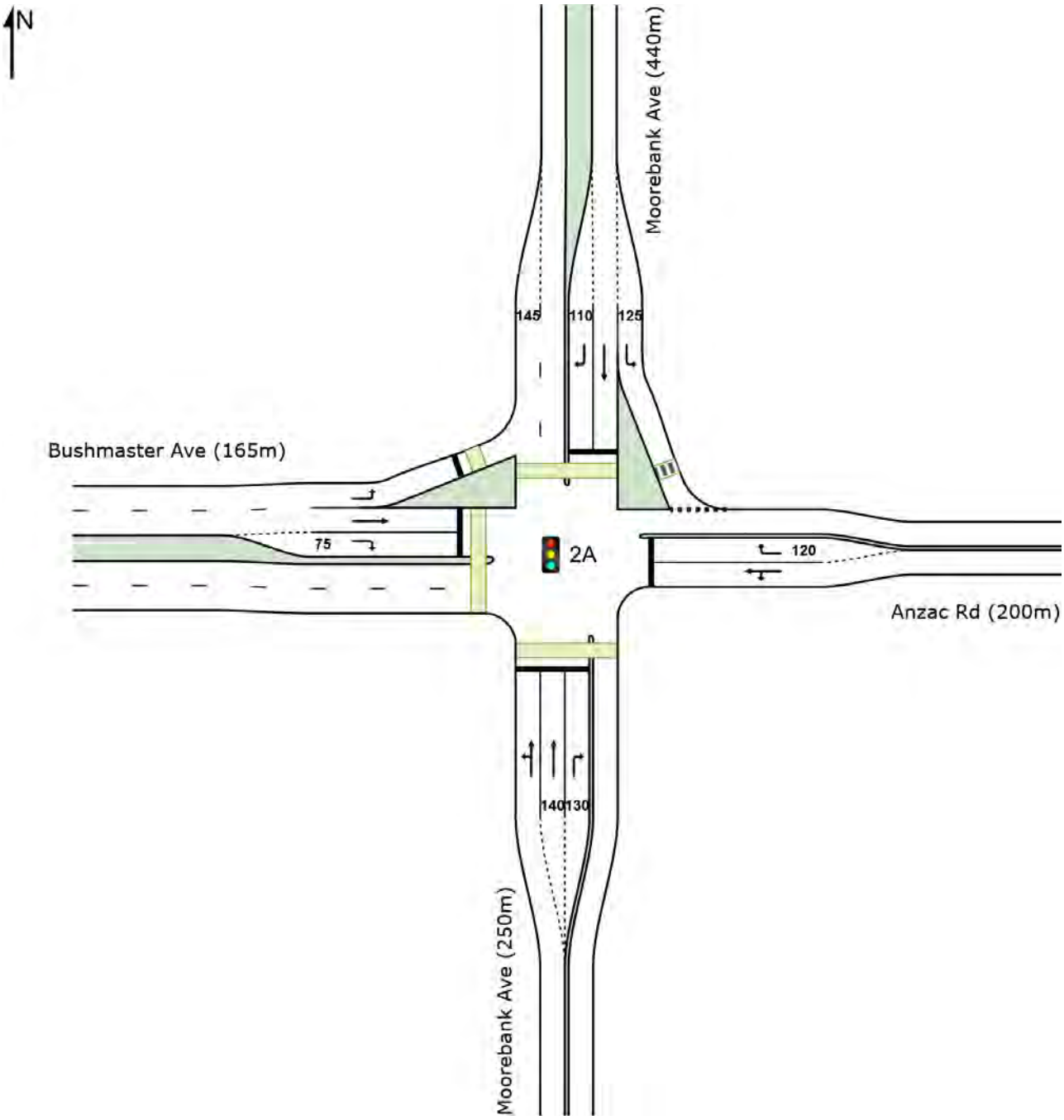
Appendix E. SIDRA Results

SITE LAYOUT

Site: 2A [AM Peak (Site Folder: 1 - Phase 2A - Stage 1 - Q1 2024)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.

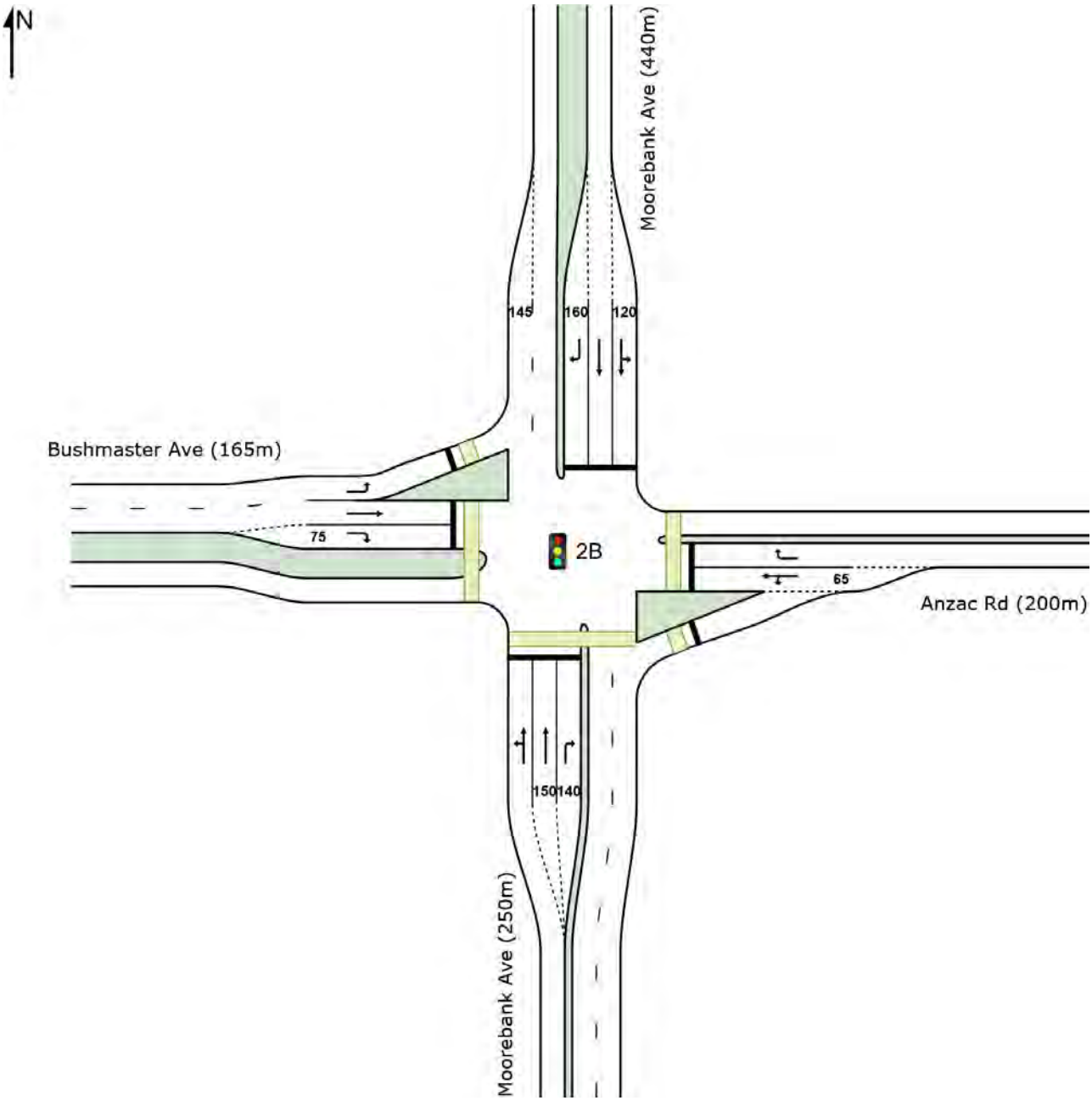


SITE LAYOUT

Site: 2B [AM Peak (Site Folder: 4 - Phase 2B - Stage 2 - Q3 2024)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.

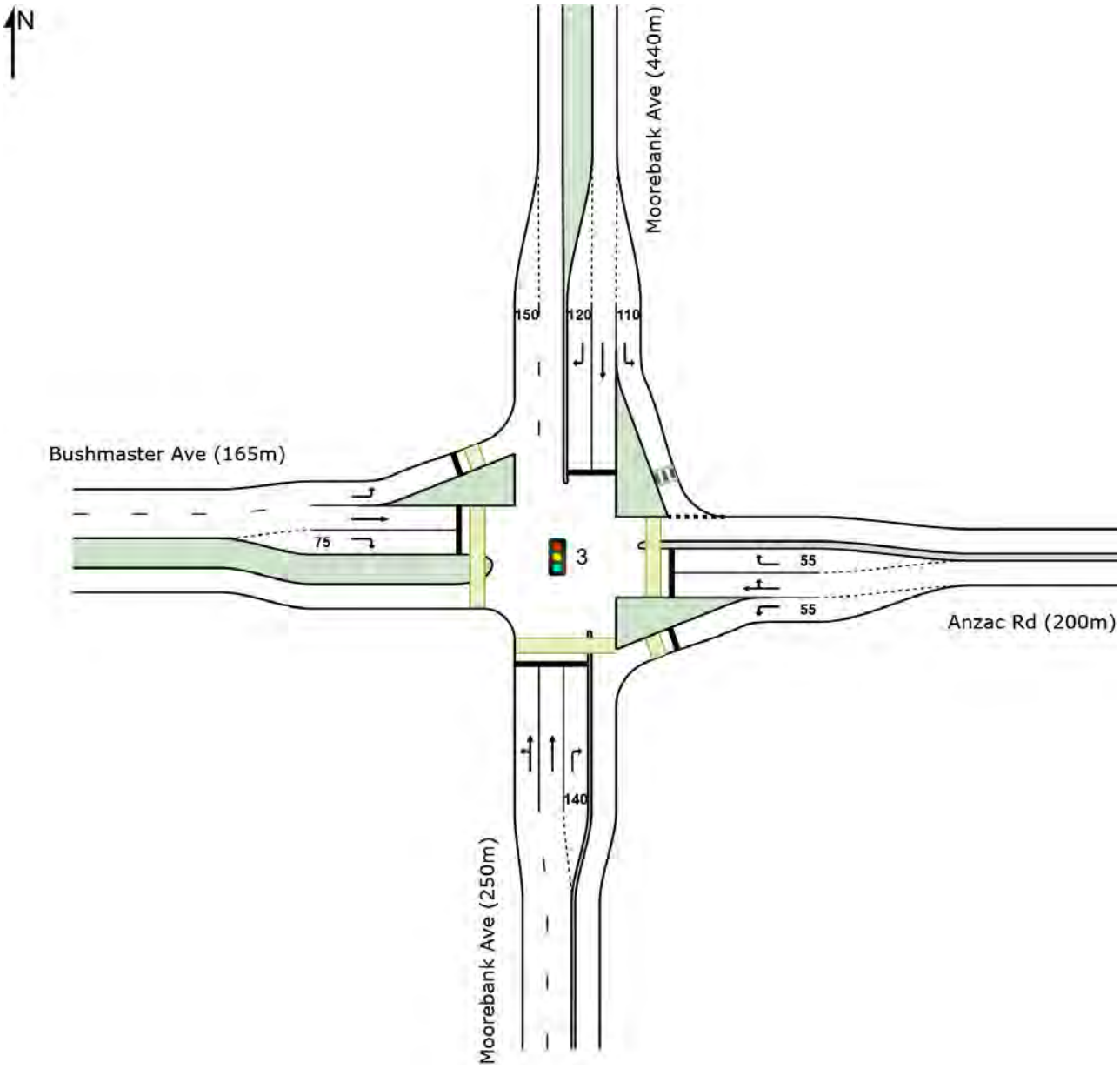


SITE LAYOUT

Site: 3 [AM Peak (Site Folder: 6 - Phase 3 - Stage 2 - Q3 2024)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.

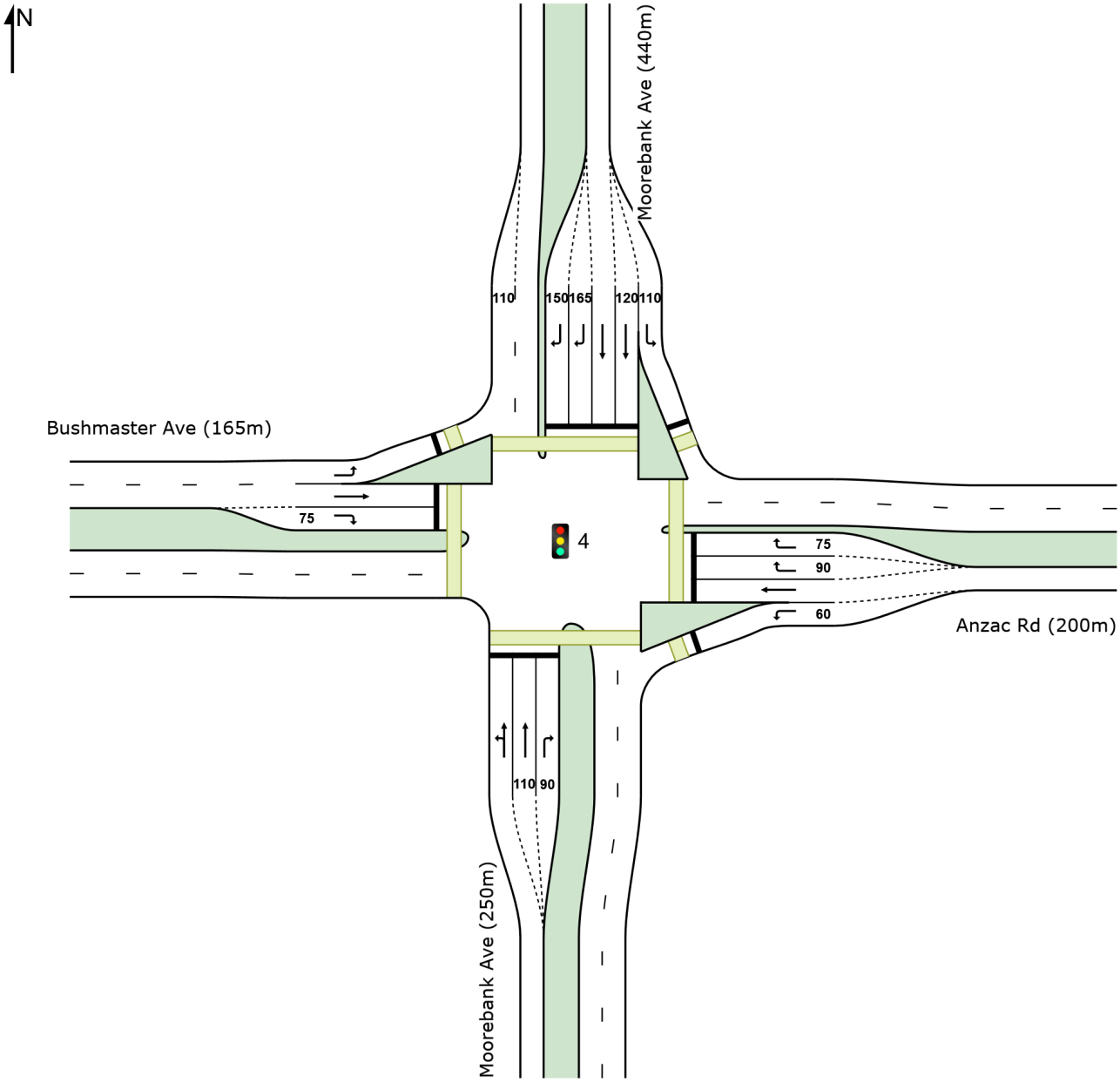


SITE LAYOUT

Site: 4 [AM Peak (Site Folder: 8 - Phase 4 - Stage 3 - Q1 2025)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 2A [AM Peak (Site Folder: 1 - Phase 2A - Stage 1 - Q1 2024)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Moorebank Ave (250m)														
1	L2	15	8	16	53.3	0.558	35.9	LOS C	16.3	123.6	0.83	0.73	0.83	25.7
2	T1	776	59	817	7.6	0.693	32.4	LOS C	22.7	169.5	0.86	0.77	0.86	34.7
3	R2	361	7	380	1.9	* 0.983	95.7	LOS F	31.1	221.0	1.00	1.08	1.56	13.3
Approach		1152	74	1213	6.4	0.983	52.3	LOS D	31.1	221.0	0.91	0.86	1.08	25.2
East: Anzac Rd (200m)														
4	L2	175	3	184	1.7	0.395	43.8	LOS D	8.9	62.9	0.86	0.80	0.86	22.8
5	T1	1	0	1	0.0	* 0.395	40.8	LOS C	8.9	62.9	0.86	0.80	0.86	19.2
6	R2	267	28	281	10.5	* 0.965	91.4	LOS F	22.2	169.0	1.00	1.08	1.56	17.8
Approach		443	31	466	7.0	0.965	72.5	LOS F	22.2	169.0	0.94	0.97	1.28	19.1
North: Moorebank Ave (440m)														
7	L2	363	25	382	6.9	0.330	12.2	LOS A	8.0	59.5	0.43	0.68	0.43	44.6
8	T1	502	48	528	9.6	* 0.967	77.5	LOS F	41.9	317.3	1.00	1.24	1.44	21.3
9	R2	87	55	92	63.2	0.691	63.2	LOS E	5.6	60.5	0.99	0.88	1.14	21.5
Approach		952	128	1002	13.4	0.967	51.3	LOS D	41.9	317.3	0.78	0.99	1.03	26.4
West: Bushmaster Ave (165m)														
10	L2	63	50	66	79.4	0.259	20.3	LOS B	1.4	16.4	0.70	0.68	0.70	34.8
11	T1	2	0	2	0.0	0.130	75.3	LOS F	0.1	1.0	1.00	0.59	1.00	13.4
12	R2	12	8	13	66.7	0.086	48.3	LOS D	0.6	7.0	0.85	0.68	0.85	17.2
Approach		77	58	81	75.3	0.259	26.1	LOS B	1.4	16.4	0.73	0.68	0.73	30.4
All Vehicles		2624	291	2762	11.1	0.983	54.6	LOS D	41.9	317.3	0.86	0.92	1.09	24.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Moorebank Ave (250m)												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	83.9	35.7	0.43
North: Moorebank Ave (440m)												
P3	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	83.9	35.7	0.43

West: Bushmaster Ave (165m)												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	234.3	216.2	0.92
P4B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	224.4	204.3	0.91
All Pedestrians		40	42	54.2	LOS E	0.0	0.0	0.95	0.95	156.7	123.0	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2A [PM Peak (Site Folder: 1 - Phase 2A - Stage 1 - Q1 2024)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Moorebank Ave (250m)														
1	L2	14	11	15	78.6	0.445	34.4	LOS C	12.2	92.5	0.78	0.68	0.78	26.4
2	T1	627	37	660	5.9	0.552	30.3	LOS C	17.3	127.2	0.81	0.71	0.81	35.7
3	R2	158	3	166	1.9	0.860	71.9	LOS F	10.8	77.0	1.00	0.94	1.32	16.4
Approach		799	51	841	6.4	0.860	38.6	LOS C	17.3	127.2	0.84	0.75	0.91	30.5
East: Anzac Rd (200m)														
4	L2	295	5	311	1.7	0.882	67.6	LOS E	20.6	146.3	1.00	0.97	1.27	17.2
5	T1	1	0	1	0.0	*0.882	64.5	LOS E	20.6	146.3	1.00	0.97	1.27	14.4
6	R2	332	20	349	6.0	*0.979	95.3	LOS F	28.5	209.8	1.00	1.10	1.57	17.3
Approach		628	25	661	4.0	0.979	82.2	LOS F	28.5	209.8	1.00	1.03	1.43	17.3
North: Moorebank Ave (440m)														
7	L2	315	14	332	4.4	0.240	7.8	LOS A	3.8	27.6	0.27	0.63	0.27	48.7
8	T1	587	34	618	5.8	*0.963	70.9	LOS F	47.2	346.9	1.00	1.21	1.39	22.5
9	R2	65	57	68	87.7	*0.971	109.5	LOS F	5.8	71.3	1.00	1.19	1.93	14.9
Approach		967	105	1018	10.9	0.971	52.9	LOS D	47.2	346.9	0.76	1.02	1.06	26.1
West: Bushmaster Ave (165m)														
10	L2	188	51	198	27.1	0.455	20.0	LOS B	4.8	41.5	0.74	0.73	0.74	36.4
11	T1	16	0	17	0.0	0.207	64.0	LOS E	1.0	7.1	1.00	0.69	1.00	15.0
12	R2	19	11	20	57.9	0.111	45.6	LOS D	1.0	10.2	0.83	0.69	0.83	17.9
Approach		223	62	235	27.8	0.455	25.3	LOS B	4.8	41.5	0.77	0.73	0.77	32.2
All Vehicles		2617	243	2755	9.3	0.979	53.2	LOS D	47.2	346.9	0.85	0.92	1.08	24.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Moorebank Ave (250m)												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	83.9	35.7	0.43
North: Moorebank Ave (440m)												
P3	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	83.9	35.7	0.43

West: Bushmaster Ave (165m)												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	234.3	216.2	0.92
P4B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	224.4	204.3	0.91
All Pedestrians		40	42	54.2	LOS E	0.0	0.0	0.95	0.95	156.7	123.0	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2A [AM Peak (Site Folder: 2 - Phase 2A - Stage 2 - Q2 2024)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Moorebank Ave (250m)														
1	L2	15	8	16	53.3	0.570	36.8	LOS C	16.6	125.5	0.84	0.74	0.84	25.3
2	T1	776	59	817	7.6	0.707	33.3	LOS C	23.1	172.0	0.88	0.78	0.88	34.2
3	R2	361	7	380	1.9	* 0.983	95.7	LOS F	31.1	221.0	1.00	1.08	1.56	13.3
Approach		1152	74	1213	6.4	0.983	52.9	LOS D	31.1	221.0	0.91	0.87	1.09	25.0
East: Anzac Rd (200m)														
4	L2	175	3	184	1.7	0.395	43.8	LOS D	8.9	62.9	0.86	0.80	0.86	22.8
5	T1	1	0	1	0.0	* 0.395	40.8	LOS C	8.9	62.9	0.86	0.80	0.86	19.2
6	R2	267	28	281	10.5	* 0.965	91.4	LOS F	22.2	169.0	1.00	1.08	1.56	17.8
Approach		443	31	466	7.0	0.965	72.5	LOS F	22.2	169.0	0.94	0.97	1.28	19.1
North: Moorebank Ave (440m)														
7	L2	363	25	382	6.9	0.330	12.2	LOS A	8.0	59.5	0.43	0.68	0.43	44.6
8	T1	502	48	528	9.6	* 0.967	77.5	LOS F	41.9	317.3	1.00	1.24	1.44	21.3
9	R2	93	58	98	62.4	0.698	62.5	LOS E	6.0	64.2	0.99	0.88	1.14	21.6
Approach		958	131	1008	13.7	0.967	51.3	LOS D	41.9	317.3	0.78	0.99	1.03	26.4
West: Bushmaster Ave (165m)														
10	L2	69	53	73	76.8	0.276	20.4	LOS B	1.5	17.9	0.71	0.68	0.71	34.8
11	T1	2	0	2	0.0	0.130	75.3	LOS F	0.1	1.0	1.00	0.59	1.00	13.4
12	R2	12	8	13	66.7	0.086	48.3	LOS D	0.6	7.0	0.85	0.68	0.85	17.2
Approach		83	61	87	73.5	0.276	25.8	LOS B	1.5	17.9	0.73	0.68	0.73	30.7
All Vehicles		2636	297	2775	11.3	0.983	54.8	LOS D	41.9	317.3	0.87	0.93	1.09	24.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Moorebank Ave (250m)												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	83.9	35.7	0.43
North: Moorebank Ave (440m)												
P3	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	83.9	35.7	0.43

West: Bushmaster Ave (165m)												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	234.3	216.2	0.92
P4B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	224.4	204.3	0.91
All Pedestrians		40	42	54.2	LOS E	0.0	0.0	0.95	0.95	156.7	123.0	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2A [PM Peak (Site Folder: 2 - Phase 2A - Stage 2 - Q2 2024)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Moorebank Ave (250m)														
1	L2	14	11	15	78.6	0.548	42.1	LOS C	13.9	105.0	0.87	0.76	0.87	23.4
2	T1	627	37	660	5.9	0.680	38.3	LOS C	19.6	144.1	0.90	0.79	0.90	32.1
3	R2	158	3	166	1.9	* 0.931	82.4	LOS F	11.8	83.8	1.00	1.01	1.53	14.8
Approach		799	51	841	6.4	0.931	47.1	LOS D	19.6	144.1	0.92	0.83	1.03	27.5
East: Anzac Rd (200m)														
4	L2	295	5	311	1.7	0.881	67.4	LOS E	20.6	146.0	1.00	0.96	1.27	17.2
5	T1	1	0	1	0.0	* 0.881	64.3	LOS E	20.6	146.0	1.00	0.96	1.27	14.4
6	R2	332	20	349	6.0	* 0.943	80.6	LOS F	26.0	191.6	1.00	1.04	1.43	19.4
Approach		628	25	661	4.0	0.943	74.4	LOS F	26.0	191.6	1.00	1.00	1.36	18.5
North: Moorebank Ave (440m)														
7	L2	315	14	332	4.4	0.271	8.0	LOS A	3.9	28.7	0.29	0.64	0.29	48.5
8	T1	587	34	618	5.8	* 0.983	81.4	LOS F	50.4	370.5	1.00	1.27	1.47	20.6
9	R2	70	59	74	84.3	0.662	63.4	LOS E	4.5	54.4	0.98	0.87	1.13	21.4
Approach		972	107	1023	11.0	0.983	56.3	LOS D	50.4	370.5	0.77	1.04	1.06	25.2
West: Bushmaster Ave (165m)														
10	L2	193	53	203	27.5	0.451	21.1	LOS B	5.0	43.5	0.77	0.74	0.77	35.7
11	T1	16	0	17	0.0	0.173	62.2	LOS E	1.0	7.0	0.99	0.68	0.99	15.3
12	R2	19	11	20	57.9	0.106	44.6	LOS D	1.0	10.0	0.83	0.69	0.83	18.1
Approach		228	64	240	28.1	0.451	25.9	LOS B	5.0	43.5	0.79	0.74	0.79	31.9
All Vehicles		2627	247	2765	9.4	0.983	55.2	LOS D	50.4	370.5	0.87	0.94	1.10	24.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Moorebank Ave (250m)												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	83.9	35.7	0.43
North: Moorebank Ave (440m)												
P3	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	83.9	35.7	0.43

West: Bushmaster Ave (165m)												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	234.3	216.2	0.92
P4B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	224.4	204.3	0.91
All Pedestrians		40	42	54.2	LOS E	0.0	0.0	0.95	0.95	156.7	123.0	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2A [AM Peak (Site Folder: 3 - Phase 2A - Stage 2 - Q3 2024)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Moorebank Ave (250m)														
1	L2	16	8	17	50.0	0.596	38.5	LOS C	17.1	129.3	0.86	0.76	0.86	24.6
2	T1	776	59	817	7.6	0.739	35.2	LOS C	23.8	177.6	0.90	0.80	0.90	33.4
3	R2	361	7	380	1.9	* 0.983	95.7	LOS F	31.1	221.0	1.00	1.08	1.56	13.3
Approach		1153	74	1214	6.4	0.983	54.2	LOS D	31.1	221.0	0.93	0.88	1.11	24.7
East: Anzac Rd (200m)														
4	L2	175	3	184	1.7	0.395	43.8	LOS D	8.9	62.9	0.86	0.80	0.86	22.8
5	T1	1	0	1	0.0	* 0.395	40.8	LOS C	8.9	62.9	0.86	0.80	0.86	19.2
6	R2	267	28	281	10.5	* 0.965	91.4	LOS F	22.2	169.0	1.00	1.08	1.56	17.8
Approach		443	31	466	7.0	0.965	72.5	LOS F	22.2	169.0	0.94	0.97	1.28	19.1
North: Moorebank Ave (440m)														
7	L2	363	25	382	6.9	0.330	12.2	LOS A	8.0	59.5	0.43	0.68	0.43	44.6
8	T1	502	48	528	9.6	* 0.967	77.5	LOS F	41.9	317.3	1.00	1.24	1.44	21.3
9	R2	103	68	108	66.0	0.730	62.7	LOS E	6.7	73.5	0.99	0.90	1.17	21.6
Approach		968	141	1019	14.6	0.967	51.4	LOS D	41.9	317.3	0.79	0.99	1.04	26.3
West: Bushmaster Ave (165m)														
10	L2	79	63	83	79.7	0.318	21.2	LOS B	1.8	21.7	0.73	0.70	0.73	34.4
11	T1	2	0	2	0.0	0.130	75.3	LOS F	0.1	1.0	1.00	0.59	1.00	13.4
12	R2	13	8	14	61.5	0.088	48.2	LOS D	0.7	7.3	0.85	0.68	0.85	17.3
Approach		94	71	99	75.5	0.318	26.1	LOS B	1.8	21.7	0.75	0.69	0.75	30.7
All Vehicles		2658	317	2798	11.9	0.983	55.2	LOS D	41.9	317.3	0.87	0.93	1.10	24.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Moorebank Ave (250m)												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	83.9	35.7	0.43
North: Moorebank Ave (440m)												
P3	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	83.9	35.7	0.43
West: Bushmaster Ave (165m)												

P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	234.3	216.2	0.92
P4B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	224.4	204.3	0.91
All Pedestrians		40	42	54.2	LOS E	0.0	0.0	0.95	0.95	156.7	123.0	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2A [PM Peak (Site Folder: 3 - Phase 2A - Stage 2 - Q3 2024)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Moorebank Ave (250m)														
1	L2	15	11	16	73.3	0.548	42.0	LOS C	13.9	105.2	0.87	0.76	0.87	23.4
2	T1	627	37	660	5.9	0.681	38.3	LOS C	19.6	144.3	0.91	0.79	0.91	32.1
3	R2	158	3	166	1.9	* 0.931	82.4	LOS F	11.8	83.8	1.00	1.01	1.53	14.8
Approach		800	51	842	6.4	0.931	47.1	LOS D	19.6	144.3	0.92	0.83	1.03	27.5
East: Anzac Rd (200m)														
4	L2	295	5	311	1.7	0.881	67.4	LOS E	20.6	146.0	1.00	0.96	1.27	17.2
5	T1	1	0	1	0.0	* 0.881	64.3	LOS E	20.6	146.0	1.00	0.96	1.27	14.4
6	R2	332	20	349	6.0	* 0.979	95.3	LOS F	28.5	209.8	1.00	1.10	1.57	17.3
Approach		628	25	661	4.0	0.979	82.1	LOS F	28.5	209.8	1.00	1.03	1.43	17.3
North: Moorebank Ave (440m)														
7	L2	315	14	332	4.4	0.271	8.0	LOS A	3.9	28.7	0.29	0.64	0.29	48.5
8	T1	587	34	618	5.8	* 0.973	75.5	LOS F	48.6	356.9	1.00	1.24	1.43	21.6
9	R2	76	65	80	85.5	0.691	63.7	LOS E	5.0	60.1	0.99	0.88	1.16	21.4
Approach		978	113	1029	11.6	0.973	52.8	LOS D	48.6	356.9	0.77	1.02	1.04	26.1
West: Bushmaster Ave (165m)														
10	L2	199	59	209	29.6	0.466	21.2	LOS B	5.1	45.0	0.77	0.75	0.77	35.6
11	T1	16	0	17	0.0	0.173	62.2	LOS E	1.0	7.0	0.99	0.68	0.99	15.3
12	R2	20	11	21	55.0	0.113	45.6	LOS D	1.0	10.5	0.84	0.69	0.84	18.0
Approach		235	70	247	29.8	0.466	26.0	LOS B	5.1	45.0	0.79	0.74	0.79	31.9
All Vehicles		2641	259	2780	9.8	0.979	55.7	LOS D	48.6	356.9	0.87	0.94	1.11	24.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Moorebank Ave (250m)												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	83.9	35.7	0.43
North: Moorebank Ave (440m)												
P3	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	83.9	35.7	0.43

West: Bushmaster Ave (165m)												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	234.3	216.2	0.92
P4B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	224.4	204.3	0.91
All Pedestrians		40	42	54.2	LOS E	0.0	0.0	0.95	0.95	156.7	123.0	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2B [AM Peak (Site Folder: 4 - Phase 2B - Stage 2 - Q3 2024)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Moorebank Ave (250m)														
1	L2	16	8	17	50.0	0.715	45.7	LOS D	18.9	142.9	0.94	0.83	0.95	22.0
2	T1	776	59	817	7.6	* 0.908	52.6	LOS D	32.4	241.7	0.98	0.98	1.13	27.2
3	R2	361	7	380	1.9	* 0.913	70.8	LOS F	26.3	187.0	1.00	0.99	1.32	16.6
Approach		1153	74	1214	6.4	0.913	58.2	LOS E	32.4	241.7	0.98	0.98	1.19	23.6
East: Anzac Rd (200m)														
4	L2	175	3	184	1.7	0.202	14.7	LOS B	3.9	27.5	0.57	0.70	0.57	38.6
5	T1	1	0	1	0.0	0.202	11.6	LOS A	3.9	27.5	0.57	0.70	0.57	32.5
6	R2	267	28	281	10.5	* 0.901	71.5	LOS F	19.2	146.9	1.00	1.00	1.35	20.9
Approach		443	31	466	7.0	0.901	48.9	LOS D	19.2	146.9	0.83	0.88	1.04	24.5
North: Moorebank Ave (440m)														
7	L2	363	25	382	6.9	0.829	48.0	LOS D	28.5	212.6	0.97	0.93	1.07	26.7
8	T1	502	48	528	9.6	0.829	46.6	LOS D	28.5	212.6	0.99	0.96	1.11	28.3
9	R2	103	68	108	66.0	0.599	53.2	LOS D	6.0	65.8	0.94	0.82	0.96	23.7
Approach		968	141	1019	14.6	0.829	47.8	LOS D	28.5	212.6	0.98	0.93	1.08	27.2
West: Bushmaster Ave (165m)														
10	L2	79	63	83	79.7	0.321	23.6	LOS B	1.9	22.9	0.76	0.70	0.76	33.2
11	T1	2	0	2	0.0	* 0.130	75.3	LOS F	0.1	1.0	1.00	0.59	1.00	13.4
12	R2	13	8	14	61.5	0.226	65.7	LOS E	0.8	8.9	0.97	0.71	0.97	14.4
Approach		94	71	99	75.5	0.321	30.5	LOS C	1.9	22.9	0.80	0.70	0.80	28.8
All Vehicles		2658	317	2798	11.9	0.913	51.9	LOS D	32.4	241.7	0.95	0.94	1.11	25.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Moorebank Ave (250m)												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	87.1	39.5	0.45
East: Anzac Rd (200m)												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	79.5	32.9	0.41

P2B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	74.4	24.3	0.33
West: Bushmaster Ave (165m)												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	234.1	215.9	0.92
P4B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	224.4	204.3	0.91
All Pedestrians		50	53	54.2	LOS E	0.0	0.0	0.95	0.95	139.9	103.4	0.74

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2B [PM Peak (Site Folder: 4 - Phase 2B - Stage 2 - Q3 2024)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Moorebank Ave (250m)														
1	L2	15	11	16	73.3	0.621	46.3	LOS D	14.6	110.9	0.92	0.79	0.92	21.9
2	T1	627	37	660	5.9	0.788	44.9	LOS D	22.2	163.4	0.96	0.86	1.00	29.6
3	R2	158	3	166	1.9	* 0.798	67.2	LOS E	10.4	73.6	1.00	0.89	1.20	17.3
Approach		800	51	842	6.4	0.798	49.3	LOS D	22.2	163.4	0.97	0.87	1.04	26.8
East: Anzac Rd (200m)														
4	L2	295	5	311	1.7	0.329	15.3	LOS B	7.5	52.9	0.60	0.73	0.60	38.1
5	T1	1	0	1	0.0	0.329	12.2	LOS A	7.5	52.9	0.60	0.73	0.60	32.2
6	R2	332	20	349	6.0	0.783	47.7	LOS D	18.9	139.4	0.93	0.88	1.01	26.6
Approach		628	25	661	4.0	0.783	32.4	LOS C	18.9	139.4	0.77	0.81	0.82	30.1
North: Moorebank Ave (440m)														
7	L2	315	14	332	4.4	* 0.821	47.9	LOS D	28.4	206.8	0.98	0.92	1.06	26.9
8	T1	587	34	618	5.8	0.821	44.7	LOS D	28.4	206.8	0.99	0.94	1.08	28.9
9	R2	76	65	80	85.5	0.806	73.3	LOS F	5.4	65.8	1.00	0.98	1.38	19.6
Approach		978	113	1029	11.6	0.821	48.0	LOS D	28.4	206.8	0.98	0.94	1.10	27.3
West: Bushmaster Ave (165m)														
10	L2	199	59	209	29.6	0.603	27.9	LOS B	6.7	59.2	0.90	0.80	0.90	32.2
11	T1	16	0	17	0.0	* 0.518	72.6	LOS F	1.1	7.9	1.00	0.71	1.10	13.7
12	R2	20	11	21	55.0	0.490	72.2	LOS F	1.4	14.2	1.00	0.75	1.06	13.7
Approach		235	70	247	29.8	0.603	34.7	LOS C	6.7	59.2	0.92	0.79	0.93	28.2
All Vehicles		2641	259	2780	9.8	0.821	43.5	LOS D	28.4	206.8	0.92	0.87	1.00	27.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Moorebank Ave (250m)												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	87.1	39.5	0.45
East: Anzac Rd (200m)												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	79.5	32.9	0.41

P2B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	74.4	24.3	0.33
West: Bushmaster Ave (165m)												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	234.1	215.9	0.92
P4B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	224.4	204.3	0.91
All Pedestrians		50	53	54.2	LOS E	0.0	0.0	0.95	0.95	139.9	103.4	0.74

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2B [AM Peak (Site Folder: 5 - Phase 2B - Stage 2 - Q4 2024)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Moorebank Ave (250m)														
1	L2	18	8	19	44.4	0.717	45.7	LOS D	18.9	143.4	0.95	0.83	0.95	22.0
2	T1	776	59	817	7.6	*0.910	53.0	LOS D	32.6	243.3	0.98	0.98	1.14	27.1
3	R2	361	7	380	1.9	*0.913	70.8	LOS F	26.3	187.0	1.00	0.99	1.32	16.6
Approach		1155	74	1216	6.4	0.913	58.4	LOS E	32.6	243.3	0.98	0.98	1.19	23.6
East: Anzac Rd (200m)														
4	L2	175	3	184	1.7	0.203	14.8	LOS B	3.9	27.7	0.57	0.70	0.57	38.6
5	T1	2	0	2	0.0	0.203	11.7	LOS A	3.9	27.7	0.57	0.70	0.57	32.6
6	R2	267	28	281	10.5	*0.901	71.5	LOS F	19.3	147.0	1.00	1.00	1.35	20.9
Approach		444	31	467	7.0	0.901	48.9	LOS D	19.3	147.0	0.83	0.88	1.04	24.5
North: Moorebank Ave (440m)														
7	L2	363	25	382	6.9	0.829	48.0	LOS D	28.5	212.6	0.97	0.93	1.07	26.7
8	T1	502	48	528	9.6	0.829	46.6	LOS D	28.5	212.6	0.99	0.96	1.11	28.3
9	R2	141	99	148	70.2	0.851	71.0	LOS F	10.3	115.1	1.00	1.01	1.37	20.0
Approach		1006	172	1059	17.1	0.851	50.5	LOS D	28.5	212.6	0.99	0.95	1.13	26.3
West: Bushmaster Ave (165m)														
10	L2	116	93	122	80.2	0.473	24.8	LOS B	3.0	35.9	0.81	0.73	0.81	32.7
11	T1	3	0	3	0.0	*0.194	76.0	LOS F	0.2	1.5	1.00	0.60	1.00	13.3
12	R2	14	8	15	57.1	0.234	65.6	LOS E	0.9	9.3	0.97	0.71	0.97	14.5
Approach		133	101	140	75.9	0.473	30.3	LOS C	3.0	35.9	0.83	0.73	0.83	29.3
All Vehicles		2738	378	2882	13.8	0.913	52.6	LOS D	32.6	243.3	0.95	0.94	1.13	25.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Moorebank Ave (250m)												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	87.1	39.5	0.45
East: Anzac Rd (200m)												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	79.5	32.9	0.41

P2B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	74.4	24.3	0.33
West: Bushmaster Ave (165m)												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	234.1	215.9	0.92
P4B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	224.4	204.3	0.91
All Pedestrians		50	53	54.2	LOS E	0.0	0.0	0.95	0.95	139.9	103.4	0.74

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2B [PM Peakk (Site Folder: 5 - Phase 2B - Stage 2 - Q4 2024)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Moorebank Ave (250m)														
1	L2	17	11	18	64.7	0.661	48.3	LOS D	15.1	114.2	0.94	0.81	0.94	21.2
2	T1	627	37	660	5.9	*0.840	49.1	LOS D	23.9	175.5	0.98	0.91	1.06	28.2
3	R2	158	3	166	1.9	0.860	72.0	LOS F	10.8	77.0	1.00	0.94	1.32	16.5
Approach		802	51	844	6.4	0.860	53.6	LOS D	23.9	175.5	0.98	0.91	1.11	25.5
East: Anzac Rd (200m)														
4	L2	295	5	311	1.7	0.342	15.3	LOS B	7.5	53.3	0.62	0.74	0.62	38.1
5	T1	2	0	2	0.0	0.342	12.2	LOS A	7.5	53.3	0.62	0.74	0.62	32.2
6	R2	332	20	349	6.0	*0.842	54.6	LOS D	20.6	151.9	0.95	0.92	1.12	24.6
Approach		629	25	662	4.0	0.842	36.0	LOS C	20.6	151.9	0.79	0.84	0.89	28.6
North: Moorebank Ave (440m)														
7	L2	315	14	332	4.4	0.763	41.2	LOS C	25.6	186.8	0.94	0.87	0.95	29.2
8	T1	587	34	618	5.8	0.763	38.2	LOS C	25.6	186.8	0.95	0.86	0.97	31.2
9	R2	102	84	107	82.4	*0.864	77.8	LOS F	7.7	91.7	1.00	1.03	1.48	18.8
Approach		1004	132	1057	13.1	0.864	43.2	LOS D	25.6	186.8	0.95	0.88	1.02	28.8
West: Bushmaster Ave (165m)														
10	L2	224	77	236	34.4	0.669	28.8	LOS C	7.8	71.1	0.91	0.82	0.92	31.8
11	T1	17	0	18	0.0	*0.551	72.8	LOS F	1.2	8.4	1.00	0.72	1.13	13.7
12	R2	21	11	22	52.4	0.430	69.8	LOS E	1.4	14.3	1.00	0.73	1.00	14.1
Approach		262	88	276	33.6	0.669	35.0	LOS C	7.8	71.1	0.93	0.81	0.94	28.2
All Vehicles		2697	296	2839	11.0	0.864	43.8	LOS D	25.6	186.8	0.92	0.87	1.01	27.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Moorebank Ave (250m)												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	87.1	39.5	0.45
East: Anzac Rd (200m)												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	79.5	32.9	0.41

P2B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	74.4	24.3	0.33
West: Bushmaster Ave (165m)												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	234.1	215.9	0.92
P4B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	224.4	204.3	0.91
All Pedestrians		50	53	54.2	LOS E	0.0	0.0	0.95	0.95	139.9	103.4	0.74

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 3 [AM Peak (Site Folder: 6 - Phase 3 - Stage 2 - Q3 2024)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Moorebank Ave (250m)														
1	L2	16	8	17	50.0	0.562	38.5	LOS C	16.5	124.8	0.83	0.74	0.83	24.5
2	T1	776	59	817	7.6	0.690	33.3	LOS C	22.6	168.6	0.86	0.77	0.86	34.1
3	R2	361	7	380	1.9	* 0.913	70.8	LOS F	26.3	187.0	1.00	1.00	1.32	16.7
Approach		1153	74	1214	6.4	0.913	45.2	LOS D	26.3	187.0	0.91	0.84	1.00	27.3
East: Anzac Rd (200m)														
4	L2	175	3	184	1.7	0.238	16.9	LOS B	4.4	31.3	0.62	0.73	0.62	36.8
5	T1	1	0	1	0.0	0.768	64.6	LOS E	7.9	60.2	1.00	0.88	1.20	14.4
6	R2	267	28	281	10.5	* 0.943	79.7	LOS F	11.4	87.3	1.00	0.98	1.42	19.7
Approach		443	31	466	7.0	0.943	54.8	LOS D	11.4	87.3	0.85	0.88	1.10	23.1
North: Moorebank Ave (440m)														
7	L2	363	25	382	6.9	0.337	12.3	LOS A	8.2	61.0	0.45	0.69	0.45	44.4
8	T1	502	48	528	9.6	* 0.903	53.8	LOS D	35.0	264.9	0.99	1.07	1.23	26.4
9	R2	103	68	108	66.0	0.671	58.3	LOS E	6.4	70.0	0.97	0.86	1.07	22.5
Approach		968	141	1019	14.6	0.903	38.7	LOS C	35.0	264.9	0.79	0.91	0.92	30.4
West: Bushmaster Ave (165m)														
10	L2	79	63	83	79.7	0.265	16.9	LOS B	1.8	21.2	0.62	0.65	0.62	36.5
11	T1	2	0	2	0.0	0.022	60.3	LOS E	0.1	0.8	0.97	0.59	0.97	15.7
12	R2	13	8	14	61.5	* 0.339	71.5	LOS F	0.9	9.5	1.00	0.71	1.00	13.7
Approach		94	71	99	75.5	0.339	25.4	LOS B	1.8	21.2	0.68	0.66	0.68	30.8
All Vehicles		2658	317	2798	11.9	0.943	43.7	LOS D	35.0	264.9	0.85	0.86	0.98	27.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Moorebank Ave (250m)												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	83.9	35.7	0.43
East: Anzac Rd (200m)												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	79.5	32.9	0.41

P2B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	74.4	24.3	0.33
West: Bushmaster Ave (165m)												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	234.1	215.9	0.92
P4B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	224.4	204.3	0.91
All Pedestrians		50	53	54.2	LOS E	0.0	0.0	0.95	0.95	139.3	102.6	0.74

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 3 [PM Peak (Site Folder: 6 - Phase 3 - Stage 2 - Q3 2024)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Moorebank Ave (250m)														
1	L2	15	11	16	73.3	0.478	40.2	LOS C	12.9	97.6	0.81	0.72	0.81	23.9
2	T1	627	37	660	5.9	0.587	34.1	LOS C	18.0	132.2	0.84	0.74	0.84	33.8
3	R2	158	3	166	1.9	* 0.798	67.2	LOS E	10.4	73.6	1.00	0.89	1.20	17.3
Approach		800	51	842	6.4	0.798	40.7	LOS C	18.0	132.2	0.87	0.77	0.91	29.6
East: Anzac Rd (200m)														
4	L2	295	5	311	1.7	0.460	18.5	LOS B	8.5	60.4	0.71	0.77	0.71	35.5
5	T1	1	0	1	0.0	0.674	57.7	LOS E	9.2	67.4	1.00	0.84	1.05	15.5
6	R2	332	20	349	6.0	* 0.828	65.6	LOS E	12.2	90.0	1.00	0.88	1.15	22.4
Approach		628	25	661	4.0	0.828	43.5	LOS D	12.2	90.0	0.86	0.83	0.94	26.1
North: Moorebank Ave (440m)														
7	L2	315	14	332	4.4	0.271	7.9	LOS A	3.8	27.6	0.28	0.63	0.28	48.7
8	T1	587	34	618	5.8	* 0.856	36.9	LOS C	34.1	250.4	0.90	0.90	1.01	32.1
9	R2	76	65	80	85.5	0.605	57.9	LOS E	4.6	56.3	0.96	0.83	1.02	22.6
Approach		978	113	1029	11.6	0.856	29.1	LOS C	34.1	250.4	0.71	0.81	0.77	34.8
West: Bushmaster Ave (165m)														
10	L2	199	59	209	29.6	0.404	16.4	LOS B	4.1	35.8	0.67	0.70	0.67	38.2
11	T1	16	0	17	0.0	0.173	62.2	LOS E	1.0	7.0	0.99	0.68	0.99	15.3
12	R2	20	11	21	55.0	* 0.490	72.2	LOS F	1.4	14.2	1.00	0.75	1.06	13.7
Approach		235	70	247	29.8	0.490	24.3	LOS B	4.1	35.8	0.72	0.71	0.72	32.5
All Vehicles		2641	259	2780	9.8	0.856	35.6	LOS C	34.1	250.4	0.79	0.79	0.85	30.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Moorebank Ave (250m)												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	83.9	35.7	0.43
East: Anzac Rd (200m)												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	79.5	32.9	0.41

P2B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	74.4	24.3	0.33
West: Bushmaster Ave (165m)												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	234.1	215.9	0.92
P4B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	224.4	204.3	0.91
All Pedestrians		50	53	54.2	LOS E	0.0	0.0	0.95	0.95	139.3	102.6	0.74

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 3 [AM Peak (Site Folder: 7 - Phase 3 - Stage 2 - Q4 2024)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Moorebank Ave (250m)														
1	L2	18	8	19	44.4	0.629	42.8	LOS D	17.8	134.4	0.89	0.79	0.89	22.9
2	T1	776	59	817	7.6	0.772	38.9	LOS C	25.0	186.5	0.92	0.84	0.94	31.7
3	R2	361	7	380	1.9	* 0.913	70.8	LOS F	26.3	187.0	1.00	1.00	1.32	16.7
Approach		1155	74	1216	6.4	0.913	49.0	LOS D	26.3	187.0	0.95	0.88	1.06	26.1
East: Anzac Rd (200m)														
4	L2	175	3	184	1.7	0.238	16.9	LOS B	4.4	31.3	0.62	0.73	0.62	36.8
5	T1	2	0	2	0.0	0.770	64.7	LOS E	7.9	60.5	1.00	0.89	1.20	14.4
6	R2	267	28	281	10.5	* 0.946	80.2	LOS F	11.5	88.0	1.00	0.98	1.42	19.6
Approach		444	31	467	7.0	0.946	55.2	LOS D	11.5	88.0	0.85	0.88	1.11	23.0
North: Moorebank Ave (440m)														
7	L2	363	25	382	6.9	0.370	12.3	LOS A	8.2	61.1	0.46	0.69	0.46	44.4
8	T1	502	48	528	9.6	* 0.904	54.1	LOS D	35.1	265.6	0.99	1.07	1.23	26.4
9	R2	141	99	148	70.2	0.794	62.6	LOS E	9.5	106.6	0.99	0.95	1.24	21.6
Approach		1006	172	1059	17.1	0.904	40.2	LOS C	35.1	265.6	0.80	0.92	0.95	29.8
West: Bushmaster Ave (165m)														
10	L2	116	93	122	80.2	0.379	18.7	LOS B	3.0	35.2	0.68	0.69	0.68	35.6
11	T1	3	0	3	0.0	0.032	60.6	LOS E	0.2	1.3	0.97	0.61	0.97	15.6
12	R2	14	8	15	57.1	* 0.350	71.3	LOS F	0.9	9.9	1.00	0.71	1.00	13.8
Approach		133	101	140	75.9	0.379	25.2	LOS B	3.0	35.2	0.72	0.69	0.72	31.3
All Vehicles		2738	378	2882	13.8	0.946	45.6	LOS D	35.1	265.6	0.87	0.89	1.01	27.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Moorebank Ave (250m)												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	83.9	35.7	0.43
East: Anzac Rd (200m)												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	79.5	32.9	0.41

P2B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	74.4	24.3	0.33
West: Bushmaster Ave (165m)												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	234.1	215.9	0.92
P4B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	224.4	204.3	0.91
All Pedestrians		50	53	54.2	LOS E	0.0	0.0	0.95	0.95	139.3	102.6	0.74

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 3 [PM Peak (Site Folder: 7 - Phase 3 - Stage 2 - Q4 2024)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Moorebank Ave (250m)														
1	L2	17	11	18	64.7	0.539	44.4	LOS D	13.9	104.9	0.87	0.77	0.87	22.4
2	T1	627	37	660	5.9	0.662	38.6	LOS C	19.3	142.0	0.89	0.79	0.89	31.9
3	R2	158	3	166	1.9	* 0.860	72.0	LOS F	10.8	77.0	1.00	0.94	1.32	16.5
Approach		802	51	844	6.4	0.860	45.3	LOS D	19.3	142.0	0.91	0.82	0.98	28.0
East: Anzac Rd (200m)														
4	L2	295	5	311	1.7	0.463	18.5	LOS B	8.5	60.4	0.71	0.77	0.71	35.5
5	T1	2	0	2	0.0	0.675	57.8	LOS E	9.2	67.7	1.00	0.84	1.05	15.5
6	R2	332	20	349	6.0	* 0.830	65.8	LOS E	12.3	90.4	1.00	0.88	1.16	22.3
Approach		629	25	662	4.0	0.830	43.6	LOS D	12.3	90.4	0.86	0.83	0.95	26.1
North: Moorebank Ave (440m)														
7	L2	315	14	332	4.4	0.271	8.0	LOS A	3.9	28.7	0.29	0.64	0.29	48.5
8	T1	587	34	618	5.8	* 0.864	37.2	LOS C	34.2	251.1	0.89	0.90	1.01	31.9
9	R2	102	84	107	82.4	0.656	55.2	LOS D	6.2	73.9	0.95	0.86	1.04	23.3
Approach		1004	132	1057	13.1	0.864	29.9	LOS C	34.2	251.1	0.71	0.81	0.79	34.3
West: Bushmaster Ave (165m)														
10	L2	224	77	236	34.4	0.467	17.5	LOS B	5.0	45.4	0.71	0.72	0.71	37.5
11	T1	17	0	18	0.0	0.184	62.2	LOS E	1.1	7.4	0.99	0.69	0.99	15.3
12	R2	21	11	22	52.4	* 0.502	72.1	LOS F	1.4	14.6	1.00	0.76	1.07	13.8
Approach		262	88	276	33.6	0.502	24.8	LOS B	5.0	45.4	0.75	0.72	0.75	32.3
All Vehicles		2697	296	2839	11.0	0.864	37.2	LOS C	34.2	251.1	0.81	0.81	0.88	30.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Moorebank Ave (250m)												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	83.9	35.7	0.43
East: Anzac Rd (200m)												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	79.5	32.9	0.41

P2B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	74.4	24.3	0.33
West: Bushmaster Ave (165m)												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	234.1	215.9	0.92
P4B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	224.4	204.3	0.91
All Pedestrians		50	53	54.2	LOS E	0.0	0.0	0.95	0.95	139.3	102.6	0.74

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 4 [AM Peak (Site Folder: 8 - Phase 4 - Stage 3 - Q1 2025)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Moorebank Ave (250m)														
1	L2	23	11	24	47.8	0.538	36.4	LOS C	14.9	113.7	0.82	0.73	0.82	25.5
2	T1	786	60	827	7.6	* 0.842	39.0	LOS C	30.1	224.3	0.91	0.86	0.98	31.8
3	R2	366	7	385	1.9	0.682	25.6	LOS B	10.8	76.8	0.93	0.84	0.93	30.8
Approach		1175	78	1237	6.6	0.842	34.8	LOS C	30.1	224.3	0.91	0.85	0.96	31.5
East: Anzac Rd (200m)														
4	L2	177	3	186	1.7	0.179	11.1	LOS A	2.6	18.7	0.46	0.68	0.46	42.0
5	T1	4	0	4	0.0	0.015	50.2	LOS D	0.2	1.5	0.88	0.61	0.88	17.9
6	R2	271	28	285	10.3	* 0.802	64.8	LOS E	10.8	82.6	0.99	0.87	1.12	22.9
Approach		452	31	476	6.9	0.802	43.6	LOS D	10.8	82.6	0.78	0.79	0.86	26.7
North: Moorebank Ave (440m)														
7	L2	368	26	387	7.1	0.511	18.9	LOS B	9.4	70.1	0.76	0.79	0.76	39.6
8	T1	509	48	536	9.4	0.816	55.9	LOS D	16.5	124.6	1.00	0.96	1.17	26.0
9	R2	185	133	195	71.9	0.689	61.1	LOS E	5.9	66.7	0.98	0.88	1.12	21.9
Approach		1062	207	1118	19.5	0.816	44.0	LOS D	16.5	124.6	0.92	0.88	1.02	28.5
West: Bushmaster Ave (165m)														
10	L2	165	126	174	76.4	* 0.604	24.4	LOS B	5.1	59.1	0.84	0.78	0.84	33.0
11	T1	6	0	6	0.0	0.065	61.1	LOS E	0.4	2.6	0.98	0.64	0.98	15.7
12	R2	21	10	22	47.6	0.478	71.5	LOS F	1.4	14.1	1.00	0.74	1.04	14.0
Approach		192	136	202	70.8	0.604	30.7	LOS C	5.1	59.1	0.86	0.77	0.86	29.3
All Vehicles		2881	452	3033	15.7	0.842	39.3	LOS C	30.1	224.3	0.89	0.85	0.96	29.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Moorebank Ave (250m)												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	90.4	43.5	0.48
East: Anzac Rd (200m)												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	84.6	39.5	0.47

P2B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	72.9	24.3	0.33
North: Moorebank Ave (440m)												
P3	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	89.8	42.8	0.48
P3B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	74.4	24.3	0.33
West: Bushmaster Ave (165m)												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	236.0	218.2	0.92
P4B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	224.4	204.3	0.91
All Pedestrians		70	74	54.2	LOS E	0.0	0.0	0.95	0.95	124.6	85.3	0.68

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 4 [PM Peak (Site Folder: 8 - Phase 4 - Stage 3 - Q1 2025)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Moorebank Ave (250m)														
1	L2	23	15	24	65.2	0.493	40.1	LOS C	12.0	92.5	0.84	0.73	0.84	24.1
2	T1	635	37	668	5.8	* 0.771	39.1	LOS C	23.3	171.3	0.91	0.82	0.94	31.8
3	R2	160	3	168	1.9	0.365	26.5	LOS B	4.7	33.3	0.86	0.77	0.86	30.3
Approach		818	55	861	6.7	0.771	36.6	LOS C	23.3	171.3	0.90	0.81	0.92	31.4
East: Anzac Rd (200m)														
4	L2	299	5	315	1.7	0.358	13.8	LOS A	5.3	37.8	0.60	0.73	0.60	39.3
5	T1	4	0	4	0.0	0.019	53.3	LOS D	0.2	1.5	0.91	0.62	0.91	17.2
6	R2	336	20	354	6.0	* 0.781	61.1	LOS E	13.0	95.7	0.98	0.86	1.07	23.8
Approach		639	25	673	3.9	0.781	38.9	LOS C	13.0	95.7	0.80	0.80	0.85	28.0
North: Moorebank Ave (440m)														
7	L2	319	14	336	4.4	0.383	16.8	LOS B	8.1	59.0	0.66	0.75	0.66	41.2
8	T1	595	35	626	5.9	0.769	49.4	LOS D	18.1	132.8	0.99	0.91	1.07	27.8
9	R2	131	104	138	79.4	0.459	53.1	LOS D	3.7	43.8	0.91	0.79	0.91	23.8
Approach		1045	153	1100	14.6	0.769	39.9	LOS C	18.1	132.8	0.88	0.84	0.93	30.1
West: Bushmaster Ave (165m)														
10	L2	260	97	274	37.3	* 0.617	21.8	LOS B	6.9	64.0	0.83	0.79	0.83	35.2
11	T1	20	0	21	0.0	0.216	62.5	LOS E	1.3	8.8	0.99	0.70	0.99	15.5
12	R2	29	14	31	48.3	0.332	62.0	LOS E	1.8	17.8	0.97	0.74	0.97	15.3
Approach		309	111	325	35.9	0.617	28.2	LOS B	6.9	64.0	0.85	0.78	0.85	30.8
All Vehicles		2811	344	2959	12.2	0.781	37.5	LOS C	23.3	171.3	0.87	0.82	0.90	30.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Moorebank Ave (250m)												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	90.4	43.5	0.48
East: Anzac Rd (200m)												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	84.6	39.5	0.47

P2B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	72.9	24.3	0.33
North: Moorebank Ave (440m)												
P3	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	89.8	42.8	0.48
P3B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	74.4	24.3	0.33
West: Bushmaster Ave (165m)												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	236.0	218.2	0.92
P4B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	224.4	204.3	0.91
All Pedestrians		70	74	54.2	LOS E	0.0	0.0	0.95	0.95	124.6	85.3	0.68

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 4 [AM Peak (Site Folder: 9 - Phase 4 - Stage 3 - Q2 2025)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Moorebank Ave (250m)														
1	L2	24	11	25	45.8	0.539	36.3	LOS C	14.9	113.9	0.82	0.73	0.82	25.5
2	T1	786	60	827	7.6	0.843	39.2	LOS C	30.2	224.9	0.91	0.86	0.98	31.8
3	R2	366	7	385	1.9	* 0.836	35.4	LOS C	13.4	95.1	1.00	0.92	1.14	26.1
Approach		1176	78	1238	6.6	0.843	37.9	LOS C	30.2	224.9	0.94	0.88	1.03	30.2
East: Anzac Rd (200m)														
4	L2	177	3	186	1.7	0.222	13.5	LOS A	3.2	22.6	0.55	0.71	0.55	39.7
5	T1	4	0	4	0.0	0.043	63.5	LOS E	0.2	1.7	0.97	0.63	0.97	15.3
6	R2	271	28	285	10.3	* 0.852	68.0	LOS E	11.3	86.2	0.99	0.90	1.18	22.2
Approach		452	31	476	6.9	0.852	46.6	LOS D	11.3	86.2	0.82	0.82	0.93	25.7
North: Moorebank Ave (440m)														
7	L2	368	26	387	7.1	* 0.455	16.0	LOS B	7.4	54.9	0.68	0.77	0.68	41.6
8	T1	509	48	536	9.4	0.612	41.9	LOS C	13.9	105.1	0.93	0.79	0.93	30.3
9	R2	197	144	207	73.1	0.711	61.3	LOS E	6.3	72.1	0.98	0.89	1.15	21.9
Approach		1074	218	1131	20.3	0.711	36.6	LOS C	13.9	105.1	0.86	0.80	0.89	31.1
West: Bushmaster Ave (165m)														
10	L2	177	137	186	77.4	0.640	26.5	LOS B	5.5	64.4	0.85	0.81	0.86	32.1
11	T1	6	0	6	0.0	* 0.065	61.1	LOS E	0.4	2.6	0.98	0.64	0.98	15.7
12	R2	22	10	23	45.5	0.183	56.0	LOS D	1.3	12.4	0.92	0.72	0.92	16.3
Approach		205	147	216	71.7	0.640	30.7	LOS C	5.5	64.4	0.86	0.80	0.87	29.3
All Vehicles		2907	474	3060	16.3	0.852	38.3	LOS C	30.2	224.9	0.88	0.84	0.95	29.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Moorebank Ave (250m)												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	90.4	43.5	0.48
East: Anzac Rd (200m)												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	84.6	39.5	0.47

P2B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	72.9	24.3	0.33
North: Moorebank Ave (440m)												
P3	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	89.8	42.8	0.48
P3B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	74.4	24.3	0.33
West: Bushmaster Ave (165m)												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	236.0	218.2	0.92
P4B	Slip/ Bypass	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	224.4	204.3	0.91
All Pedestrians		70	74	54.2	LOS E	0.0	0.0	0.95	0.95	124.6	85.3	0.68

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 4 [PM Peak (Site Folder: 9 - Phase 4 - Stage 3 - Q2 2025)]

Moorebank Avenue x Anzac Road
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Moorebank Ave (250m)														
1	L2	24	15	25	62.5	0.521	41.9	LOS C	12.5	95.7	0.87	0.75	0.87	23.4
2	T1	635	37	668	5.8	* 0.816	42.8	LOS D	24.8	182.5	0.94	0.87	1.00	30.4
3	R2	160	3	168	1.9	0.343	25.5	LOS B	4.6	32.6	0.84	0.77	0.84	30.8
Approach		819	55	862	6.7	0.816	39.4	LOS C	24.8	182.5	0.92	0.84	0.96	30.3
East: Anzac Rd (200m)														
4	L2	299	5	315	1.7	0.358	13.8	LOS A	5.3	37.6	0.60	0.73	0.60	39.4
5	T1	4	0	4	0.0	0.020	54.4	LOS D	0.2	1.5	0.92	0.62	0.92	17.0
6	R2	336	20	354	6.0	* 0.822	63.5	LOS E	13.5	99.1	0.99	0.88	1.11	23.2
Approach		639	25	673	3.9	0.822	40.2	LOS C	13.5	99.1	0.80	0.81	0.87	27.5
North: Moorebank Ave (440m)														
7	L2	319	14	336	4.4	0.396	17.7	LOS B	8.5	62.0	0.68	0.76	0.68	40.6
8	T1	595	35	626	5.9	0.798	51.9	LOS D	18.6	136.7	1.00	0.93	1.11	27.1
9	R2	139	111	146	79.9	0.438	50.3	LOS D	3.8	45.2	0.89	0.79	0.89	24.5
Approach		1053	160	1108	15.2	0.798	41.3	LOS C	18.6	136.7	0.89	0.86	0.95	29.6
West: Bushmaster Ave (165m)														
10	L2	267	103	281	38.6	* 0.623	23.8	LOS B	7.4	69.0	0.82	0.81	0.82	34.1
11	T1	20	0	21	0.0	0.216	62.5	LOS E	1.3	8.8	0.99	0.70	0.99	15.5
12	R2	30	14	32	46.7	0.338	62.0	LOS E	1.9	18.2	0.97	0.74	0.97	15.3
Approach		317	117	334	36.9	0.623	29.9	LOS C	7.4	69.0	0.85	0.79	0.85	30.1
All Vehicles		2828	357	2977	12.6	0.822	39.2	LOS C	24.8	182.5	0.87	0.84	0.93	29.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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