Martin Place South Stage 5 Pedestrian Underpass Closure

Construction Traffic Management Plan

Project: Sydney Metro City & Southwest – TSE Works

Document No: SMCSWTSE-JCG-SMP-TM-PLN-002280

DOCUMENT APPROVAL

REVISION	DATE	PREPARED BY	REVIEWED BY	APPROVED BY	REMARKS
A	1-May-20	W. Jobling	W. Freelander	W. Jobling	For approval
B	26-May-20	W. Jobling	W. Freelander	W. Jobling	Incorporating comments
Signature:					

City & Southwest

General Correspondence

Reference No: SMCSWTSE-RMS-GEN-000395
Project Title: Sydney Metro City & Southwest - TSE
DLM:
Orig Ref No: SMCSWTSE-SMD-P_GEN-003030

Date: 02 June 2020, 08:49 PM **Response required by:**

From: Quac Minh LA (Roads and Maritime Services (part of TfNSW division))

To: Aidan Rooney (Sydney Metro)

Cc: Will Freelander (John Holland CPB Ghella JV) ; Abdullah Khan (John Holland CPB Ghella JV) ; Jeremy Glasgow (John Holland CPB Ghella JV) ; Terry Sleiman (John Holland CPB Ghella JV) ; Thomas Murray (Sydney Metro) ; Berin Gordon (Sydney Metro) ; Caroline St Clair (Sydney Metro) ; Phil Brogan (Sydney Metro) ; Giovanny Ramirez (Sydney Coordination Office) ; Jake Coles (Sydney Coordination Office) ; Steve Brown (Sydney Coordination Office) ; Carl Mella (Roads and Maritime Services (part of TfNSW division)) ; Anthony McMahon (Roads and Maritime Services (part of TfNSW division)) ; David Tawadros (Roads and Maritime Services (part of TfNSW division))

Subject: **RE: CTMP - Martin Place Stage 5 - Pedestrian Underpass Closure - TfNSW (former RMS) approval**

Contract No: -

Classification:

Aidan,

In accordance with Schedule C1 Appendix A.9 Section 2.1 (c) and 2.2 (c) of the Principal's General Specifications G10 – Traffic and Transport Management and Minister's Condition of Approval E82 for the Sydney Metro City & South West, Transport for NSW - Greater Sydney - Planning and Programs, and the Sydney Coordination Office approve the Sydney Metro City & South West Construction Traffic Management Plan – Martin Place South Stage 5 - Pedestrian Underpass Closure - SMCSWTSE-JCG-SMP-TM-PLN-002480-B subject to the following requirements:

- obtaining Road Occupancy Licenses (ROLs) from the Transport Management Centre as required;
- addressing any safety issues identified within the Road Safety Audit review for this CTMP;
- addressing any issues raised by Council, STA, Taxi Council, residents/businesses, or Emergency Services in the CTMP approval process;
- addressing the requirements arising as an outcome of the Local Pedestrian, Cycling and Traffic Calming Committee meeting;
- promptly addressing any SCO and/or TMC and/or TfNSW (former RMS) issue that eventuates during the works

Regards,
Minh

Discipline: Construction Management **Area:** **Location:** Martin Place South

----- Original Message -----

NSW GOVERNMENT | sydney METRO

City

Sydney Metro General Correspondence

Reference No: SMCSWTSE-SMD-P_GEN-003064
Project Title: Sydney Metro City & Southwest - TSE
DLM:
Orig Ref No: SMCSWTSE-SMD-P_GEN-003030

Date: 27 May 2020, 03:40 PM

From: Aidan Rooney (Sydney Metro)

To: Aidan Rooney (Sydney Metro) ; Van Le (City of Sydney Council) ; Elise Webster (City of Sydney Council) ; Tony Ly (City of Sydney Council) ; Giovanny Ramirez (Sydr (Sydney Coordination Office) ; Quac Minh LA (Roads and Maritime Services (part of TfNSW division)) ; Carl Mella (Roads and Maritime Services (part of TfNSW divisior Maritime Services (part of TfNSW division)) ; Steve Brown (Sydney Coordination Office)

Cc: Will Freelander (John Holland CPB Ghella JV) ; Abdullah Khan (John Holland CPB Ghella JV) ; Jeremy Glasgow (John Holland CPB Ghella JV) ; Thomas Murray (Syd Metro) ; Caroline St Clair (Sydney Metro) ; Phil Brogan (Sydney Metro) ; Terry Sleiman (John Holland CPB Ghella JV)

Subject: **RE: CTMP - Martin Place Stage 5 - Pedestrian Underpass Closure**

Contract No: -

Classification:

Dear All,

Please find attached Revision B of the CTMP for Martin Place Stage 5 - Pedestrian Underpass Closure which has been updated in response to comments received on Revision A. Please Comment Tracker in excel format for your ease of response.

Please confirm the closure of comments by 29 May 2020, bearing in mind our revised target of 13 June to undertake the works.

Yours sincerely

Aidan Rooney
Delivery Director
Tunnel & Station Excavation (TSE)
City & Southwest
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Discipline: Construction Management **Area:** **Location:** Martin Place South

----- Original Message -----

Sydney Metro General Correspondence

Reference No: SMCSWTSE-SMD-P_GEN-003030
Project Title: Sydney Metro City & Southwest - TSE
DLM:
Orig Ref No:

Date: 13 May 2020, 08:17 AM **Response required by:** 15 May 2020

From: Aidan Rooney (Sydney Metro)

To: Van Le (City of Sydney Council) ; Giovanny Ramirez (Sydney Coordination Office) ; Jake Coles (Sydney Coordination Office) ; Quac Minh LA (Roads and Maritime Services (part of TfNSW division)) ; Carl Mella (Roads and Maritime Services (part of TfNSW division)) ; David Tawadros (Roads and Maritime Services (part of TfNSW division)) ; Elise Webster (City of Sydney Council) ; Tony Ly (City of Sydney Council) ; Steve Brown (Sydney Coordination Office)

Cc: Will Freelander (John Holland CPB Ghella JV) ; Abdullah Khan (John Holland CPB Ghella JV) ; Thomas Murray (Sydney Metro) ; Berin Gordon (Sydney Metro) ; Caroline St Clair (Sydney Metro) ; Aidan Rooney (Sydney Metro) ; William Jobling (Sydney Metro) ; Jeremy Glasgow (John Holland CPB Ghella JV)

Subject: **CTMP - Martin Place Stage 5 - Pedestrian Underpass Closure**

Contract No: -

Classification:

Dear All,

Please find attached the CTMP for Martin Place Stage 5 - Pedestrian Underpass Closure for your review and comment by Friday 15 May 2020.

The two documents attached are unchanged from those which have been previously provided to reviewers by email as follows:

'Martin Place CTMP Stage 5.pdf' - issued by Will Jobling, Fri 1/05/2020 4:43 PM
'200502_r01_v02.pdf' - Appendix 4 Road Safety Audit - issued by Will Jobling, Tue 12/05/2020 6:12 PM

Please could all comments be returned through the usual channels as soon as possible, bearing in mind our target of 30 May to undertake the works.

Yours sincerely

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Discipline: Construction Management **Area:** **Location:** Martin Place South

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Table of Amendments

Revision A to Revision B

Paragraph	Revision A	Revision B (this CTMP)
3.1, 4.5	Disconnection and removal of pedestrian bridge wing	Disconnection and removal of pedestrian bridge wing adjacent to Elizabeth St only
3.1		Addition of sections 4.7 to 4.9 for excavation of rock pillar and replacement of wing
4, 4.3, 4.4, 4.11, 4.12, 4.13	Dates from 29-31 May 2020	Dates from 12 June – 26 July 2020 to reflect updated program
4	The works outlined in Section 3.2	The works outlined in Section 3.1
4		Insertion of new table to show overall program of works
4.4		Deleted: "The western footpath of Elizabeth St will also be closed – pedestrians will be diverted to the eastern footpath via the signalised crossings available at Hunter and King Streets as the pedestrian crossings across Elizabeth Street at Martin Place will not be available for use." Figure 9 revised accordingly.
4.5	The pedestrian wing will be lifted out of position by the tower crane currently installed on the site and lifted into the site, where it will be dismantled and removed via truck from within the site during normal construction hours. There will be no requirement for lane closures and/or ROLs during these works on either Elizabeth Street or Castlereagh Street. There will be no impact on public traffic or bus operations.	The wing will either be dismantled and removed via truck from within the site during normal construction hours, or removed as a single piece as an OSOM during night shift hours, subject to the relevant permits. The only requirement for lane closures and/or ROLs during these works would be an ROL on Castlereagh Street during the night-time loading of the OSOM, subject to permits. There will be no impact on public traffic or bus operations.
4.6	either Perspex panels or an angled upper hoarding	Perspex panels on the corner of the bridge and Elizabeth St elevations Figure 10 artist's impression amended to show Perspex panels arrangement.
4.7, 4.8, 4.9		New sections added to cover excavation of rock pillar, installation of scaffold structure and final realignment of hoarding.
Was 4.7 (now 4.10)	Once the pedestrian underpass has been closed and the pedestrian wing removed	Deleted "and the pedestrian wing removed"
Was 4.8 (now 4.11)	Traffic Flows – Impacts - None – no road closures or ROLs	Minor – lane closure under ROL for hoarding installation. Mitigation – works to be undertaken as night time works
Was 4.8 (now 4.11)		Deleted: "Western footpath of Elizabeth St closed – pedestrians diverted to eastern footpath via the signalised crossings available at Hunter and King streets as the pedestrian

		crossings across Elizabeth Street at Martin Place will not be available for use"
4.12		New section describing impacts between 14 June and 26 July 2020 whilst no wing is in place.
Was 4.9 (now 4.13) Pedestrians	Pedestrian access between Castlereagh St and Elizabeth St will be maintained on surface. The impact of the wing removal has been modelled (see section 6) Impacts to pedestrians will be monitored as set out in section 4.10 below. If necessary, a surface wing will be reinstated to ensure safety of pedestrians	Underpass closed to pedestrians. Pedestrian access between Castlereagh St and Elizabeth St will be maintained on surface via reinstated wing. The impact of the underpass closure has been modelled (see Appendix 1)
4.10		Deleted
6	A further analysis has established that the number of pedestrians who can complete their crossing in each green light sequence is on average 125 people per pedestrian crossing cycle. It has therefore been proposed, in section 4.10, that a system of monthly pedestrian counts should be instigated, with a trigger level for number of pedestrians. If the number of pedestrians crossing Elizabeth Street exceeds that trigger level, then a contingency measure will be put in place to reinstate the surface wing and thereby extend the footpath area. The pedestrian modelling demonstrates the size of wing necessary to ensure that all pedestrians up to the 2022 predicted level can cross Elizabeth Street prior to the traffic signal going to green.	The analysis recommends that: "more space is needed on the western footpath of Elizabeth Street. Consideration should therefore be given to providing additional space on Elizabeth Street through lane taking on the western side of Elizabeth Street or through the provision of a wing arrangement." This CTMP therefore proposes the provision of a wing arrangement as set out in section 4.8
7	There will be no requirement for lane closures and/or ROLs on either Elizabeth Street or Castlereagh Street for the works described in this CTMP. There will be no impact on vehicle traffic including buses.	An ROL will be required for Elizabeth Street as described in Section 4.1 and 4.9. An ROL may be required on Castlereagh Street as described in Section 4.5. Impacts on vehicle traffic including buses are described in sections 4.11 to 4.13.
Appendix 2		Additional design drawings added for hoarding showing Perspex sheeting at corner to improve sight lines
Appendix 3		TCP-SMP-CAS-SB-0414 has been revised to reflect the arrangements described in Section 4.4
Appendix 6		Updated document included which incorporates all comments from TfNSW wayfinding team and is now considered final
Appendix 7		New appendix added for scaffold structure design
Appendix 8		Previous review comments and responses added

1. Introduction

1.1. Project Overview

Sydney Metro is Australia's biggest public transport project. The metro project currently consists of:

- Sydney Metro Northwest, connecting the north western suburbs of Sydney and Chatswood, which entered into operations in May 2019
- Sydney Metro City & South West, which extends from Chatswood through to Sydenham and the upgrade of the existing rail line between Sydenham and Bankstown.

Figure 1 shows the proposed Sydney Metro project and stages.

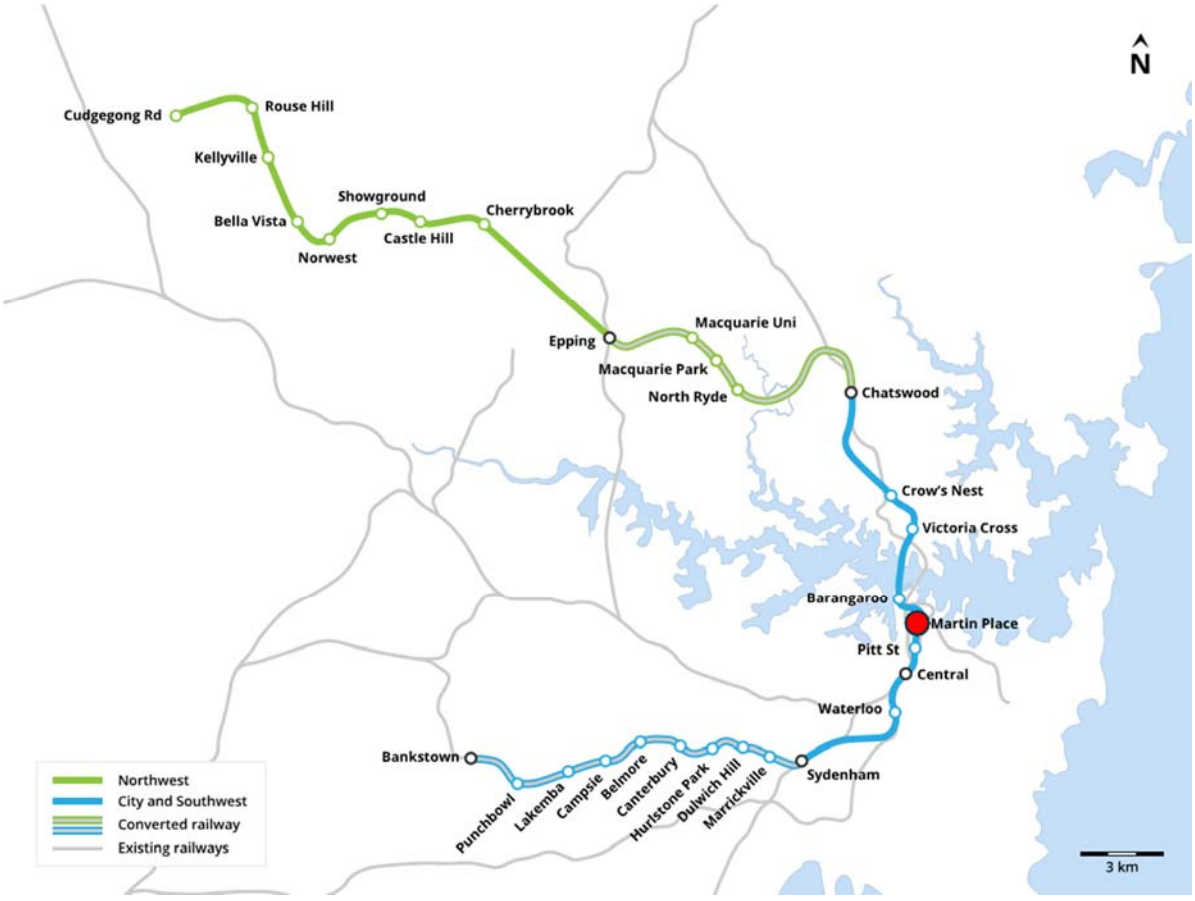

Figure 1: Sydney Metro Project

1.2. Martin Place

Martin Place is classed as a plaza which falls under the care and control of the City of Sydney council. It commences at Macquarie Street and ceases at George Street. Vehicle access to Martin Place is limited to vehicles authorised for access during approved hours.

At Martin Place, Sydney Metro are building a new station which will interface with the existing Sydney Trains station. The station will have two entrances, Martin Place North and Martin Place South. In addition, a site at 33 Bligh St is used to support the construction process.

Figure 2: Sydney Metro Martin Place Station overview

The southern entrance to Sydney Metro station ('Martin Place South') is being constructed in the building footprint of 39 Martin Place and in the section of Martin Place between Castlereagh and Elizabeth Streets shown below in Figure 3 in red.

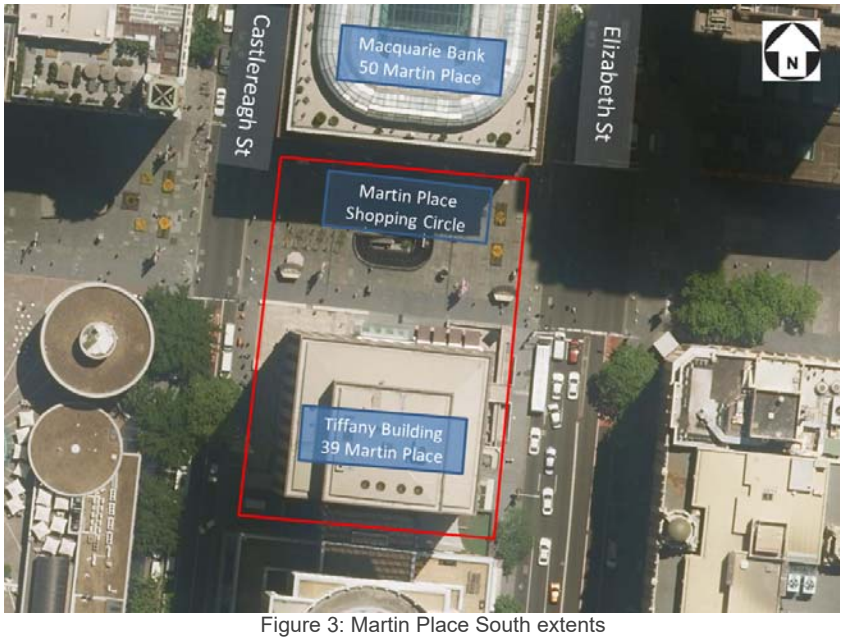

Figure 3: Martin Place South extents

1.3. Martin Place Sydney Trains Station

The Sydney Trains Station at Martin Place is located beneath Martin Place plaza to the east of Elizabeth Street. There are numerous train station exits shown below.

Exit 7 and the Shopping Circle exit, highlighted in red in Figure 4 below, were closed to the public on 30 April 2018. Exit 3, which was previously closed by a separate development (not Sydney Metro), is reopening in Q2 2020.

This CTMP relates to the below-ground closure of the area highlighted in green in Figure 4 below.

Figure 4: Martin Place Train Station Exit points

The interface with Sydney Trains is described further in section 5.

2. Planning documents

The Martin Place Station site has been the subject of a number of planning documents including:

- The Environmental Impact Statement (EIS) for the City and Southwest project
- Planning Approval

This section of the CTMP highlights the original EIS requirements regarding pedestrian management and the components of the approved project.

2.1. EIS Proposal

The EIS for the Project was released in May 2016. This document assessed the potential impact on traffic and transport during the construction stage of the Project. It described the existing traffic and transport environment and identified the potential nature and extent of impacts to traffic and transport services. Measures to address the potential impacts were described in Technical paper 1 – Traffic and transport.

The original proposal for passenger and commuter management as noted in the EIS was:

- The existing underground pedestrian concourse between Castlereagh and Elizabeth streets and the associated connection to Martin Place would be closed during these cut and cover works
- The above would result in additional pedestrians using the pedestrian crossing facilities at Castlereagh and Elizabeth streets. There is sufficient pedestrian storage space within Martin Place to accommodate these additional peak pedestrian movements.
- The pedestrian access points which would be closed during this construction period were shown, reproduced in Figure 5 below.

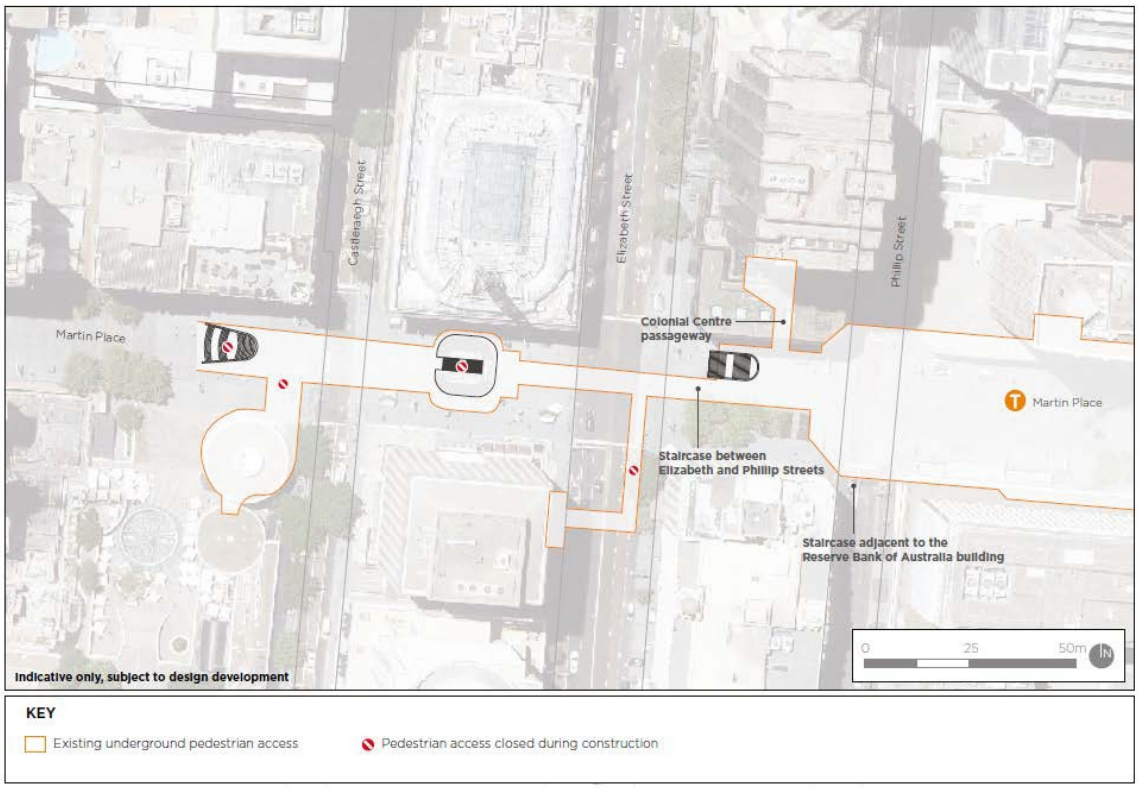

Figure 5: EIS Martin Place Station construction pedestrian access arrangements

- Provision for an alternative route for pedestrian and cycle use was shown, reproduced in Figure 6 below.

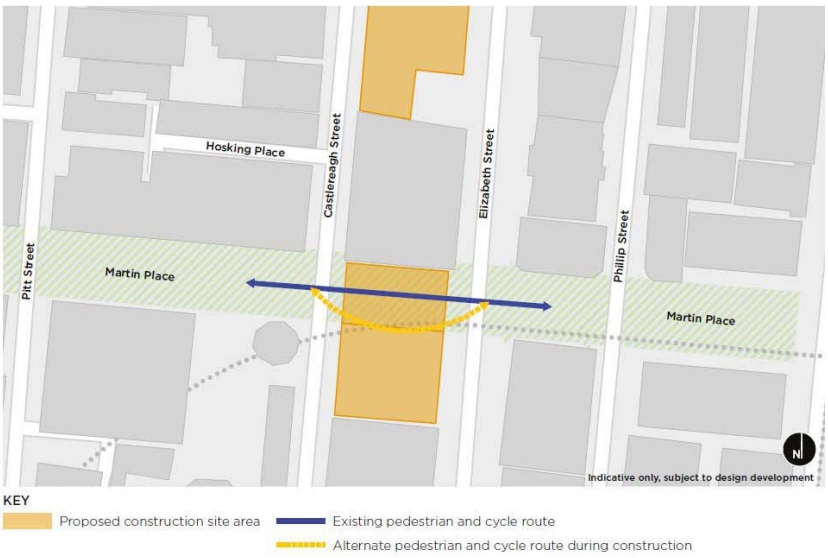

Figure 6: EIS Martin Place Station construction site - alternative pedestrian and cyclist route

2.2. Approved project

The approved project for the Martin Place station area includes:

- A northern entry via a pedestrian plaza opening to Castlereagh, Hunter and Elizabeth streets
- A future northern entry via an underground pedestrian connection below Hunter St to O'Connell St and/ or Bligh St (subject to future development of the site)
- A southern entry via a pedestrian plaza opening to Martin Place and Castlereagh St
- New underground pedestrian link between the existing suburban Martin Place Station platforms and the metro station platforms
- Closure of existing access and egress points, including the underground connections to the west of Elizabeth Street from Martin Place to the underground concourse connection to the existing Martin Place station.

2.3. Summary of EIS/Planning Approval Philosophy

The EIS and Planning approval can therefore be summarised as follows:

- The EIS envisaged the closure of various exits from the existing Sydney Trains station and Martin Place Shopping Circle to the surface of Martin Place plaza
- The approved Martin Place Sydney Metro station does not reinstate any surface entrance/exits within the Martin Place plaza. All entrance/exits are within the future 39 Martin Place building footprint. This is consistent with City of Sydney's Gehl masterplan for Martin Place.
- The EIS also envisaged the closure and/or diversion of pedestrian routes both on the surface and underground during construction works, on the basis that sufficient capacity for predicted pedestrian flows was maintained.
- Indicative routes for these diversions were shown in an illustrative rather than prescriptive form, giving discretion to the TSE Contractor to propose routes compatible with their construction.

3. Martin Place South Works

The Martin Place South works consist of three overall phases of works, shown below in Table 1. This Construction Traffic Management Plan (CTMP) is presented by the Tunnel & Station Excavation (TSE) Contractor. A follow-on contract has been awarded for the Station construction to Macquarie Bank; works will be undertaken by their contractor, Lendlease.

Table 1

Description	Contractor	Approximate timeline
Demolition of 39 Martin Place and the Martin Place Shopping Circle	TSE	Q1 2018 – Q1 2019
Excavation of station - shafts and adits beneath the footprint of the demolition sites; breakthrough of connection to Sydney Trains Martin Place station	TSE	Q1 2019 – Q4 2020
Construction of new Sydney Metro station within excavation; Restoration of Martin Place plaza and public realm works; Construction of Over Station Development to replace 39 Martin Place	Station Contractor (Macquarie/ Lendlease)	Q4 2020-2024

The Martin Place South TSE works above have been divided into a number of stages. Five stages have previously been approved via the CTMPs in Table 2 below.

This CTMP is titled 'Martin Place South Stage 5 – Pedestrian Underpass Closure'.

Table 2

Description	Date of Works	CTMP
39 Martin Place – Site Establishment Erection of hoarding around 39 Martin Place; access to 39 Martin Place for demolition vehicles	Feb 2018	Tiffany's Building Demolition Approved 29-Jan-18
Closure of Station Exits Closure of Exit 7 and Shopping Circle stairs; removal of street furniture	April 2018	Martin Place Stage 1 (Demolition) Approved 6-Apr-18
Utility Works Creation of working areas and laydown areas for utility works; minor redirection of underground pedestrian routes within Shopping Circle	Jul-Nov 2018	Martin Place (South) Demolition Stage 2 Approved 23-Jul-18
Pedestrian bridge & tower crane install Installation of pedestrian bridge and tower crane	Dec 2018 – Feb 2019	Martin Place South Stage 3 Approved 18-Oct-18
Revised Site Access Driveway construction and hoarding updates on Castlereagh St	Nov 2019	Martin Place South Stage 4 Approved 8-Feb-19 Addendum 1 Approved 6-Jun-19
Pedestrian Underpass Closure Closure of underpass route via lower deck of pedestrian bridge. Amendment of surface pedestrian route.	Jun-Jul 2020	**Martin Place South Stage 5** **(This CTMP)**

3.1. Scope of this CTMP

The scope of this CTMP is the following changes to enable Stage 5 of the works to proceed:

Section	Scope
4.1	Revision of hoarding on Elizabeth Street
4.2	Routine closure of underpass
4.3	Installation of hoarding in Sydney Trains concourse
4.4	Temporary closure of surface pedestrian routes
4.5	Disconnection and removal of pedestrian bridge wing adjacent to Elizabeth St only
4.6	Reinstatement of revised hoarding
4.7	Excavation of rock pillar
4.8	Installation of scaffold wing structure
4.9	Reconfiguration of hoarding

This plan will describe, in the sections indicated above, these changes in detail, outline the pedestrian modelling which has been undertaken, and set out the traffic management initiatives that will be deployed to minimise disruption to, and ensure the safety of, the wide range of stakeholders potentially affected by the works, including but not limited to motorists, pedestrians, cyclists, public transport users, local residents and property owners, business owners and workers.

Pedestrian modelling has been undertaken to simulate the impact of these changes. Detailed analysis is contained in Section 6 and Appendix 1.

A Wayfinding Strategy, attached at Appendix 6, has been developed to describe how the community and stakeholders will be notified in advance and at the time of the changes.

It should be noted that best endeavours have been used to nominate the times and durations of the works, however, these times and durations are impacted by approvals, weather and resources and, therefore, the time lines are indicative only.

3.2. Future Scope

This CTMP covers the remaining works of the TSE contractor. It is anticipated that these works will be completed in Q4 2020 and the Martin Place sites handed over to the Martin Place Station Contractor, Macquarie/Lendlease (the Station Contractor). The pedestrian arrangements described in this CTMP will remain in place at the date of handover from the TSE Contractor to the Station Contractor.

In advance of the handover date, the Station Contractor will submit their own CTMP to cover the various stages of their works, which will include the specific details of how surface pedestrian routes will be managed and how underground pedestrian access between the Sydney Trains station and the new Sydney Metro station will be opened.

The Station Contractor is also responsible for permanent upgrades to the intersection of Castlereagh Street and Martin Place to incorporate the frontage of the new 39 Martin Place, which will also be the subject of a future CTMP. This has previously been raised by stakeholders during the comments review of previous versions of the TSE CTMP.

4. Closure of the Pedestrian Underpass

Duration: 12 June – 26 July 2020

The works outlined in Section 3.1 will take place over a 6 week period, separated into three phases:

Activity	Start	Finish	w/e 14 June	w/e 21 June	w/e 28 June	w/e 5 July	w/e 12 July	w/e 19 July	w/e 26 July
Removal of pedestrian bridge wing (see sections 4.1 to 4.6)	12 June	14 June							
Excavation of rock pillar (section 4.7)	15 June	12 July							
Installation of scaffold surface wing (sections 4.8 and 4.9)	13 July	26 July							

The first phase of these works, to remove the pedestrian bridge wing, will take place over a weekend as set out indicatively below and as described in detail in Sections 4.1 to 4.6 below.

The current target for these works is the weekend of 12-14 June 2020. However, depending on the time taken for approval of the CTMP and other external factors, this date is subject to change. It is intended that the works will take place as soon as possible, a minimum of 1 week following approval of this CTMP.

	Midweek night shift TBC	Friday after last train	Saturday (time)												Saturday 1800 - Sunday 1800
			7	8	9	10	11	12	13	14	15	16	17	18	
Revise A class hoarding on Elizabeth Street (see Section 4.1)															
Routine closure of underpass (4.2)															
Install hoarding in Sydney Trains station concourse (4.3)															
Preparatory works within lower deck of bridge and Sydney Metro site (4.4)															
Temporary closure of surface pedestrian routes (4.4)															
Disconnection and removal of pedestrian bridge wing (4.5)															
Reinstatement of revised hoarding (4.6)															
Contingency															

4.1. Revision of hoarding on Elizabeth Street

Prior to removal of the pedestrian bridge wing, the existing A class hoarding which runs along the footpath adjacent to the site boundary on Elizabeth Street will be extended northwards to the new site footprint, as shown below in Figure 7. A temporary fence will be installed as shown in blue to make the area secure.

This work will be undertaken during a single night shift in the week prior to the footbridge closure. The exact night is to be confirmed nearer to the time. This work will be undertaken from Elizabeth Street. An ROL for the inside lane of Elizabeth Street will be applied for in due course in accordance with the standard processes for minor night time street works.

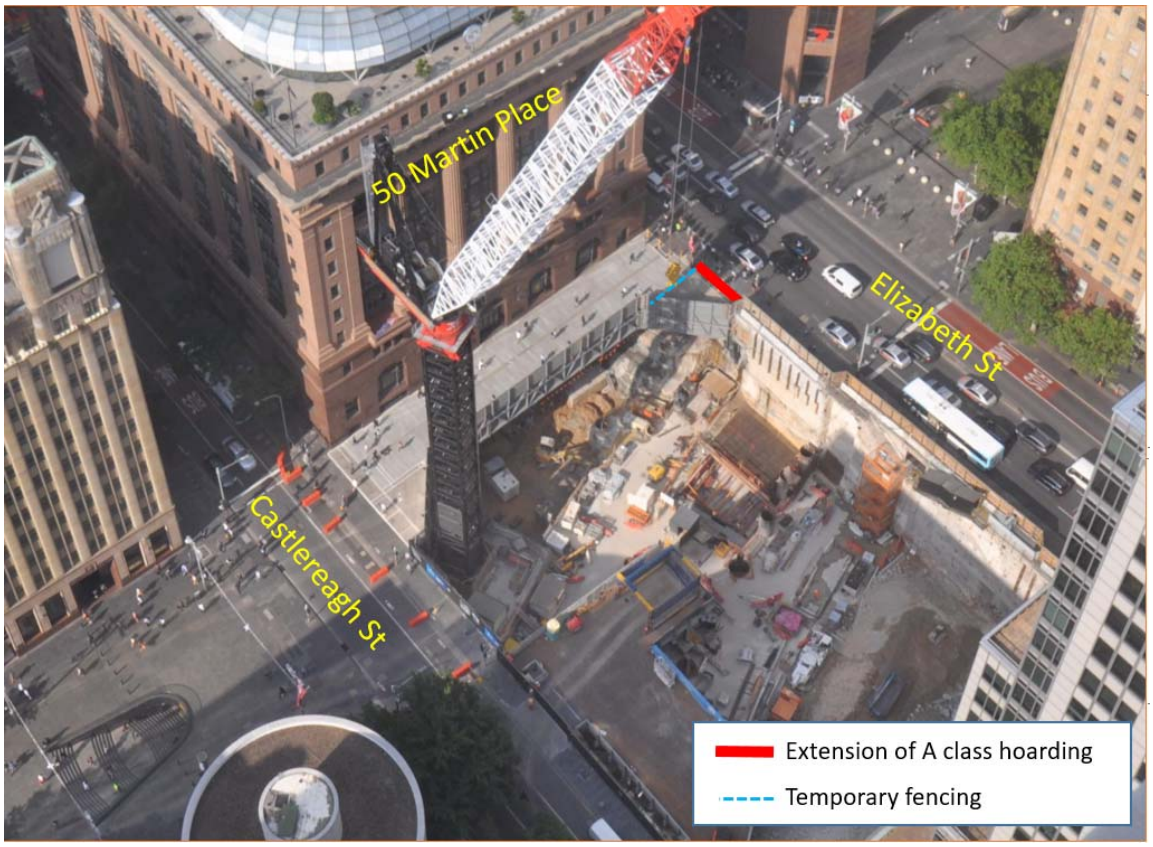

Figure 7: Hoarding amendments undertaken prior to footbridge wing closure

4.2. Routine closure of underpass

The underpass will close as normal prior to the weekend by the closure of roller shutter gates indicated in red on Figure 8 below. The roller shutters will remain closed for the remainder of the TSE works.

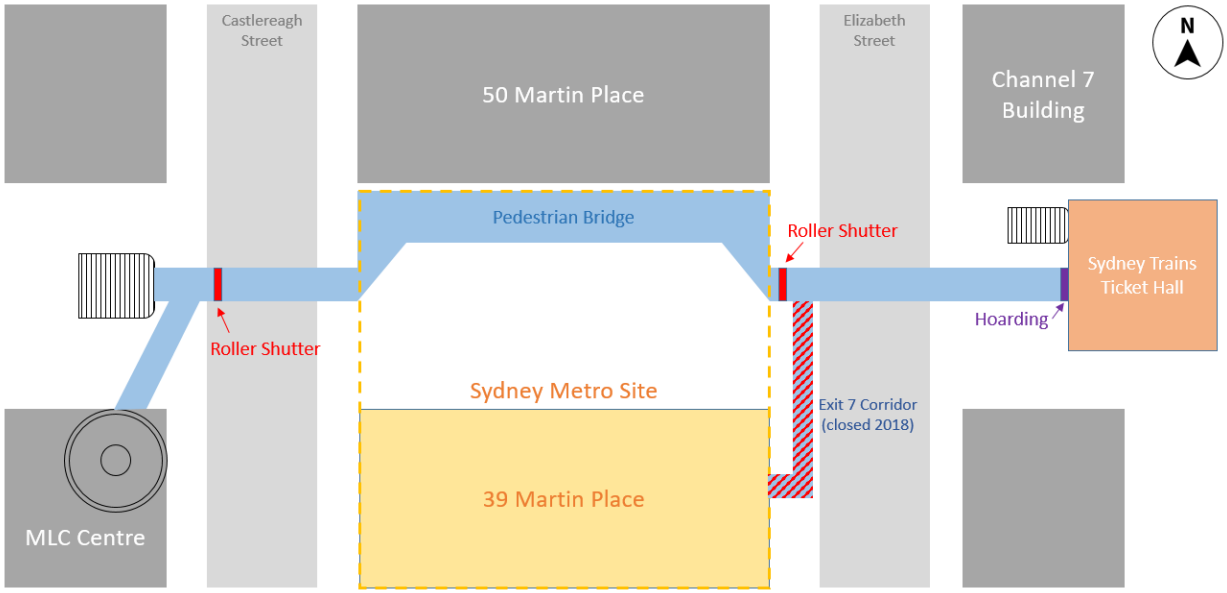

Figure 8: Current underground pedestrian layout with proposed changes

4.3. Installation of hoarding in Sydney Trains concourse

A new hoarding will be installed at the edge of the ticket hall to prevent the underpass beneath Elizabeth Street becoming a dead end at the roller shutter. The location of the hoarding is shown in purple on Figure 8 above.

The hoarding will be full height (floor to ceiling), with a painted plywood finish, to which wayfinding signage and advertising will be fixed. There will be a door in the hoarding to facilitate emergency pedestrian access/egress from the construction site – this will not be a formal site entrance.

The hoarding installation will take place between the closure of the station on the evening of Friday 12 June and its opening on the morning of Monday 15 June. The anticipated duration of the works is 1 shift, with the remaining time contingency.

4.4. Temporary closure of surface pedestrian routes

Initial preparatory works to disconnect the pedestrian bridge wing, for example the disconnection of temporary lighting and handrails will commence at 7am on Saturday 13 June. During these works, temporary barriers and traffic marshals will be used to divert pedestrians around the works whilst maintaining access in all directions. See TCP-SMP-ELI-NB-1309 in Appendix 3.

Once the preparatory works are complete, adjacent surface pedestrian routes will be temporarily closed to allow the safe disconnection and removal of the pedestrian bridge wing, and the installation of new hoarding. It is anticipated that this closure will begin at approximately 10am and last for 3 to 6 hours, as shown in Section 4 above.

The area to be closed to pedestrians is shown in Figure 9 below.

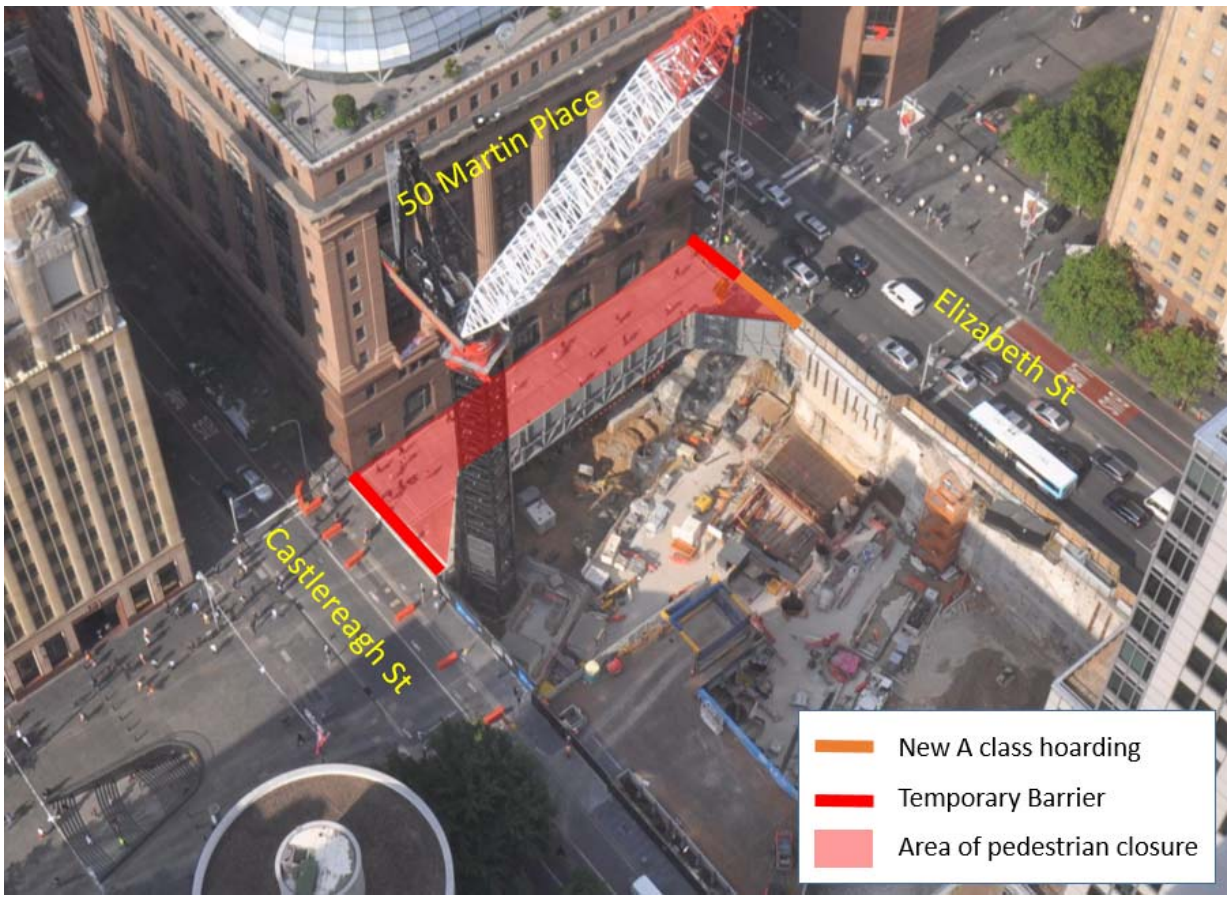

Figure 9: Temporary surface footpath closures

During the closure, there will be no pedestrian access through Martin Place between Castlereagh St and Elizabeth St. Pedestrian detours will be signposted via Hunter St or King St.

See TCP-SMP-CAS-SB-0414 in Appendix 3 for more details on the pedestrian marshalling arrangements.

There will be no requirement for lane closures and/or ROLs during these works on either Elizabeth Street or Castlereagh Street. There will be no impact on public traffic or bus operations.

4.5. Disconnection and removal of pedestrian bridge wing adjacent to Elizabeth St only

All works to disconnect the pedestrian bridge will be undertaken from within the Sydney Metro site and the surface area within the temporary barriers.

The pedestrian wing will be lifted out of position by the tower crane currently installed on the site and lifted into the site. The wing will either be dismantled and removed via truck from within the site during normal construction hours, or removed as a single piece as an OSOM during night shift hours, subject to the relevant permits.

The only requirement for lane closures and/or ROLs during these works would be an ROL on Castlereagh Street during the night-time loading of the OSOM, subject to permits. There will be no impact on public traffic or bus operations.

4.6. Reinstatement of revised hoarding

Following removal of the wing, the Class A hoarding will be reinstated. The hoarding on the pedestrian bridge will be attached to the bridge structure as per the existing hoarding on the bridge and integrated with the hoarding on the Elizabeth Street boundary installed as described in section 4.1.

Detailed hoarding drawings are shown in Appendix 2. Figure 10 below shows the before and after appearance of the hoarding. The hoarding will be modified to maximise sight lines for pedestrians as they approach the corner through the installation of Perspex panels on the corner of the bridge and Elizabeth St elevations.

Following the completion of the hoarding works, all surface routes will be reopened to the public.

Figure 10: Current site photo of existing hoarding and artist's impression of completed works

4.7. Excavation of rock pillar

Following removal of the wing structure, the excavation of the rock pillar beneath the wing will commence immediately and will take up to 4 weeks, finishing no later than 10 July 2020.

This excavation is a delicate operation because it sits immediately above the Eastern Suburbs line, with a clearance of approximately 3 metres. Excavation therefore needs to be controlled to

minimise vibration impacts. Furthermore, there are a number of utilities pits underneath the Elizabeth Street footpath immediately adjacent to this area which mean that the shoring of the side wall of the shaft will require significant work.

All rock pillar excavation activities will take place from within the site, with rock transported from site via the load out platform access from Castlereagh Street – this is the process which is being used for all other excavation from the shaft.

There will be no requirement for lane closures and/or ROLs during these works on either Elizabeth Street or Castlereagh Street. There will be no impact on public traffic or bus operations.

4.8. Installation of scaffold wing structure

Following excavation of the rock pillar, a heavy duty scaffold structure will be built up within the site from the site floor. The scaffold design is attached at Appendix 7. The scaffold will include a hoarding along the site boundary and be floored with a non-slip material consistent with the bridge structure.

Erection of the scaffold structure will take no more than 2 weeks, being completed no later than 24 July 2020.

4.9. Reconfiguration of hoarding

Following completion of the scaffolding, the A class hoarding installed in section 4.1 and 4.6 above will be removed to make the scaffold structure operational. These works will require an ROL as per section 4.1.

The surface wing will be open to the public no later than 7am on Monday 27 July 2020.

4.10. Operating Conditions once works completed

All entrances to the Sydney Trains station to the east of Elizabeth Street will be unaffected by the works described in this CTMP.

Once the pedestrian underpass has been closed, all pedestrians wishing to travel along Martin Place, including pedestrians coming to/from the Sydney Trains station, will use the surface route across the pedestrian bridge and the surface pedestrian crossings across Castlereagh Street and Elizabeth Street.

Access to the Sydney Trains station from the west will be via the Exit 5 staircase from the Sydney Trains ticket hall to the surface of Martin Place adjacent to 52 Martin Place (Channel 7 building).

Revised Sydney Trains access points are shown in green in Figure 11 over page, overlaid on the Sydney Trains station entrance graphic. Note that Exit 3 (highlighted red) is anticipated to reopen in Q2 2020, prior to any resurgence in passenger numbers post-coronavirus.

The Wayfinding Strategy at Appendix 6 details the revisions to signage that will accompany these changes. This document will be reviewed in conjunction with SCO, TfNSW and Sydney Trains wayfinding teams.

Figure 11: Revised Sydney Trains station access points

4.11. Impacts during removal of pedestrian bridge wing works (12-14 June 2020)

Stakeholder	Impacts	Mitigations
Traffic Flows	Minor – lane closure under ROL for hoarding installation.	Works to be undertaken as night time works
Public Transport	None – all bus stops remain operational throughout	n/a
Pedestrians	No pedestrian access through Martin Place between Castlereagh St and Elizabeth St. Pedestrian detours via Hunter St/King St.	Traffic marshals in place to divert pedestrians.
Commercial access	Access to the Macquarie Building (50 Martin Place) from the pedestrian bridge on Martin Place will be closed Access to the MLC centre via underground connection will be closed as per normal weekend closures.	Works undertaken at weekend when access requirements are minimised. Access to 50 Martin Place will be via Castlereagh/Elizabeth St side entrances. Temporary signage will be erected by the TSE Contractor to direct pedestrians to these entrances.

4.12. Impacts during rock pillar excavation works with no surface wing (14 June – 26 July 2020)

Stakeholder	Impacts	Mitigations
Traffic Flows	None – no road closures or ROLs	n/a
Public Transport	None – all bus stops remain operational throughout	n/a
Pedestrians	Underpass closed to pedestrians. Pedestrian access between Castlereagh St and Elizabeth St will be maintained on surface.	The impact of the underpass closure and wing removal has been modelled (see Appendix 1). Pedestrian numbers will be monitored via daily inspections to ensure safe levels are maintained on Elizabeth St crossing.
Commercial access	Access to/from the MLC Centre from the underpass will be closed.	Access to/from the MLC Centre from the steps between Pitt St and Castlereagh St will remain open.

4.13. Impacts after surface wing reopens (26 July onwards)

Stakeholder	Impacts	Mitigations
Traffic Flows	None	n/a
Public Transport	None	n/a
Pedestrians	Underpass closed to pedestrians. Pedestrian access between Castlereagh St and Elizabeth St will be maintained on surface via reinstated wing.	The impact of the underpass closure has been modelled (see Appendix 1)
Commercial access	Access to/from the MLC Centre from the underpass will be closed.	Access to/from the MLC Centre from the steps between Pitt St and Castlereagh St will remain open.

5. Interface with Sydney Trains

The works described in this CTMP will close the underground pedestrian route from the Sydney Trains Martin Place station under Elizabeth Street and Castlereagh Street.

Sydney Metro has entered into an Interface Agreement with Sydney Trains which sets out the following:

(a) The parties acknowledge that pedestrian access to Martin Place Station will be impacted by the performance of the TSE Works.

(b) Subject to clause (c) throughout the duration of the TSE Works, TfNSW may vary the access ways to Martin Place Station from Martin Place for use by pedestrians, having regard to the requirements for the performance of the TSE Works and delivery of the Sydney Metro City & Southwest Project.

(c) TfNSW will consult with Sydney Trains and use its reasonable endeavours to ensure that adequate provision is made for pedestrian access (including emergency egress) from Martin Place to Martin Place Station, having regard to all relevant conditions including other works being carried out in the vicinity of Martin Place.

Sydney Metro has undertaken regular interface meetings with Sydney Trains throughout the TSE works. In relation to the works described by this CTMP, Sydney Metro has consulted with Sydney Trains as set out in Appendix 5.

6. Pedestrian modelling and analysis

Sydney Metro have engaged Arup, a suitably qualified designer, to undertake a detailed pedestrian modelling analysis to understand the impact of closing the wing and underpass of the pedestrian bridge. This is attached at Appendix 1.

The analysis was undertaken based on pedestrian counts from April 2019, factored with a 2.5% annual growth rate to 2022. The analysis has particularly focused on the worst case scenario - the pedestrian crossing of Elizabeth Street, for people travelling east to west, during the weekday morning rush hour between 8:45am and 9:00am.

The conclusions of the analysis are that, when the underpass is closed and the surface wing removed, there are areas of congestion on the Elizabeth Street crossing and, in particular, a risk that pedestrians who cross Elizabeth Street during the red flashing pedestrian signal may not have cleared the traffic lines prior to the traffic signal going to green.

The analysis recommends that:

"*more space is needed on the western footpath of Elizabeth Street. Consideration should therefore be given to providing additional space on Elizabeth Street through lane taking on the western side of Elizabeth Street or through the provision of a wing arrangement*."

This CTMP therefore proposes the provision of a wing arrangement as set out in section 4.8.

7. Traffic Considerations

An ROL will be required for Elizabeth Street as described in Section 4.1 and 4.9. An ROL may be required on Castlereagh Street as described in Section 4.5. Impacts on vehicle traffic including buses are described in sections 4.11 to 4.13.

7.1. Special Events

Council and TMC events calendar have been reviewed and no direct conflict can be identified for the weekend proposed for the works.

7.2. Road Safety Audit

A road safety audit has been undertaken during the development of the CTMP, refer to Appendix 7. A further audit will be undertaken when the pedestrian bridge is brought into operation.

7.3. Haulage Routes

The works described in this CTMP do not affect existing haulage routes.

7.4. Permits/ Over Dimensional Vehicles

The works described in this CTMP do not require any over dimensional vehicles.

8. Community considerations

8.1. Communications and the community

The TSE Contractor will be responsible for the dissemination of information to the community including affected residents, City of Sydney Council, businesses and the public.

Any enquiries, complaints and/ or compliments are to be directed to the Sydney Metro Project Information line - **1800 171 386** or via email to: tunnels@transport.nsw.gov.au or Sydney Metro City & Southwest, PO Box K659, Haymarket, NSW 1240 or Sydney Metro City & Southwest Website.

Table 1 provides the proposed communications to be implemented for this CTMP

Table 1 Proposed Communications

NOTIFICATION	APPLICABLE
Community notice	YES
Precinct update/ e-update	YES
Email	YES
Internet	YES
On site briefings	NO (replaced by telephone and video calls due to social distancing)
Print advertising	NO
Advanced warning signs	YES

8.2. Advanced notifications

Where our works will impact on the travelling public, we will undertake the following, where detailed within this CTMP:

- Public transport interruptions will be communicated via on site signage and through consultation with managing Government bodies

- Motoring public will be forewarned of any changes, including lane closures, road changes and approaching works well in advance using appropriate signage, including variable message signs as applicable
- Pedestrians and cyclists will be provided with advance warning signs where applicable.

Refer Appendix 3 for advanced warning signage and messaging.

8.3. Stakeholder Consultation

Table 2 identifies the stakeholders consulted during the development of this CTMP:

Table 2: Stakeholder Consultation

STAKEHOLDER	DATE	CONSULTATION	MAIN CONTACT PEOPLE
TCG	24 March 2020	All members	SCO/ TfNSW/ Councils/ RMS/ BDA
RMS		Submission of CTMP	Carl Mella
City of Sydney Council		Submission of CTMP	Van Le, Tony Ly
SCO		TCG, TTLG Submission of CTMP	Giovanny Ramirez/ Jake Cole
Sydney Metro		Submission of CTMP	Berin Gordon
Sydney Trains	2 April 2020	Specific meeting (see Appendix 5)	Stephen Wong, Syed Murtaza

Additionally, the Wayfinding Strategy attached at Appendix 6 details how stakeholder consultation will be managed for these works.

8.4. Commercial and Residential impacts

There are no direct impacts to Commercial or residential developments in the area. Consultation is occurring with directly adjacent developments and businesses through the community notification and stakeholder consultations.

8.5. Emergency Services

The Emergency Services will be informed of relevant activities proposed within this CTMP at the weekly Emergency Services meeting and via the Traffic and Transport Liaison Group (TTLG). Regular updates will include changes to road network configurations, changes to road conditions and worksite access locations.

Additionally, to this prior to the works occurring an ROL and permit approval process requires a notification and approval to be placed to local police.

8.6. Required approvals

Sydney Metro is responsible for obtaining approval for these works. There are a number of permits and approvals required, a summary of which is identified below,

It is noted that these are a summary and this list is not definite.

- CTMP (Approval of this plan for implementation)
- CoS Hoarding Permit / Temporary works for Hoarding works described in section 4.1
- ROL for Hoarding works described in section 4.1 (Approval through SCO and TMC for lane closures with police approval to implement)

8.7. Australia Post

There is no impact to Australia Post from the works described in this CTMP.

8.8. Adjacent Contractors

To ensure no conflict in completing these works consultation with adjacent contractors is completed through various Traffic and Interface meetings, This CTMP is also provided to governing bodies for issue to contractors whom there may be conflict.

Additionally, the ROL and CoS permit process requires additional consultation be completed.

Sites adjacent or within the immediate area, including the Sydney Metro works at the Martin Place North site and the renovation works to the MLC centre, have been assessed to confirm there is no impact on the works described in this CTMP

8.9. Inspections and monitoring

The site will be monitored by the site supervisor. Any changes as noted in this CTMP, to signs/ lines that impact on the public will be monitored daily during site operating hours.

Traffic control used for pedestrian management, lane closures etc. will provide records of the traffic control implemented. Any changes required to the traffic control set up will be authorised by a holder of an RMS “Prepare a Work Zone Traffic Management Plan” or equivalent.

8.10. Environmental Management

All works will be undertaken in accordance with the TSE Construction Environmental Management Plan (SMCTSE-JCG-TPW-EM-PLN-002010) and associated sub plans including the Construction Noise and Vibration Management Plan (SMCSTSE-JCG-TPW-EM-PLN-002012). The TSE Works are also regulated by the NSW Environment Protection Authority and works to be undertaken outside of standard construction hours will need to comply with the requirements of the Environment Protection License.

8.11. Incident Response

TSE procedures in the event of an incident will follow the management procedures set out in the plans identified below:

Incident response will be as required based on the severity and impact of the incident as detailed in:

- SMCSWTSE-JCG-TPW-PM-PLN-002081 Emergency Response Plan
- SMCSWTSE-JCG-TPW-HS-APP-005014 Incident Notification & Investigation Flowchart
- SMCSWTSE-JCG-TPW-HS-APP-005072 Incident & Emergency Response Process

The Sydney Metro Traffic Team phone is the preferred initial means of communication between TMC/ SCO/ RMS/ Councils. In the event of an incident TSE are to provide aid as required by governing bodies in terms of traffic management as available, governing bodies include but are not limited to: Emergency Services, SCO, TMC, RMS and Council.

8.12. Site Contacts

Table 3: Site contacts

NAME	POSITION	CONTACT #
Will Freelander	Project Manager	0400 170 322
Jeremy Glasgow	Construction Manager	0428 746 505
Sydney Metro	Traffic Team	0428 033 283

8.13. References

The following documents were used in the development of this CTMP:

- Construction Traffic Management Framework – TfNSW, v 2.5 provided 22 Dec 2017
- Principal's General Specification G10 Traffic and Transport Management, v2.0
- Roads and Maritime Service Traffic Control at Worksites Manual v 5.0
- Relevant AustRoads Guides and RMS Supplements
- Sydney Metro Principal Contractor Health and Safety Standard
- Environmental Impact Statement for Sydney Metro Chatswood to Sydenham Chapter 8 Construction traffic and transport June 2016

Appendix 1	Pedestrian modelling and analysis
Appendix 2	Hoarding layout drawings (current and proposed)
Appendix 3	Traffic Control Plans (TCPs)
Appendix 4	Road Safety Audit
Appendix 5	Consultation with Sydney Trains
Appendix 6	Wayfinding Strategy
Appendix 7	Scaffold design
Appendix 8	Review Comments

File Note

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Project title	Metro Martin Place	Job number	264648
cc	Eric Rivers Andy McGuinness Nick Suslak Greg Collings Leonie So Richard Eaton	File reference	
Prepared by	Rekel Ahmed	Date	27 April 2020
Subject	Martin Place Construction Staging Impacts Assessment		

Executive Summary

The purpose of our assignment is to assess the removal of the 'wings' on the construction site and subsequent impacts to pedestrians crossing Castlereagh and Elizabeth Streets on Martin Place. The following assessment criteria have been adopted to understand and assess the performance of the assessed intersections:

- The need for pedestrians to be able to clear the crosswalk before traffic enters the crosswalk;
- Provision of sufficient space on the footpath so that people crossing the crosswalk can step onto the footpath and
- Provision of sufficient space on the footpath such that people walking north-south can move through the east-west crowds without stepping off the kerb and into traffic.

The key findings and mitigation methods from the analysis are outlined below.

Elizabeth Street Intersection:

- The removal of the wing results in congestion on the western footpath of Elizabeth Street. The results suggest that additional space is needed on the western footpath of Elizabeth Street. Additional space provision could be achieved through lane taking on the western side of Elizabeth Street and/or through provision of a wing arrangement.
- The modelling indicates that not all pedestrians are able to finish crossing the road before the pedestrian lights turn red. Possible mitigations to help resolve this could include implementation of marshalling, with traffic marshals holding back traffic even after the pedestrian lights turn red and the lights for traffic turn green, to allow those people who started to cross the road to reach the other side. Alternatively, a review of signal timings

could be considered. Such a review should concentrate on provision of more frequent opportunities for pedestrians to cross through shorter cycle times and more green time for pedestrians.

Castlereagh Street Intersection:

- The modelling indicates that if pedestrians cross for the full duration of the countdown timer and offset, the waiting areas on the eastern side of Castlereagh Street operate at LoS C/D, with queuing at the intersection beginning to impact east-west movements across Martin Place. Provision of more green time to pedestrians would help to improve the performance of the Castlereagh Street intersection. The modelling results suggest that the Castlereagh Street intersection could be managed by allowing pedestrians to begin crossing for the full duration of the countdown timer and offset with marshalling to ensure that pedestrians who step onto the road towards the end of the countdown timer and are on the road when the traffic signals for the cars turn green are able to safely cross the road while traffic marshals hold back the cars. Alternatively, signal timings could be reviewed to provide more green time to pedestrians.
- It is also worth noting that the modelling has not considered jaywalking, as instructed by Sydney Metro. Given that Castlereagh is a one-way street with only two lanes of traffic, jaywalking is an observed and common trend. It is therefore likely than the performance of the Castlereagh Street intersection will be better than that demonstrated through the modelling, which assumes no jaywalking.

While the modelling provides an indication of performance and can help to inform mitigations and decision making, modelling represents a single scenario and set of inputs so it does have limitations that need to be considered when developing and implementing mitigation measures. For example, the current modelling assumes that all pedestrians walk within a standard speed range. Therefore, those agents who step onto the road last are left on the road when the pedestrian lights turn red. In reality it is likely that those who step onto the road last would walk faster or even run to reach the other side of the crossing before the pedestrian lights turn red.

The model also shows some congestion on the road as those moving westbound pass those moving eastbound. It is likely that people would organise themselves and navigate around each other a bit better than what is shown in the simulation. These modelling limitations may mean that more pedestrians are able to reach the other side of the road quicker, which may mean that additional space is needed on the western footpath. Therefore, simply relying on the model outputs to inform and implement mitigations measures will not be enough to ensure safe operation of the crossings. Regular counts and observations will be essential in informing mitigation measures and operational strategies to ensure safe operation of the crossings.

File Note

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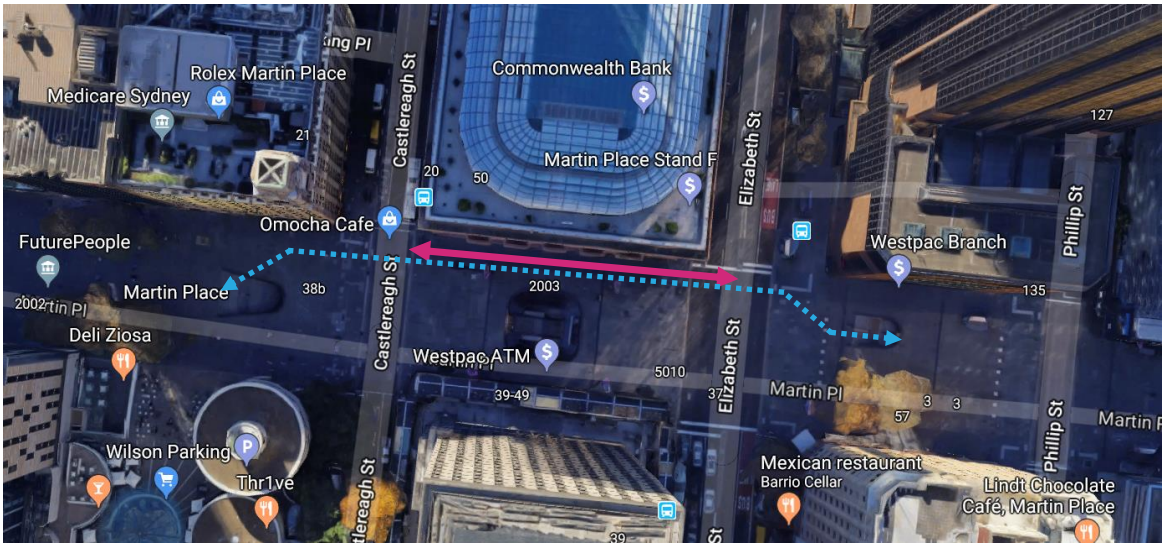
1 Introduction

Arup has been engaged by Lendlease to undertake an assessment of the waiting spaces at the intersections of Martin Place/Castlereagh Street and Martin Place/Elizabeth Street.

As detailed in Figure 1, there are currently two options to cross between Castlereagh Street and Elizabeth Street, via Martin Place:

- An at grade connection at street level, as indicated by the pink arrow and shown in Image 1 and
- An underground connection, as indicated by the blue arrow and shown in Image 2.



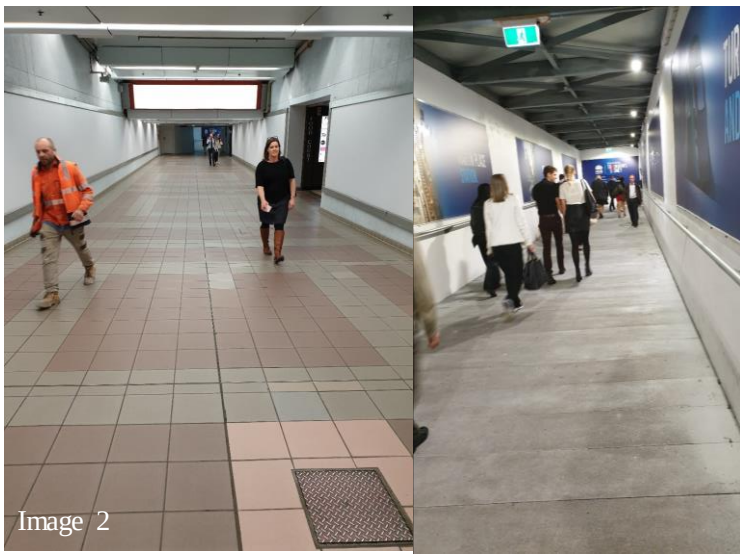


Figure 1: Current crossing options between Elizabeth/Castlereagh Streets via Martin Place

Arup completed a pedestrian assessment in July 2019 to investigate the impacts of either closing the underground connection only or closing both the at grade and underground connections. The previous assessment only considered mid-block flows along the footpath and did not assess the performance of the crossings on Martin Place/Elizabeth Street and Martin Place/Castlereagh Street.

The waiting space for both crossings allow for additional pedestrian waiting space with the hoarding line flaring out to create “wings” as shown in the images in Figure 2. Due to construction requirements, the additional waiting space provision provided by the “wings” will need to be removed and the underground connection closed. Arup has been engaged by Lendlease to undertake a high-level dynamic modelling assessment into the performance of the waiting spaces at the intersections of Martin Place/Castlereagh Street and Martin Place/Elizabeth Street with the wings removed and underground connection closed. This file note outlines the assumptions, model extents, approach and outputs of the modelling work undertaken to investigate the closure of the “wings”.

Figure 2: Current waiting space provision at crossing(s)

2 MassMotion Model Setup

The MassMotion model combines the physical space, the pedestrian demands and the operational aspects of the site (in this case being signal timings and jaywalking).

2.1 Extents

The extent of the modelled area is highlighted in pink in Figure 3. The model includes the pedestrian walkway on Martin Place between Castlereagh Street and Elizabeth Street and the intersections of Martin Place/Castlereagh Street and Martin Place/Elizabeth Street.

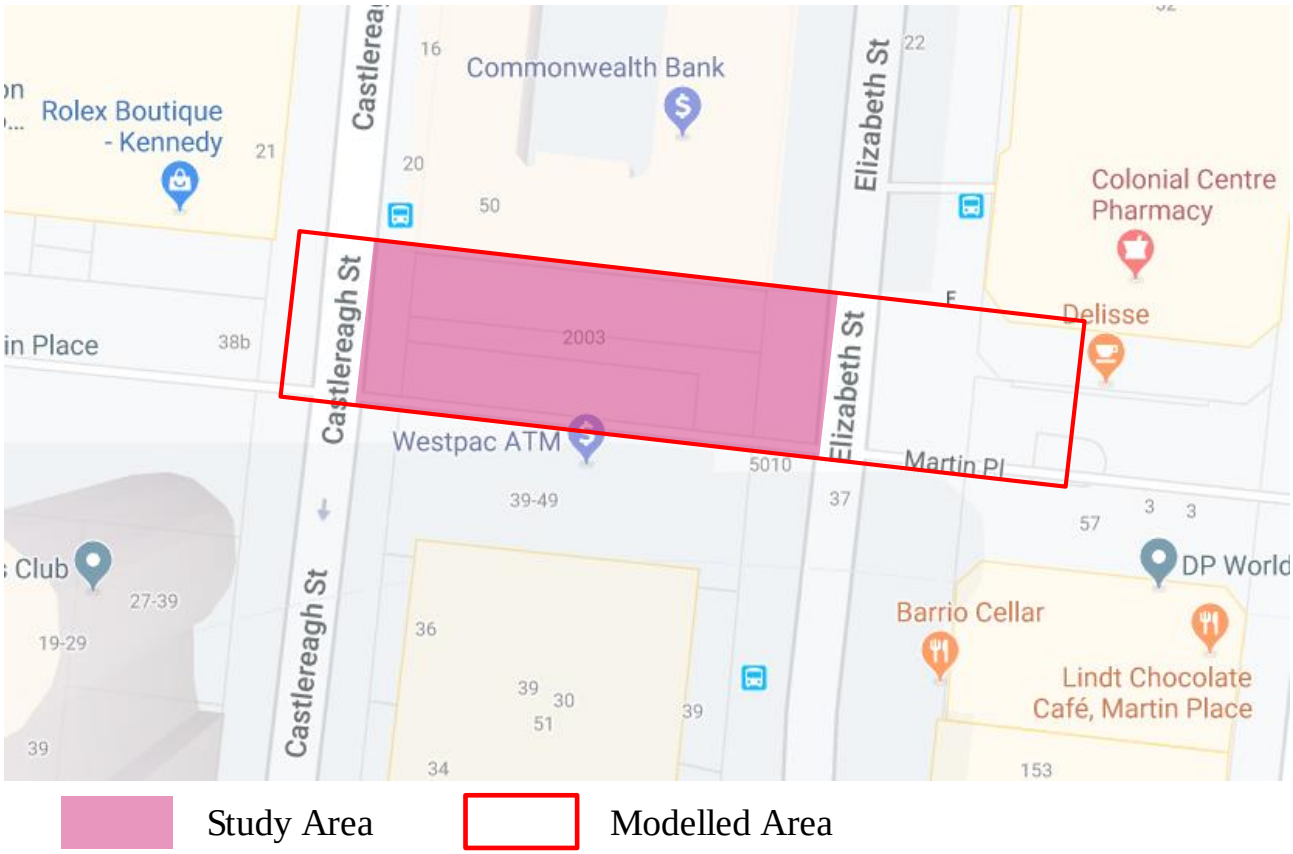


Figure 3: Model Extents and Study Area

2.1.1 Model Geometry

Based on a review of the TSEJV drawings and through checks of the dimensions of the pedestrian link and wings measured from Near Maps and on-site measurements Arup has constructed a plan for this area.

The dimensions of key elements of the plan used to undertake the modelling are provided in Figure 4 (proposed arrangement without wings) and Figure 5 (proposed arrangement with 10m x 5m wing).

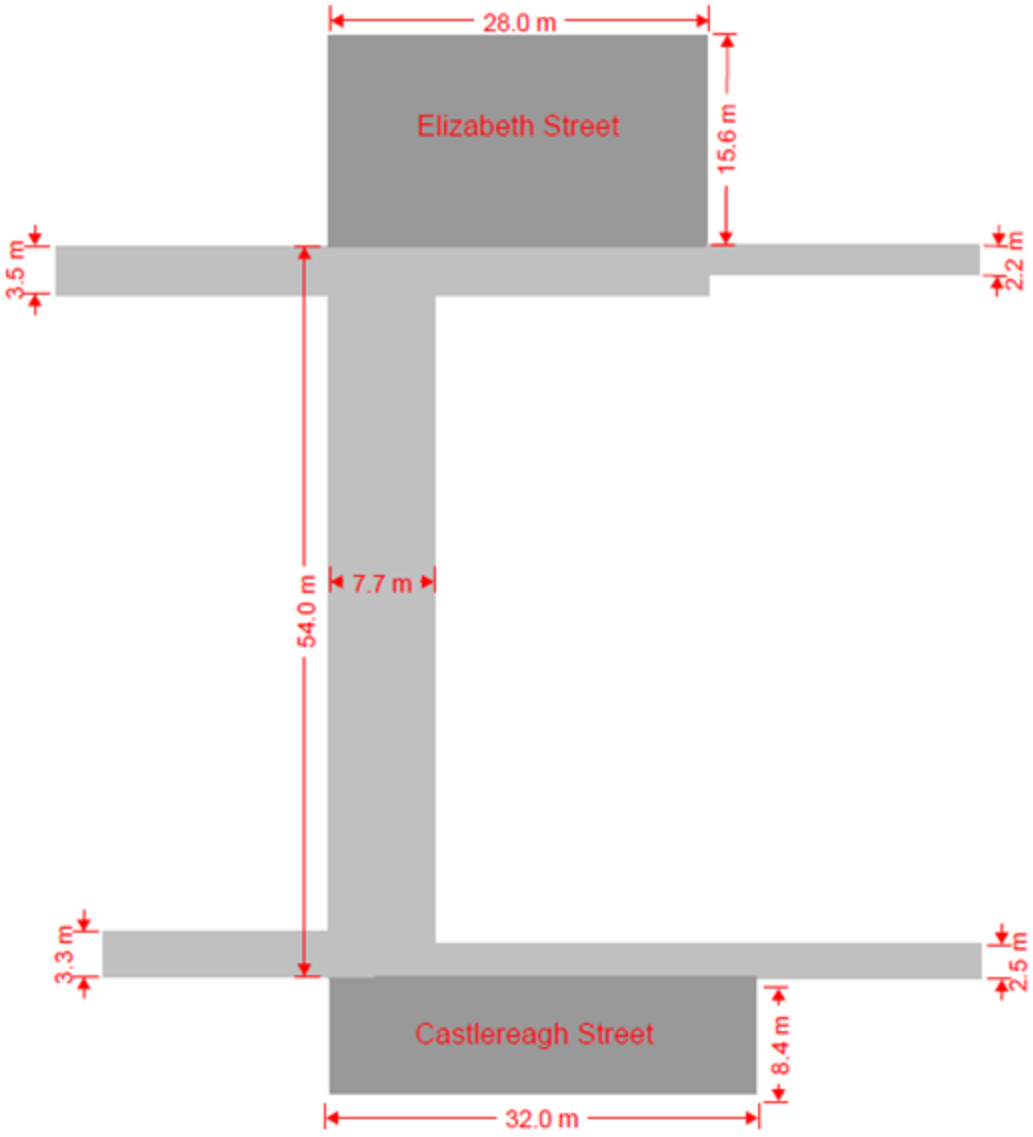


Figure 4: Key dimensions for modelled area (proposed arrangement without wings)

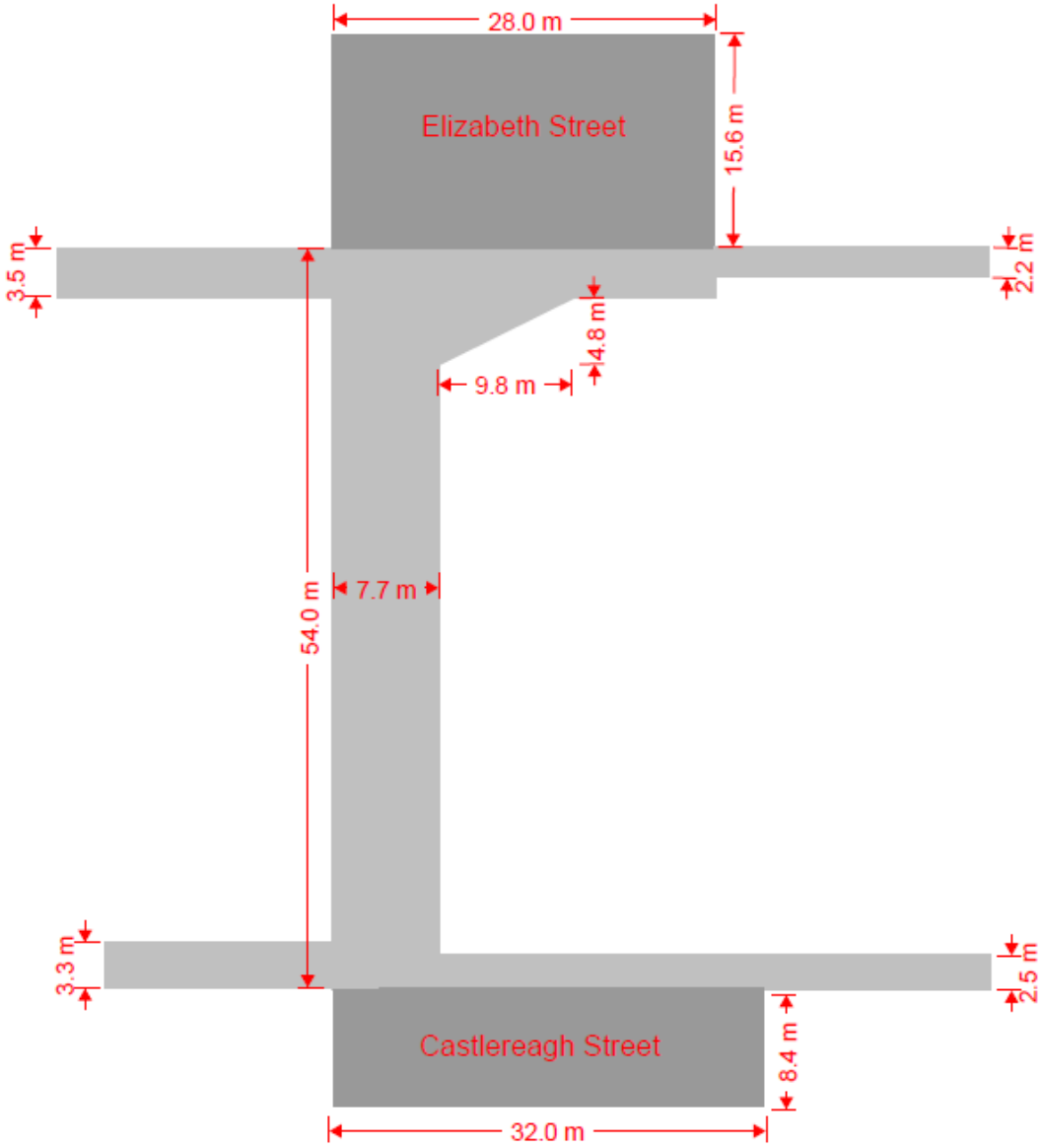


Figure 5: Key dimensions for modelled area (proposed arrangement with 10m x 5m wing)

2.1.2 Waiting Behaviour

In the existing arrangement, the easternmost lane on Castlereagh Street is closed to vehicular traffic and is available to use as a pedestrian space. Westbound pedestrians wait in this area when crossing Castlereagh Street. A visit to the site during the AM peak on 11 February 2020 confirmed that the additional waiting space provided by the removal of the lane on Castlereagh Street is being used by pedestrians, as demonstrated by the image in Figure 6. The modelling has therefore assumed that pedestrians use the extra lane as a waiting space when crossing west across Castlereagh Street.

Figure 6: Image taken on 11 February 2020 that shows waiting behaviour on Castlereagh Street

File Note

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2.2 Pedestrian Demand

2.2.1 Pedestrian Survey Count Data

The volume of pedestrian movements assumed in the modelling is based on the 2019 survey data provided to Arup by Lendlease in April 2019. Survey data for three days (Monday 1 April – Wednesday 3 April) has been provided. The count locations are detailed in Figure 6. The key locations of interest to this study are Site 18 (the at grade crossing) and Site 26 (the underground crossing).

Figure 7: Survey locations (*source: Lendlease*)

As this assessment assumes that the underground connection is closed, all pedestrians that were observed crossing Martin Place either above or below ground in the surveys will be forced to walk along the at-grade connection. To understand the total flow across Martin Place, the total flow across both the connections and in both directions was graphed (see Figure 8). The graph shows that the combined flow is highest on the Monday and Wednesday, with Tuesday being much lower. Therefore, the average of the Monday and Wednesday data was used in the modelling.

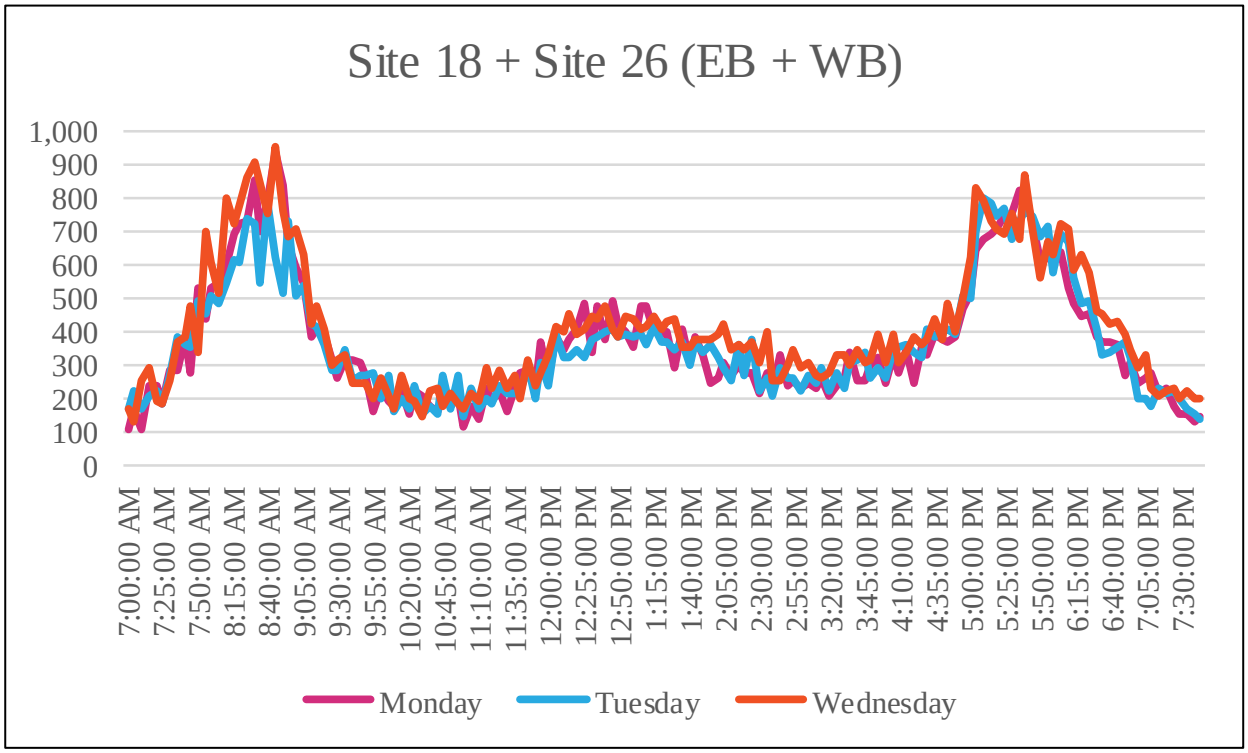

Figure 8: Total flows across Martin Place (eastbound + westbound)

The 2019 survey data was used to identify the peak hour during the AM for Eastbound movements along Martin Place, which identified the AM peak hour as being from 08:05 – 09:05. Figure 9 shows the key eastbound, westbound, northbound and southbound movements through the intersections being assessed as part of this study, and the volumes recorded for these in the 2019 survey data provided by Lendlease.

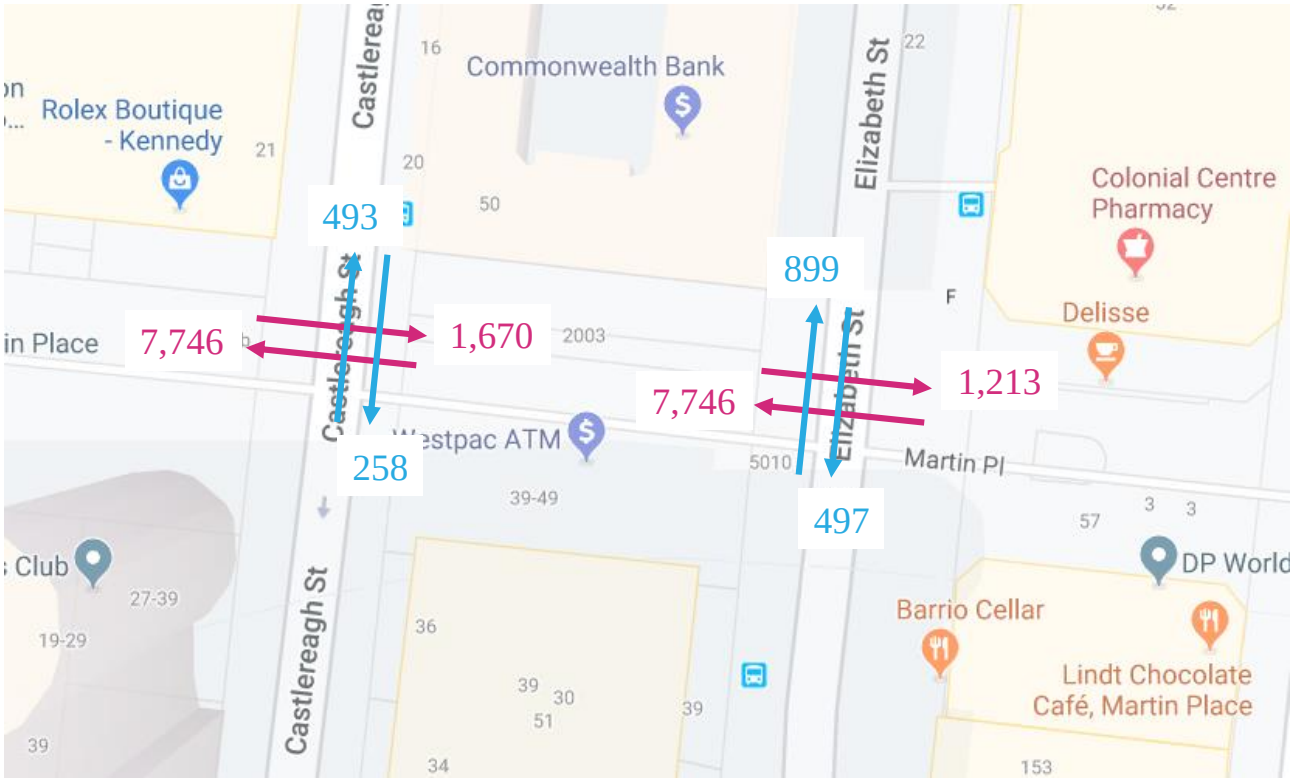

Figure 9: 2019 Pedestrian demand (AM Peak Hour)

2.2.2 2022 Estimated Pedestrian Demands

As per the previous assessment undertaken for footpath closures during construction, the current assessment represents a future year of 2022. As per the previous assessment, a growth rate of 2.5% per annum was used to estimate a 2022 demand. A 1-hour AM peak model has been developed for the morning period only, with only the movements and volumes outlined in Figure 10 assessed in the modelling. The assessment therefore assumes that all those walking westbound across Martin Place from Philip Street are crossing westbound across Elizbeth Street and then continuing to walk westbound across Martin Place. All movements not associated with the Martin Place connection and shown in Figure 10 are excluded from the modelling.

File Note

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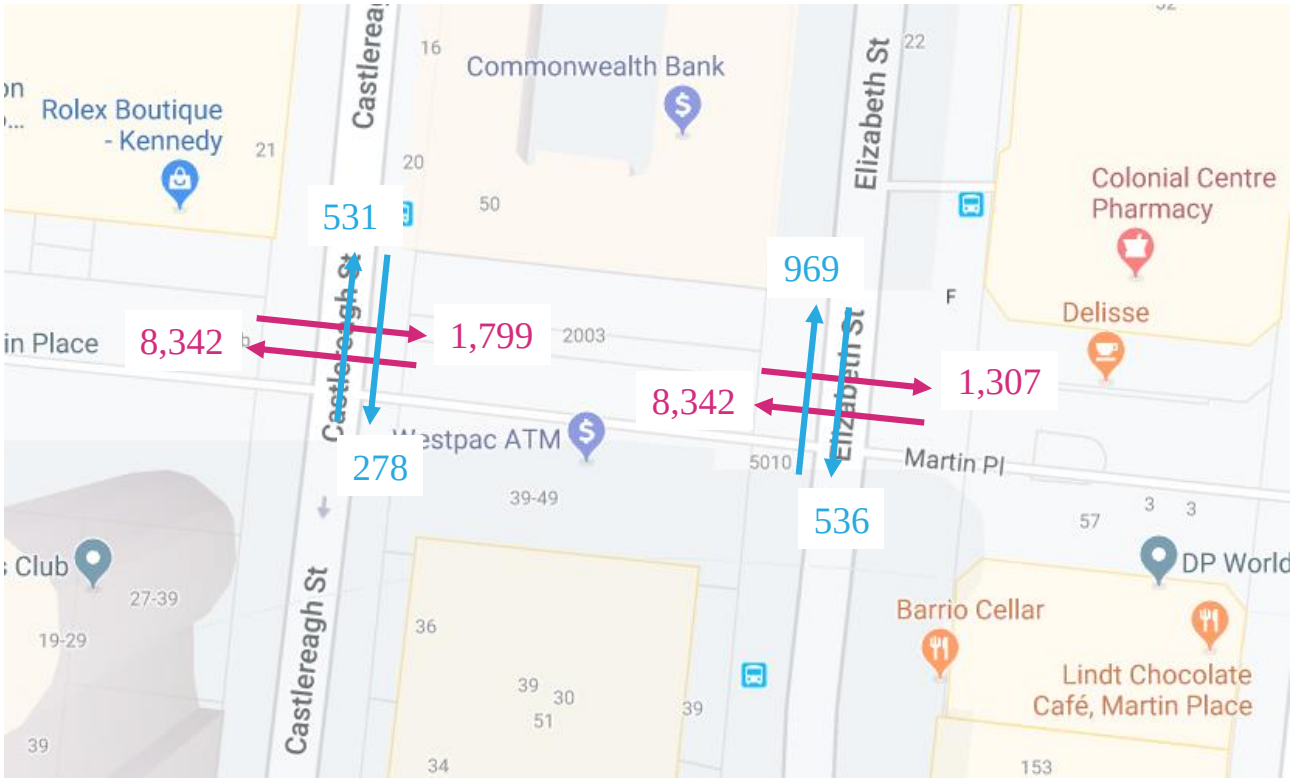


Figure 10: 2022 Pedestrian demand (AM Peak Hour)

From Figure 10 it is clear that the key movement during the AM peak is the westbound movement along Martin Place. A key component of the westbound movement is passengers coming off trains from Martin Place station on the ESL line. These passengers are likely to exit the station at the staircase on Martin Place adjacent to the Elizabeth Street/Martin Place intersection. To account for the surges in demand as a result of train arrivals, the modelling will assume that a certain proportion of the westbound movement is passengers from Martin Place Station. These passengers are incorporated into the model over 2-minute surges, assuming that:

- 52% of the Westbound movement is coming from Martin Place Station. The assumption of 52% of the Westbound movement being from Martin Place Station is based on Journey to Work data, which shows that approximately 52% of pedestrians arrive to the travel zone associated with Martin Place by train and
- There are 18 trains per hour running through the existing station (source: SWTC requirements, Appendix 45, Clause 2 (b)). An even headway of train arrivals has been assumed with 30% of train demand arriving during the peak 15 minutes.

The remaining 48% of Westbound movements has been generated adjacent to the Martin Place Station stair and was assumed to enter the model based on the profile recorded in the 2019 survey data.

2.3 Signal Timings

SCATS data for four intersections (Castlereagh Street/Martin Place, Hunter Street/Castlereagh Street/Bligh Street, Elizabeth Street/Martin Place and Hunter Street/Elizabeth Street/Phillip Street) has been provided by Lendlease to undertake the assessment. The SCATS data provided details average times for each of the phases in 15-minute segments. An average of the average signal timings for each phase for the peak hour (08:00am – 09:00am) has been adopted for the assessment and are detailed in Figure 11. As observations at both intersections have shown that pedestrians start to cross the road once the countdown timer starts, the modelling has assumed that pedestrians start to cross the street even after the countdown timer starts. A spot counts at site has shown that it takes the average commuter approximately 10 seconds to cross Elizabeth Street. The modelling therefore assumes that pedestrians begin to cross Elizabeth Street up until there is 10 seconds left on the countdown timer. As pedestrians only need to cross two lanes of traffic at Castlereagh Street and given that pedestrians have been observed to cross for the entire duration of the countdown timer, the modelling has assumed that pedestrians begin to cross Castlereagh Street for the full 10 second duration of the Countdown Timer and Offset.

	SCATS Signal Timings					
Location	1			2		
	Pedestrian Green	Countdown Timer + Offset	Pedestrian Red	Pedestrian Green	Countdown Timer + Offset	Pedestrian Red
08:00 – 08:15	6	10	40	10	17	63
08:15 – 08:30	6	10	29	10	17	62
08:30 – 08:45	6	10	43	10	17	69
08:45 – 09:00	6	10	29	10	17	63
Average (used in modelling)	**6**	10	**35**	**10**	17	**64**

Figure 11: Assumed signal timings (source: SCATS Data)

Observations have shown that jaywalking across Castlereagh Street is a common occurrence throughout the morning peak. However, as instructed by Sydney Metro, the modelling assumes that there is no jaywalking present at either intersection.

3 Assessment Criteria

Like the MassMotion model setup, performance can be assessed, and potential mitigations described in terms of the physical space, the pedestrian demands and the operational aspects of the site. In this assessment, we review the findings in terms of the scenario being able to:

1. clear the crosswalk of people before traffic enters the crosswalk;
2. provide sufficient space on the footpath so that people crossing the crosswalk can step onto the footpath; and
3. provide sufficient space on the footpath such that people walking north-south can move through the east-west crowds without stepping off the kerb and into traffic.

We have used density and Fruin Level of Service to describe space available to moving and queueing pedestrians. The suggested aim is to be sure that the footpath remains at Walkways LoS C to allow movement.

Assessment of the crosswalk clearing prior to traffic entering is demonstrated through observations of the MassMotion model scenarios and is described within this File Note through model images.

3.1 SWTC LoS Requirements

The Fruin Level of Service (LoS) criteria has been used to assess the performance of the footpaths and the crossings in terms of space requirements. The different levels of service are outlined in Figure 12, with contextual descriptions of the different LoS bands provided in Appendix A.

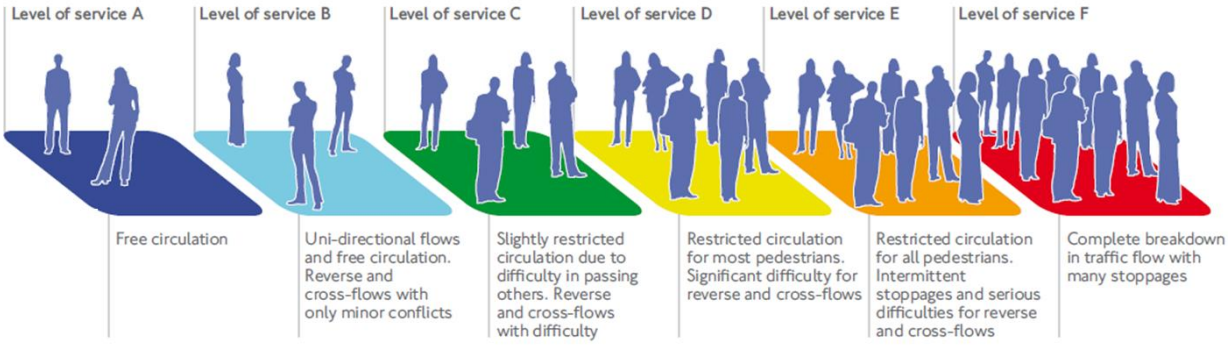


Figure 12: Fruin Level of Service criteria (walkways). Source: London Underground Station Planning Standards and Guidelines (2012), Transport for London.

Taking account of the different LoS descriptions, and considering the fact that the connection across Martin Place being assessed in this study is a busy link through the city and is a key east-west connection close to Martin Place Station, it is recommended that any proposed arrangement achieve an LoS C, with perhaps some localised areas of LoS D being deemed acceptable for short periods of time. Descriptions of LoS C and LoS D are provided below:

- At **walkway level-of-service C**, freedom to select individual walking speed and freely pass other pedestrians is restricted. Where pedestrian cross movements and reverse flows exist, there is a high probability of conflict requiring frequent adjustment of speed and direction to avoid contact. Designs consistent with this level-of-service would represent reasonably fluid flow;

however, considerable friction and interaction between pedestrians is likely to occur, particularly in multi-directional flow situations. Examples of this type of design would be heavily used transportation terminals, public buildings, or open spaces where severe peaking, combined with space restrictions, limit design flexibility.

- At **walkway level-of-service D**, the majority of persons would have their normal walking speeds restricted and reduced, due to difficulties in bypassing slower-moving pedestrians and avoiding conflicts. Pedestrians involved in reverse-flow and crossing movements would be severely restricted, with the occurrence of multiple conflicts with others. Designs at this level-of-service would be representative of the most crowded public areas, where it is necessary to continually alter walking stride and direction to maintain reasonable forward progress. At this level-of-service there is some probability of intermittently reaching critical density, causing momentary stoppages of flow. Designs consistent with this level-of-service would represent only the most crowded public areas.

4 Model Scenario Results

Dynamic micro-simulation modelling has been undertaken for two scenarios:

- Scenario 1: assumes that the “wings” are closed as per the arrangement shown in Figure 4.
- Scenario 2: assumes the wing arrangement shown in Figure 5.

Both scenarios assume that the underground connection is closed.

4.1 Scenario 1

Scenario 1: assumes that the wings are closed as per the arrangement shown in Figure 4. Scenario 1 assumes that at the Elizabeth Street intersection, pedestrians begin to cross the road while there is a green man and up until there is 10 seconds left on the countdown timer. At Castlereagh Street, Scenario 1 assumes that pedestrians begin crossing the road for the full duration of the green man, countdown timer and offset.

Figure 13 shows the Walkways Level of Service (LoS) density map for Scenario 1. The map demonstrates that, with the underground connection and wings closed, the mid-block of the at-grade connection would continue to operate at Walkways LoS C. Without the wings in place, the additional space for pedestrians to use as they move from the wider crossing of Elizabeth Street to the narrower Martin Place is no longer available, meaning that pedestrians are forced to queue on the western footpath of Elizabeth Street to access Martin Place. The queuing on the Elizabeth Street footpath causes additional congestion on the footpath, which is operating at LoS D/E, and conflicts with north-south movements along the Elizabeth Street footpath. The poor performance of the western footpath of Elizabeth Street suggests that more space is required for pedestrian movement on the western side of Elizabeth Street. Consideration should therefore be given to lane taking at the Elizabeth Street intersection to help provide more space on the western footpath.

At the Castlereagh Street intersection, some congestion is noted with queuing at the intersection beginning to impact east-west pedestrian movement across Martin Place. Congestion occurs at the new the pinch point created where the wing was previously located, at the point where Martin Place and Castlereagh Street meet. The results indicate the wings are needed at both intersections.

It is worth noting that the modelling has not considered jaywalking. Given that Castlereagh is a one-way street with only two lanes of traffic to cross, jaywalking is an observed and common trend at the Castlereagh Street intersection. It is therefore likely that the performance of the Castlereagh Street intersection will be better than that demonstrated through the modelling, which assumes no jaywalking.

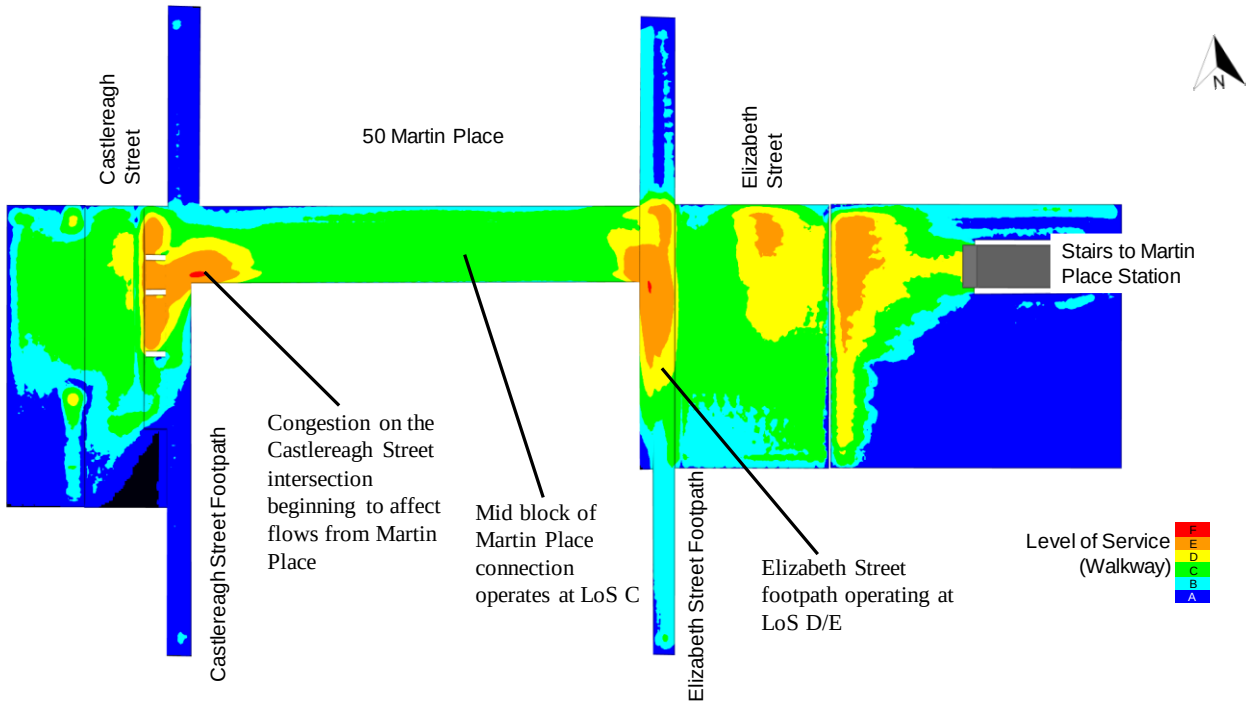


Figure 13: Scenario 1, Walkways and Stairs Level of Service, Peak 15 Minutes (*Model Ref: Construction Staging Without Wings 2022_v08*)

Figure 14 displays the Queuing LoS density map for Scenario 1. The map shows that with the underground connection closed, the waiting space at the Elizabeth Street intersection is operating at Queuing LoS C/D. The closure of the wings makes the crossing much busier with people having to queue on the footpath along Elizabeth Street to get onto Martin Place, as demonstrated by the model image in Figure 15. The modelling results therefore suggest that more space is required to cater to the crowds of people crossing Elizabeth Street and accessing Martin Place. Without provision of this additional space, there is a real risk that pedestrians will step off the kerb and onto the road to avoid congestion on the footpath. With traffic flowing northbound along Elizabeth Street, and pedestrians facing north as they head towards the Martin Place connection, most pedestrians will have their backs to the oncoming traffic as they step off the kerb to avoid congestion on the footpath, thereby further increasing the risk to pedestrians.

The waiting area at the Castlereagh Street intersection is operating at Queuing LoS C/D, even with the additional lane on Castlereagh being used for waiting movements and assuming that pedestrians start to cross the road for the full duration of the countdown timer and offset. The results therefore indicate that provision of more green time for pedestrians would help to relieve congestion at the Castlereagh Street intersection. Provision of marshalling could also be considered, to ensure that vehicles are held back even when the pedestrian lights change to red, to allow pedestrians that started their journeys during the countdown timer to finish crossing the road.

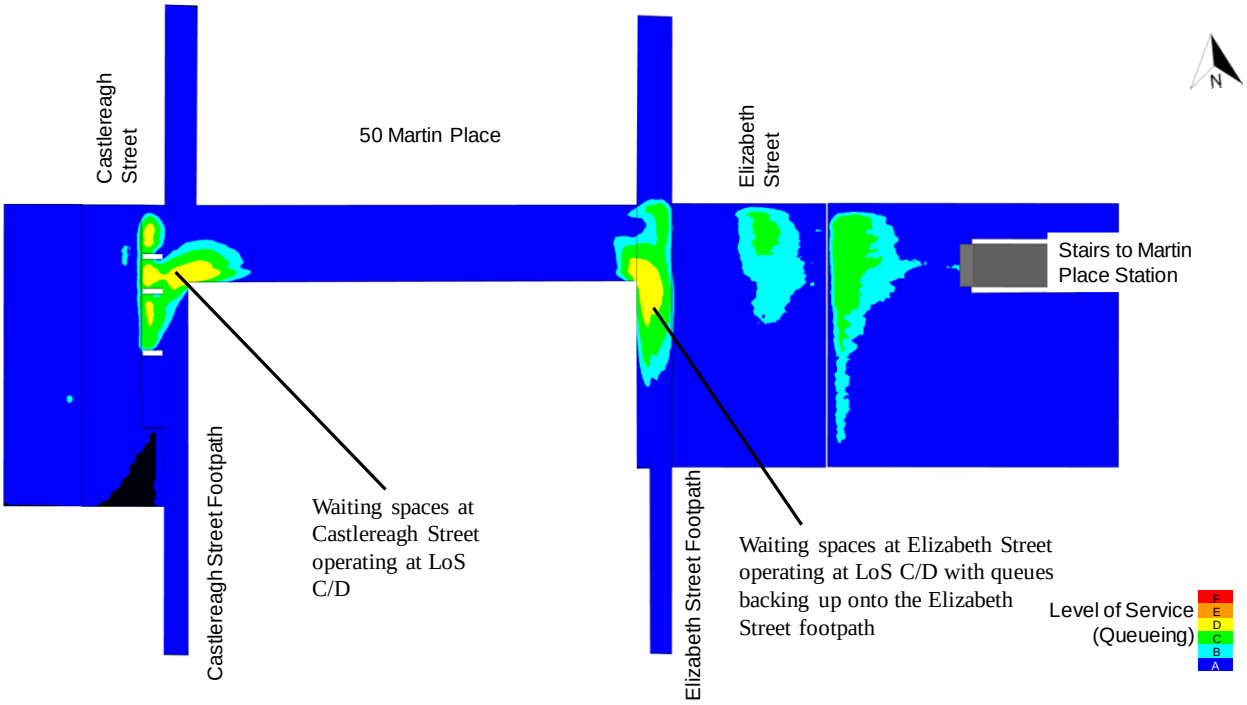


Figure 14: Scenario 1, Queuing Level of Service, Peak 15 Minutes (*Model Ref: Construction Staging Without Wings 2022_v08*)

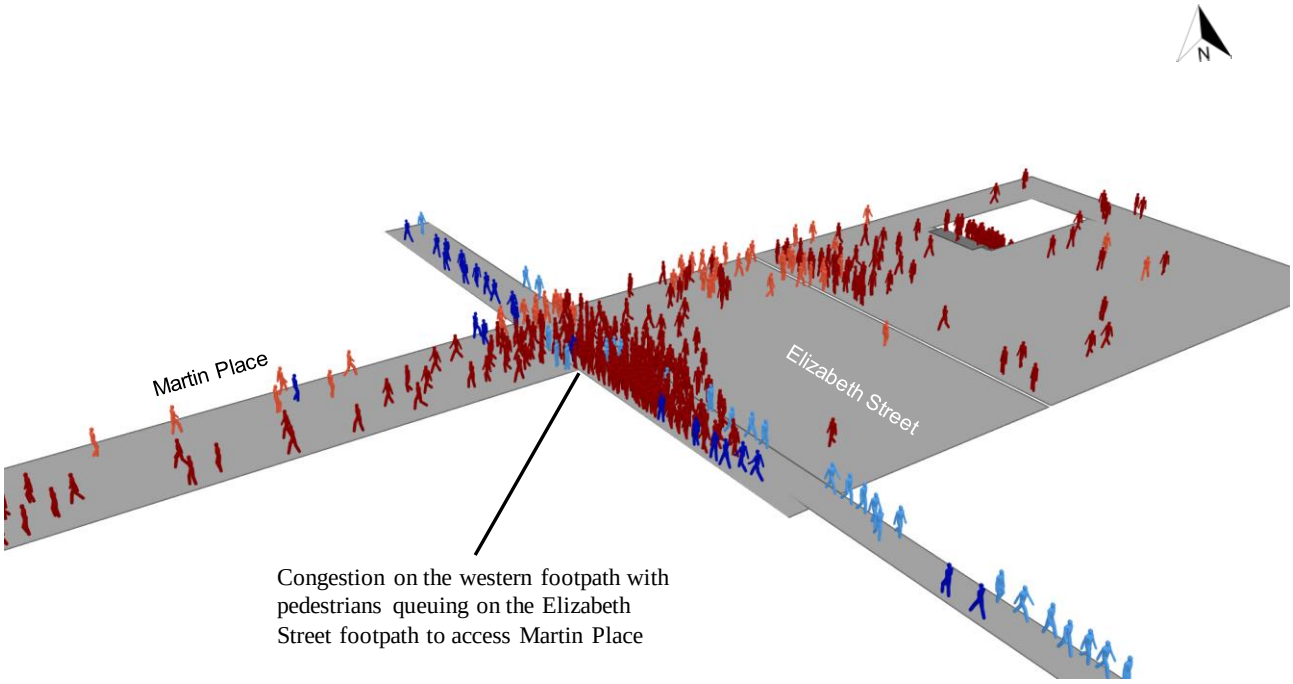


Figure 15: Scenario 1, Agents queuing to access Martin Place after crossing Elizabeth Street (*Model Ref: Construction Staging Without Wings 2022_v08*)

A review of the Elizabeth Street/Martin Place intersection has shown that, with the underground connection closed, more pedestrians are using the at grade route, meaning that there are more pedestrians crossing westbound across Elizabeth Street. Due to the additional number of people

now crossing westbound across Elizabeth Street, many pedestrians are not able to clear the intersection before the pedestrian lights turn red, as demonstrated by the image in Figure 16.

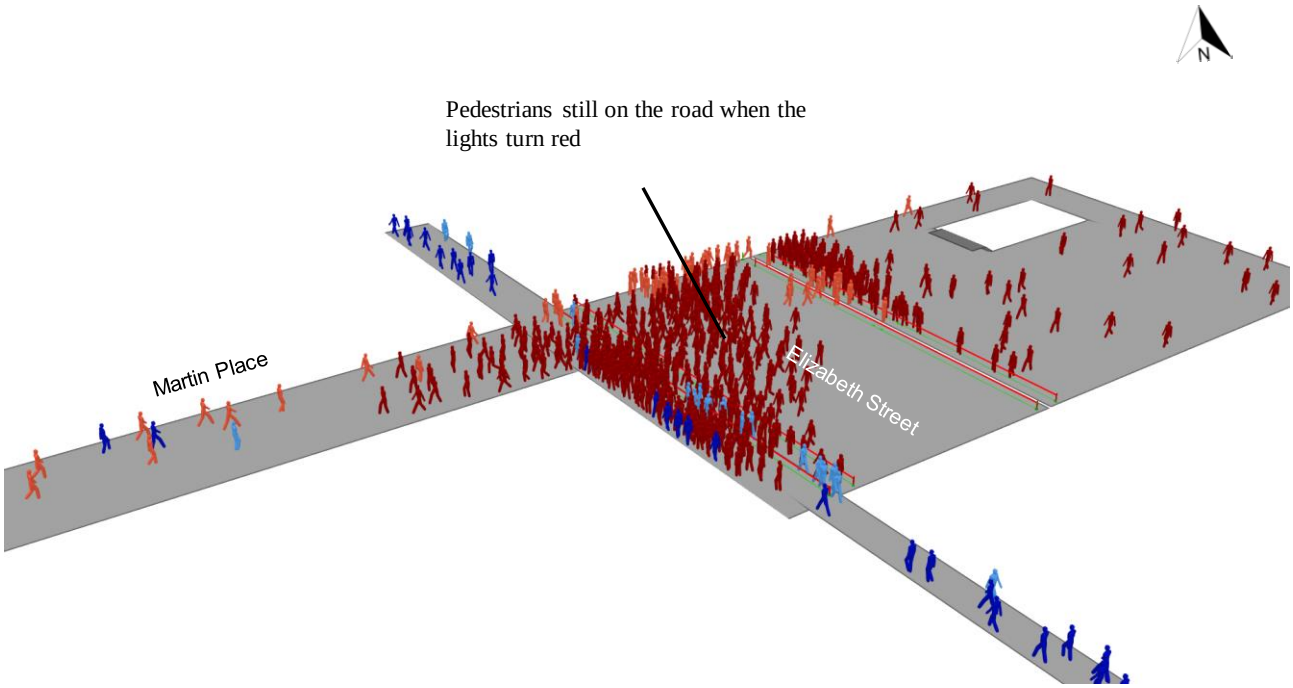


Figure 16: Scenario 1, Elizabeth Street intersection after the pedestrian lights go red *(Model Ref: Construction Staging Without Wings 2022_v08)*

4.2 Effective Crossing Capacity

Lendlease asked to understand how many people can finish crossing the road before the pedestrian lights turn red i.e. before the traffic lights for the cars turn green. To answer this question, an analysis into the number of agents crossing for each traffic light cycle was undertaken. The graph in Figure 17 shows the total number of agents crossing the road for each cycle in this scenario. The blue bars show the number of agents that can finish crossing the road before the pedestrian lights go red and the pink bars show the number of pedestrians that are left on the road when the pedestrian lights go red i.e when the traffic lights turn green. The graph demonstrates that many pedestrians are unable to finish crossing the road when the pedestrian lights turn red.

Table 1 summaries the extracted model outputs into 15-minute time slots. The table shows that, on average, approx. 1,200 agents can cross the road over a 15-minute period. It should be noted that this value is an estimate based on the specific parameters of the modelled scenario in line with the assumptions documented in this File Note. Monitoring of the crossing should be undertaken to manage and inform when to implement mitigations to safely manage pedestrian movement through the Elizabeth Street intersection. If the effective crossing capacity is used as a guide, a value lower than 1,200 people per 15 minutes should be chosen to ensure that appropriate and adequate mitigations are put in place to manage the movement of large crowds through the Elizabeth Street intersection. Daily observations and frequent counts (perhaps as often as weekly) should be undertaken to ensure that mitigation measures are implemented within a suitable timeframe. Mitigation measures could include some combination of the following: taking a lane out of Elizabeth Street, provision of a wing arrangement, marshalling of pedestrian movements through

the intersection and/or changes to signal timings. The mitigation measures implemented should be decided and developed based on regular counts and observations undertaken at the crossing.

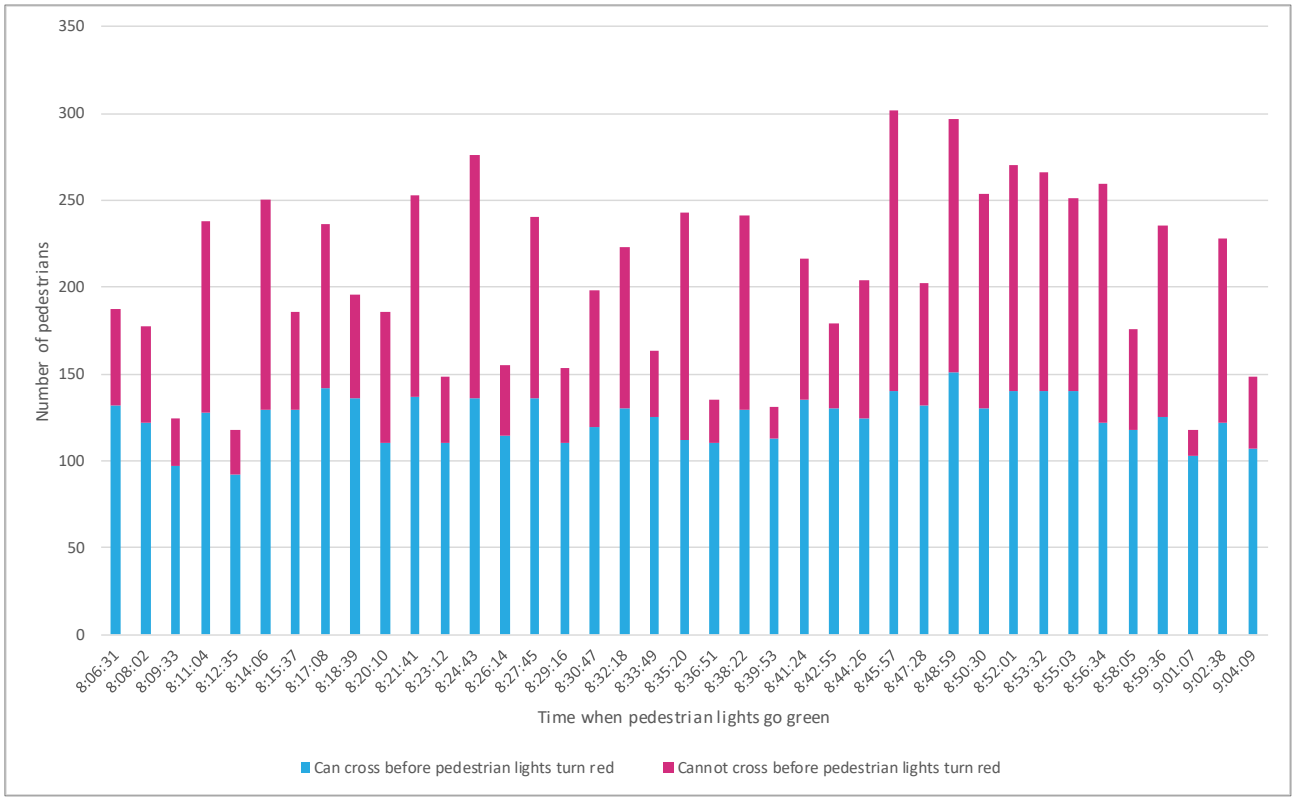


Figure 17: Number of agents crossing the road at each cycle of the traffic lights

Time Period	Total crossing the road	Can cross before pedestrian lights turn red	Can cross before pedestrian lights turn red
08:05 - 08:20	1,712	1,107	605
08:20 – 08:35	1,995	1,227	768
08:35 – 08:50	2,150	1,276	874
08:50 – 09:05	2,205	1,247	958
Average		**1,214**	**801**

Table 1: Number of agents crossing the road per 15-minute time segments

4.3 Scenario 2

Scenario 2: assumes that a 10m x 5m wing is in place at the Elizabeth Street intersection, as shown in Figure 5.

Figure 18 shows the Walkways LoS map for Scenario 2. The map shows that, with the wing in place, the performance of the western footpath of Elizabeth Street is improved, with most of the footpath operating at LoS C with some areas of LoS D. The outputs indicate that, with a wing in place, there is space available on the western footpath of Elizabeth Street to accommodate those crossing west to step off the road and onto the kerb, thereby reducing the risk of pedestrians stepping off the footpath to avoid crowded conditions on the footpath as may happen in Scenario 1.

The model outputs therefore suggest that additional space provision is needed on the western footpath of Elizabeth Street. The performance of the Castlereagh Street intersection remains the same as that outlined for Scenario 1, as no changes have been made to the Castlereagh Street intersection as part of Scenario 2.

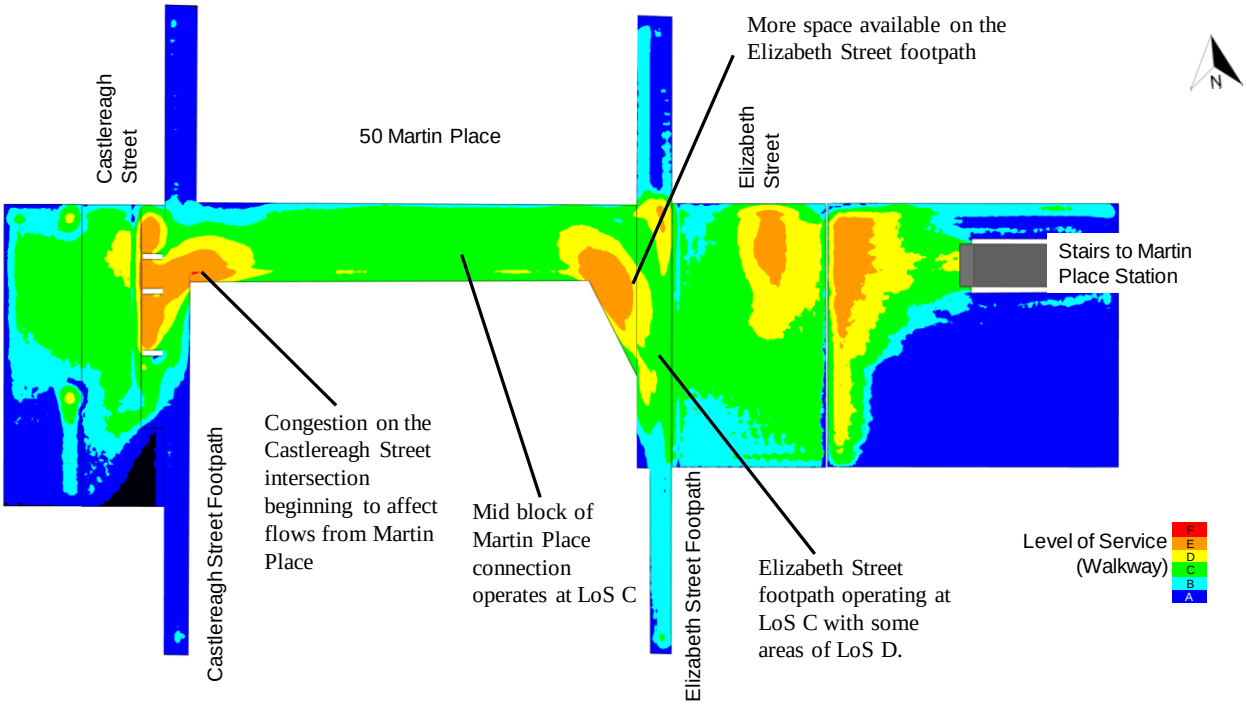


Figure 18: Scenario 2, Walkways and Stairs Level of Service, Peak 15 Minutes (*Model Ref: Construction Staging Without Wings 2022_v19*)

Figure 19 displays the LoS Queuing map for Scenario 2. The map again demonstrates that, with the wing in place, there is space available on the western footpath of Elizabeth Street for pedestrians to step onto the kerb once they finish crossing the road. This is further demonstrated by the image in Figure 20. The performance of the Castlereagh Street intersection remains the same as that outlined for Scenario 1, as no changes have been made to the Castlereagh Street intersection as part of Scenario 2.

The provision of additional space on the western footpath would mean that there is space available on the western footpath should these people cross the road; however provision of more frequent opportunities for pedestrians to cross through shorter cycle times and more green time for pedestrians could still be required. Provision of marshalling could also be considered, to ensure that vehicles are held back even when the pedestrian lights change to red, to allow pedestrians that started their journeys during the countdown timer to finish crossing the road.

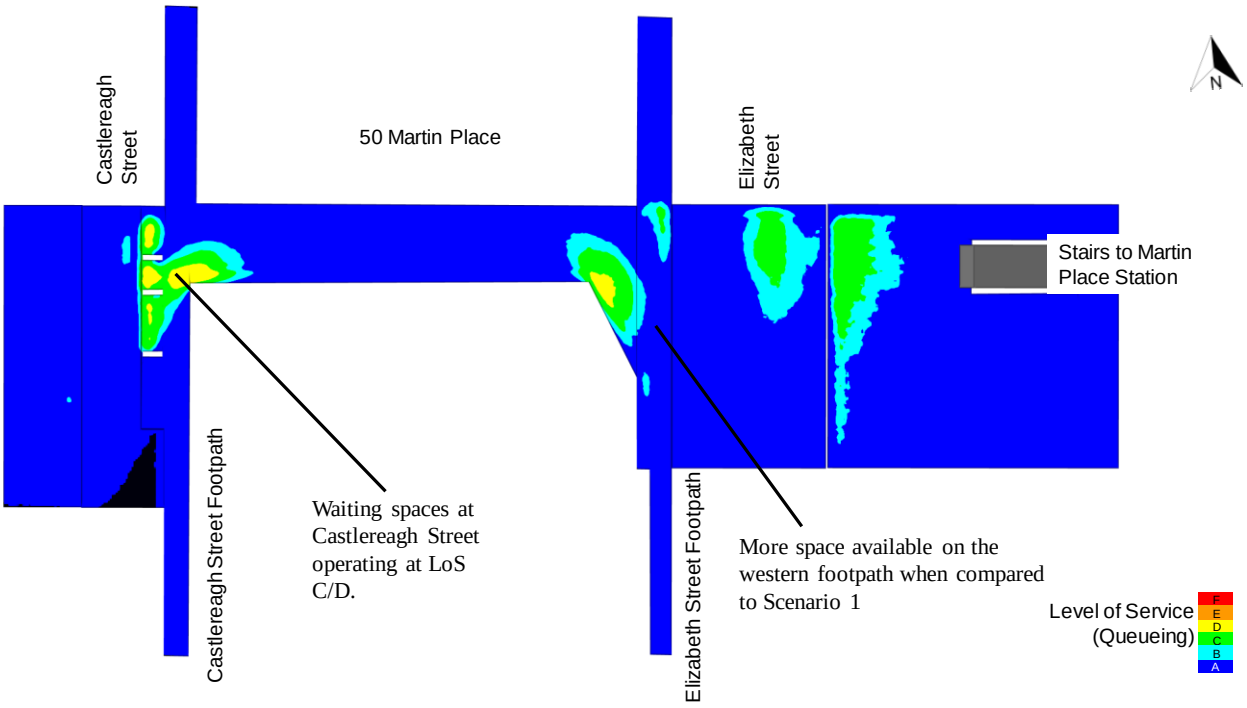


Figure 19: Scenario 2, Queuing Level of Service, Peak 15 Minutes (*Model Ref: Construction Staging Without Wings 2022_v19*)

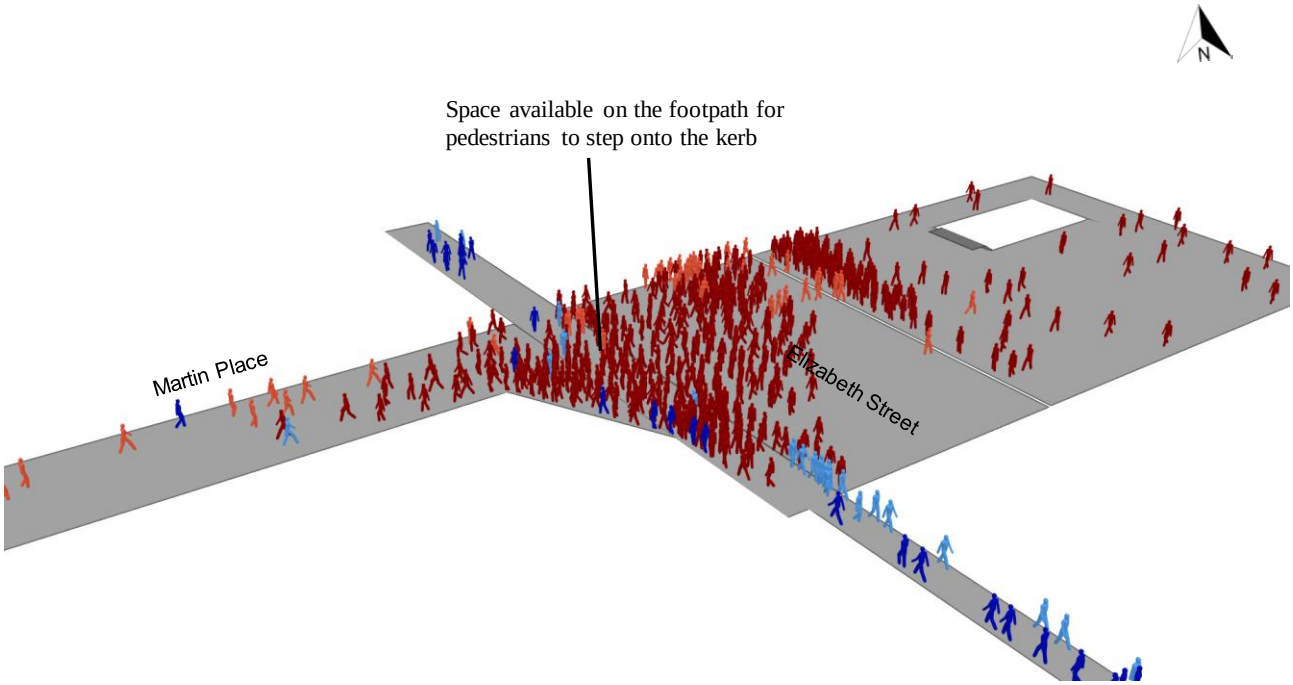


Figure 20: Scenario 2, Agents queuing to access Martin Place after crossing Elizabeth Street (*Model Ref: Construction Staging Without Wings 2022_v19*)

4.4 Modelling Context and Limitations

It is worth noting that, while the modelling provides an indication of the number of people that can cross within a 15-minute period and provides an indication of expected performance of the crossings, modelling does have limitations that need to be considered when developing and implementing mitigation measures. The current modelling assumes that all pedestrians walk within a standard speed range. Therefore, those agents who step onto the road last are left on the road when the pedestrian lights turn red. In reality it is likely that those who step onto the road last would walk faster or even run to reach the other side of the crossing before the pedestrian lights turn red.

The model also shows some congestion on the road as those moving westbound pass those moving eastbound. It is likely that people would organise themselves and navigate around each other a bit better than what is shown in the simulation. These model limitations may mean that more pedestrians are able to reach the other side of the road quicker, which may mean that additional space is needed on the western footpath. Therefore, simply relying on the model outputs to inform and implement mitigations measures will not be enough to ensure safe operation of the crossings. Regular counts and observations will be essential in informing mitigation measures and operational strategies to ensure safe operation of the crossings.

5 Conclusion and Recommendations

Modelling of the intersections of Martin Place/Elizabeth Street and Martin Place/Castlereagh Street has demonstrated that:

- With the underground connection closed, and the wings removed, the 7.7m connection across Martin Place can achieve a Walkways LoS C at mid-block during the peak 15 minutes of the AM peak hour.
- The wings present in the current hoarding arrangement provide space to funnel pedestrians from the wider width of the Elizabeth Street crossing into the narrower width of Martin Place. Without these wings present, pedestrians are concentrated into the western Elizabeth Street footpath to access Martin Place. Scenario 1 has demonstrated that, with the removal of the wings, there is congestion on the western footpath of Elizabeth Street. The results therefore suggest that more space is needed on the western footpath of Elizabeth Street. Consideration should therefore be given to providing additional space on Elizabeth Street through lane taking on the western side of Elizabeth Street or through the provision of a wing arrangement.
- The modelling indicates that, at the Elizabeth Street intersection, not all pedestrians are able to finish crossing the road before the pedestrian lights turn red. Possible mitigations to help resolve this could include implementation of marshalling, with traffic marshals holding back traffic even after the pedestrian lights turn red and the lights for traffic turn green, to allow those people who started to cross the road to reach the other side. Alternatively, a review of signal timings could be considered. Such a review should concentrate on provision of more frequent opportunities for pedestrians to cross through shorter cycle times and more green time for pedestrians.
- Both Scenarios 1 and 2 have demonstrated that if pedestrians cross for the full duration of the countdown timer and offset, the waiting areas on the eastern side of Castlereagh Street operate at LoS C/D, with queuing at the intersection beginning to impact east-west movements across Martin Place. Provision of more green time to pedestrians would help to improve the performance of the Castlereagh Street intersection. The modelling results suggest that the Castlereagh Street intersection could be managed by allowing pedestrians to begin crossing for the full duration of the countdown timer and offset with marshalling to ensure that pedestrians who step onto the road towards the end of the countdown timer and are on the road when the traffic signals for the cars turn green are able to safely cross the road while traffic marshals hold back the cars. Alternatively, signal timings could be reviewed to provide more green time to pedestrians.
- It is also worth noting that the modelling has not considered jaywalking, as instructed by Sydney Metro. Given that Castlereagh is a one-way street with only two lanes of traffic, jaywalking is an observed and common trend at the Castlereagh Street intersection. It is therefore likely than the performance of the Castlereagh Street intersection will be better than that demonstrated through the modelling, which assumes no jaywalking.
- With the current COVID-19 pandemic, most employees are currently working from home with people only making trips for essential needs. Therefore, the current level of pedestrian volumes moving through Martin Place today are much lower than those recorded in 2015 or

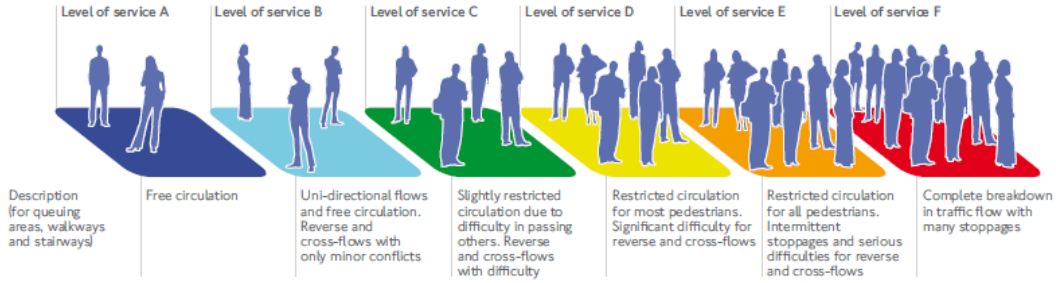
estimated for 2022. Given the high volumes of pedestrians expected to cross Martin Place in the morning peak once people start returning to working from the office, it may be worth implementing some marshalling or management of flows for the first few weeks after recording high volumes of movements through the crossings to ensure safe operations at the crossings and to observe pedestrian movements. It may be that with the changes to the hoarding, and closure of the underground connection, some pedestrians may choose different routes to go eastbound or westbound, meaning that the movements through Martin Place would not be as high as those recorded in survey data or used as part of this assessment. However, given that crossing via Martin Place is the shortest route to head west, and given that most people taking this route during peak times are commuters whose key motivation is time, it would not be prudent to implement any solutions on the assumptions that many people would take a different route.

Appendix A: Fruin Level of Service

In the 1960s and 70s, John Fruin pioneered pedestrian planning analysis and the development of Level of Service (LoS) thresholds for pedestrians[1] – previously LoS metrics had only been used to describe vehicular traffic flow by highways agencies. Fruin's LoS describe pedestrian movement, relating density of pedestrians and flow rates for walkways, circulation areas, stairs and queues.

Fruin LoS thresholds for pedestrians are illustrated in the figure below. Fruin describes LoS C as being free flow, assuming a normal walking speed with opportunity to overtake. However, there is potential for pedestrian conflicts where crossing movements and counter-flows exist. Transit agencies, owners and operators around the world have adopted Fruin thresholds to help describe the performance of transit stations. These agencies often target the middle of LoS C, or the breakpoint between LoS C and D as the typical design density for the planning and design of transport interchanges as it provides a balance between congestion, design and infrastructure.

Fruin Level of Service criteria (walkways). Source: London Underground Station Planning Standards and Guidelines (2012), Transport for London.



Fruin describes the performance of LoS for walkways in his book "Pedestrian Planning and Design" as follows:

> At **walkway level-of-service A**, sufficient area is provided for pedestrians to freely select their own walking speed, to bypass slower pedestrians, and to avoid crossing conflicts with others. Designs consistent with this level-of-service would include public buildings or plazas without severe peaking characteristics or space restrictions.
>
> At **walkway level-of-service B**, sufficient space is available to select normal walking speed, and to bypass other pedestrians in primarily one-directional flows. Where reverse-direction or pedestrian crossing movements exist, minor conflicts will occur, slightly lowering mean pedestrian speeds and potential volumes. Designs consistent with this level-of-service would be of reasonably high type, for transportation terminals and buildings in which recurrent, but not severe, peaks are likely to occur.
>
> At **walkway level-of-service C**, freedom to select individual walking speed and freely pass other pedestrians is restricted. Where pedestrian cross movements and reverse flows exist, there is a high probability of conflict requiring frequent adjustment of speed and direction to avoid contact. Designs consistent with this level-of-service would represent reasonably fluid flow; however, considerable friction and interaction between pedestrians is likely to occur, particularly in multi-directional flow situations. Examples of this type of design would be

[1] Fruin, J.J., 1971, Pedestrian Planning and Design

heavily used transportation terminals, public buildings, or open spaces where severe peaking, combined with space restrictions, limit design flexibility.

At **walkway level-of-service D**, the majority of persons would have their normal walking speeds restricted and reduced, due to difficulties in bypassing slower-moving pedestrians and avoiding conflicts. Pedestrians involved in reverse-flow and crossing movements would be severely restricted, with the occurrence of multiple conflicts with others. Designs at this level-of-service would be representative of the most crowded public areas, where it is necessary to continually alter walking stride and direction to maintain reasonable forward progress. At this level-of-service there is some probability of intermittently reaching critical density, causing momentary stoppages of flow. Designs consistent with this level-of-service would represent only the most crowded public areas.

At **walkway level-of-service E**, virtually all pedestrians would have their normal walking speeds restricted, requiring frequent adjustments of gait. At the lower end of the range, forward progress would only be made by shuffling. Insufficient area would be available to bypass slower-moving pedestrians. Extreme difficulties would be experienced by pedestrians attempting reverse flow and cross flow movements. The design volume approaches the maximum attainable capacity of the walkway, with resulting frequent stoppages and interruptions of flow. This design range should only be employed for short peaks in the most crowded areas. This design level would occur naturally with a bulk arrival traffic pattern that immediately exceeds available capacity, and this is the only design situation for which it would be recommended. Examples would be sports-stadium design, or rail transit facilities where there may be a large but short-term exiting of passengers from a train. When this level-of-service is assumed for these design conditions, the adequacy of pedestrian holding areas at critical design sections, and all supplementary pedestrian facilities, must be carefully evaluated.

At **walkway level-of-service F**, all pedestrian walking speeds are extremely restricted, and forward progress can only be made by shuffling. There would be frequent, unavoidable contact with other pedestrians, and reverse crossing movements would be virtually impossible. Traffic flow would be sporadic, with forward progress based on the movement of those in front. This level-of-service is representative of a loss of control, and a complete breakdown in traffic flow. Pedestrian areas below 5 square feet are more representative of a queuing, rather than a traffic flow situation, and this level-of-service is not recommended for walkway design.

Fruin – Pedestrian Level of Service in Walkway areas

LoS	Lower (people per metre per minute)	Upper (people per metre per minute)
LoS A	0.0	23.0
LoS B	23.0	32.8
LoS C	32.8	49.2
LoS D	49.2	65.6
LoS E	65.6	82.0
LoS F	82.0	-

Fruin – Pedestrian Level of Service in Stairways areas

LoS	Lower (people per metre per minute)	Upper (people per metre per minute)
LoS A	0.0	16.4
LoS B	16.4	23.0
LoS C	23.0	32.8
LoS D	32.8	42.6
LoS E	42.6	55.8
LoS F	55.8	-

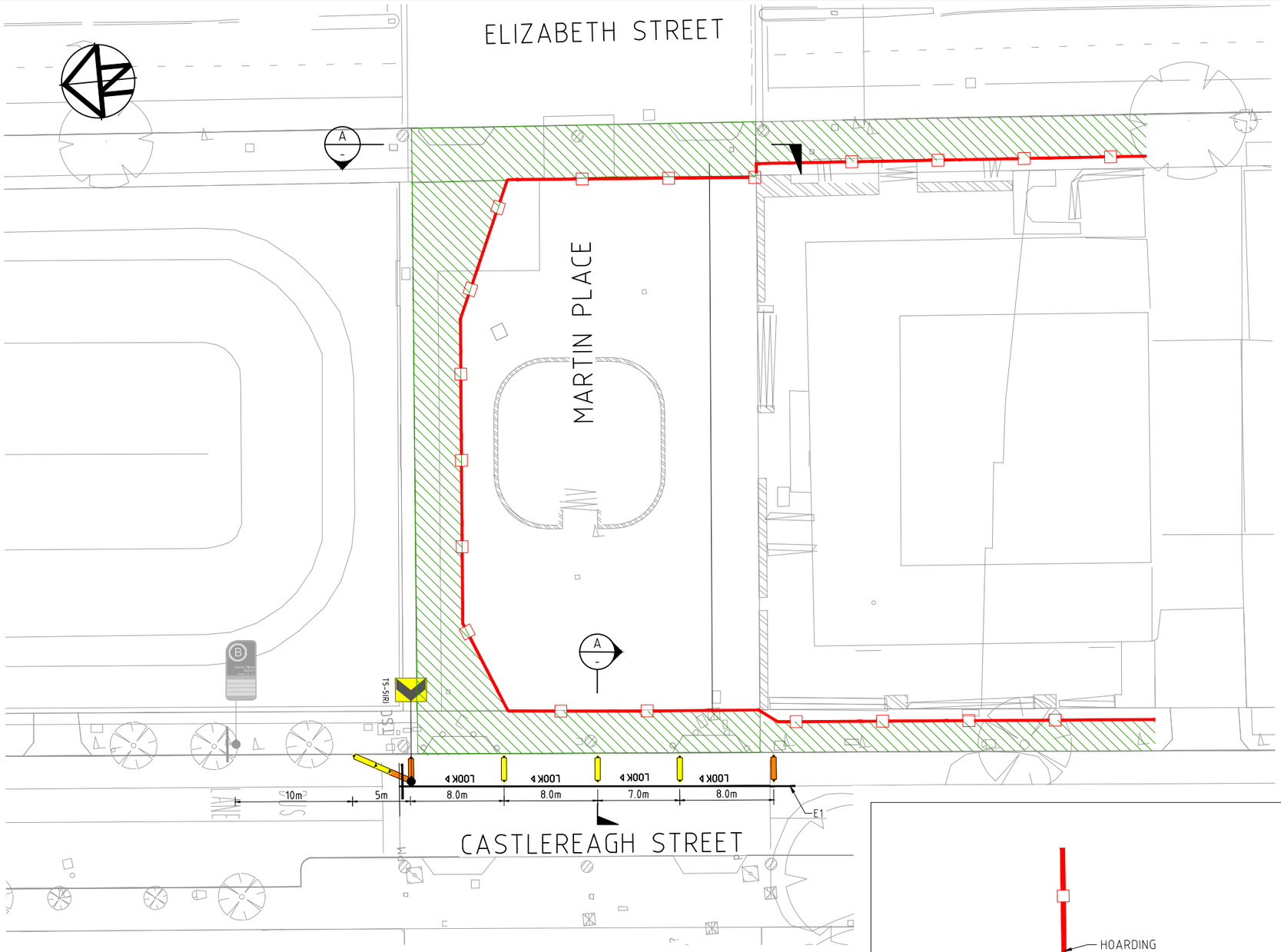
Fruin – Pedestrian Level of Service in Queuing areas

LoS	Lower (m^2 per person)	Upper (m^2 per person)
LoS A	-	1.2
LoS B	1.2	0.9
LoS C	0.9	0.7
LoS D	0.7	0.3
LoS E	0.3	0.2
LoS F	0.2	0.0

DOCUMENT CHECKING (not mandatory for File Note)

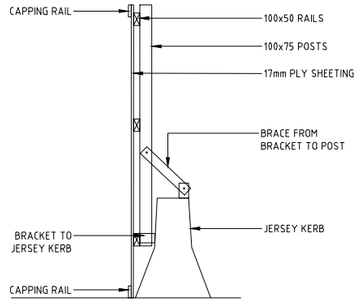
	Prepared by	Checked by	Approved by
Name	Rekel Ahmed	Eric Rivers	Nick Suslak
Signature			

Appendix 1	Pedestrian modelling and analysis
Appendix 2	Hoarding layout drawings (current and proposed)
Appendix 3	Traffic Control Plans (TCPs)
Appendix 4	Road Safety Audit
Appendix 5	Consultation with Sydney Trains
Appendix 6	Wayfinding Strategy
Appendix 7	Review Comments

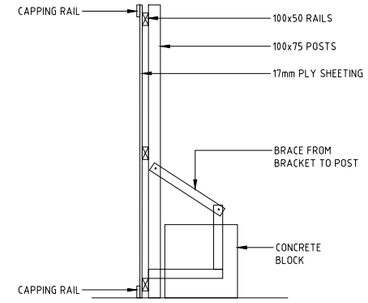


LEGEND

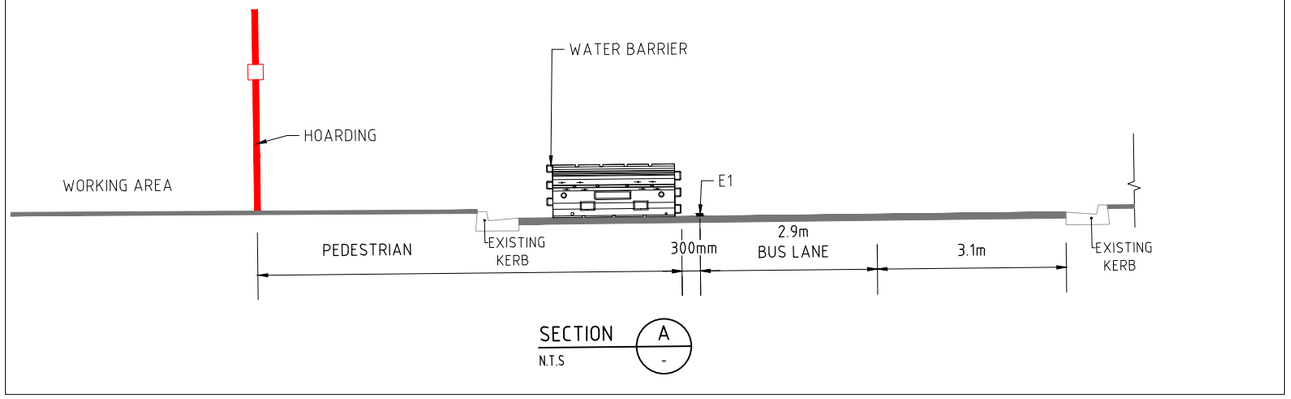
PEDESTRIAN PATHWAY	
ENCLOSED HOARDING	
HOARDING	
WATER FILLED BARRIER	



TYPICAL 'A' CLASS HOARDING WITH JERSEY KERB



TYPICAL 'A' CLASS HOARDING WITH CONC BLOCK



SECTION A - N.T.S

DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

AMD	DESCRIPTION	DESIGNER SIGN./DATE	VERIFIED SIGN./DATE	APPROVED SIGN./DATE
A1	ISSUED FOR INTERNAL REVIEW	07.05.19	DM/07.05.19	DM/27.05.19

CO-ORDINATE SYSTEM: | HEIGHT DATUM: | SCALE: -

SCALES
0 2 4 6 8 10m
SCALE 1:200 (A1)
SCALE 1:400 (A3)

CLIENT
NSW GOVERNMENT Transport for NSW

SERVICE PROVIDERS: Metro city & southwest; ARCADIS; BG&E; NOMA; HOCHTIEF ENGINEERING; JACOBS

DRAWN	PHIL TULLY	07.05.19
DESIGNED	DECLAN Mc GARRY	07.05.19
DRG CHECK	DECLAN Mc GARRY	07.05.19
DESIGN CHECK	DECLAN Mc GARRY	07.05.19
APPROVED	DECLAN Mc GARRY	07.05.19

SYDNEY METRO CITY & SOUTHWEST

MARTIN PLACE STATION AND PRECINCT

TRAFFIC MANAGEMENT

MARTIN PLACE AND CASTLEREAGH ST

PEDESTRIAN BARRIER LAYOUT PLAN STAGE 4

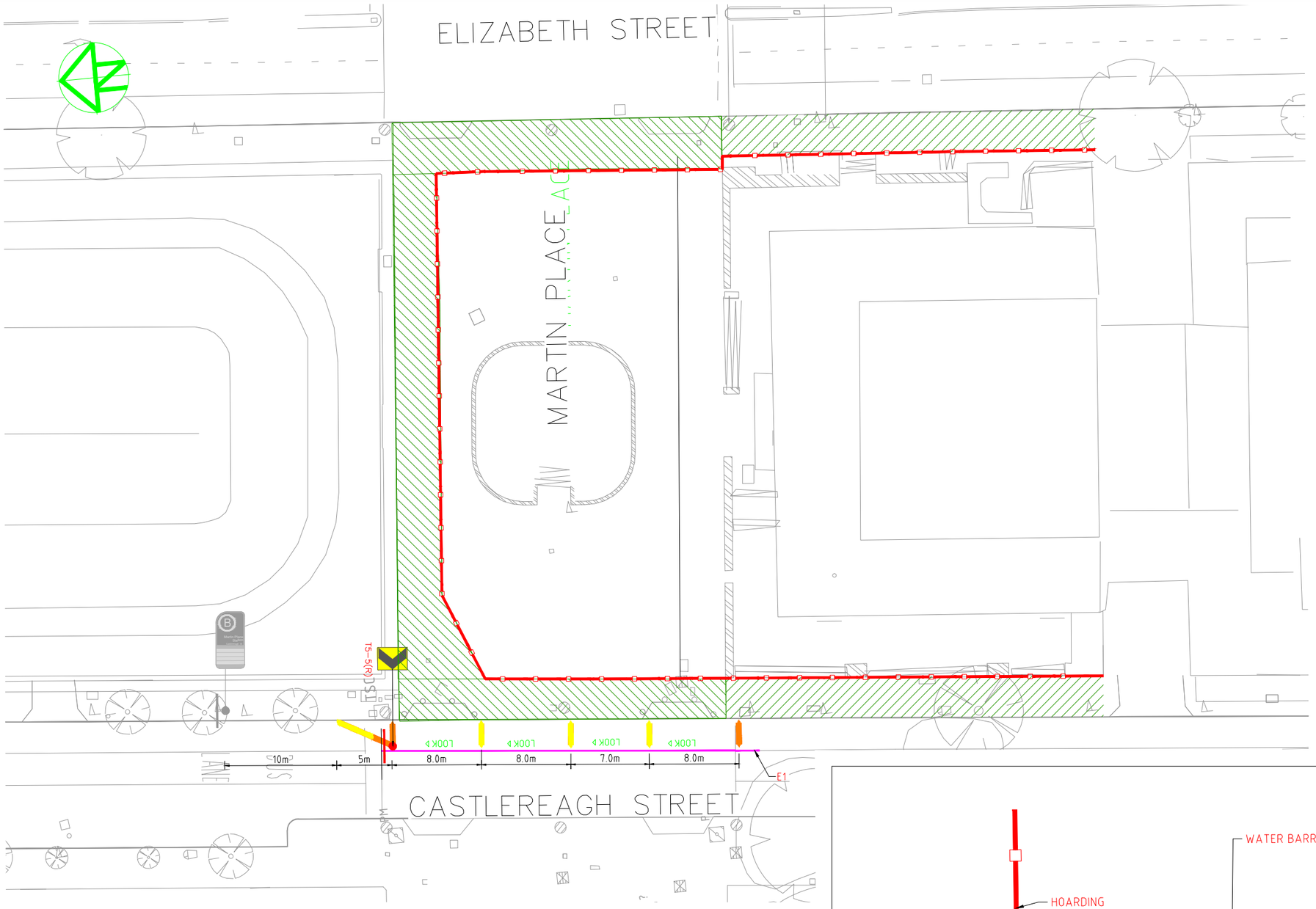
FILE No. | SHEET: 10F 1

STATUS: ©

DRG No. JCG-SMP-TM-DRG-002279-0038 | A1 | EDMS No.

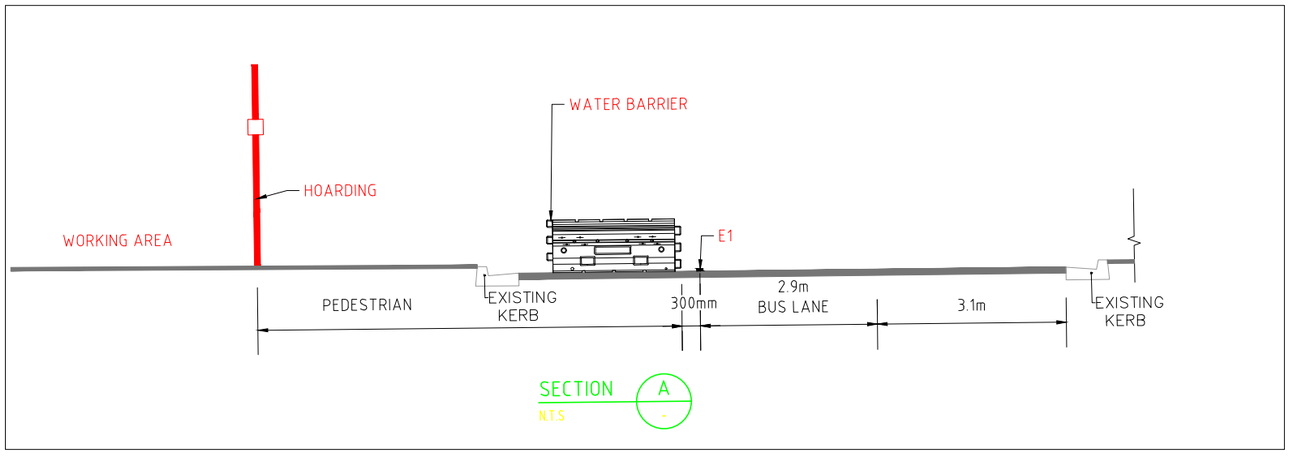
DF 801*554

File Plotted: 5/7/2019 2:02 PM
Plot Date & Time:
Plotted by: PTULLY1



LEGEND

PEDESTRIAN PATHWAY	
ENCLOSED HOARDING	
HOARDING	
WATER FILLED BARRIER	



DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

AMD	DESCRIPTION	DESIGNER SIGN./DATE	VERIFIED SIGN./DATE	APPROVED SIGN./DATE
B2	SECTION-A MODIFIED	10.10.18	SL/10.10.18	SL/10.10.18
B1	ISSUED FOR EXTERNAL REVIEW	05.10.18	SL/05.10.18	SL/05.10.18
A1	ISSUED FOR INTERNAL REVIEW	25.09.18	SL/25.09.18	SL/25.09.18

CO-ORDINATE SYSTEM: | HEIGHT DATUM: | SCALE: -

SCALES
0 2 4 6 8 10m
SCALE 1:200
SCALE 1:400
(A1)
(A3)

CLIENT
NSW GOVERNMENT Transport for NSW

SERVICE PROVIDERS: Metro city & southwest; ARCADIS; BG&E; NOMA; HOCHTIEF ENGINEERING; AECOM; MMJ JACOBS

DRAWN	BILLY KUNG	10.10.18
DESIGNED	DECLAN Mc GARRY	10.10.18
DRG CHECK	DECLAN Mc GARRY	10.10.18
DESIGN CHECK	DECLAN Mc GARRY	10.10.18
APPROVED		

SYDNEY METRO CITY & SOUTHWEST

MARTIN PLACE STATION AND PRECINCT
TRAFFIC MANAGEMENT
MARTIN PLACE AND CASTLEREAGH ST
PEDESTRIAN BARRIER LAYOUT PLAN STAGE 5

FILE No. | SHEET: 10F 1
STATUS: ©
DRG No. JCG-SMP-TM-DRG-002279-0039 | B2 | EDMS No.

DF 801*554

Plotted by BILLY
Plot Date & Time 4/30/2020 3:32 PM
File Plotted

COLOURS: BLACK

NORTH

FIX PLY TO EXISTING A CLASS FENCE AND GANTRY

BOLLARDS

1600

KERB

EXISTING "A" CLASS ON JERSEY KERBS

ELIZABETH ST

80

330

SK05 1

8000

1 SK02

"A" CLASS ON JERSEY KERBS BOLTED TO GROUND

1m WIDE SEE THROUGH CLEAR PERSPEX WINDOW AT THE TOP HALF OF THE HOARDING AT CORNER ON BOTH HOARDING SIDES

3480

1070

"A" CLASS RETURN DONE BY OTHERS

BOLLARDS TO BE REMOVED BY OTHERS

4550 O/A F/P

PITS

T/L

PHONE BOX

SITE
MARTIN PLACE SHOPPING CIRCLE

EXISTING "A" CLASS FENCE LINE

MARTIN PLACE

NEIGHBOURING PROPERTY

180

EXISTING "A" CLASS ON JERSEY KERBS

KERB

PITS

T/L

KERB

PROJECT LOCATION: 39 MARTIN PLACE, SYDNEY(SYDNEY METRO)	PROPOSED HOARDING FOR: SYDNEY METRO 2	DRAWING TITLE: PLAN	ALESSI JOB NO: 207000	HOARDINGS JOB NO: TH08994 TH10811	DRAWING NO: SK01H	ISSUE: 04

HOARDINGS BY:
TOTAL HOARDINGS P/L
22 POWERS ROAD, SEVEN HILLS, NSW 2147
PH: (02) 8811 2900 FAX: (02) 9674 9200
www.hoardings.com.au sales@hoardings.com.au
Postal: PO BOX 908, SEVEN HILLS NSW 1730
ABN 63 083 076 073

REVISION TABLE:

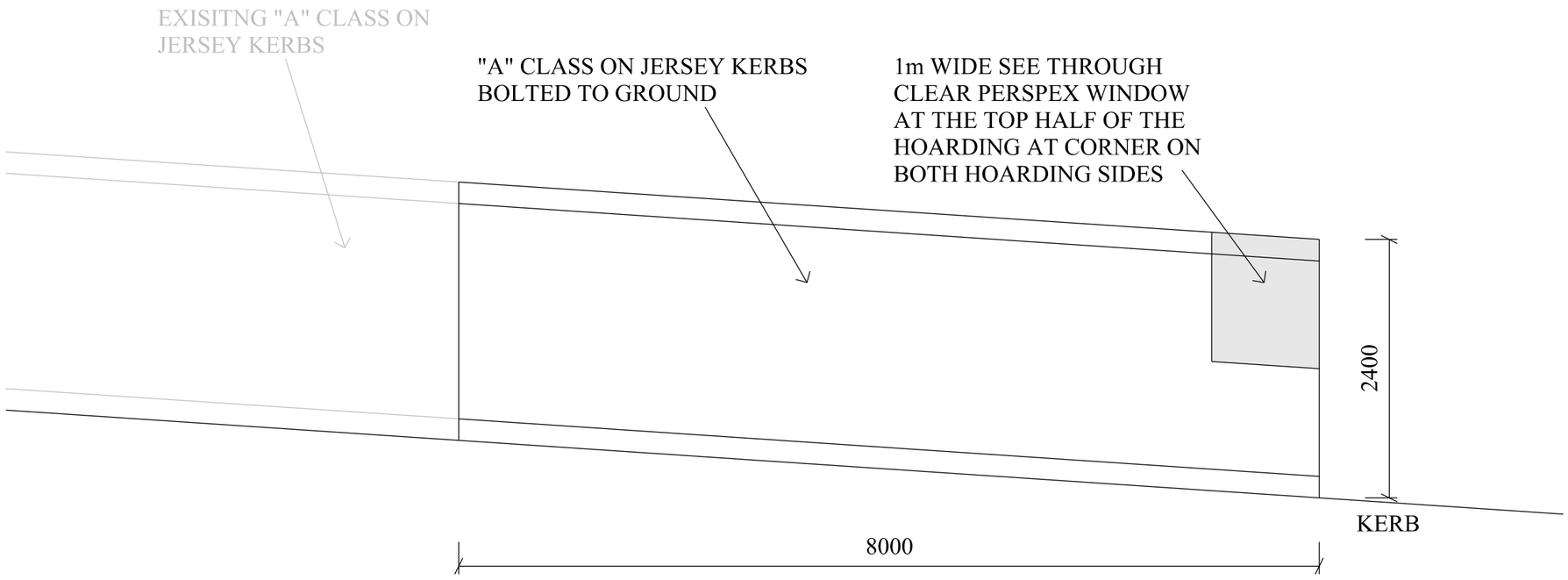
NO:	DATE:	DESCRIPTION:
01	07/12/18	FOR SUBMISSION TO COUNCIL.
02	10/12/18	ADD BRIDGE.
03	15/05/20	FOR SUBMISSION TO COUNCIL.
04	18/05/20	FOR SUBMISSION TO COUNCIL.

ENGINEER:
ALESSI CONSULTING
1/50 PONSONBY PDE, SEAFORTH NSW 2092
PHONE 9949 7697 / FACSIMILE 9949 2880
orazioa@tpg.com.au
ABN 93 112 769 759

SCALE: 1:150@A3 DATE: 18/05/20

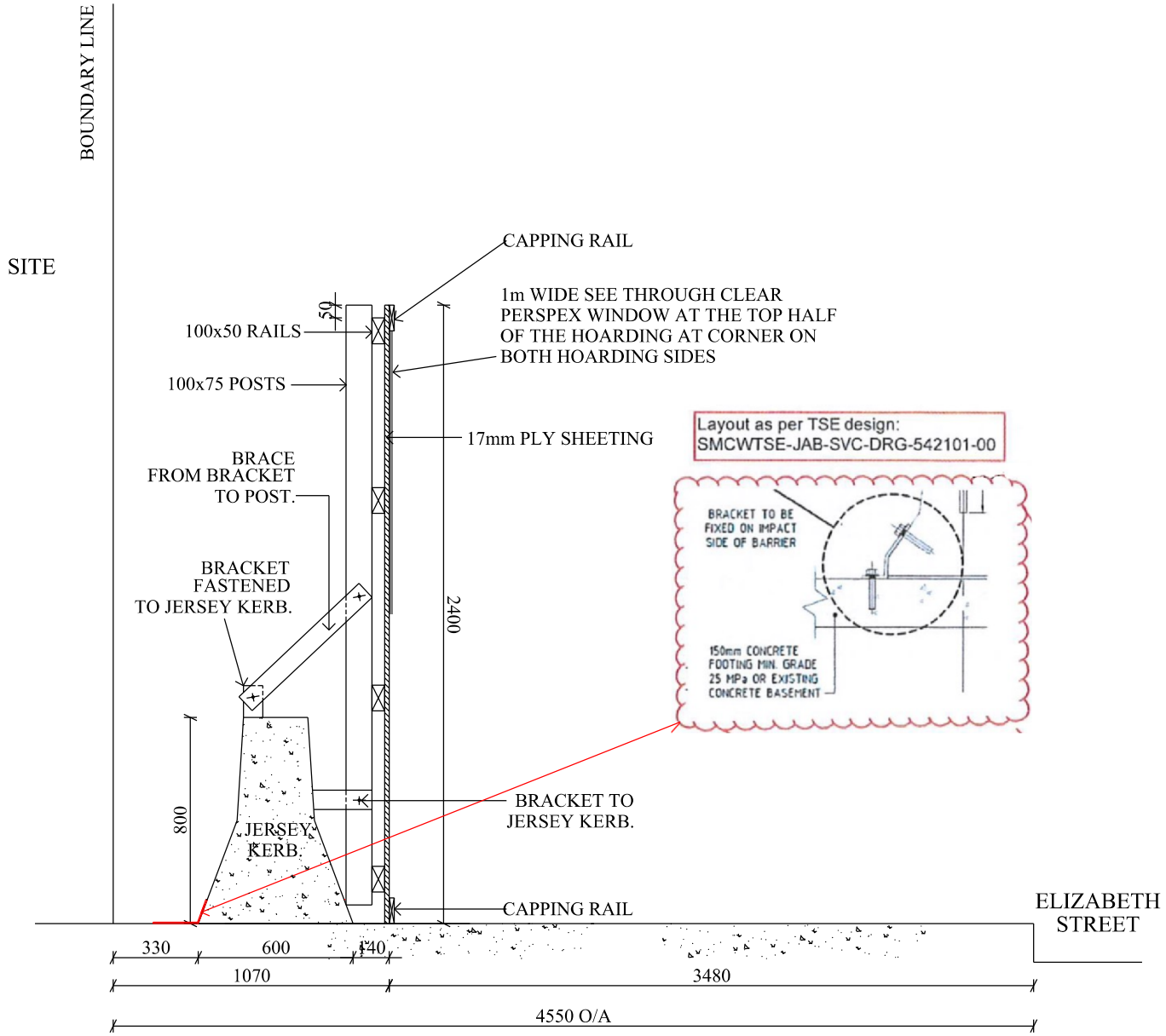
VERIFIED DRAFTSMAN:		VERIFIED ENGINEER:
JB		OA

COLOURS: BLACK

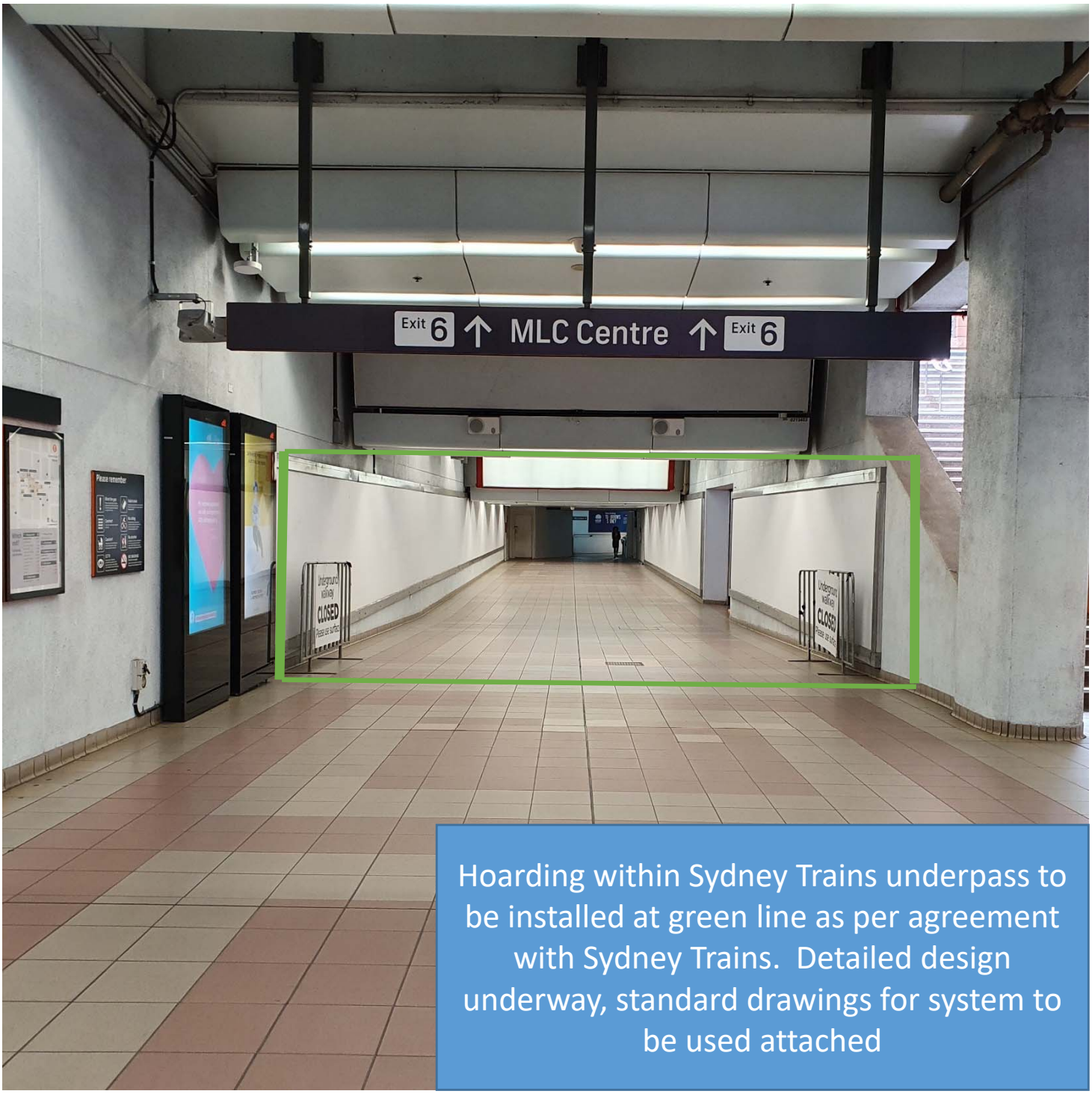


	PROJECT LOCATION: 39 MARTIN PLACE, SYDNEY(SYDNEY METRO)	PROPOSED HOARDING FOR: SYDNEY METRO 2	DRAWING TITLE: ELEVATION ELIZABETH STREET FRONTAGE	ALESSI JOB NO: 207000	HOARDINGS JOB NO: TH08994 TH10811	DRAWING NO: SK02H	ISSUE: 04
	HOARDINGS BY: TOTAL HOARDINGS P/L 22 POWERS ROAD, SEVEN HILLS, NSW 2147 PH: (02) 8811 2900 FAX: (02) 9674 9200 www.hoardings.com.au sales@hoardings.com.au Postal: PO BOX 908, SEVEN HILLS NSW 1730 ABN 63 083 076 073	REVISION TABLE: N0: DATE: DESCRIPTION: 01 07/12/18 FOR SUBMISSION TO COUNCIL. 02 10/12/18 ADD BRIDGE. 03 15/05/20 FOR SUBMISSION TO COUNCIL. 04 18/05/20 FOR SUBMISSION TO COUNCIL.	ENGINEER: ALESSI CONSULTING 1/50 PONSONBY PDE, SEAFORTH NSW 2092 PHONE 9949 7697 / FACSIMILE 9949 2880 orazioa@tpg.com.au ABN 93 112 769 759	SCALE: 1:50@A3	DATE: 18/05/20		
				VERIFIED DRAFTSMAN: JB		VERIFIED ENGINEER: OA	

COLOURS: BLACK STRUCTURE



PROJECT LOCATION: 39 MARTIN PLACE, SYDNEY(SYDNEY METRO)	PROPOSED HOARDING FOR: SYDNEY METRO 2	DRAWING TITLE: TYPICAL SECTION 'A' CLASS TYPE ON JERSEY KERB BOLTED TO GROUND ELIZABETH STREET FRONTAGE	ALESSI JOB NO: 207000	HOARDINGS JOB NO: TH08994 TH10811	DRAWING NO: SK05	ISSUE: 01
HOARDINGS BY: TOTAL HOARDINGS P/L 22 POWERS ROAD, SEVEN HILLS, NSW 2147 PH: (02) 8811 2900 FAX: (02) 9674 9200 www.hoardings.com.au sales@hoardings.com.au Postal: PO BOX 908, SEVEN HILLS NSW 1730 ABN 63 083 076 073	REVISION TABLE: NO: DATE: DESCRIPTION: 01 18/05/20 FOR SUBMISSION TO COUNCIL.	ENGINEER: ALESSI CONSULTING 1/50 PONSONBY PDE, SEAFORTH NSW 2092 PHONE 9949 7697 / FACSIMILE 9949 2880 orazioa@tpg.com.au ABN 45 163 749 648	SCALE: 1:25@A4		DATE: 18/05/20	
			VERIFIED DRAFTSMAN: JB		VERIFIED ENGINEER: OA	



Hoarding within Sydney Trains underpass to be installed at green line as per agreement with Sydney Trains. Detailed design underway, standard drawings for system to be used attached

COMPLETELY FREESTANDING

Designed and structurally engineered to free-stand up to a **massive 8mH,** with no fixings or bracing required to anything

5.6mH example shown –
only 6 x LOMAX Counter-weights required

INDOOR IMPACT RATED HOARDING – REAR VIEW

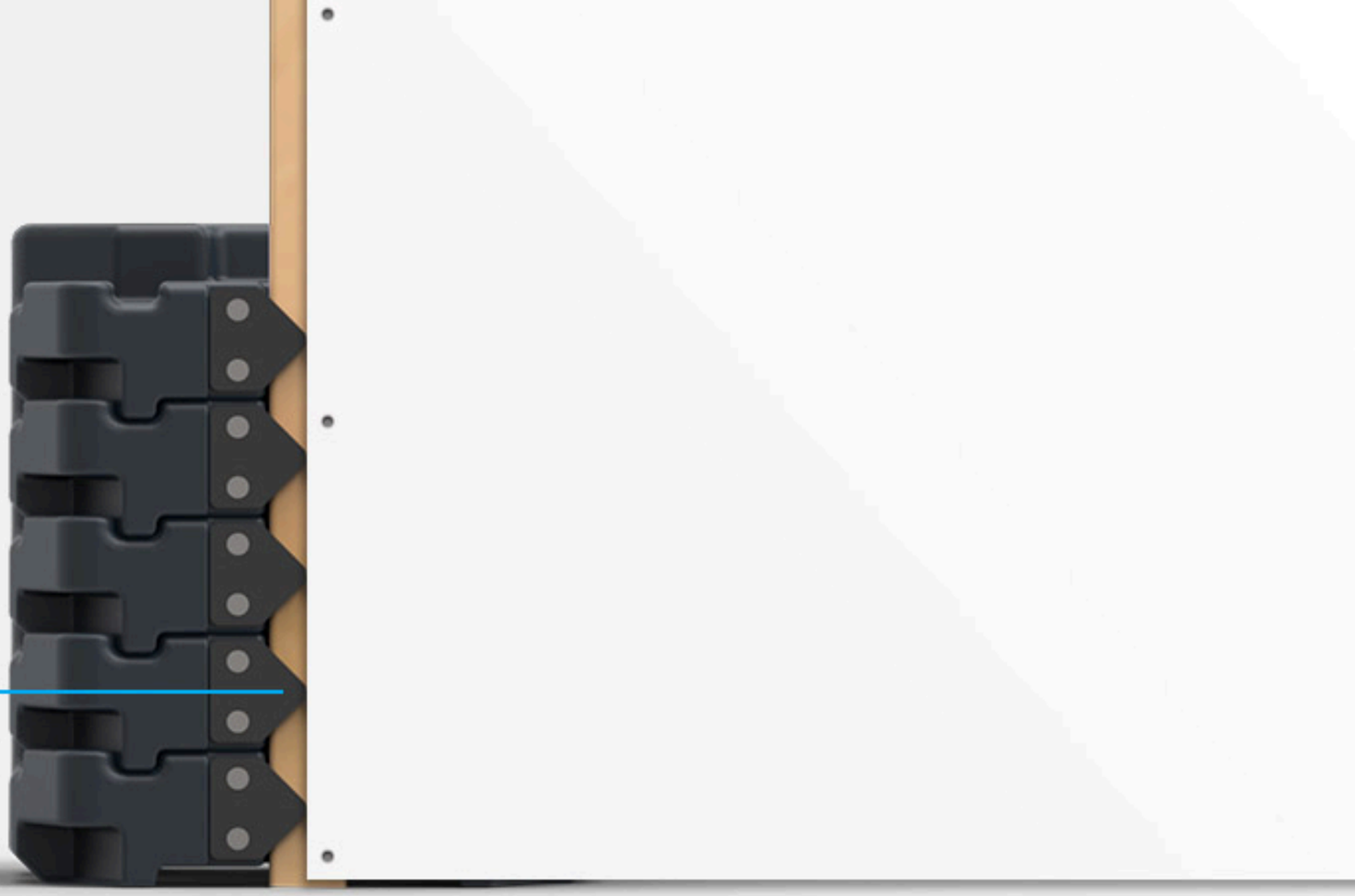
LOMAX HOARDING AND FENCING SYSTEMS

1300 056 629 | lomaxhoarding.com | lomaxfencing.com

LOMAX
HOARDING AND FENCING SYSTEM
SAFE | COMPACT | FREE-STANDING | PRE-CERTIFIED

IT'S SAFE AND SECURE

The clever design of the patented metal plates ensures that the weights cannot be detached from the system without first removing the hoarding panels and the timber studs – no locking devise is required to prohibit unauthorised tampering



LOMAX HOARDING AND FENCING SYSTEMS

1300 056 629 | lomaxhoarding.com | lomaxfencing.com

LOMAX™
HOARDING AND FENCING SYSTEM
SAFE | COMPACT | FREE-STANDING | PRE-CERTIFIED

SIMPLE AND SAFE CONSTRUCTION PROCESS

We've done the AS4687 testing for you! A modular A-Class hoarding system that is safe, compact, free-standing (up to 8mH) and pre-certified for compliance by an external structural engineer

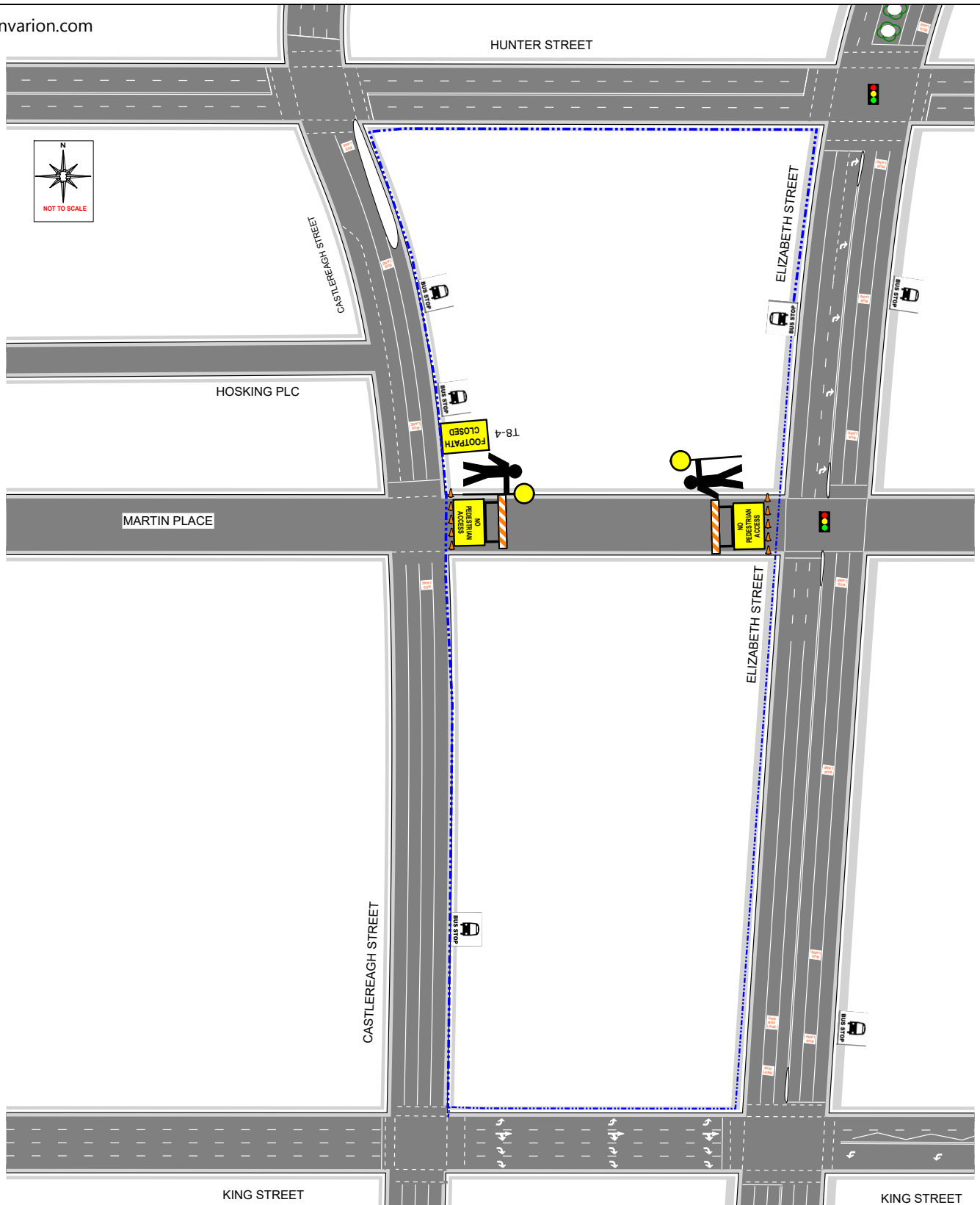
LOMAX HOARDING AND FENCING SYSTEMS

1300 056 629 | lomaxhoarding.com | lomaxfencing.com

LOMAX
HOARDING AND FENCING SYSTEM
SAFE | COMPACT | FREE-STANDING | PRE-CERTIFIED

Appendix 1	Pedestrian modelling and analysis
Appendix 2	Hoarding layout drawings (current and proposed)
Appendix 3	Traffic Control Plans (TCPs)
Appendix 4	Road Safety Audit
Appendix 5	Consultation with Sydney Trains
Appendix 6	Wayfinding Strategy
Appendix 7	Review Comments

www.invarion.com



NOTE:

1. This TCP is in conjunction with *TCP-SMP-CAS-SB-4401(Castlereagh St Closure).

TRAFFIC CONTROL PLAN

DATE: 30/04/2020

* Australian Standards AS 1742.3.
* Traffic Control at Worksites Manual.
* Principal's General Specifications G10 - Traffic and Transport Management.
* Relevant Austroads Guides.
* RMS Supplements to Austroads & Australian Standards.
* Sydney Metro Principal Contractor Health and Safety Standard.

Area:	Martin Place (SMP)
Location:	Castlereagh St, Sydney
TCP No:	TCP-SMP-CAS-SB-0414
Sheet No:	1 OF 1

Install as per TCP and in accordance with any changes as shown on TCP

Team Leader (Onsite): _____

Signature: _____

Date: _____

Ticket: Orange/Red/Yellow (Circle Appropriate)

Ticket No: _____

Reasons for modification: _____

Email to: NSW.SM2.TRAFFIC@SYDNEYMETRO2.COM.AU

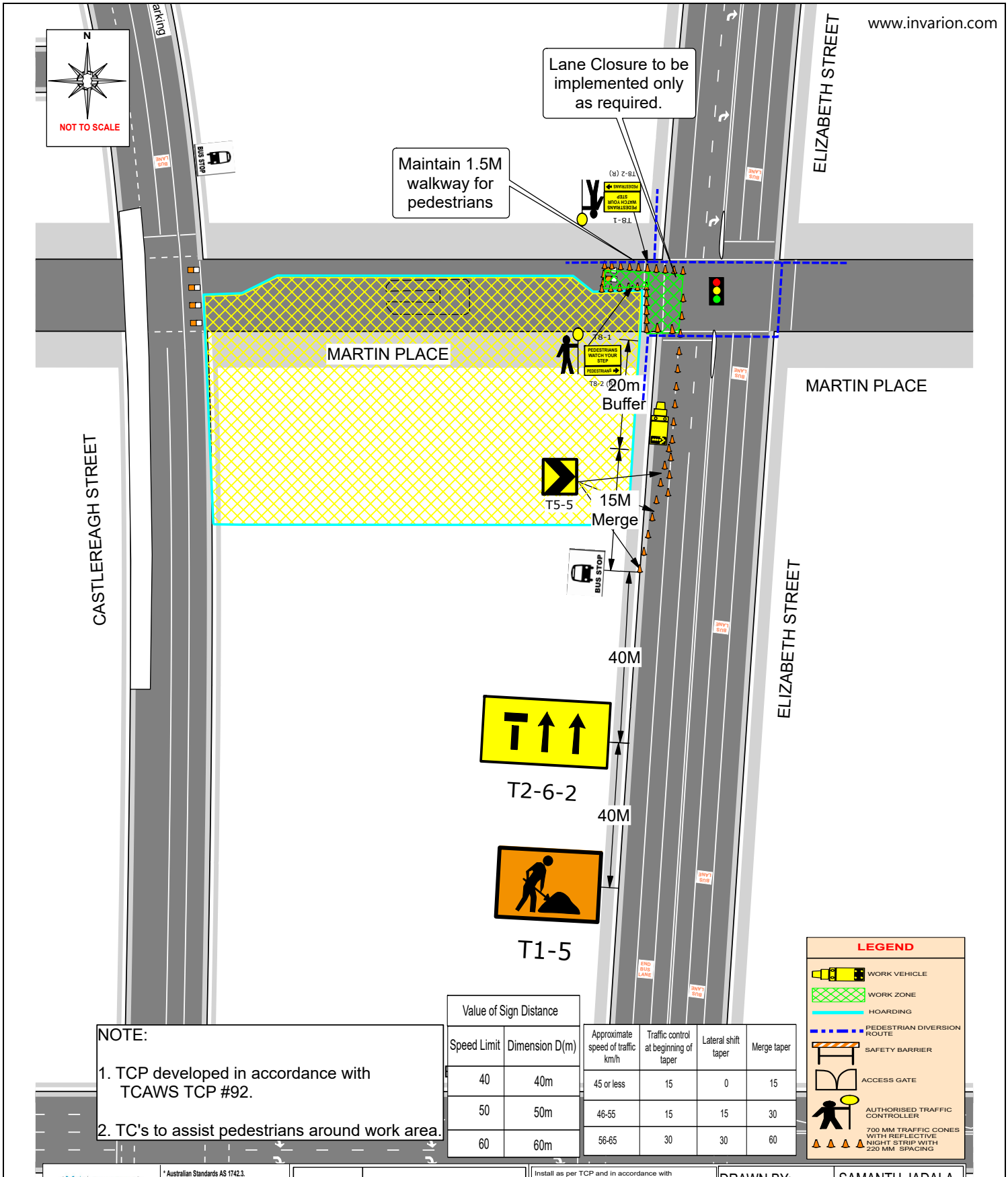
DRAWN BY:	BILLY KUNG
CERTIFICATE NO:	003746580
SIGNATURE:	
PLAN CHECKED BY:	ABDULLAH KHAN
CERTIFICATE NO:	0032576588
SIGNATURE:	Abdullah Khan

LEGEND

- WORK VEHICLE
- WORK ZONE
- TRAFFIC FLOW
- PEDESTRIAN DIVERSION ROUTE
- SAFETY BARRIER
- ACCESS GATE
- AUTHORISED TRAFFIC CONTROLLER
- 700 MM TRAFFIC CONES WITH REFLECTIVE NIGHT STRIP WITH 220 MM SPACING

Custom/Special Signs

- FOOTPATH CLOSED AHEAD
- BUS STOP CLOSED AHEAD
- CITY EAST
- CITY EAST
- ELIZABETH ST



NOTE:

1. TCP developed in accordance with TCAWS TCP #92.
2. TC's to assist pedestrians around work area.

Value of Sign Distance	
Speed Limit	Dimension D(m)
40	40m
50	50m
60	60m

Approximate speed of traffic km/h	Traffic control at beginning of taper	Lateral shift taper	Merge taper
45 or less	15	0	15
46-55	15	15	30
56-65	30	30	60

LEGEND

- WORK VEHICLE
- WORK ZONE
- HOARDING
- PEDESTRIAN DIVERSION ROUTE
- SAFETY BARRIER
- ACCESS GATE
- AUTHORISED TRAFFIC CONTROLLER
- 700 MM TRAFFIC CONES WITH REFLECTIVE NIGHT STRIP WITH 220 MM SPACING

TRAFFIC CONTROL PLAN

DATE: 22/01/2019

* Australian Standards AS 1742.3.
* Traffic Control at Worksites Manual.
* Principal's General Specifications G10 - Traffic and Transport Management.
* Relevant Austroads Guides.
* RMS Supplements to Austroads & Australian Standards.
* Sydney Metro Principal Contractor Health and Safety Standard.

Area:	Martin Plc
Location:	Elizabeth Street, Sydney
TCP No:	TCP-SMP-ELI-NB-1309
Sheet No:	1 OF 1

Install as per TCP and in accordance with any changes as shown on TCP

Team Leader (Onsite): _____

Signature: _____

Date: _____

Ticket: Orange/Red/Yellow (Circle Appropriate)

Ticket No: _____

Reasons for modification: _____

Email to: NSW.SM2.TRAFFIC@SYDNEYMETRO2.COM.AU

DRAWN BY:	SAMANTH JADALA
CERTIFICATE NO:	0044399691
SIGNATURE:	
PLAN CHECKED BY:	ABDULLAH KHAN
CERTIFICATE NO:	0032576588
SIGNATURE:	

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Meeting Minutes

Martin Place Station Exit 6_MLC Closing

Meeting #05

Coordinator/Chair	Syed Murtaza
Date and Time	09-Mar-2020 0900hrs
Location	140 Sussex Street, Wynyard
Next Meeting	TBC

Meeting Objective	Discussion and Response to ST Concerns due to MLC Exit Shutdown.

Attendees			
William Jobling (WJ)	Syed Murtaza (SM)		
Invited Guests			

1 Background

Sydney Metro TSE team has informed us that they will be shutting down the MLC exit (Exit 6) by Mid-April 2020 (date to be confirmed). TSE team requires to close down the MLC exit due to some excavation works, once the excavation is complete, the Metro Stations team will take over.

The MLC exit will remain closed till the project goes live, expected handover by Mid 2022.

Once the MLC exit 6 closes, ST Martin Place Station under current situation will have 2 Exits that can be used in a degraded mode:

1) Exit 5
2) Exit 1 and 2
3) Exit 4 (Lift, will not be used under degraded mode)
4) Exit 3 (currently closed by 60 MPS).

****Please see Sydney Metro comments in blue**.**

1.1 Discussion

1. Pedestrian modelling to be requested from Sydney Metro TSE team under the current scenario (Exit 3 closed) and once exit 3 is opened; **Sydney Metro currently working on the PED modelling. Some issues regarding congestion at Elizabeth Street pedestrian crossings are under consideration and hence causing delay. Will be resolved soon and update provided to ST.**

2. TSE can only move forward with closing down the MLC exit once Exit 3 is reopened (FND team currently liaising with ST AMD and 60 Martin Place teams; **Sydney Metro has been given the current update on Exit 3 work from ST, Exit 3 should be reopened in a month's time.**

3. Kristen Mckendry raised a concern that Sydney Metro TSE needs to postpone their given date (18-04-2020) to after Anzac Day as that is a major event and will impact customers and operations; **Sydney Metro advised, SM will provide a month's notice before any works. Sydney Metro has taken this into consideration.**

4. TSE team to provide a confirm time frame and date for Hoarding installation; **Sydney Metro to provide a response.**

5. aand any other construction related impacts to the stations; **the roller shutter end (exit 6) will be covered and protected from dust. The hoarding will be second protection. The hoarding installed will be similar to Exit 7 hoarding currently installed. The hoarding will not be nailed to the surface and will rest on concrete. Design to be shared with ST.**

6. SM TSE team will be the first respondent to any emergency or alarms behind the hoarding area; **ST Station Duty Manager will always have an access via the door (proposed to be installed in the hoarding). Sydney Metro will be the first respondents but at the same time ST has access to the area.**

7. Access needs to be provided to ST incase of an emergency as well; **SM to install an access door.**

8. Dilapidation survey to be done by ST before hoarding installation and handing over the area to Sydney Metro; **agreed**

9. From FLS, it was advised that Ped modelling needed to inform how many exits are required. For compliance there needs to be alternative exits separated at prescribed distances; **Discussed**

10. Way finding maps to be updated;

11. Customer information applications need to be updated (exit informations etc); **Sydney Metro advised.**

12. Sydney Metro to put up signages at least one week before the changes take place for customers; **Sydney Metro advised.**

13. Hoarding to be installed must be non-combustible , Sydney Metro to use Central Platform 16 and 23 hoarding as reference; **Sydney Metro advised.**

14. Follow up with 60 Martin Place team to ensure works are completed for exit 3 before MLC closing;

15. Sydney Trains Martin Place station SIMP to be updated by Rob Austen's team- Peter Cheney to follow-up;

16. PED modelling requested from Sydney Metro with the assumptions that: 1) the escalators leading to exit 3 and 1&2 stop working, 2) PIDs Rack is no longer there (to be discussed with Leon Miller and his team); **Sydney Metro advised. Syed Murtaza to follow up with ST teams.**

17. Sydney Metro to be advised that the Station cannot be used by contractors for general works behind the hoarding on the non-paid concourse; **Sydney Metro advised.**

18. The issue for advertisements in the exit 6 corridor was raised by Vikram Singh, the advertisements are a source of revenue for Sydney Trains and placing a hoarding in that area will cause a financial offset to ST. To be discussed with Sect. Revenue and Sydney Metro. **Sydney metro will discuss with Sect Revenue and compensation will be discussed. Hoarding can be used for advertisement purposes as well.**

Meeting Minutes

Template ID: 120-MM-0001; Release Date: 01 Sep 2009

Sydney Metro / TSE
Martin Place Station MLC Exit 6 Closure

Meeting #1

Coordinator/Chair	Syed Murtaza
Date and Time	02 April 2020 13:00 – 14:00
Location	MS Teams Meeting
Next Meeting	TBC

Meeting Objective	Martin Place Station Exit 6 closure arrangement and discussions

Attendees			
William Jobling	Shaun Finegan	Jason Wight	Stephen Wong
Sam Parker	Hann Lo	Jason Barber	Vikram Singh
Maria Pon	Peter Cheney	Kristen McKendry	Chantel Khoury

Apologies			

1 Meeting Outcomes

1.1 Discussion

Item	Description	Action By	Due Date
1.1	**Review of Previous Minutes** Minutes of Previous Meeting on 9 March 2020 had been discussed with Sydney Metro, and an updated set of minutes circulated with Sydney Metro comments. It was noted that since the previous meeting, the coronavirus pandemic had made a significant impact to passenger numbers and public events. Sydney Metro – Will Jobling (WJ) provided an update to these comments and answered further questions		
2.1	**Planned Date for Closure** WJ confirmed that closures would not take place until after Anzac Day. The date was not yet confirmed, pending approvals from Sydney Co-ordination Office, but was anticipated to be during May 2020. Shaun Finegan (SF) confirmed Sydney Trains support for these changes to take place whilst passenger numbers were greatly reduced. WJ to confirm closure dates when finalised.	WJ	
2.2	**Exit 3**		

	ST confirmed that Exit 3 should be opened prior to Exit 6 closure. Jason Barber (JB) advised there are still some issues between ST and Lendlease (60 Martin Place contractor) with regards to paperwork to allow this to happen. JB to speak offline to WJ regarding anything Sydney Metro can do to help expedite (as Lendlease are also the Martin Place Station contractor for Sydney Metro)	WJ, JB	
2.3	**Hoarding** ST require hoarding line to be at ticket hall by bottom of stairs – food court entrance to be closed. WJ to brief SM comms to make contact with 52 Martin Place Hoarding design/specification to be provided to Ray/Peter for review. WJ advised proposed design would be consistent with existing hoardings already installed at Martin Place station.	WJ WJ	
2.4	**Property** ST preference for SM to take the underpass under a construction lease as part of construction site WJ to engage SM and ST property/legal with a view to extending Exit 7 construction lease WJ confirmed that SM would undertake a photographic dilapidation report of the area to be hoarded off.	WJ	
2.5	**Pedestrian modelling** ST require modelling to show whether if Exit 5 is also blocked, whether the station can be safely evacuated via Exits 1, 2 and 3 Gate line data to be obtained – Maria Pon gave WJ contact details – Post Meeting Note - request submitted Modelling should be based on actual station exit widths – WJ to arrange measurement	MP, WJ WJ	
2.6	**Secondary revenue** Advertising on hoardings not previously allowed by Sydney Metro – WJ to confirm that no commercial advertising would be on the hoarding Vikram Singh to investigate further the contractual position with secondary revenue on the assumption that the whole advertising space in the underpass is lost. Meeting to be set up with secondary revenue if necessary	WJ VS	

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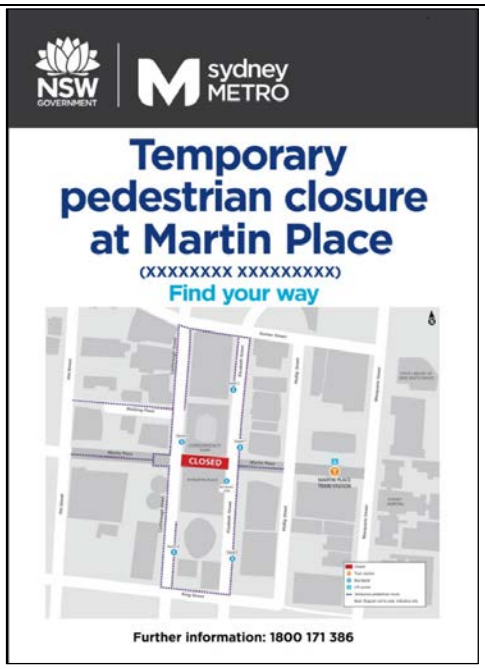
Martin Place underpass closure - Communications and wayfinding plan

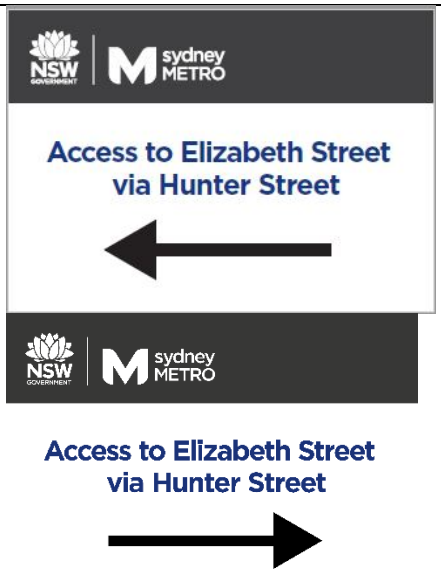
Communications

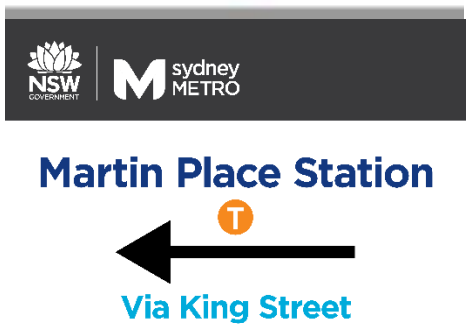
Method	Target audience/details	Timing
Government agency liaison	• Sydney Trains • SCO • RMS • TfNSW wayfinding team • City of Sydney	ongoing
Surrounding stakeholder briefings	Skype meetings: • MLC Centre • 52 Martin Place - Colliers • Macquarie Bank • CBA • Local businesses	4 – 19 May 2020
Written notification	• Distribution by letterbox drop and email to Martin Place list • Upload to Sydney Metro website	7 days prior to hoarding adjustment work (Tuesday 19 May TBC)
Signage	• Install advance warning signage at eastern and western ends of underground walkway • Install temporary Martin Place closure signage (directional signage including map) • Install permanent underground walkway closure signage • Cover existing Exit 6 directional signs in Martin Place Station and install updated station maps	7 days prior Day of work (Sat 30 May TBC) Day of work (Sat 30 May TBC) Day of work (Sat 30 May TBC)

Wayfinding

<table>
<tr><th colspan="5">Advanced warning signage</th></tr>
<tr><th>Installation date</th><th>Placement Map #</th><th>Sign</th><th>Size</th><th>Locations</th></tr>
<tr><td>22 May 2020</td><td></td><td> 
</td><td>A1</td><td>• At underground walkway entry area on Station side (eastern end)
• At underground walkway entry area on MLC side (western end)</td></tr>
<tr><td colspan="5">Temporary Martin Place closure signage</td></tr>
</table>

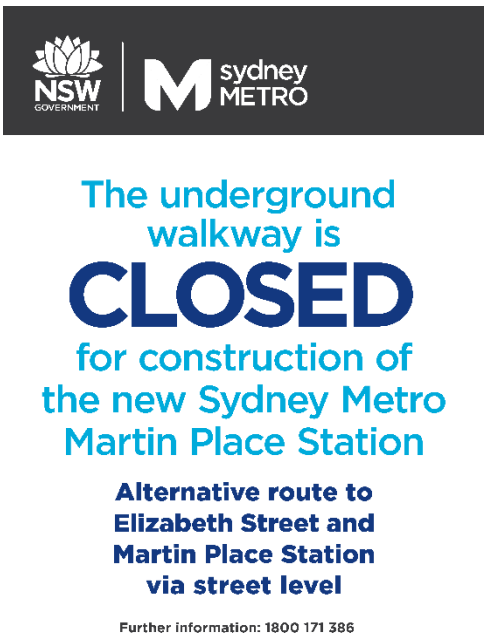
Installation date	Placement Map #	Sign	Size	Locations
30 May 2020	8		A1	• Cnr Castlereagh / Hunter x2 (sth eastern & sth western corners) • Cnr Hosking Pl / Castlereagh • Cnr Castlereagh / King x 2 (nth eastern & nth western corners) • Cnr Castlereagh / Martin Pl x 2 • Cnr Elizabeth / Martin Pl x 2 • Cnr Elizabeth / Hunter x 2 (sth eastern & sth western corners) • Cnr Elizabeth / King x 2 (nth eastern & nth western corners) • Castlereagh St / outside MLC Underground • Train station exits
	8		Sticker	• Placed on 'find your way' map signage
	2R 2L		A2	• 2R - Cnr Castlereagh / Martin Pl • 2L/2R -Castlereagh / MLC • 2L/2R -Cnr Castlereagh / King

	4L 4R		A2	• 4L - Cnr Castlereagh / Martin Pl • 4L - Castlereagh St / Hosking Pl • 4L/4R - Cnr Castlereagh / Hunter
	5		A2	• Castlereagh St / across Martin Pl • Elizabeth St / across Martin Pl
	1L 1R		A2	• 1L/1R - Cnr Elizabeth / King • 1L - Cnr Martin Pl / Elizabeth St • 1L - Elizabeth St – Nth of Bus Stand E
	3R		A2	• 3R - Cnr Martin Pl / Elizabeth • 3L/3R - Cnr Elizabeth / Hunter • 3L - Elizabeth St – Sth of Bus Stand C

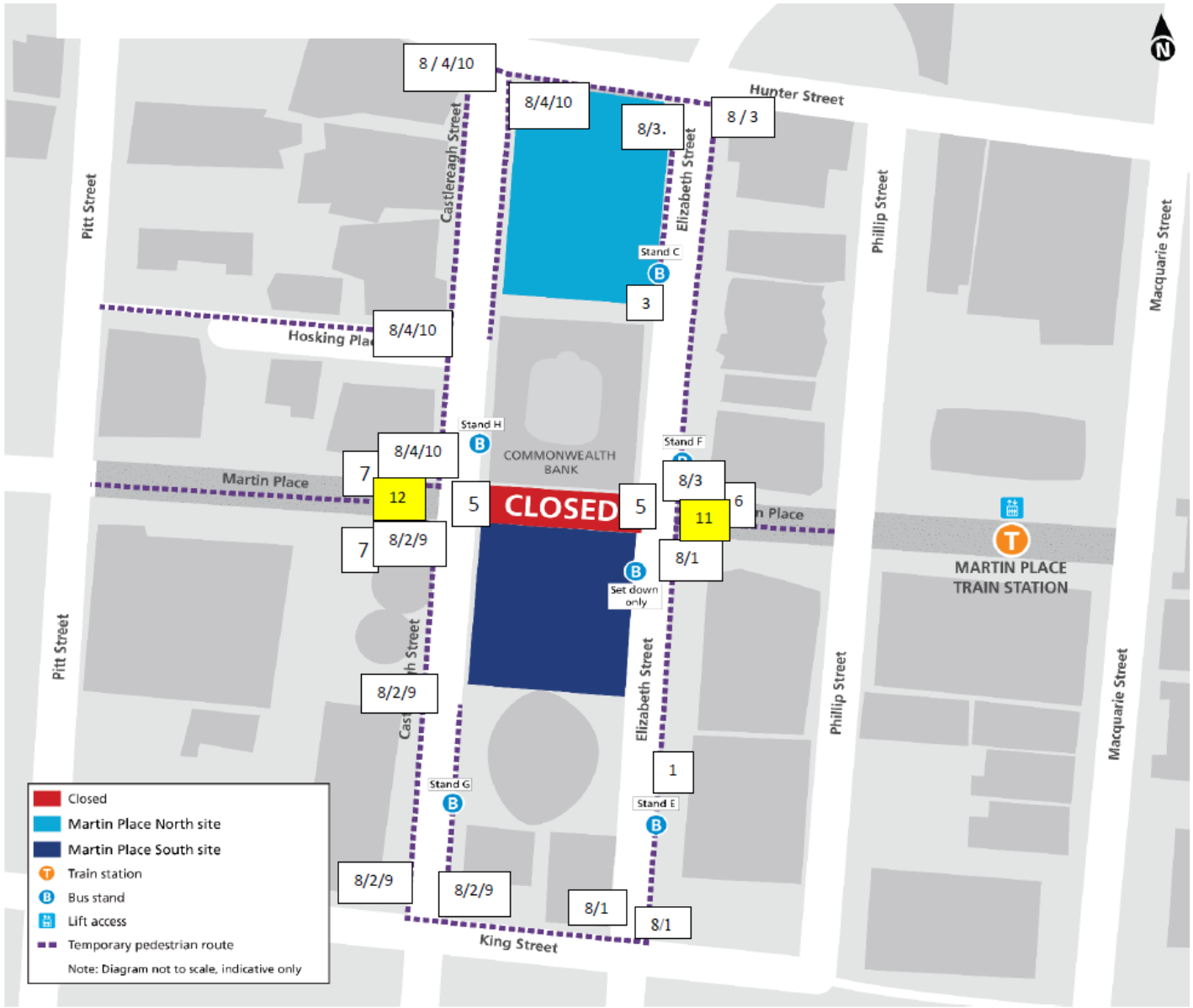
	3L			
	9R		A2	• 9L/9R - Cnr Castlereagh / King • 9L/9R - Martin Pl near CTA • 9R - Castlereagh St near MLC Ctr
	9L			

	10L 10R	 	A2	• 10L - Cnr Hosking Pl / Castlereagh • 10L/10R - Cnr Hunter / Castlereagh • 10L - Cnr Castlereagh / Martin Pl near ROLEX

30 May 2020 **Remains in place 4 weeks**	6		A2	• Above ground stairs in Martin Pl near Ch 7 x 2
	7		A2	• Aboveground stairs outside MLC x 2 • Near CTA • Near IGA

Permanent underground closure signage				
Installation date	**Placement Map #**	**Sign**	**Size**	**Locations**
30 May 2020	**11**		**A0**	• On hoarding blocking entrance to underground walkway inside Martin Place Station (eastern end of walkway)
	12			• On roller door at underground walkway entrance near MLC Centre (western end of walkway)

Signage Placement Map



Surface Level

1. Castlereagh St via King St
2. Elizabeth St via King St
3. Castlereagh St via Hunter
4. Elizabeth St via Hunter
5. Temporary Pedestrian Closure
6. Underground access to Castlereagh St and MLC Ctr CLOSED
7. Underground access to Elizabeth St and Martin Place Station CLOSED
8. Find your way map
9. Martin Place Station via King St
10. Martin Place Station via Hunter St

Underground

11. Underground walkway closed (alternative route to Castlereagh and MLC Ctr via street level)
12. Underground walkway closed (alternative route to Elizabeth Street and Martin Place Station via street level)

18/5/20

NSW GOVERNMENT | sydney METRO

Temporary pedestrian closure at Martin Place

(XXXXXXXX XXXXXXXXX)

Find your way

Further information: 1800 171 386

Appendix 1	Pedestrian modelling and analysis
Appendix 2	Hoarding layout drawings (current and proposed)
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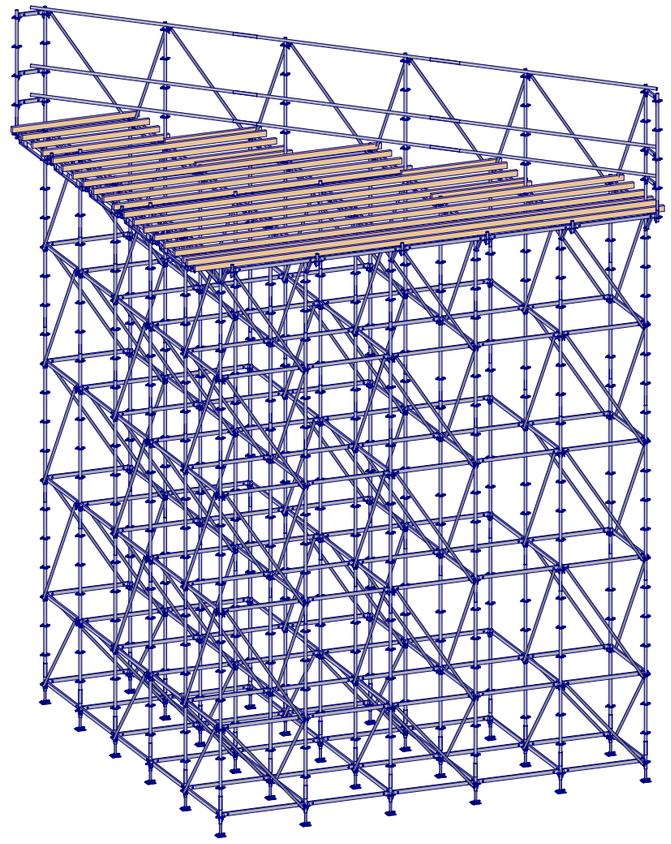
S-177 STREET LEVEL PEDESTRAIN WALKWAY SCAFFOLD

SCAFFOLD SCHEDULE	
MEMBER	COUNT
4m SCAFFOLD TUBE 48.3x3.2	9
ADJ. BASE PLATE UJB 38-36/17	26
BASE STANDARD UVB 24	26
CONSOLE BRACKET UCM 50 W. ROSSET	10
CONSOLE BRACKET UCM 50 W.SPIG.	2
LEDGER UH 50	6
LEDGER UH 150	225
LEDGER UHV 150	25
NODE BRACE UBK 150/150	24
NODE BRACE UBK 150/200	106
STANDARD UVR 200	20
STANDARD UVR 300	58
TOP STANDARD UVH 150	20
TOP STANDARD UVH 200	2
TOP STANDARD UVH 250	6



GENERAL NOTES

G1. THE DRAWINGS HAVE BEEN PREPARED IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS, IN PARTICULAR:
AS1170, AS1576 SERIES 1 TO 6, AND AS4576

G2. THE SCAFFOLDING ARRANGEMENT HAS BEEN DESIGNED USING "PERI UP" MODULAR SCAFFOLDING COMPONENTS INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATION

G3. ALL TUBE AND COUPLER COMPONENTS TO BE 48.3mm OUTSIDE DIAMETER IN ACCORDANCE WITH AS1576

G4. ALL COUPLERS TO BE RATED TO 6.0 kN (SWL)

G5. SUITABLE TOEBOARDS ARE TO BE PROVIDED AROUND ALL WORKING DECK LEVELS

G6. SOLE BOARDS/SPREADERS ARE TO BE PROVIDED UNDER JACKS TO SUIT SITE CONDITIONS

G7. ERECTING AND DISMANTLING WORK TO BE IN ACCORDANCE WITH WORKPLACE HEALTH AND SAFETY REGULATIONS AND CURRENT CODES

G8. THE TEMPORARY WORKS LAYOUT PLAN IS A GUIDE ONLY AND OBTAINING DIMENSIONS BY SCALING FROM THE PLAN IS NOT RECOMMENDED

G9. THE CONTRACTOR IS TO ENSURE:
- SUITABLE CLEARANCE IS AVAILABLE TO CONSTRUCT ACCESS WORKS ON SITE.
- TO THE BEST OF THEIR ABILITY THAT THE TEMPORARY WORKS STRUCTURE WILL BE PROTECTED FROM ANY IMPACT LOADS
- THAT THE SCAFFOLDERS / RIGGERS ARE PROVIDED SETOUT GUIDES AND MARKS BY THE PRINCIPAL CONTRACTOR PRIOR TO ERECTING ANY TEMPORARY WORKS STRUCTURE ON SITE

LOADING

L1. WIND LOAD REGION - A2
TERRAIN CATEGORY - TC3
REGIONAL DESIGN WIND SPEED V_{100} - 41m/s

NOTE: ENCAPSULATION TO BE REMOVED SHOULD GUST WIND SPEEDS BE EXPECTED TO PEAK AT OR EXCEED 25m/s (90Km/h)

L2. SCAFFOLD DESIGNED AS '**SPECIAL DUTY**' - 5.0 kPa (500kg/m^2) PER BAY
1 WORKING LEVEL

L3. THE CAPACITY OF THE SUPPORTING STRUCTURE TO BE CONFIRMED BY THE PROJECT STRUCTURAL ENGINEER.

No.	REVISION DESCRIPTION	DRAWN	DATE
A	ISSUED FOR APPROVAL	JP	21-05-2020

van der meer
LEVEL 1, 51 ALFRED STREET
FORTITUDE VALLEY QLD 4006
Telephone 61-7-3021 6600
www.vandermeer.com.au
van der Meer (QLD) Pty Ltd
ABN 63 609 812 615

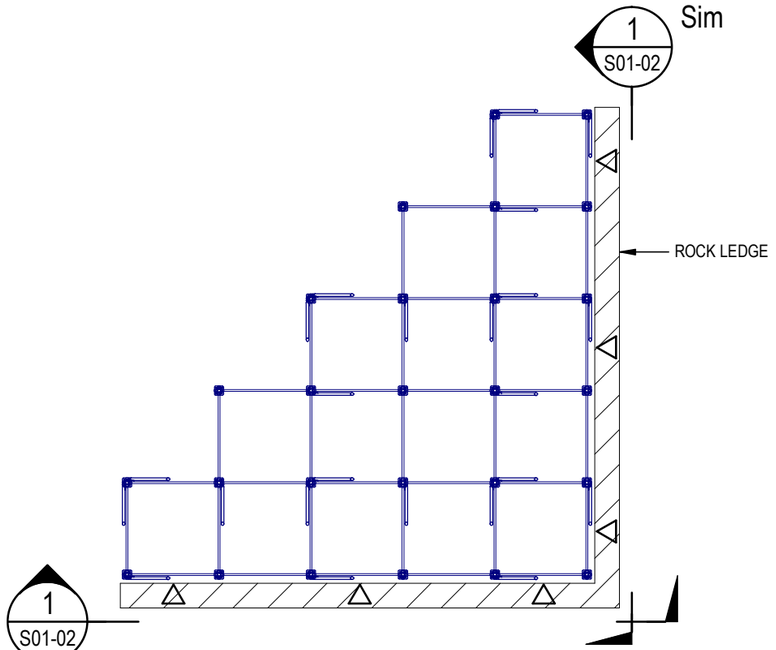
CLIENT
LAG LANE ACCESS GROUP

PROJECT TITLE
SYDNEY METRO, MARTIN PLACE
STREET LEVEL PEDESTRIAN
WALKWAY SCAFFOLD

DRAWING TITLE
COVER SHEET

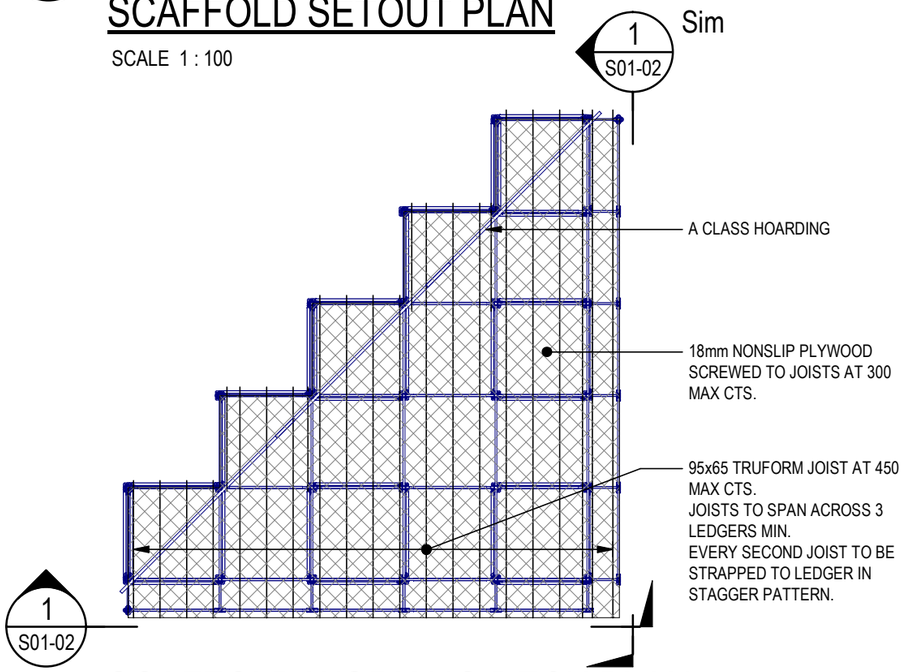
DRAWING STATUS **APPROVAL**

PROJECT LEADER	DESIGNER	SIGNATURE	
GA	RG		
DRAFTSPERSON	SCALE	DATE	SHEET SIZE
JP	1:100		**A3**
JOB No.	DRAWING No.		REVISION
BR200020_08	S01-01		A



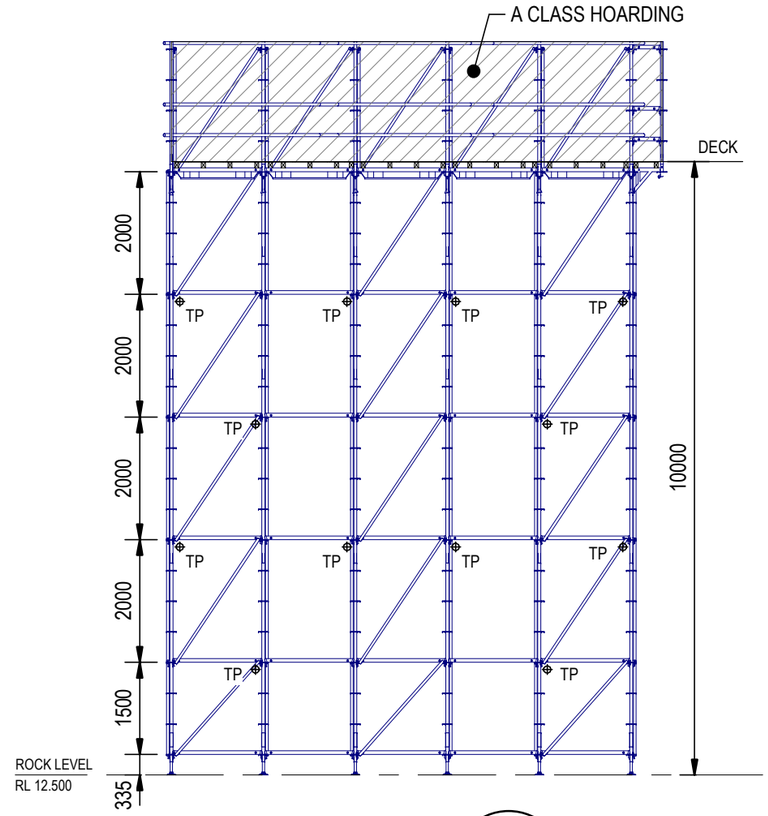
SCAFFOLD SETOUT PLAN

SCALE 1 : 100



SCAFFOLD WORKING DECK PLAN

SCALE 1 : 100



ELEVATION 1

SCALE: 1 : 100 — S01-02

LEGEND:

△ DENOTES BRACED BAY

TP DENOTES TIE POINT

No.	REVISION DESCRIPTION	DRAWN	DATE
A	ISSUED FOR APPROVAL	JP	21-05-2020

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CLIENT

LAG LANE ACCESS GROUP

PROJECT TITLE
SYDNEY METRO, MARTIN PLACE STREET LEVEL PEDESTRIAN WALKWAY SCAFFOLD

DRAWING TITLE
SCAFFOLD SETOUT PLANS AND ELEVATIONS

DRAWING STATUS **APPROVAL**

PROJECT LEADER	DESIGNER	SIGNATURE	
GA	RG		
DRAFTSPERSON	SCALE	DATE	SHEET SIZE
JP	1:100		A3
JOB No.	DRAWING No.		REVISION
BR200020_08	S01-02		A

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Sydney Metro City & Southwest
Stakeholder Comment Tracker

Document: Martin Place Stage 5 CTMP SMCSWTSE-JCG-SMP-TM-PLN-002280
Version: A
Date of your review: 7/05/2020

Item No	Contract	Doc Rev	Stakeholder (RMS,SCO,Council)	Reviewer (initials)	Date (of review)	Comment Location/Description, (Page, Para, Drg ref)	Stakeholder Comment	Metro/Contractor Response	Date	Metro Status comment (Open or Closed)	Stakeholder Response (date)	Metro/Contractor Response	Stakeholder Status comment (Open or Closed)
1	TSE	A	SCO	JC	14-May-2020	4.5,4.6,RSA	A road safety audit relating to the Martin Place Metro precinct independent to the TSE contract and contractors but not independent of Sydney Metro Project has raised a number of concerns that conflict with the intended operation of this TMP. This RSA raises that the the removal of the winged sections would not only signiciantly reduce pedestrain capcity at the singalised intersection but also reduce the site lines for vehicles approaching the pedestrain crossings. This document should address and mitigate this an other issues raised in that RSA.	The risks identified in the road safety audit which relate to this scope of works (i.e. the Elizabeth St pedestrian crossing and pedestrian bridge wing) have been addressed in this CTMP. It should be noted that the TfNSW auditors were not given sight of any previous TSE CTMPs or this CTMP, with their associated pedestrian modelling. Concerns over the impact of removal of the wings on pedestrian congestion and sight lines have been addressed by the reinstatement of a surface wing structure as soon as possible following removal of the rock pillar, as described in section 4.8. Sight lines are addressed in more detail in comment 7 below. Other issues raised in the RSA which relate to other locations will be addressed separately with stakeholders, and any changes incorporated into an addendum to the relevant CTMP dealing with those locations.	26-May-2020	Open			
2	TSE	A	SCO	SB	07-May-2020	4.4 / Appendix 3	Section 4.4 mentions that the western footpath of Elizabeth St will be closed, together with the Martin Place crossings of Elizabeth St. TCP-SMP-CAS-SB-0414 however shows the eastern footpath of Castlereagh St closed and no obvious closure of Elizabeth st at the Martin Place crossing. Which set-up is to be used? If the western side of Elizabeth St is closed then bus stop access must be maintained.	As the wing will be lifted from behind hoarding (installed as described in section 4.1), it will not be necessary to close the western footpath of Elizabeth Street or the Martin Place crossings of Elizabeth Street at any time. Bus stop access will be maintained at all times. The graphic in Section 4.4 and TCP-SMP-CAS-SB-0414 in Appendix 3 have both been revised. Section 4.8 (now 4.11) has been revised to show reduced impacts.	26-May-2020	Open			
3	TSE	A	SCO	SB	07-May-2020	4.9 / 4.10	The safety mitigation for pedestrian impacts states that the surface wings can be reinstated seemingly at any point. More detail is needed as to why this structure cannot be installed from the outset, or programmed to be reinstated at an agreed time once the works that facilitate their removal. An indicative timeline for the reinstatement of the wings should it be requried also be provided within the document.	The comment is accepted. Concerns over removal of the wings have been addressed by the reinstatement of a surface wing structure as soon as possible following removal of the rock pillar, as described in section 4.8. A timeline has been included in section 4.	26-May-2020	Open			
4	TSE	A	SCO	JC	14-May-2020	4.10	Have counts been undertaken to gain an understanding of the current (May) pedestrain volumes are? Is the intention that the first count post implementation would be 2/6/2020?	Sydney Metro has taken note of comments made by stakeholders and accepted that a surface wing structure should be reinstated as soon as possible following removal of the rock pillar which supports the current wing. The revised CTMP describes these arrangements in detail. A surface wing structure will be reinstated no more than 6 weeks following the removal of the current wing, by 26 July 2020. Section 4.10 has therefore been deleted.	26-May-2020	Open			
5	TSE	A	SCO	JC	14-May-2020	4.10	Counts to be submitted to the TCG group within the week they are undertaken. If the count for a particular month is close to the 125 threshold, eg. 120, the TCG group reserves the right to ask for another count to be undertaken within the next fortnight on an agreed upon day, this frequency may continue until the wing is reinstated.	Sydney Metro has taken note of comments made by stakeholders and accepted that a surface wing structure should be reinstated as soon as possible following removal of the rock pillar which supports the current wing. The revised CTMP describes these arrangements in detail. A surface wing structure will be reinstated no more than 6 weeks following the removal of the current wing, by 26 July 2020. Section 4.10 has therefore been deleted.	26-May-2020	Open			
6	TSE	A	SCO	JC	14-May-2020	RSA	It is noted that the RSA submitted with this appears to only review the short term works associated with the installation of the long term arrangements proposed in this CTMP. The RSA should cover all aspects of the CTMP.	The RSA attached at Appendix 4 of the CTMP has considered long term arrangements - see risks 4, 5 and 6 within the CTMP.	26-May-2020	Open			

7	**TSE**	**A**	TfNSW	CM	15-May-2020	4.5 / Figure 10	TfNSW has received a copy of a Road Safety Audit undertaken for Sydney Metro works in Martin Place. In this RSA, the winged/flared sections of Martin Place were considered. The following comments were provided in item 7 of the RSA: "These winged sections were advised to be removed during subsequent construction works. These flared areas provide additional capacity for pedestrians, as well as improving sight lines for vehicles approaching the main pedestrian corridors for Martin Place crossing Castlereagh and Elizabeth Streets. Removal of the winged sections will reduce the ability of approaching vehicles to see pedestrians about to cross the road from this corridor. This will increase the risk of vehicle and pedestrian crashes, as drivers of approaching vehicles will have less time to see and react to pedestrians entering the roadway." This CTMP should address how this Road Safety risk will be mitigated specifically for Elizabeth Street in this instance. Figure 10 is a good illustration of the reduced sight lines associated with the hoarding changes where the wing/flare is currently.	A replacement wing structure will be installed to maintain sight lines. During the maximum 6 week period when there is no wing, Section 4.6 identified that "either Perspex panels or an angled upper hoarding" would be used to improve sight lines. Revised hoarding design is now provided in Appendix 2 to include perspex panels on the corner of the bridge and Elizabeth St elevations. Section 4.6 has been amended to replace "either Perspex panels or an angled upper hoarding" with "perspex panels on the corner of the bridge and Elizabeth St elevations". Figure 10 amended accordingly. With respect to other findings within the Road Safety Audit, please see Comment 1 above.	**26-May-2020**	**Open**			
8	**TSE**	**A**	TfNSW	CM	15-May-2020	4.10	"(b) the trigger level has been reached, namely that more than 125 pedestrians per crossing cycle are crossing Elizabeth Street from east to west and proceeding west on the pedestrian bridge to Castlereagh Street" Appendix 1, Section 4.2 indicates "a value lower than 1,200 people per 15 minutes should be chosen to ensure that appropriate and adequate mitigations are put in place to manage the movement of large crowds through the Elizabeth Street intersection". In order to meet the requirement to set the trigger level below the safe limit to ensure that appropriate and adequate mitigations are put in place prior to the safe level being reached, then given a cycle time of 90 seconds, this would be a value lower than 120 pedestrians per crossing cycle in both directions combined, as opposed to the suggested trigger level of 125 pedestrians crossing Elizabeth Street from east to west.	Sydney Metro has taken note of comments made by stakeholders and accepted that a surface wing structure should be reinstated as soon as possible following removal of the rock pillar which supports the current wing. The revised CTMP describes these arrangements in detail. A surface wing structure will be reinstated no more than 6 weeks following the removal of the current wing, by 26 July 2020. Section 4.10 has therefore been deleted.	**26-May-2020**	**Open**			
9	**TSE**	**A**	TfNSW	CM	15-May-2020	4.10	TfNSW has received a copy of a Road Safety Audit undertaken for Sydney Metro works in Martin Place.The following comments were provided in item 3 of the RSA: "The existing pedestrian connection of Martin Place, between Castlereagh Street and Elizabeth Street, was observed to be operating at capacity during the morning peak period. During construction, the width of this passageway will be reduced at both the Castlereagh and Elizabeth Street crossings. This will lead to the same number of pedestrians attempting to cross Castlereagh and Elizabeth Streets in a narrower passageway, funnelled to the crossings (on one side of the crossing). This may result in bottlenecks and lead to pedestrians being caught on the roadway as the traffic signal pedestrian phase ends, or an increase in non-compliance with the signals as pedestrians are required to wait for multiple phases to complete the crossing. This may increase the risk of vehicle crashes with pedestrians when the signals change phase giving the green signal to vehicles where pedestrians may attempt to dart across." The above assessment has not accounted for the projected additional pedestrians due to the closure of the underpass, so these volumes may be further increased once social restrictions are lifted. This further supports the need to set the trigger level value in accordance with the recommendations from Appendix 1 - i.e. a value lower than 120 pedestrians	Sydney Metro has taken note of comments made by stakeholders and accepted that a surface wing structure should be reinstated as soon as possible following removal of the rock pillar which supports the current wing. The revised CTMP describes these arrangements in detail. A surface wing structure will be reinstated no more than 6 weeks following the removal of the current wing, by 26 July 2020. Section 4.10 has therefore been deleted.	**26-May-2020**	**Open**			
10	**TSE**	**A**	CoS	VL	19-May-2020	3	Please describe in detail the works that will be carried out that requires the closure of the pedestrian underpass and removal of the pedestrian bridge wing. Please advise how long it will take to carry out these works and how soon can the pedestrian bridge wing be reinstated.	Sydney Metro has taken note of comments made by stakeholders and accepted that a surface wing structure should be reinstated as soon as possible following removal of the rock pillar which supports the current wing. The revised CTMP describes these arrangements in detail. A surface wing structure will be reinstated no more than 6 weeks following the removal of the current wing, by 26 July 2020. A timeline is shown in section 4.	**26-May-2020**	**Open**			
11	**TSE**	**A**	CoS	VL	19-May-2020	4	The report should clarify that the removal of the pedestrian bridge wing is for the wing at Elizabeth Street only and that the wing at Castlereagh Street will be maintained.	Confirmed that this CTMP only relates to the Elizabeth St wing and does not concern the Castlereagh St wing. Sections 3.1 and 4.5 amended accordingly.	**26-May-2020**	**Open**			

12	**TSE**	**A**	CoS	VL	19-May-2020	4.9, 4.10, 6	The City does not support the ongoing monitoring and contingency measures. The report prepared by Arup, who was engaged to carry out a detailed pedestrian modelling analysis to understand the impact of closing the pedestrian underpass and pedestrian bridge wing, provides the following recommendation: "The wings present in the current hoarding arrangement provide space to funnel pedestrians from the wider width of the Elizabeth Street crossing into the narrower width of Martin Place. Without these wings present, pedestrians are concentrated into the western Elizabeth Street footpath to access Martin Place. Scenario 1 has demonstrated that, with the removal of the wings, there is congestion on the western footpath of Elizabeth Street. The results therefore suggest that more space is needed on the western footpath of Elizabeth Street. Consideration should therefore be given to providing additional space on Elizabeth Street through lane taking on the western side of Elizabeth Street or through the provision of a wing arrangement." Section 4.10 suggests that the reinstatement of the pedestrian bridge wing can be restored at any time as it is not contingent on construction works. As such, every effort should be made to improve pedestrian safety since pedestrians are the most vulnerable road user. This is even more important with the introduction physical distancing requirements from the NSW Government for people to keep a distance of 1.5 metres away from each other.	Sydney Metro has taken note of comments made by stakeholders and accepted that a surface wing structure should be reinstated as soon as possible following removal of the rock pillar which supports the current wing. The revised CTMP describes these arrangements in detail. A surface wing structure will be reinstated no more than 6 weeks following the removal of the current wing, by 26 July 2020.	**26-May-2020**	**Open**			