WAVERLEY TRAFFIC COMMITTEE MEETING

ATTACHMENTS

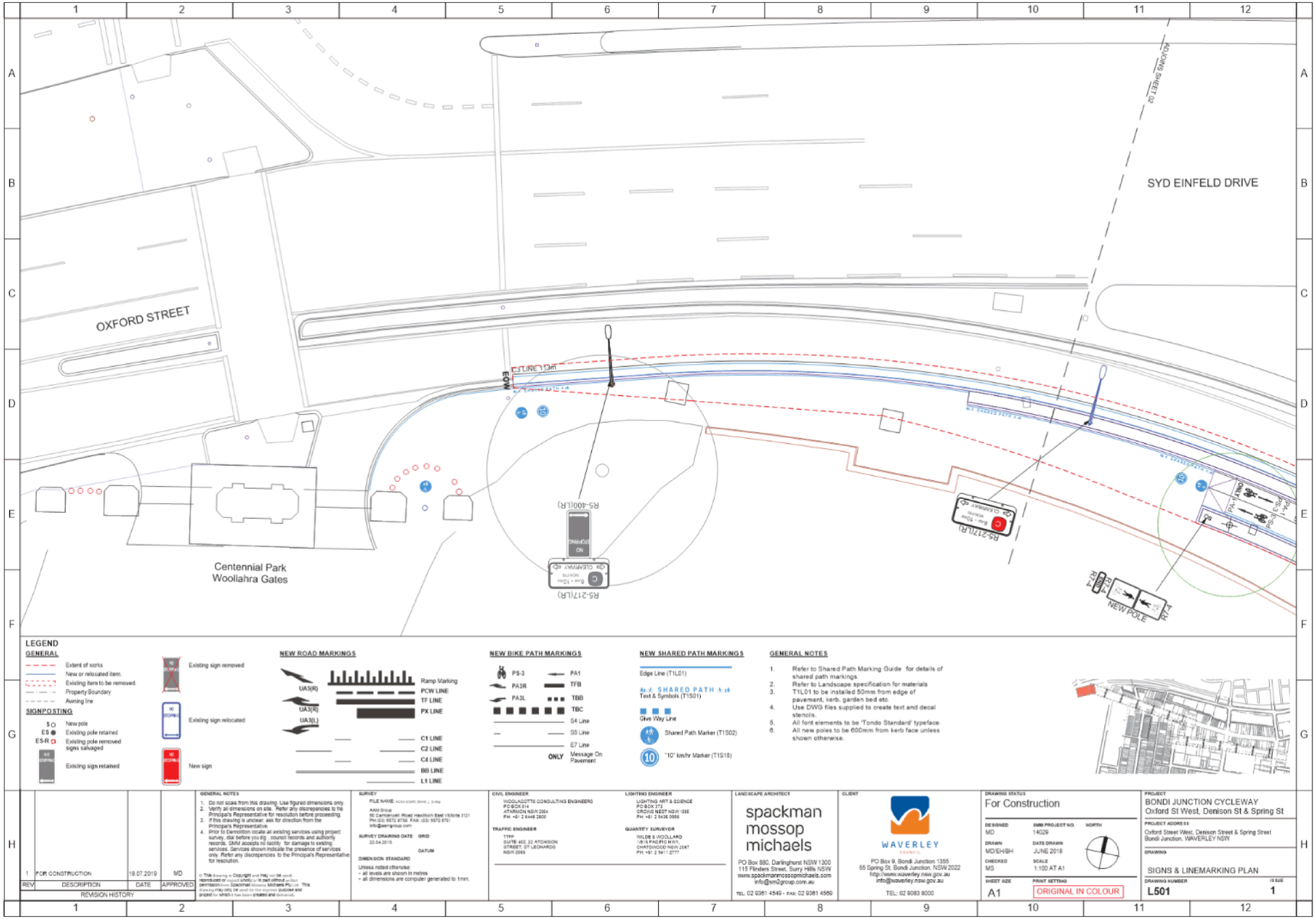
10.00 AM, THURSDAY 22 AUGUST 2019

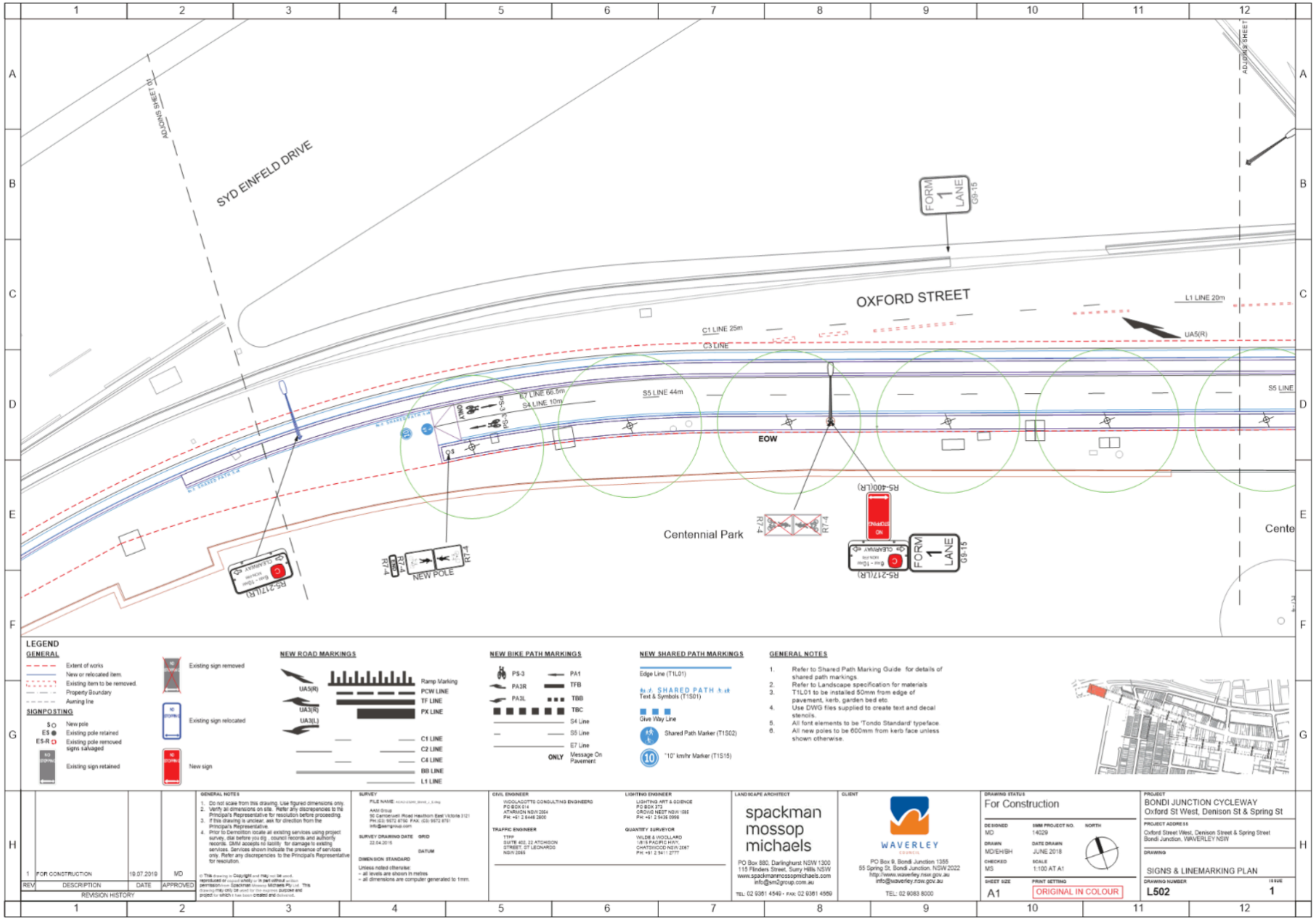
Waverley Council
PO Box 9
Bondi Junction NSW 1355
DX 12006 Bondi Junction
Tel. 9083 8000
E-mail: info@waverley.nsw.gov.au

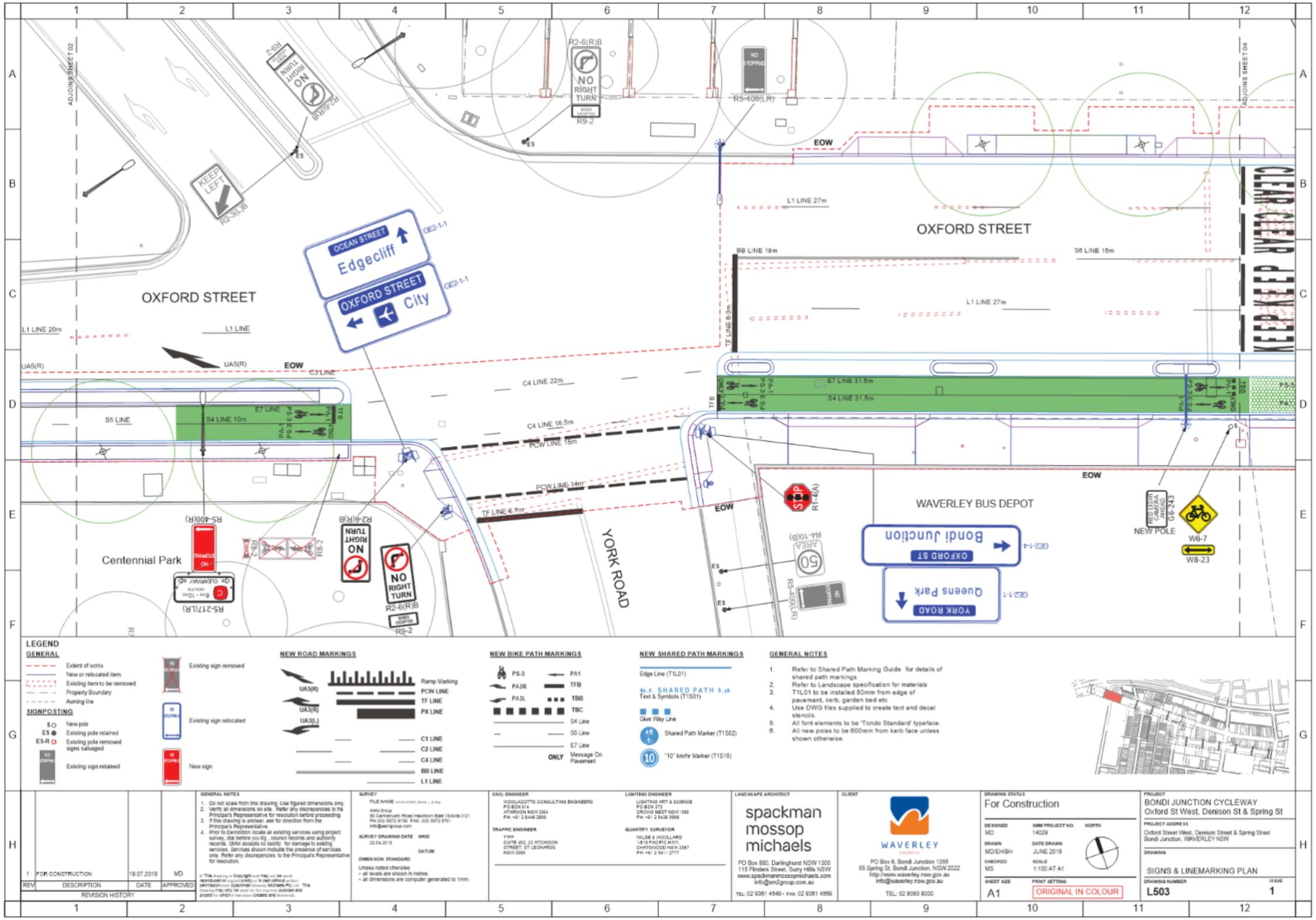
WAVERLEY TRAFFIC COMMITTEE MEETING

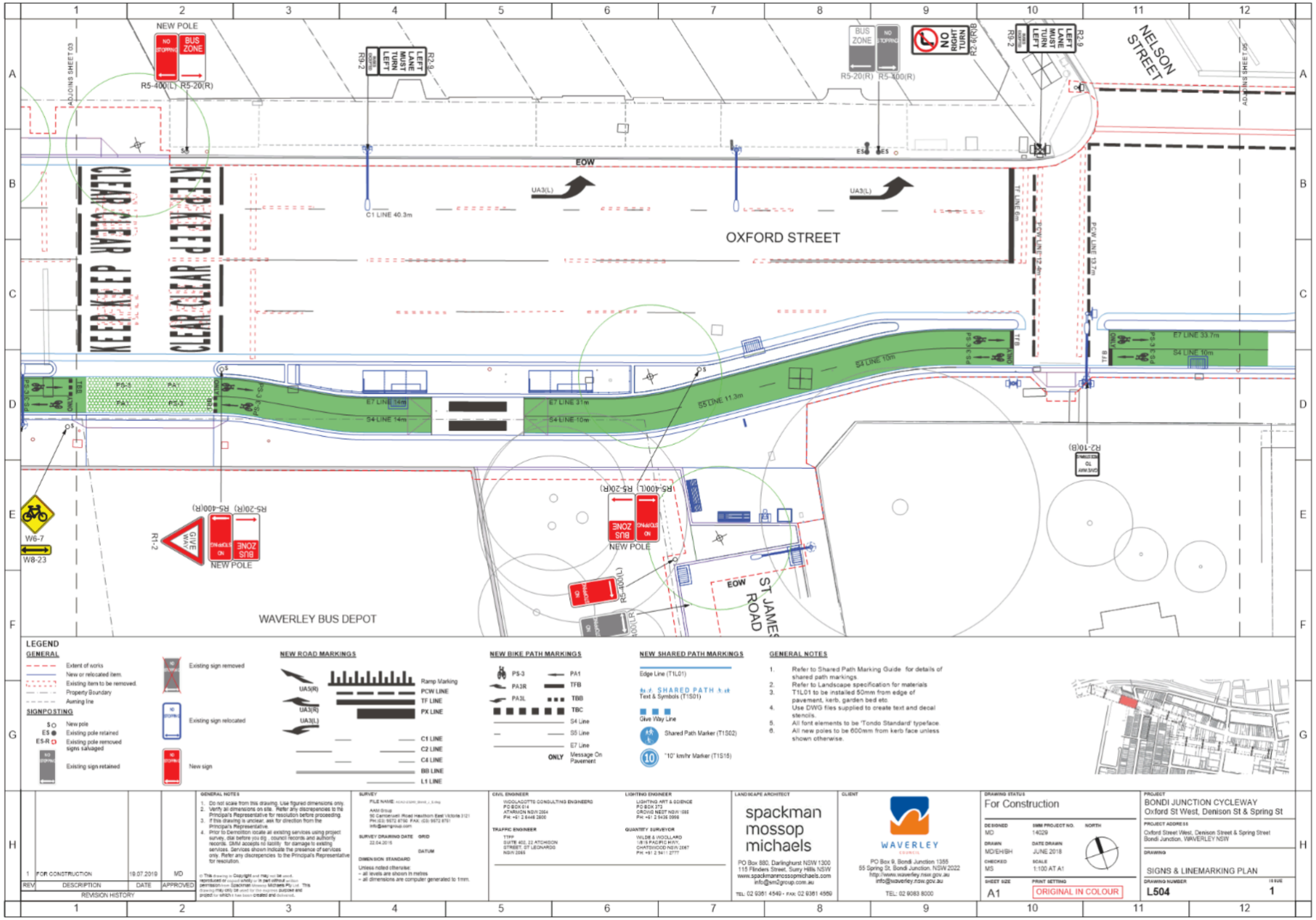
ATTACHMENTS

TC/C.05/19.08 - Bondi Junction Cycleway and Streetscape Upgrade - Signage and Linemarking Plans


OXFORD STREET
SYD EINFELD DRIVE
Centennial Park
Woollahra Gates
ADJOINS SHEET 02
C3 LINE 113m
EOW
R5-400(LR)
R5-217(LR)
NEW POLE
R7-4
LEGEND
GENERAL
Extent of works
New or relocated item
Existing item to be removed
Property Boundary
Awning line
SIGNPOSTING
New pole
Existing pole retained
Existing pole removed signs salvaged
Existing sign retained
Existing sign removed
Existing sign relocated
New sign
NEW ROAD MARKINGS
Ramp Marking
PCW LINE
TF LINE
PX LINE
C1 LINE
C2 LINE
C4 LINE
BB LINE
L1 LINE
NEW BIKE PATH MARKINGS
PS-3
PA3R
PA3L
PA1
TFB
TBB
TBC
S4 Line
S5 Line
E7 Line
Message On Pavement
NEW SHARED PATH MARKINGS
Edge Line (T1L01)
Text & Symbols (T1S01)
Give Way Line
Shared Path Marker (T1S02)
"10" km/hr Marker (T1S16)
GENERAL NOTES
1. Refer to Shared Path Marking Guide for details of shared path markings
2. Refer to Landscape specification for materials
3. T1L01 to be installed 50mm from edge of pavement, kerb, garden bed etc.
4. Use DWG files supplied to create text and decal stencils.
5. All font elements to be 'Tondo Standard' typeface
6. All new poles to be 600mm from kerb face unless shown otherwise.
1 FOR CONSTRUCTION 19.07.2019 MD
REV DESCRIPTION DATE APPROVED
REVISION HISTORY
LANDSCAPE ARCHITECT
spackman mossop michaels
CLIENT
WAVERLEY
DRAWING STATUS
For Construction
DESIGNED MD
SMM PROJECT NO. 14029
NORTH
DRAWN MD/EH/BH
DATE DRAWN JUNE 2018
CHECKED MS
SCALE 1:100 AT A1
SHEET SIZE A1
PRINT SETTING ORIGINAL IN COLOUR
PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street Bondi Junction, WAVERLEY NSW
DRAWING
SIGNS & LINEMARKING PLAN
DRAWING NUMBER L501
ISSUE 1


SYD EINFELD DRIVE
ADJOINS SHEET 01
ADJOINS SHEET
OXFORD STREET
FORM 1 LANE G9-15
C1 LINE 25m
C3 LINE
L1 LINE 20m
UA5(R)
E7 LINE 66.5m
S4 LINE 10m
S5 LINE 44m
S5 LINE
EOW
Centennial Park
Cente
NEW POLE
R5-400(LR)
R5-217(LR)
FORM 1 LANE G9-15
LEGEND
GENERAL
Extent of works
New or relocated item
Existing item to be removed
Property Boundary
Awning line
SIGNPOSTING
New pole
Existing pole retained
Existing pole removed signs salvaged
Existing sign retained
Existing sign removed
Existing sign relocated
New sign
NEW ROAD MARKINGS
Ramp Marking
PCW LINE
TF LINE
PX LINE
C1 LINE
C2 LINE
C4 LINE
BB LINE
L1 LINE
NEW BIKE PATH MARKINGS
PS-3
PA3R
PA3L
PA1
TFB
TBB
TBC
S4 Line
S5 Line
E7 Line
ONLY Message On Pavement
NEW SHARED PATH MARKINGS
Edge Line (T1L01)
SHARED PATH
Text & Symbols (T1S01)
Give Way Line
Shared Path Marker (T1S02)
"10" km/hr Marker (T1S15)
GENERAL NOTES
1. Refer to Shared Path Marking Guide for details of shared path markings.
2. Refer to Landscape specification for materials
3. T1L01 to be installed 50mm from edge of pavement, kerb, garden bed etc.
4. Use DWG files supplied to create text and decal stencils.
5. All font elements to be 'Tondo Standard' typeface.
6. All new poles to be 600mm from kerb face unless shown otherwise.
GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.
SURVEY
FILE NAME:
AAM Group
80 Camberwell Road Hawthorn East Victoria 3121
PH: (03) 9572 8750 FAX: (03) 9572 8751
info@aamgroup.com
SURVEY DRAWING DATE 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.
CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 8448 2800
TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065
LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 373
CROWD NEST NSW 1585
PH: +61 2 9436 0998
QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777
LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 - FAX: 02 9361 4559
CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction, NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000
DRAWING STATUS
For Construction
DESIGNED MD
SMM PROJECT NO. 14029
DRAWN MD/EH/BH
DATE DRAWN JUNE 2018
CHECKED MS
SCALE 1:100 AT A1
NORTH
SHEET SIZE A1
PRINT SETTING ORIGINAL IN COLOUR
PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW
DRAWING
SIGNS & LINEMARKING PLAN
DRAWING NUMBER L502
ISSUE 1
REV 1 DESCRIPTION FOR CONSTRUCTION DATE 19.07.2019 APPROVED MD
REVISION HISTORY


OCEAN STREET
Edgecliff
OXFORD STREET
City
OXFORD STREET
OXFORD STREET
WAVERLEY BUS DEPOT
Centennial Park
YORK ROAD
Bondi Junction
OXFORD ST
Queens Park
YORK ROAD
NEW POLE
KEEP LEFT
NO RIGHT TURN
NO STOPPING
CLEARWAY
EOW
ADJOINS SHEET 02
ADJOINS SHEET 04
LEGEND
GENERAL
SIGNPOSTING
NEW ROAD MARKINGS
NEW BIKE PATH MARKINGS
NEW SHARED PATH MARKINGS
GENERAL NOTES
1. Refer to Shared Path Marking Guide for details of shared path markings.
2. Refer to Landscape specification for materials
3. T1L01 to be installed 50mm from edge of pavement, kerb, garden bed etc.
4. Use DWG files supplied to create text and decal stencils.
5. All font elements to be 'Tondo Standard' typeface.
6. All new poles to be 600mm from kerb face unless shown otherwise.
REVISION HISTORY
1 FOR CONSTRUCTION 19.07.2019 MD
spackman mossop michaels
WAVERLEY
For Construction
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
SIGNS & LINEMARKING PLAN
L503
1
A1
ORIGINAL IN COLOUR



LEGEND

GENERAL

- Extent of works
- New or relocated item
- Existing item to be removed
- Property Boundary
- Awning line

SIGNPOSTING

- New pole
- Existing pole retained
- Existing pole removed signs salvaged
- Existing sign retained
- Existing sign removed
- Existing sign relocated
- New sign

NEW ROAD MARKINGS

UA5(R), UA3(R), UA3(L)

- Ramp Marking
- PCW LINE
- TF LINE
- PX LINE
- C1 LINE
- C2 LINE
- C4 LINE
- B8 LINE
- L1 LINE

NEW BIKE PATH MARKINGS

- PS-3
- PA3R
- PA3L
- TBC
- PA1
- TFB
- TBB
- S4 Line
- S5 Line
- E7 Line
- ONLY Message On Pavement

NEW SHARED PATH MARKINGS

- Edge Line (T1L01)
- SHARED PATH Text & Symbols (T1S01)
- Give Way Line
- Shared Path Marker (T1S02)
- "10" km/hr Marker (T1S15)

GENERAL NOTES

1. Refer to Shared Path Marking Guide for details of shared path markings.
2. Refer to Landscape specification for materials
3. T1L01 to be installed 50mm from edge of pavement, kerb, garden bed etc.
4. Use DWG files supplied to create text and decal stencils.
5. All font elements to be 'Tondo Standard' typeface.
6. All new poles to be 600mm from kerb face unless shown otherwise.

REV	DESCRIPTION	DATE	APPROVED
1	FOR CONSTRUCTION	19.07.2019	MD

REVISION HISTORY

GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepancies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.

© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the purpose it was created and prepared for which it has been created and delivered.

SURVEY
FILE NAME: ACAD-ESRI_Brnd_2_D.dwg
AAM Group
50 Carrickvell Road Hawthorn East Victoria 3123
PH: (03) 9572 8700 FAX: (03) 9572 8701
info@aamgroup.com
SURVEY DRAWING DATE: 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.

CIVIL ENGINEER
INGOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 8448 2800

TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065

LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 372
CROWS NEST NSW 1585
PH: +61 2 9436 0998

QUANTITY SURVEYOR
WILDE & WOOLLARD
1/8-9 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777

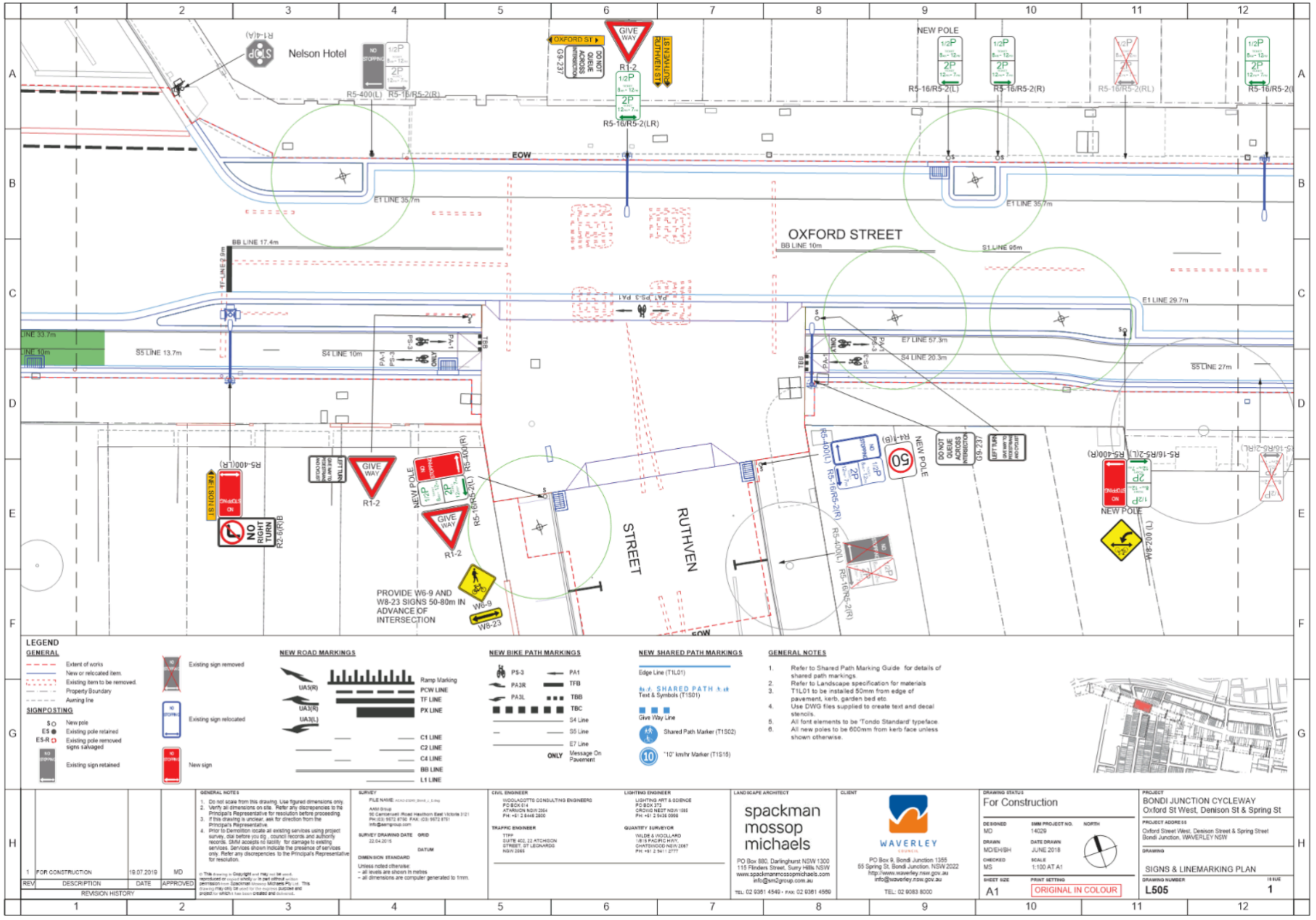
LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@smm2group.com.au
TEL: 02 9361 4549 - FAX: 02 9361 4559

CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction, NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000

DRAWING STATUS: For Construction

DESIGNED	SMM PROJECT NO.	NORTH
MD	14029	
DRAWN	DATE DRAWN	
MD/EH/BH	JUNE 2018	
CHECKED	SCALE	
MS	1:100 AT A1	
SHEET SIZE	PRINT SETTING	
A1	ORIGINAL IN COLOUR	

PROJECT: BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS: Oxford Street West, Denison Street & Spring Street Bondi Junction, WAVERLEY NSW
DRAWING: SIGNS & LINEMARKING PLAN
DRAWING NUMBER: L504
ISSUE: 1



LEGEND

GENERAL
- Extent of works
- New or relocated item
- Existing item to be removed
- Property Boundary
- Awning line

SIGNPOSTING
- New pole
- Existing pole retained
- Existing pole removed signs salvaged
- Existing sign retained
- Existing sign removed
- Existing sign relocated
- New sign

NEW ROAD MARKINGS
- Ramp Marking
- PCW LINE
- TF LINE
- PX LINE
- C1 LINE
- C2 LINE
- C4 LINE
- BB LINE
- L1 LINE

NEW BIKE PATH MARKINGS
- PS-3
- PA3R
- PA3L
- PA1
- TFB
- TBB
- TBC
- S4 Line
- S5 Line
- E7 Line
- ONLY Message On Pavement

NEW SHARED PATH MARKINGS
- Edge Line (T1L01)
- SHARED PATH Text & Symbols (T1S01)
- Give Way Line
- Shared Path Marker (T1S02)
- "10" km/hr Marker (T1S15)

GENERAL NOTES
1. Refer to Shared Path Marking Guide for details of shared path markings.
2. Refer to Landscape specification for materials
3. T1L01 to be installed 50mm from edge of pavement, kerb, garden bed etc.
4. Use DWG files supplied to create text and decal stencils.
5. All font elements to be 'Tondo Standard' typeface.
6. All new poles to be 600mm from kerb face unless shown otherwise.

REV	DESCRIPTION	DATE	APPROVED
1	FOR CONSTRUCTION	19.07.2019	MD

REVISION HISTORY

GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.

© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.

SURVEY
FILE NAME: ACAD-233R0_Brnhl_r_S.dwg
AAM Group
50 Carrolanelli Road Heathcon East Victoria 3121
PH: (03) 9572 8700 FAX: (03) 9572 8701
info@aamgroup.com
SURVEY DRAWING DATE: 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.

CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATHERTON NSW 2064
PH: +61 2 6448 2800

TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065

LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 373
CROWS NEST NSW 1585
PH: +61 2 9436 0996

QUANTITY SURVEYOR
WLDE & WOOLLARD
1/818 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777

LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 - FAX: 02 9361 4559

CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction, NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000

DRAWING STATUS: For Construction

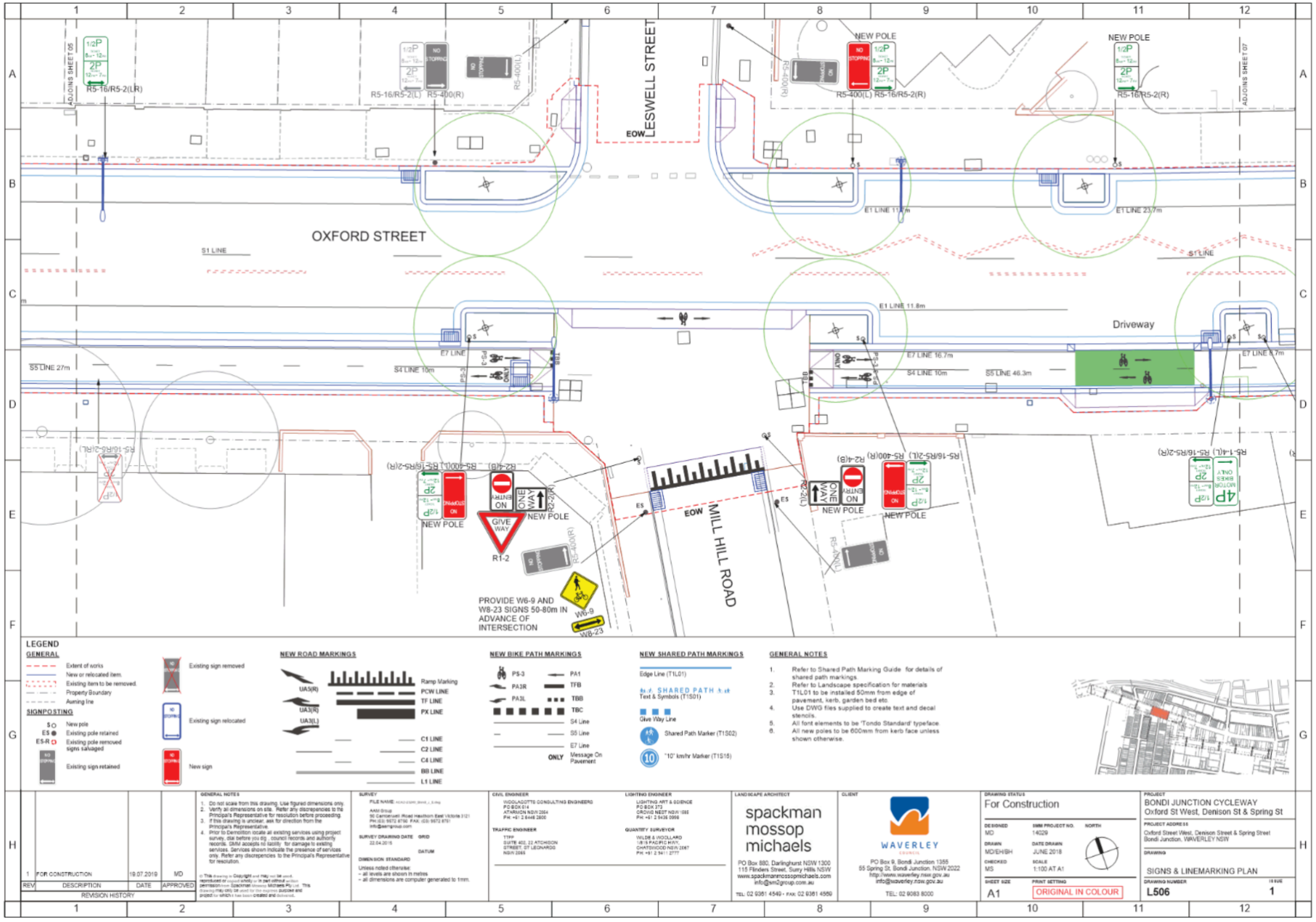
DESIGNED	MD
DRAWN	MD/EH/SH
CHECKED	MS
SHEET SIZE	A1
SMM PROJECT NO.	14029
DATE DRAWN	JUNE 2018
SCALE	1:100 AT A1
PRINT SETTING	ORIGINAL IN COLOUR

PROJECT: BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St

PROJECT ADDRESS: Oxford Street West, Denison Street & Spring Street Bondi Junction, WAVERLEY NSW

DRAWING: SIGNS & LINEMARKING PLAN

DRAWING NUMBER: L505 ISSUE: 1



LEGEND

GENERAL
- Extent of works
- New or relocated item
- Existing item to be removed
- Property Boundary
- Awning line

SIGNPOSTING
- New pole
- ES Existing pole retained
- ES-R Existing pole removed signs salvaged
- Existing sign retained
- Existing sign removed
- Existing sign relocated
- New sign

NEW ROAD MARKINGS
- UA3(R), UA3(R), UA3(L)
- Ramp Marking
- PCW LINE
- TF LINE
- PX LINE
- C1 LINE
- C2 LINE
- C4 LINE
- BB LINE
- L1 LINE

NEW BIKE PATH MARKINGS
- PS-3
- PA3R
- PA3L
- PA1
- TFB
- TBB
- TBC
- S4 Line
- S5 Line
- E7 Line
- ONLY Message On Pavement

NEW SHARED PATH MARKINGS
- Edge Line (T1L01)
- SHARED PATH Text & Symbols (T1S01)
- Give Way Line
- Shared Path Marker (T1S02)
- "10" km/hr Marker (T1S15)

GENERAL NOTES
1. Refer to Shared Path Marking Guide for details of shared path markings.
2. Refer to Landscape specification for materials
3. T1L01 to be installed 50mm from edge of pavement, kerb, garden bed etc.
4. Use DWG files supplied to create text and decal stencils.
5. All font elements to be 'Tondo Standard' typeface.
6. All new poles to be 600mm from kerb face unless shown otherwise.

REV	DESCRIPTION	DATE	APPROVED
1	FOR CONSTRUCTION	19.07.2019	MD

REVISION HISTORY

GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.

© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.

SURVEY
FILE NAME: ACAD-22240_Bondi_J_S.dwg
AAM Group
50 Carrolanelli Road Heathcon East Victoria 3121
PH: (03) 9572 8750 FAX: (03) 9572 8751
info@aamgroup.com
SURVEY DRAWING DATE: 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.

CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATHERTON NSW 2064
PH: +61 2 6448 2800

TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065

LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 373
CROWS NEST NSW 1585
PH: +61 2 9436 0996

QUANTITY SURVEYOR
WLDB & WOOLLARD
1/815 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777

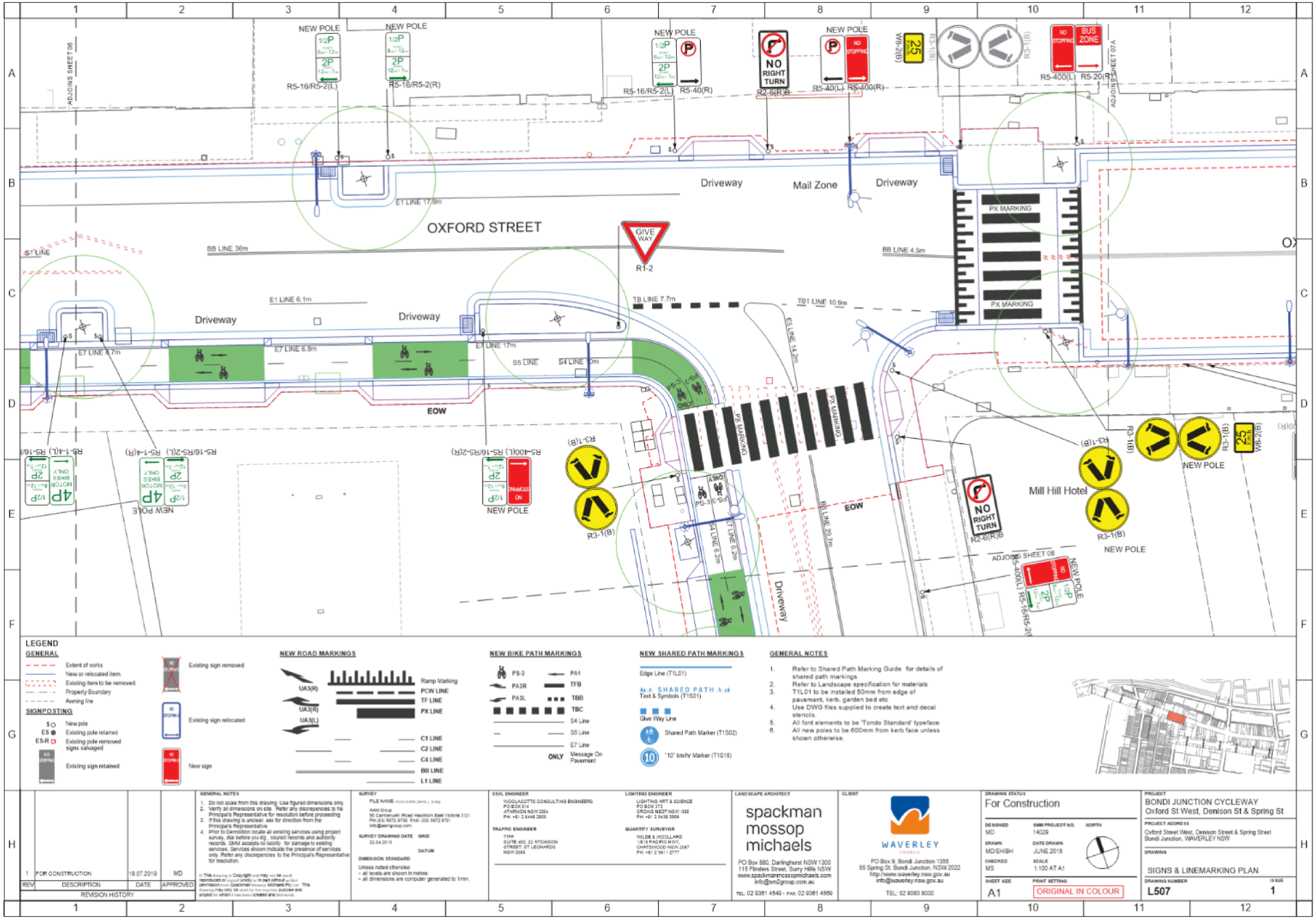
LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 - FAX: 02 9361 4559

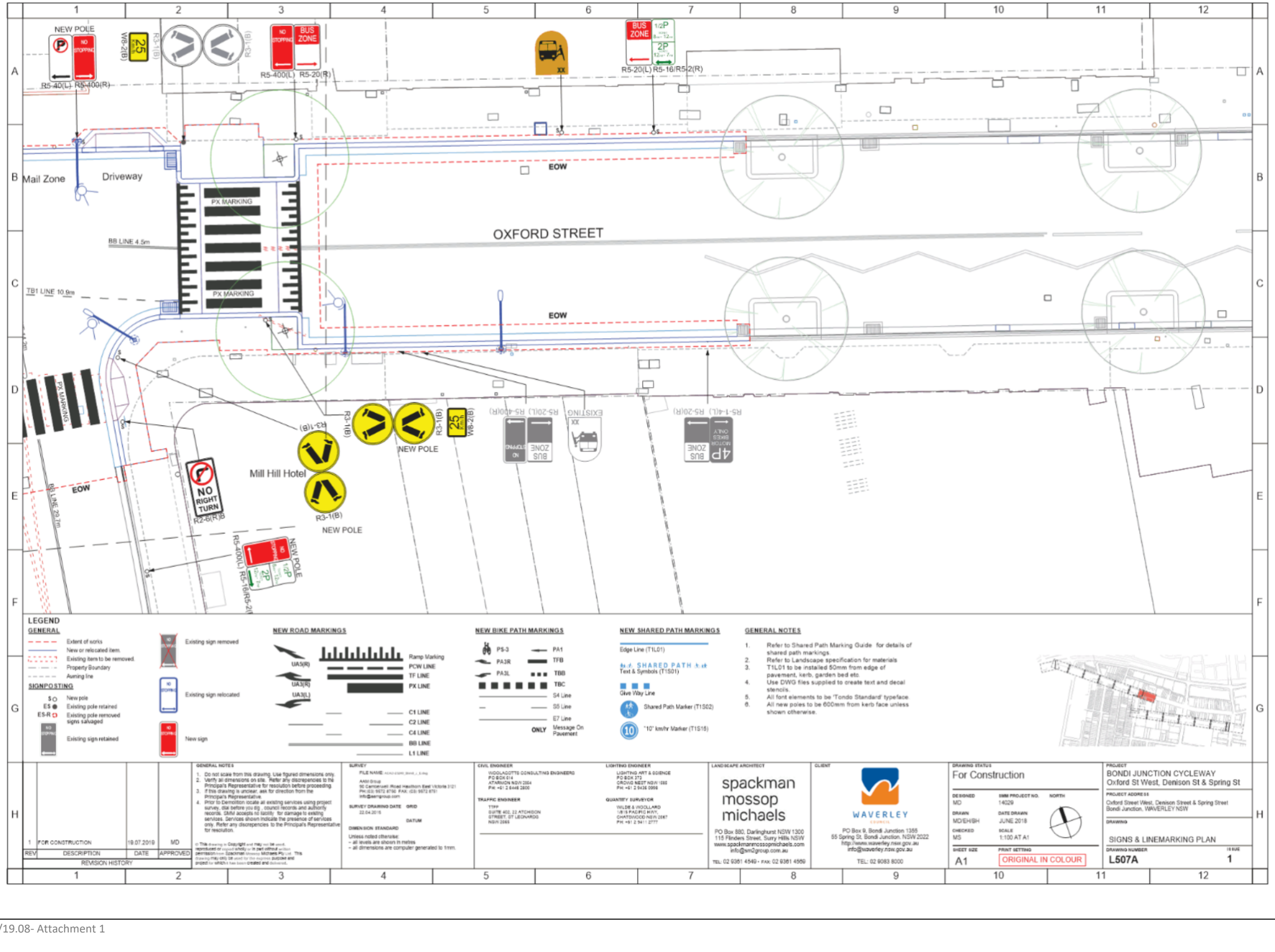
CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction, NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000

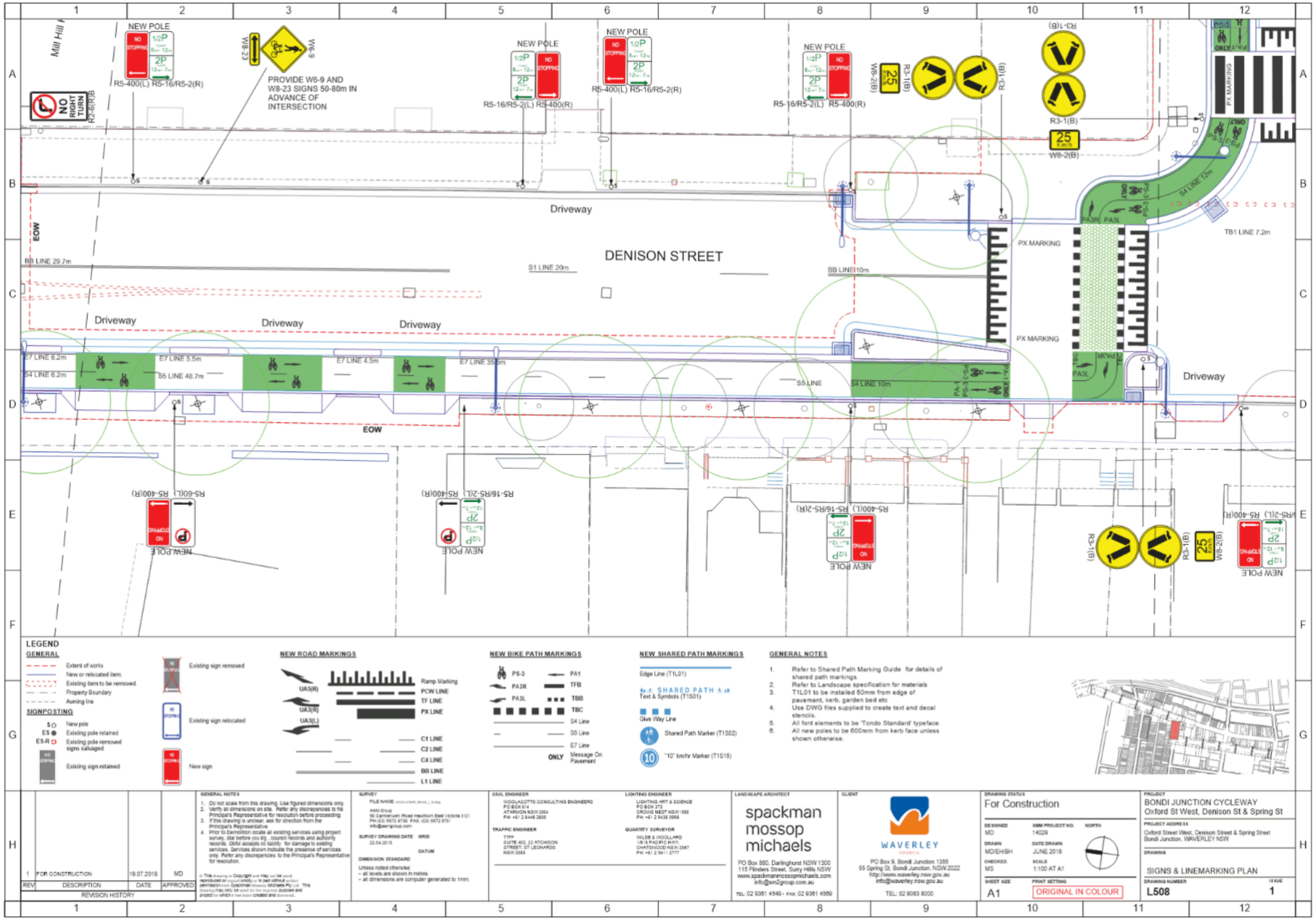
DRAWING STATUS: For Construction

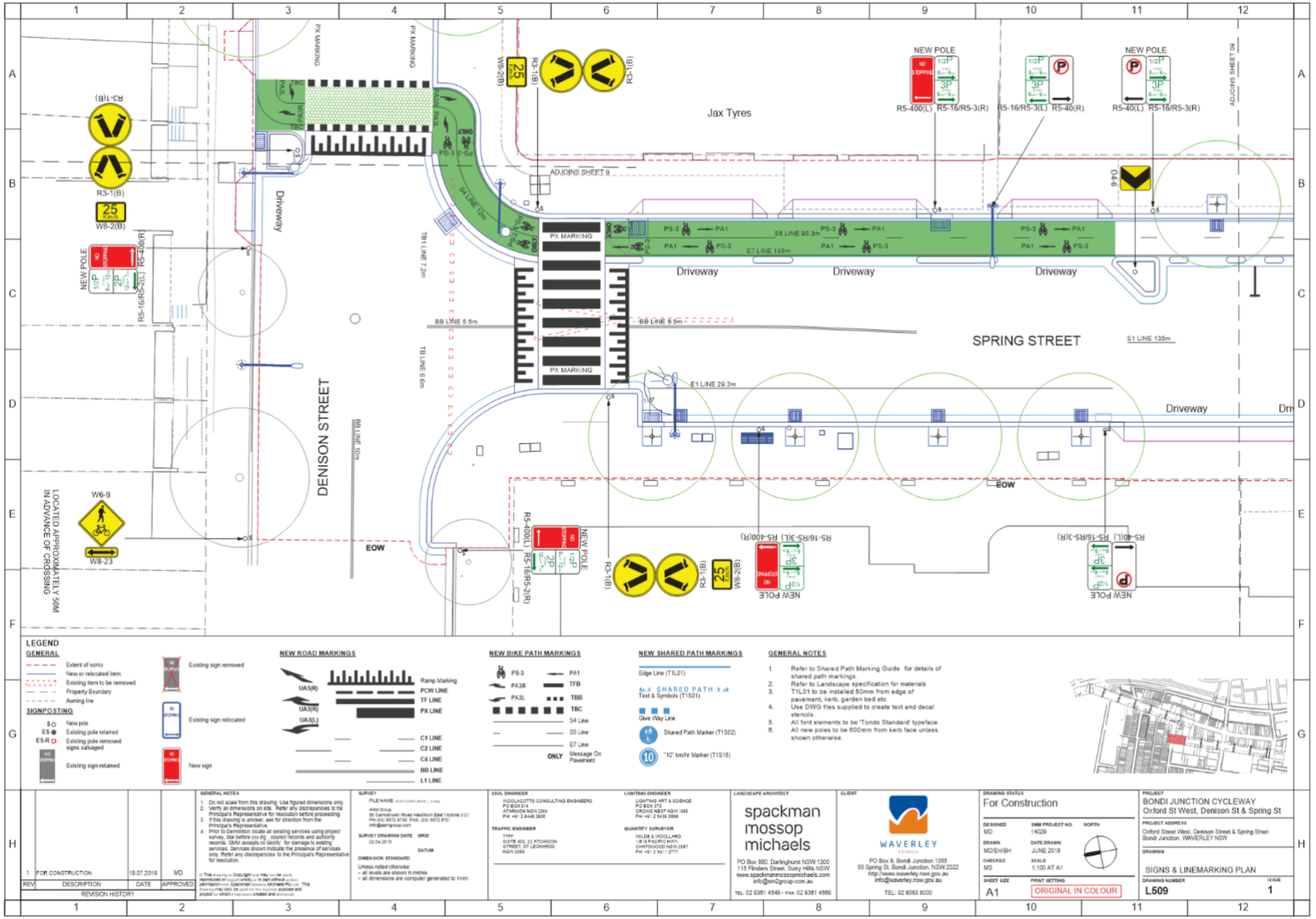
DESIGNED	MD
DRAWN	MD/EH/SH
CHECKED	MS
SHEET SIZE	A1
SMM PROJECT NO.	14029
DATE DRAWN	JUNE 2018
SCALE	1:100 AT A1
PRINT SETTING	ORIGINAL IN COLOUR

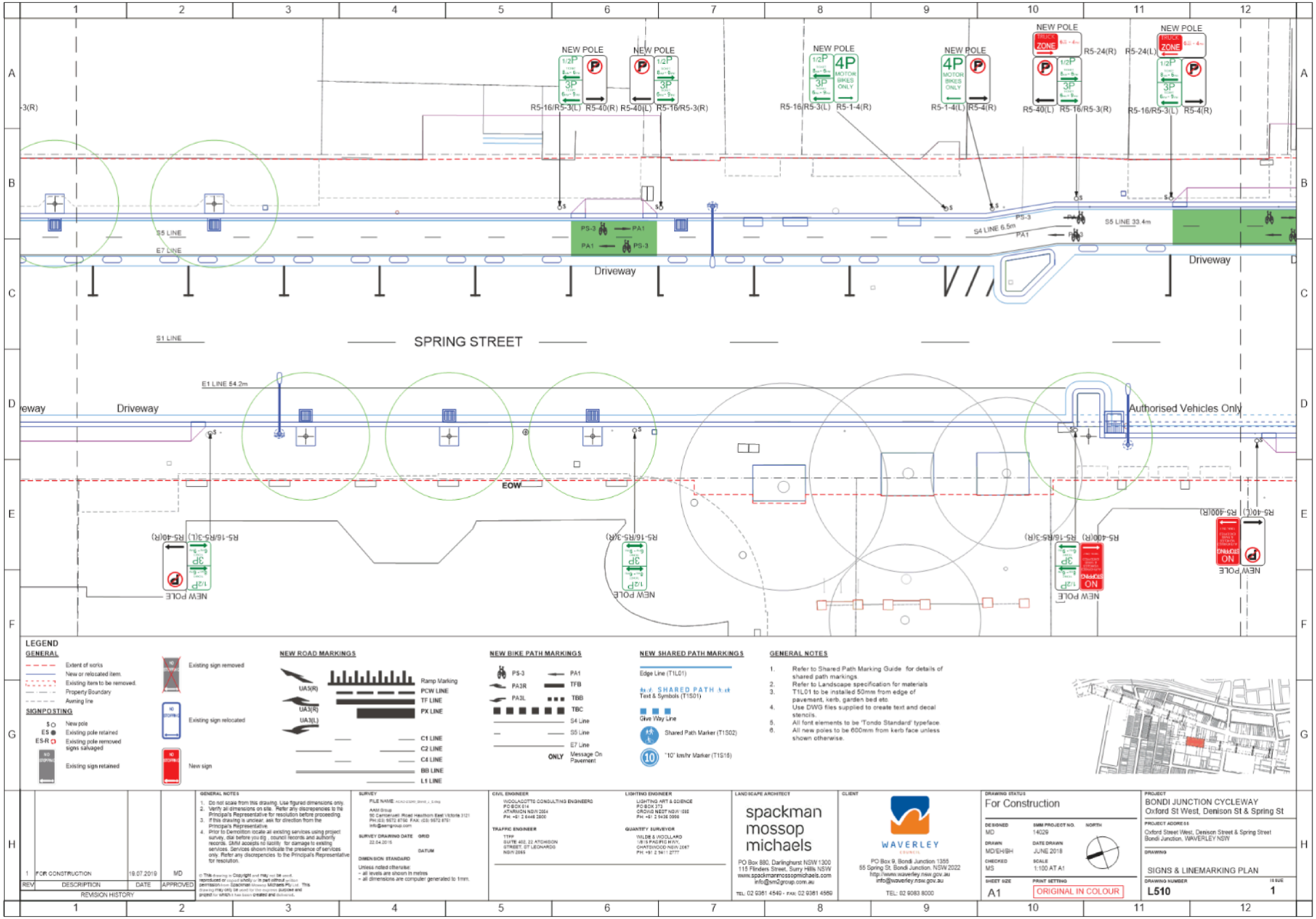
PROJECT: BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS: Oxford Street West, Denison Street & Spring Street Bondi Junction, WAVERLEY NSW
DRAWING: SIGNS & LINEMARKING PLAN
DRAWING NUMBER: L506
ISSUE: 1

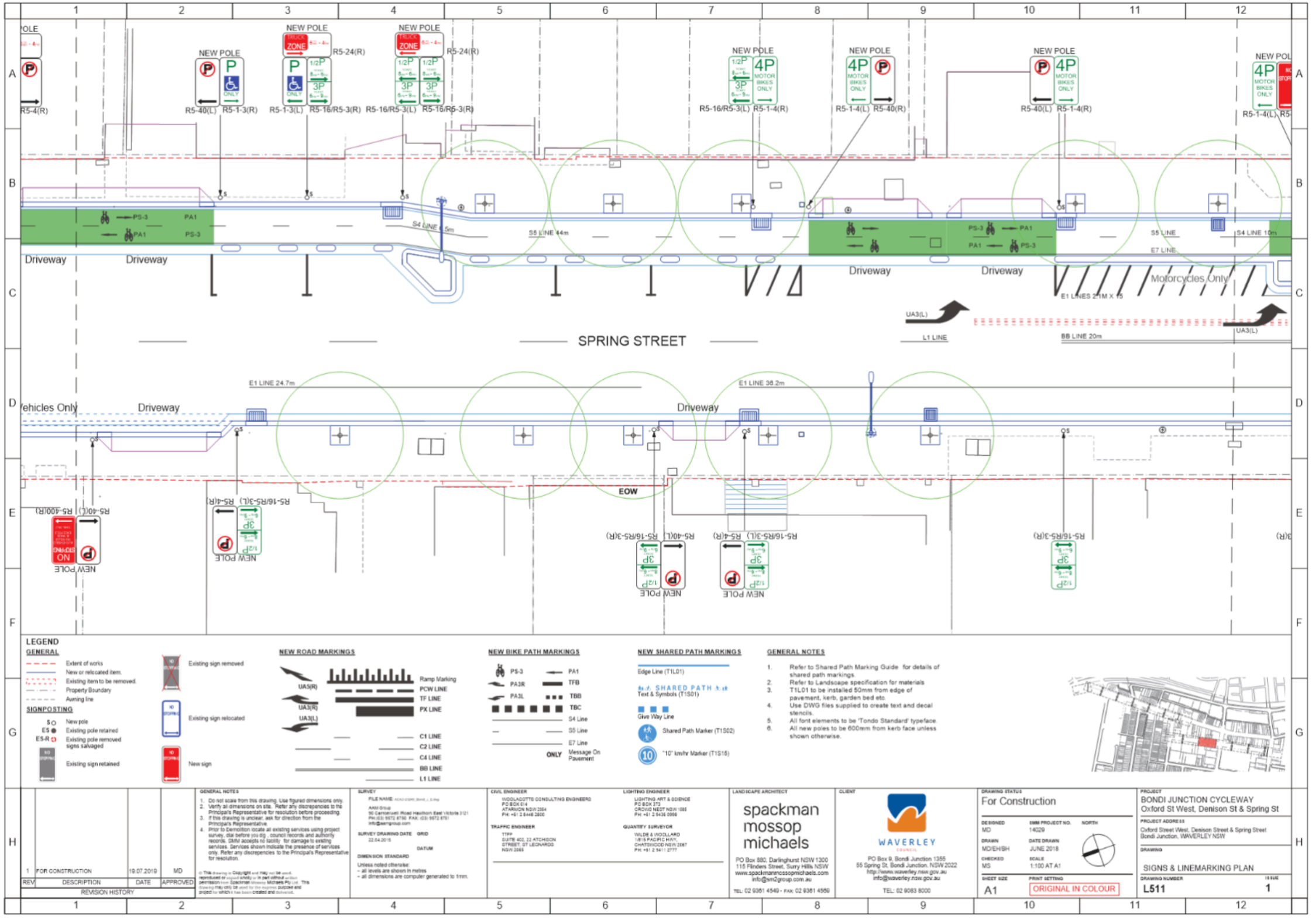

NEW POLE
R5-16/R5-2(L)
R5-16/R5-2(R)
R5-16/R5-2(L) R5-40(R)
NO RIGHT TURN
R2-6(R)B
R5-40(L) R5-400(R)
W8-2(B)
R3-1(B)
R5-400(L) R5-20(R)
BUS ZONE
ADJOINS SHEET 06
ADJOINS SHEET 07A
ADJOINS SHEET 08
Driveway
Mail Zone
OXFORD STREET
GIVE WAY
R1-2
PX MARKING
BB LINE 36m
BB LINE 4.5m
E1 LINE 17.8m
E1 LINE 6.1m
E7 LINE 8.7m
E7 LINE 6.8m
E7 LINE 17m
TB LINE 7.7m
TB1 LINE 10.9m
ES LINE 14.2m
S5 LINE
S4 LINE
EOW
Mill Hill Hotel
R3-1(B)
NEW POLE
LEGEND
GENERAL
Extent of works
New or relocated item
Existing item to be removed
Property Boundary
Awning line
SIGNPOSTING
New pole
Existing pole retained
Existing pole removed signs salvaged
Existing sign retained
Existing sign removed
Existing sign relocated
New sign
NEW ROAD MARKINGS
Ramp Marking
PCW LINE
TF LINE
PX LINE
C1 LINE
C2 LINE
C4 LINE
BB LINE
L1 LINE
NEW BIKE PATH MARKINGS
NEW SHARED PATH MARKINGS
Edge Line (T1L01)
SHARED PATH
Text & Symbols (T1S01)
Give Way Line
Shared Path Marker (T1S02)
"10" km/hr Marker (T1S16)
GENERAL NOTES
1. Refer to Shared Path Marking Guide for details of shared path markings
2. Refer to Landscape specification for materials
3. T1L01 to be installed 50mm from edge of pavement, kerb, garden bed etc.
4. Use DWG files supplied to create text and decal stencils.
5. All font elements to be 'Tondo Standard' typeface
6. All new poles to be 600mm from kerb face unless shown otherwise.
1 FOR CONSTRUCTION 19.07.2019 MD
REV DESCRIPTION DATE APPROVED
REVISION HISTORY
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
WAVERLEY
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction, NSW 2022
TEL: 02 9083 8000
For Construction
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
SIGNS & LINEMARKING PLAN
A1
ORIGINAL IN COLOUR
L507
1

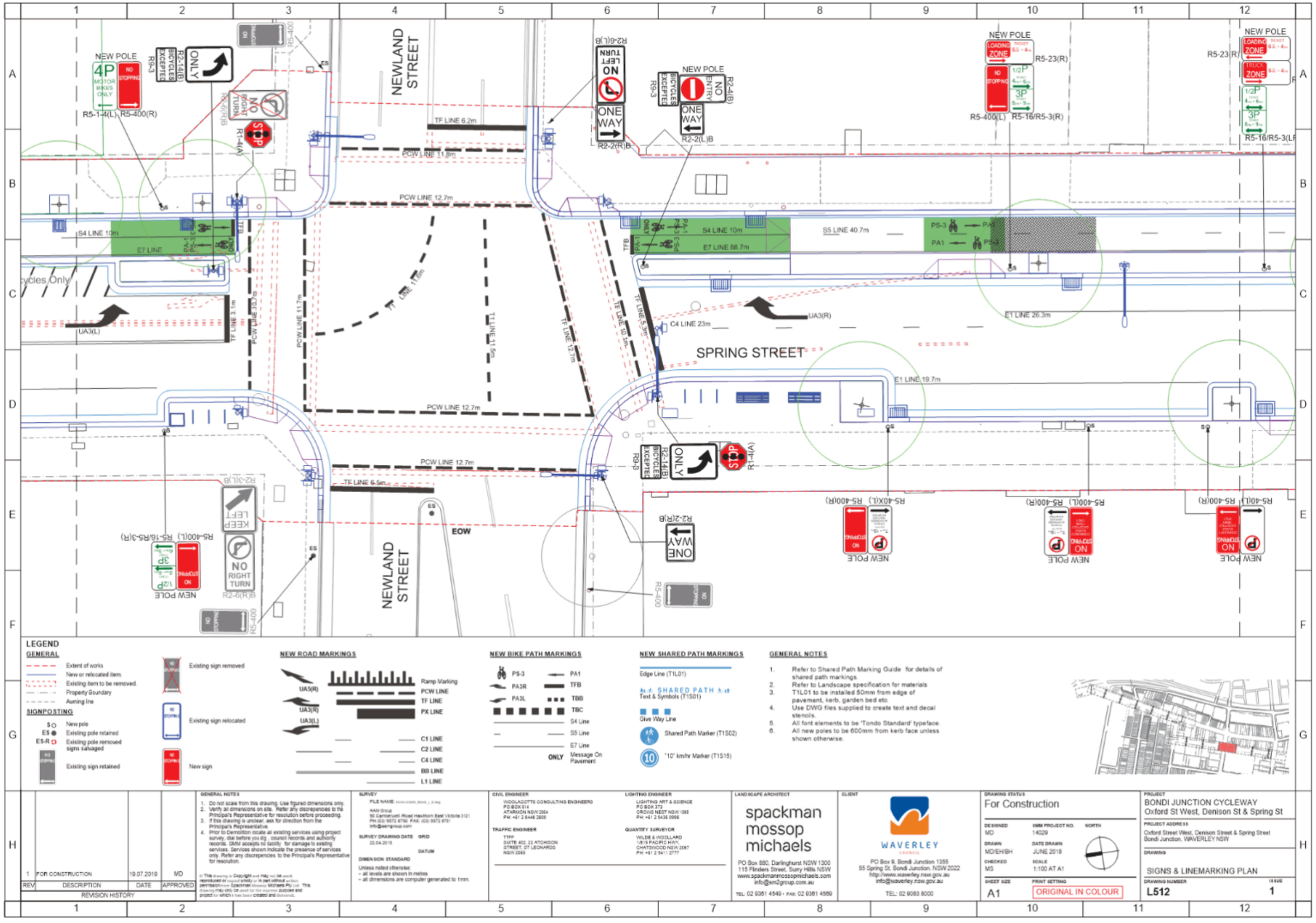

NEW POLE
R5-40(L) R5-400(R)
W8-2(B)
R3-1(B)
R5-400(L) R5-20(R)
R5-20(L) R5-16/R5-2(R)
Mail Zone
Driveway
PX MARKING
BB LINE 4.5m
TB1 LINE 10.9m
EOW
OXFORD STREET
PX MARKING
PX MARKING
BB LINE 29.7m
NO RIGHT TURN
R2-6(R)B
Mill Hill Hotel
R3-1(B)
NEW POLE
R5-400(L) R5-16/R5-2(R)
NEW POLE
EXISTING
R5-20(L) R5-400(R)
R5-1-4(L) R5-20(R)
LEGEND
GENERAL
Extent of works
New or relocated item
Existing item to be removed
Property Boundary
Awning line
SIGNPOSTING
New pole
Existing pole retained
Existing pole removed signs salvaged
Existing sign retained
Existing sign removed
Existing sign relocated
New sign
NEW ROAD MARKINGS
Ramp Marking
PCW LINE
TF LINE
PX LINE
C1 LINE
C2 LINE
C4 LINE
BB LINE
L1 LINE
NEW BIKE PATH MARKINGS
PS-3
PA3R
PA3L
TBC
PA1
TFB
TBB
S4 Line
S5 Line
E7 Line
ONLY Message On Pavement
NEW SHARED PATH MARKINGS
Edge Line (T1L01)
SHARED PATH
Text & Symbols (T1S01)
Give Way Line
Shared Path Marker (T1S02)
"10" km/hr Marker (T1S15)
GENERAL NOTES
1. Refer to Shared Path Marking Guide for details of shared path markings.
2. Refer to Landscape specification for materials
3. T1L01 to be installed 50mm from edge of pavement, kerb, garden bed etc.
4. Use DWG files supplied to create text and decal stencils.
5. All font elements to be 'Tondo Standard' typeface.
6. All new poles to be 600mm from kerb face unless shown otherwise.
REV 1 DESCRIPTION FOR CONSTRUCTION DATE 19.07.2019 APPROVED MD
REVISION HISTORY
GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.
© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from SPACKMAN Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.
SURVEY
FILE NAME:
AAM Group
90 Cambridge Road Hawthorn East Victoria 3123
Ph: (03) 9572 8790 FAX: (03) 9572 8791
info@aamgroup.com
SURVEY DRAWING DATE: 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.
CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATHERTON NSW 2004
PH: +61 2 6448 2800
TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065
LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 372
CROWS NEST NSW 1585
PH: +61 2 9436 0998
QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777
LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 - FAX: 02 9361 4559
CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction, NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000
DRAWING STATUS
For Construction
DESIGNED MD
SMM PROJECT NO. 14029
DRAWN MD/EH/BH
DATE DRAWN JUNE 2018
CHECKED MS
SCALE 1:100 AT A1
SHEET SIZE A1
PRINT SETTING ORIGINAL IN COLOUR
NORTH
PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW
DRAWING
SIGNS & LINEMARKING PLAN
DRAWING NUMBER L507A
ISSUE 1


NEW POLE
R5-400(L) R5-16/R5-2(R)
NO RIGHT TURN
R2-6(R)(B)
W8-23
W6-9
PROVIDE W6-9 AND W8-23 SIGNS 50-80m IN ADVANCE OF INTERSECTION
R5-16/R5-2(L) R5-400(R)
R5-400(L) R5-16/R5-2(R)
R3-1(B)
W8-2(B)
25
Driveway
DENISON STREET
EOW
BB LINE 29.7m
S1 LINE 20m
BB LINE 10m
PX MARKING
TB1 LINE 7.2m
S4 LINE 12m
E7 LINE 6.2m
S4 LINE 6.2m
E7 LINE 5.5m
S5 LINE 48.7m
E7 LINE 4.5m
E7 LINE 35.8m
S5 LINE
S4 LINE 10m
PA3R
PA3L
LEGEND
GENERAL
Extent of works
New or relocated item
Existing item to be removed
Property Boundary
Awning line
SIGNPOSTING
New pole
Existing pole retained
Existing pole removed signs salvaged
Existing sign retained
Existing sign removed
Existing sign relocated
New sign
NEW ROAD MARKINGS
Ramp Marking
PCW LINE
TF LINE
PX LINE
C1 LINE
C2 LINE
C4 LINE
BB LINE
L1 LINE
NEW BIKE PATH MARKINGS
PS-3
PA3R
PA3L
PA1
TFB
TBB
TBC
S4 Line
S5 Line
E7 Line
ONLY Message On Pavement
NEW SHARED PATH MARKINGS
Edge Line (T1L01)
SHARED PATH Text & Symbols (T1S01)
Give Way Line
Shared Path Marker (T1S02)
"10" km/hr Marker (T1S15)
GENERAL NOTES
1. Refer to Shared Path Marking Guide for details of shared path markings.
2. Refer to Landscape specification for materials
3. T1L01 to be installed 50mm from edge of pavement, kerb, garden bed etc.
4. Use DWG files supplied to create text and decal stencils.
5. All font elements to be 'Tondo Standard' typeface.
6. All new poles to be 600mm from kerb face unless shown otherwise.
REV DESCRIPTION DATE APPROVED
1 FOR CONSTRUCTION 19.07.2019 MD
REVISION HISTORY
GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepancies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepancies to the Principal's Representative for resolution.
SURVEY
FILE NAME:
AAM Group
SURVEY DRAWING DATE 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.
CIVIL ENGINEER
INGOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 8448 2800
TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065
LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 372
CROWS NEST NSW
PH: +61 2 9436 0998
QUANTITY SURVEYOR
WILDE & WOOLLARD
1/818 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777
LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@smm2group.com.au
TEL: 02 9361 4549 - FAX: 02 9361 4559
CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction, NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000
DRAWING STATUS
For Construction
DESIGNED MD
DRAWN MD/EH/SH
CHECKED MS
SMM PROJECT NO. 14029
DATE DRAWN JUNE 2018
SCALE 1:100 AT A1
NORTH
SHEET SIZE A1
PRINT SETTING ORIGINAL IN COLOUR
PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW
DRAWING
SIGNS & LINEMARKING PLAN
DRAWING NUMBER L508
ISSUE 1


Jax Tyres
SPRING STREET
DENISON STREET
Driveway
PX MARKING
NEW POLE
R5-400(L) R5-16/R5-3(R)
R5-16/R5-3(L) R5-40(R)
R5-40(L) R5-16/R5-3(R)
ADJOINS SHEET 9
ADJOINS SHEET 09
S4 LINE 12m
S5 LINE 90.3m
E7 LINE 195m
S1 LINE 135m
E1 LINE 29.3m
TB1 LINE 7.2m
TB LINE 6.6m
BB LINE 5.5m
BB LINE 10m
EOW
W6-9
W8-23
LOCATED APPROXIMATELY 50M IN ADVANCE OF CROSSING
R3-1(B)
W8-2(B)
R5-400(R)
R5-16/R5-2(L)
R5-400(L)
R5-16/R5-2(R)
R5-16/R5-3(L) R5-400(R)
D4-6
LEGEND
GENERAL
Extent of works
New or relocated item
Existing item to be removed
Property Boundary
Awning line
SIGNPOSTING
New pole
Existing pole retained
Existing pole removed signs salvaged
Existing sign retained
Existing sign removed
Existing sign relocated
New sign
NEW ROAD MARKINGS
Ramp Marking
PCW LINE
TF LINE
PX LINE
C1 LINE
C2 LINE
C4 LINE
BB LINE
L1 LINE
NEW BIKE PATH MARKINGS
PS-3
PA1
PA3R
TFB
PA3L
TBB
TBC
S4 Line
S5 Line
E7 Line
ONLY Message On Pavement
NEW SHARED PATH MARKINGS
Edge Line (T1L01)
SHARED PATH Text & Symbols (T1S01)
Give Way Line
Shared Path Marker (T1S02)
"10" km/hr Marker (T1S15)
GENERAL NOTES
1. Refer to Shared Path Marking Guide for details of shared path markings.
2. Refer to Landscape specification for materials
3. T1L01 to be installed 50mm from edge of pavement, kerb, garden bed etc.
4. Use DWG files supplied to create text and decal stencils.
5. All font elements to be 'Tondo Standard' typeface.
6. All new poles to be 600mm from kerb face unless shown otherwise.
REVISION HISTORY
REV 1 DESCRIPTION FOR CONSTRUCTION DATE 19.07.2019 APPROVED MD
GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.
SURVEY
CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 9448 2800
TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065
LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 372
CROWS NEST NSW 1585
PH: +61 2 9436 0998
QUANTITY SURVEYOR
WILDE & WOOLLARD
1/813 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777
LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 · FAX: 02 9361 4559
CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction, NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000
DRAWING STATUS
For Construction
DESIGNED MD
DRAWN MD/EH/BH
CHECKED MS
SHEET SIZE A1
SMM PROJECT NO. 14029
DATE DRAWN JUNE 2018
SCALE 1:100 AT A1
PRINT SETTING ORIGINAL IN COLOUR
NORTH
PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW
DRAWING
SIGNS & LINEMARKING PLAN
DRAWING NUMBER L509
ISSUE 1


SPRING STREET
NEW POLE
Driveway
Authorised Vehicles Only
EOW
S1 LINE
S5 LINE
E7 LINE
E1 LINE 54.2m
S4 LINE 6.5m
S5 LINE 33.4m
R5-16/R5-3(L)
R5-40(R)
R5-40(L)
R5-16/R5-3(R)
R5-1-4(R)
R5-1-4(L)
R5-4(R)
R5-24(R)
R5-24(L)
LEGEND
GENERAL
SIGNPOSTING
NEW ROAD MARKINGS
NEW BIKE PATH MARKINGS
NEW SHARED PATH MARKINGS
GENERAL NOTES
1. Refer to Shared Path Marking Guide for details of shared path markings
2. Refer to Landscape specification for materials
3. T1L01 to be installed 50mm from edge of pavement, kerb, garden bed etc.
4. Use DWG files supplied to create text and decal stencils.
5. All font elements to be 'Tondo Standard' typeface
6. All new poles to be 600mm from kerb face unless shown otherwise.
1 FOR CONSTRUCTION 19.07.2019 MD
REV DESCRIPTION DATE APPROVED
REVISION HISTORY
spackman mossop michaels
WAVERLEY
For Construction
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
Oxford Street West, Denison Street & Spring Street Bondi Junction, WAVERLEY NSW
SIGNS & LINEMARKING PLAN
A1
ORIGINAL IN COLOUR
L510
1


SPRING STREET
Driveway
Motorcycles Only
Vehicles Only
EOW
NEW POLE
R5-1-4(R)
R5-40(L) R5-1-3(R)
R5-1-3(L) R5-16/R5-3(R)
R5-16/R5-3(L) R5-16/R5-3(R)
R5-24(R)
R5-16/R5-3(L) R5-1-4(R)
R5-1-4(L) R5-40(R)
R5-40(L) R5-1-4(R)
R5-1-4(L)
S4 LINE 6.5m
S5 LINE 44m
S5 LINE
S4 LINE 10m
E7 LINE
E1 LINES 2.1M X 15
UA3(L)
L1 LINE
BB LINE 20m
E1 LINE 24.7m
E1 LINE 38.2m
LEGEND
GENERAL
Extent of works
New or relocated item
Existing item to be removed
Property Boundary
Awning line
SIGNPOSTING
New pole
Existing pole retained
Existing pole removed signs salvaged
Existing sign retained
Existing sign removed
Existing sign relocated
New sign
NEW ROAD MARKINGS
Ramp Marking
PCW LINE
TF LINE
PX LINE
C1 LINE
C2 LINE
C4 LINE
BB LINE
L1 LINE
NEW BIKE PATH MARKINGS
PS-3
PA1
PA3R
TFB
PA3L
TBB
TBC
S4 Line
S5 Line
E7 Line
ONLY Message On Pavement
NEW SHARED PATH MARKINGS
Edge Line (T1L01)
SHARED PATH Text & Symbols (T1S01)
Give Way Line
Shared Path Marker (T1S02)
"10" km/hr Marker (T1S15)
GENERAL NOTES
1. Refer to Shared Path Marking Guide for details of shared path markings.
2. Refer to Landscape specification for materials
3. T1L01 to be installed 50mm from edge of pavement, kerb, garden bed etc.
4. Use DWG files supplied to create text and decal stencils.
5. All font elements to be 'Tondo Standard' typeface.
6. All new poles to be 600mm from kerb face unless shown otherwise.
REVISION HISTORY
1 FOR CONSTRUCTION 19.07.2019 MD
REV DESCRIPTION DATE APPROVED
GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.
SURVEY
FILE NAME:
SURVEY DRAWING DATE 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.
CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 9448 2800
TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065
LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 372
CROWD NEST NSW 1585
PH: +61 2 9436 0998
QUANTITY SURVEYOR
WLDE & WOOLLARD
1/818 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777
LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 - FAX: 02 9361 4559
CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction, NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000
DRAWING STATUS
For Construction
DESIGNED MD
SMM PROJECT NO. 14029
DRAWN MD/EH/BH
DATE DRAWN JUNE 2018
CHECKED MS
SCALE 1:100 AT A1
SHEET SIZE A1
PRINT SETTING ORIGINAL IN COLOUR
NORTH
PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW
DRAWING
SIGNS & LINEMARKING PLAN
DRAWING NUMBER L511
ISSUE 1



LEGEND

GENERAL
- Extent of works
- New or relocated item
- Existing item to be removed
- Property Boundary
- Awning line

SIGNPOSTING
- New pole
- Existing pole retained
- Existing pole removed signs salvaged
- Existing sign retained
- Existing sign removed
- Existing sign relocated
- New sign

NEW ROAD MARKINGS
- Ramp Marking
- PCW LINE
- TF LINE
- PX LINE
- C1 LINE
- C2 LINE
- C4 LINE
- BB LINE
- L1 LINE

NEW BIKE PATH MARKINGS
- PS-3
- PA3R
- PA3L
- PA1
- TFB
- TBB
- TBC
- S4 Line
- S5 Line
- E7 Line
- ONLY Message On Pavement

NEW SHARED PATH MARKINGS
- Edge Line (T1L01)
- SHARED PATH Text & Symbols (T1S01)
- Give Way Line
- Shared Path Marker (T1S02)
- "10" km/hr Marker (T1S15)

GENERAL NOTES
1. Refer to Shared Path Marking Guide for details of shared path markings.
2. Refer to Landscape specification for materials
3. T1L01 to be installed 50mm from edge of pavement, kerb, garden bed etc.
4. Use DWG files supplied to create text and decal stencils.
5. All font elements to be 'Tondo Standard' typeface.
6. All new poles to be 600mm from kerb face unless shown otherwise.

REV	DESCRIPTION	DATE	APPROVED
1	FOR CONSTRUCTION	19.07.2019	MD

REVISION HISTORY

GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.

© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from SJMOTION Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.

SURVEY
FILE NAME:
AAM Group
80 Camberwell Road Hawthorn East Victoria 3121
PH: (03) 9572 8790 FAX: (03) 9572 8791
info@aamgroup.com
SURVEY DRAWING DATE: 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.

CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATHERTON NSW 2004
PH: +61 2 6448 2800

TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065

LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 272
CROWS NEST NSW 1585
PH: +61 2 9436 0998

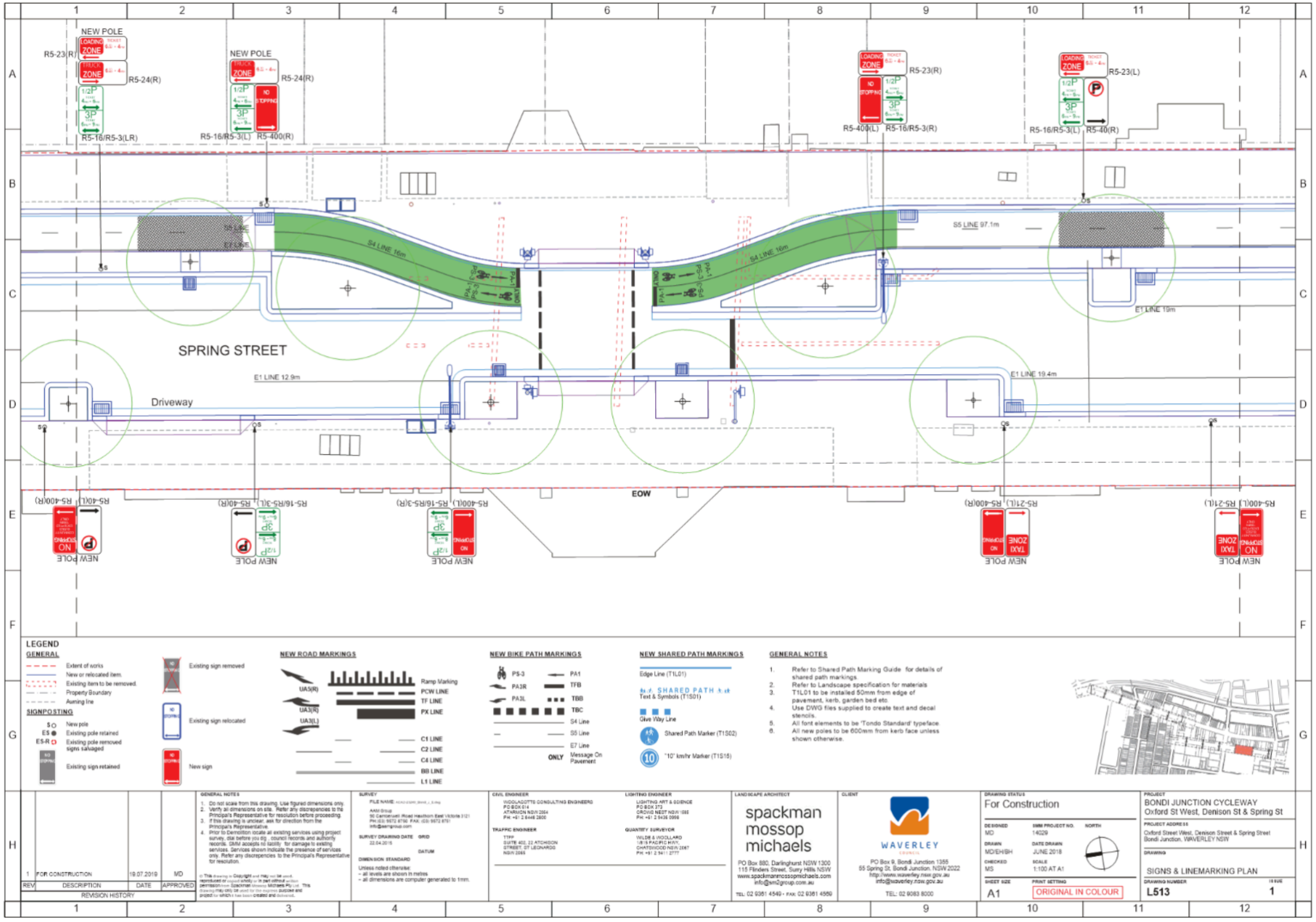
QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777

LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 - FAX: 02 9361 4559

CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction, NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000

DRAWING STATUS: For Construction
DESIGNED: MD
SMM PROJECT NO.: 14029
DRAWN: MD/EH/BH
DATE DRAWN: JUNE 2018
CHECKED: MS
SCALE: 1:100 AT A1
NORTH
SHEET SIZE: A1
PRINT SETTING: ORIGINAL IN COLOUR

PROJECT: BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS: Oxford Street West, Denison Street & Spring Street Bondi Junction, WAVERLEY NSW
DRAWING: SIGNS & LINEMARKING PLAN
DRAWING NUMBER: L512
ISSUE: 1



LEGEND

GENERAL

- Extent of works
- New or relocated item
- Existing item to be removed
- Property Boundary
- Awning line

SIGNPOSTING

- New pole
- Existing pole retained
- Existing pole removed signs salvaged
- Existing sign retained
- Existing sign removed
- Existing sign relocated
- New sign

NEW ROAD MARKINGS

UA5(R), UA3(R), UA3(L)

- Ramp Marking
- PCW LINE
- TF LINE
- PX LINE
- C1 LINE
- C2 LINE
- C4 LINE
- BB LINE
- L1 LINE

NEW BIKE PATH MARKINGS

PS-3, PA3R, PA3L, PA1, TFB, TBB, TBC, S4 Line, S5 Line, E7 Line, ONLY Message On Pavement

NEW SHARED PATH MARKINGS

Edge Line (T1L01)

SHARED PATH Text & Symbols (T1S01)

Give Way Line

Shared Path Marker (T1S02)

"10" km/hr Marker (T1S15)

GENERAL NOTES

1. Refer to Shared Path Marking Guide for details of shared path markings.
2. Refer to Landscape specification for materials
3. T1L01 to be installed 50mm from edge of pavement, kerb, garden bed etc.
4. Use DWG files supplied to create text and decal stencils.
5. All font elements to be 'Tondo Standard' typeface.
6. All new poles to be 600mm from kerb face unless shown otherwise.

REV	DESCRIPTION	DATE	APPROVED
1	FOR CONSTRUCTION	19.07.2019	MD

REVISION HISTORY

GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.

© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.

SURVEY
FILE NAME: ROAD CORR_Base_v_Entry
AAM Group
80 Camberwell Road Hawthorn East Victoria 3121
Ph: (03) 9572 8700 FAX: (03) 9572 8701
info@aamgroup.com
SURVEY DRAWING DATE: 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.

CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATHERTON NSW 2004
PH: +61 2 6448 2800

TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065

LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 372
CROWS NEST NSW 1585
PH: +61 2 9436 0998

QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777

LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 - FAX: 02 9361 4559

CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction, NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000

DRAWING STATUS: For Construction

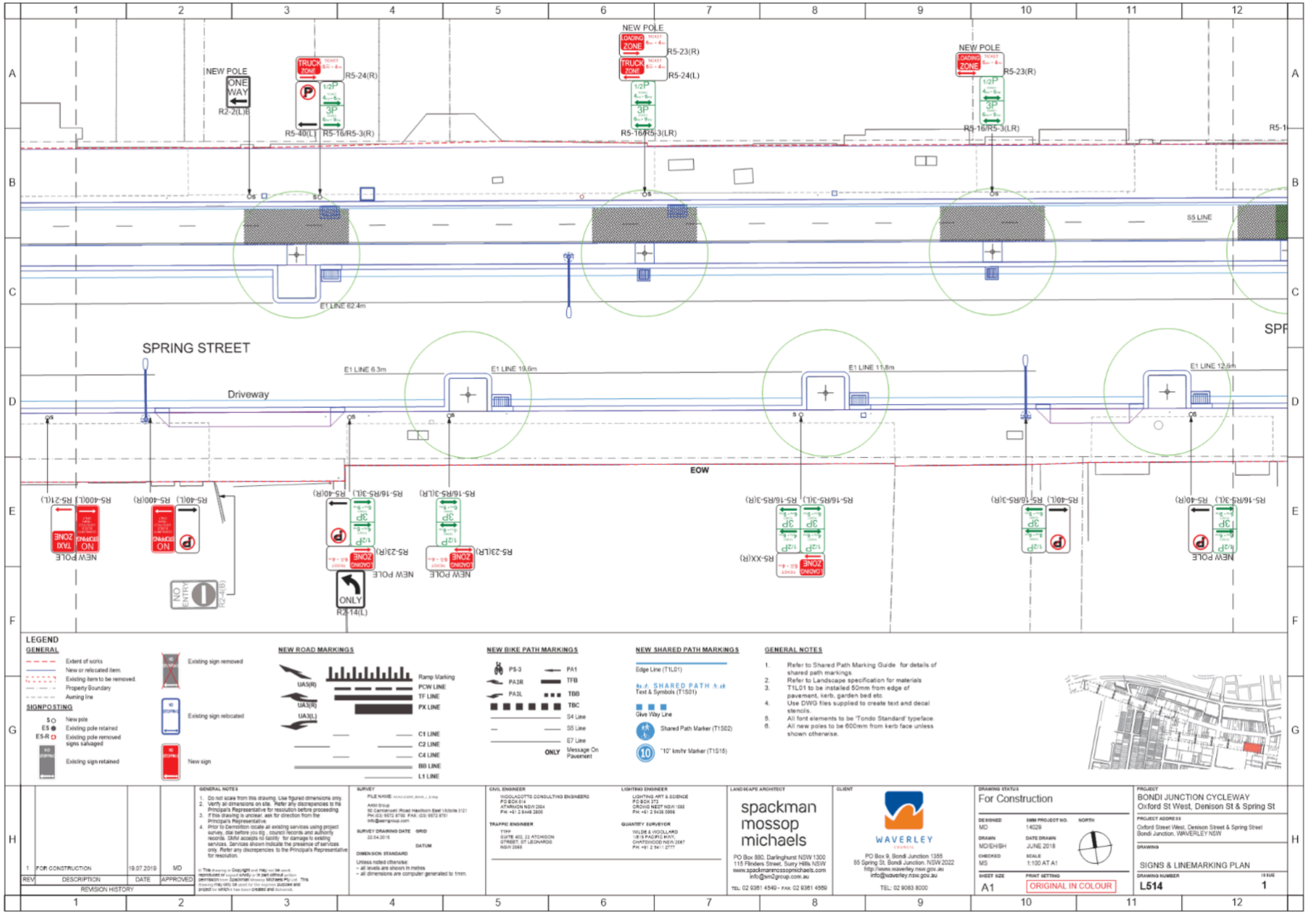
DESIGNED	SMM PROJECT NO.	NORTH
MD	14029	
DRAWN	DATE DRAWN	
MD/EH/BH	JUNE 2018	
CHECKED	SCALE	
MS	1:100 AT A1	
SHEET SIZE	PRINT SETTING	
A1	ORIGINAL IN COLOUR	

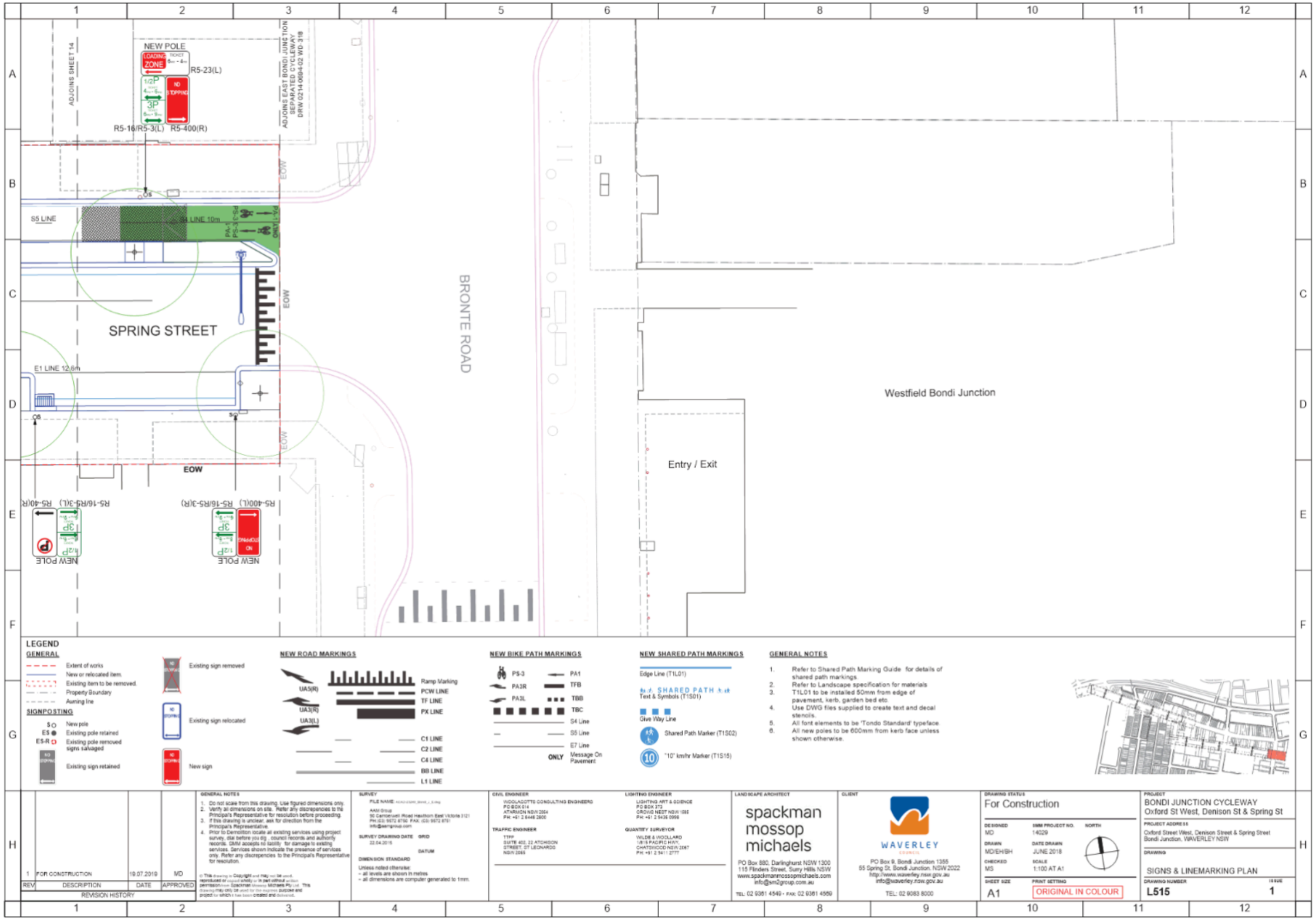
PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St

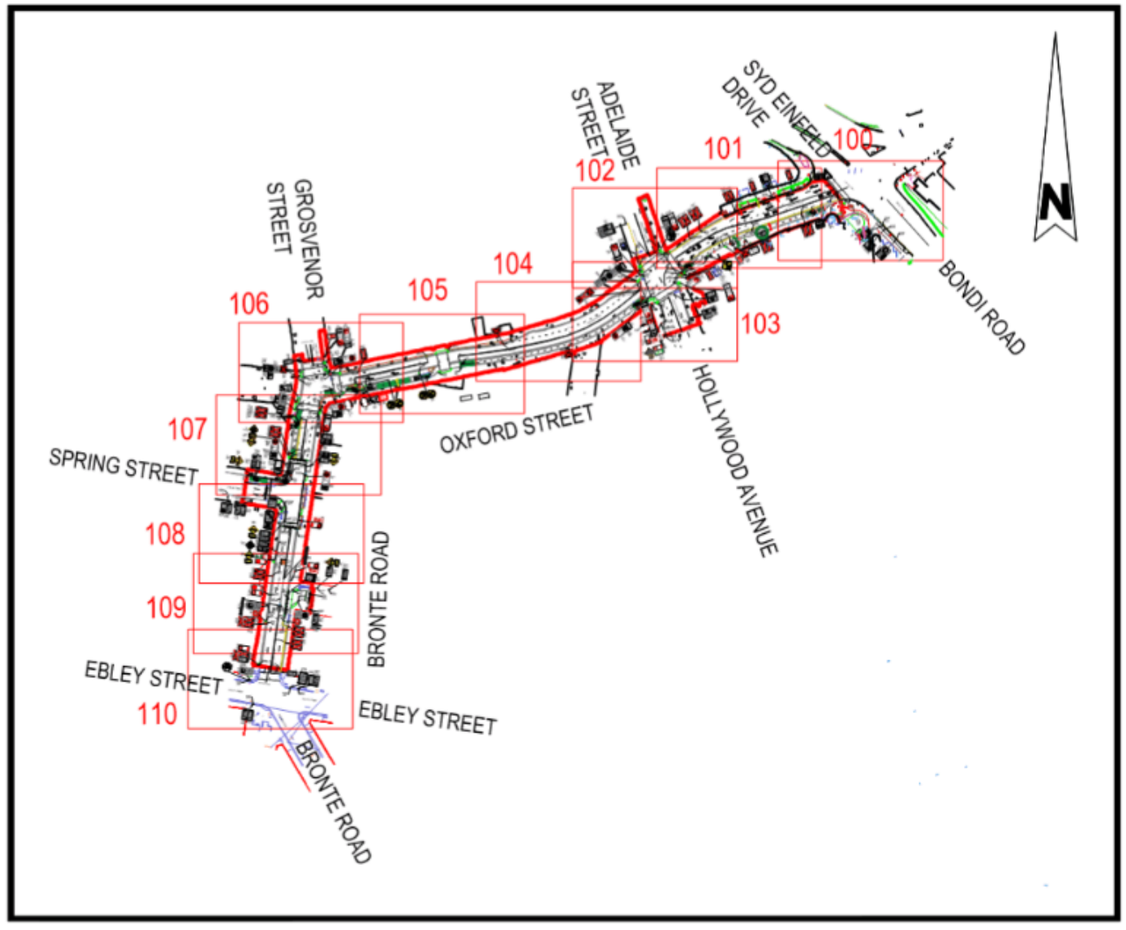
PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW

DRAWING
SIGNS & LINEMARKING PLAN

DRAWING NUMBER: L513
ISSUE: 1


NEW POLE
ONE WAY
R2-2(L)B
TRUCK ZONE
R5-24(R)
R5-40(L)
R5-16/R5-3(R)
NEW POLE
LOADING ZONE
R5-23(R)
TRUCK ZONE
R5-24(L)
R5-16/R5-3(LR)
NEW POLE
LOADING ZONE
R5-23(R)
R5-16/R5-3(LR)
S5 LINE
E1 LINE 62.4m
SPRING STREET
Driveway
E1 LINE 6.3m
E1 LINE 19.6m
E1 LINE 11.8m
E1 LINE 12.6m
EOW
NO ENTRY
R2-4(B)
ONLY
R2-14(L)
LEGEND
GENERAL
Extent of works
New or relocated item
Existing item to be removed
Property Boundary
Awning line
SIGNPOSTING
New pole
Existing pole retained
Existing pole removed signs salvaged
Existing sign retained
Existing sign removed
Existing sign relocated
New sign
NEW ROAD MARKINGS
Ramp Marking
PCW LINE
TF LINE
PX LINE
C1 LINE
C2 LINE
C4 LINE
BB LINE
L1 LINE
NEW BIKE PATH MARKINGS
PS-3
PA3R
PA3L
PA1
TFB
TBB
TBC
S4 Line
S5 Line
E7 Line
ONLY Message On Pavement
NEW SHARED PATH MARKINGS
Edge Line (T1L01)
SHARED PATH Text & Symbols (T1S01)
Give Way Line
Shared Path Marker (T1S02)
"10" km/hr Marker (T1S15)
GENERAL NOTES
1. Refer to Shared Path Marking Guide for details of shared path markings.
2. Refer to Landscape specification for materials
3. T1L01 to be installed 50mm from edge of pavement, kerb, garden bed etc.
4. Use DWG files supplied to create text and decal stencils.
5. All font elements to be 'Tondo Standard' typeface.
6. All new poles to be 600mm from kerb face unless shown otherwise.
REV 1 DESCRIPTION FOR CONSTRUCTION DATE 19.07.2019 APPROVED MD
REVISION HISTORY
GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepancies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.
SURVEY
SURVEY DRAWING DATE 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.
CIVIL ENGINEER
INGOLACOTTO CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 8448 2800
TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065
LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 372
CROWS NEST NSW 1585
PH: +61 2 9436 0998
QUANTITY SURVEYOR
WILDE & WOOLLARD
1/819 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777
LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@smm2group.com.au
TEL: 02 9361 4549 - FAX: 02 9361 4569
CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction, NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000
DRAWING STATUS
For Construction
DESIGNED MD
SMM PROJECT NO. 14029
NORTH
DRAWN MD/EH/BH
DATE DRAWN JUNE 2018
CHECKED MS
SCALE 1:100 AT A1
SHEET SIZE A1
PRINT SETTING ORIGINAL IN COLOUR
PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW
DRAWING
SIGNS & LINEMARKING PLAN
DRAWING NUMBER L514
ISSUE 1


NEW POLE
R5-23(L)
R5-16/R5-3(L) R5-400(R)
ADJOINS SHEET 14
ADJOINS EAST BONDI JUNCTION SEPARATED CYCLEWAY DRW 0214-069-02 WD-318
EOW
S5 LINE
S4 LINE 10m
SPRING STREET
E1 LINE 12.6m
BRONTE ROAD
Westfield Bondi Junction
Entry / Exit
LEGEND
GENERAL
Extent of works
New or relocated item
Existing item to be removed
Property Boundary
Awning line
SIGNPOSTING
New pole
Existing pole retained
Existing pole removed signs salvaged
Existing sign retained
Existing sign removed
Existing sign relocated
New sign
NEW ROAD MARKINGS
Ramp Marking
PCW LINE
TF LINE
PX LINE
C1 LINE
C2 LINE
C4 LINE
BB LINE
L1 LINE
NEW BIKE PATH MARKINGS
PS-3
PA3R
PA3L
PA1
TFB
TBB
TBC
S4 Line
S5 Line
E7 Line
ONLY Message On Pavement
NEW SHARED PATH MARKINGS
Edge Line (T1L01)
SHARED PATH
Text & Symbols (T1S01)
Give Way Line
Shared Path Marker (T1S02)
"10" km/hr Marker (T1S15)
GENERAL NOTES
1. Refer to Shared Path Marking Guide for details of shared path markings.
2. Refer to Landscape specification for materials
3. T1L01 to be installed 50mm from edge of pavement, kerb, garden bed etc.
4. Use DWG files supplied to create text and decal stencils.
5. All font elements to be 'Tondo Standard' typeface
6. All new poles to be 600mm from kerb face unless shown otherwise.
REV 1 DESCRIPTION FOR CONSTRUCTION DATE 19.07.2019 APPROVED MD
REVISION HISTORY
GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.
SURVEY
FILE NAME:
AAM Group
90 Camberwell Road Hawthorn East Victoria 3123
Ph: (03) 9572 8700 FAX: (03) 9572 8701
info@aamgroup.com
SURVEY DRAWING DATE 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.
CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 9449 2800
TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065
LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 373
CROWS NEST NSW 1585
PH: +61 2 9436 0999
QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777
LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 - FAX: 02 9361 4559
CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction, NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000
DRAWING STATUS
For Construction
DESIGNED MD
SMM PROJECT NO. 14029
NORTH
DRAWN MD/EH/BH
DATE DRAWN JUNE 2018
CHECKED MS
SCALE 1:100 AT A1
SHEET SIZE A1
PRINT SETTING ORIGINAL IN COLOUR
PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW
DRAWING
SIGNS & LINEMARKING PLAN
DRAWING NUMBER L515
ISSUE 1



LOCALITY PLAN

(Not to scale)

UBD Reference: Map 298 J8

East Bondi Junction Streetscape

JOB NUMBER: P2996

SHEET LIST TABLE

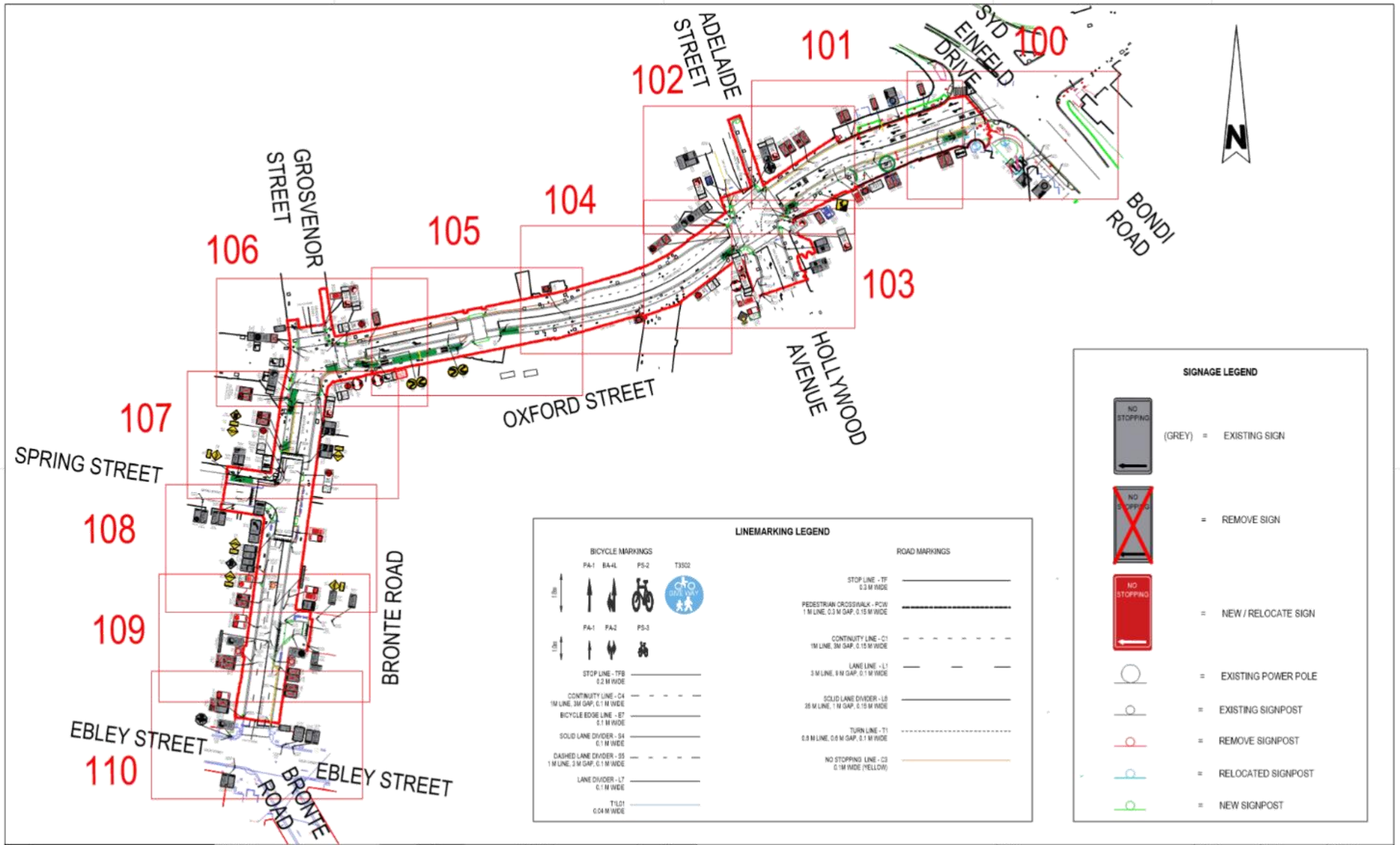
PROJECT No.	SHEET No.	DRAWING REVISION	SHEET TITLE
P2996	1	003	PROJECT COVER SHEET
P2996	2	003	PROJECT LAYOUT
P2996	100	003	SIGNAGE AND LINEMARKING
P2996	101	003	SIGNAGE AND LINEMARKING
P2996	102	003	SIGNAGE AND LINEMARKING
P2996	103	003	SIGNAGE AND LINEMARKING
P2996	104	003	SIGNAGE AND LINEMARKING
P2996	105	003	SIGNAGE AND LINEMARKING
P2996	106	003	SIGNAGE AND LINEMARKING
P2996	107	003	SIGNAGE AND LINEMARKING
P2996	108	003	SIGNAGE AND LINEMARKING
P2996	109	003	SIGNAGE AND LINEMARKING
P2996	110	003	SIGNAGE AND LINEMARKING

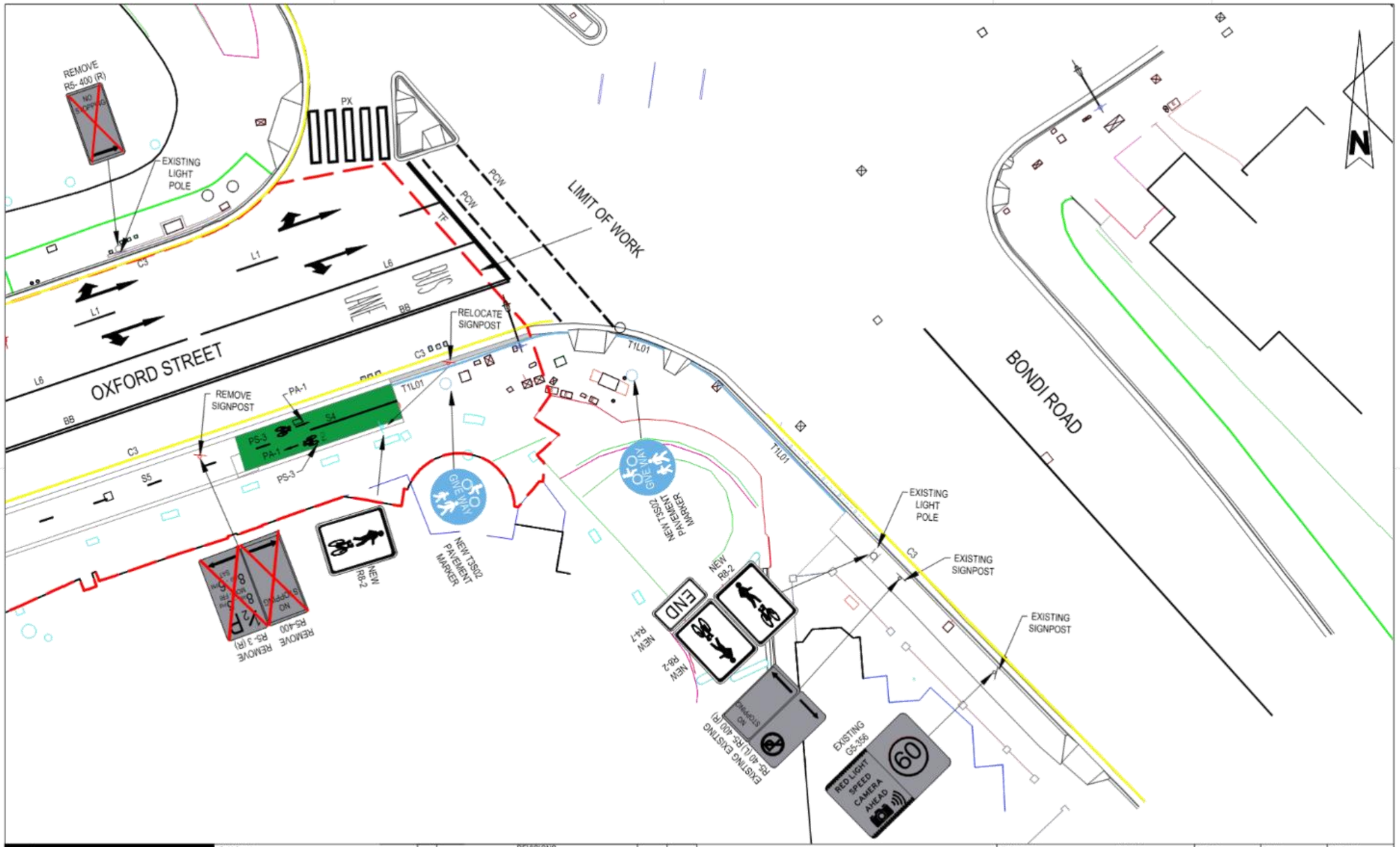
BITZIOS consulting
traffic engineering transport planning

Gold Coast
Suite 26, 58 Riverwalk Avenue, Robina QLD 4226.
P: (07) 5562-5377
W: www.bitziosconsulting.com.au
Brisbane
Level 2, 428 Upper Edward Street, Spring Hill 4000.
P: (07) 3831-4442
E: admin@bitziosconsulting.com.au
Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202

Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	100% SIGNAGE AND LINEMARKING	G.Y	30.05.2018
002	100% SIGNAGE AND LINEMARKING	G.Y	01.06.2018
003	ISSUE FOR CONSTRUCTION	G.Y	13.08.2019

Project: East Bondi Junction Streetscape	Design: C.M	Drawn: G.Y	Checked: T.W
	100% DOCUMENTATION		Date: 13.08.2019
Title: 100% DESIGN SIGNAGE AND LINEMARKING PLAN COVER SHEET	Project Number: P2996	Sheet Number: 1	Issue: 003


ADELAIDE STREET
SYD EINFELD DRIVE
BONDI ROAD
GROSVENOR STREET
OXFORD STREET
HOLLYWOOD AVENUE
SPRING STREET
BRONTE ROAD
EBLEY STREET
BRONTE ROAD
EBLEY STREET
100
101
102
103
104
105
106
107
108
109
110
N
SIGNAGE LEGEND
(GREY) = EXISTING SIGN
= REMOVE SIGN
= NEW / RELOCATE SIGN
= EXISTING POWER POLE
= EXISTING SIGNPOST
= REMOVE SIGNPOST
= RELOCATED SIGNPOST
= NEW SIGNPOST
LINEMARKING LEGEND
BICYCLE MARKINGS
ROAD MARKINGS
STOP LINE - TFB 0.2 M WIDE
CONTINUITY LINE - C4 1M LINE, 3M GAP, 0.1 M WIDE
BICYCLE EDGE LINE - E7 0.1 M WIDE
SOLID LANE DIVIDER - S4 0.1 M WIDE
DASHED LANE DIVIDER - S5 1 M LINE, 3 M GAP, 0.1 M WIDE
LANE DIVIDER - L7 0.1 M WIDE
T1L01 0.04 M WIDE
STOP LINE - TF 0.3 M WIDE
PEDESTRIAN CROSSWALK - PCW 1 M LINE, 0.3 M GAP, 0.15 M WIDE
CONTINUITY LINE - C1 1M LINE, 3M GAP, 0.15 M WIDE
LANE LINE - L1 3 M LINE, 9 M GAP, 0.1 M WIDE
SOLID LANE DIVIDER - L8 35 M LINE, 1 M GAP, 0.15 M WIDE
TURN LINE - T1 0.9 M LINE, 0.6 M GAP, 0.1 M WIDE
NO STOPPING LINE - C3 0.1M WIDE (YELLOW)
BITZIOS consulting
traffic engineering transport planning
Gold Coast
Suite 26, 58 Riverwalk Avenue, Robina QLD 4226.
P: (07) 5562-5377
W: www.bitziosconsulting.com.au
Brisbane
Level 2, 428 Upper Edward Street, Spring Hill 4000.
P: (07) 3831-4442
E: admin@bitziosconsulting.com.au
Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202
REVISIONS
Issue | Revision/Description | Drawn | Date
001 | 100% SIGNAGE AND LINEMARKING | G.Y | 30.05.2018
002 | 100% SIGNAGE AND LINEMARKING | G.Y | 01.06.2018
003 | ISSUE FOR CONSTRUCTION | G.Y | 13.08.2019
Project
East Bondi Junction Streetscape
Title
100% DESIGN SIGNAGE AND LINEMARKING PLAN
PROJECT LAYOUT
Design C.M
Drawn G.Y
Checked T.W
100% DOCUMENTATION
Date 13.08.2019
Project Number P2996
Sheet Number 2
Issue 003



BITZIOS consulting
traffic engineering ■ transport planning

Gold Coast
Suite 26, 58 Riverwalk Avenue, Robina QLD 4226.
P: (07) 5562-5377
W: www.bitziosconsulting.com.au
Brisbane
Level 2, 428 Upper Edward Street, Spring Hill 4000.
P: (07) 3831-4442
E: admin@bitziosconsulting.com.au
Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202

Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	100% SIGNAGE AND LINEMARKING	G.Y	06.06.2018
002	100% SIGNAGE AND LINEMARKING	G.Y	01.08.2018
003	ISSUE FOR CONSTRUCTION	G.Y	13.08.2019

Scale @ A3 0 2 4 6 8 10 12 1:250

Project: East Bondi Junction Streetscape

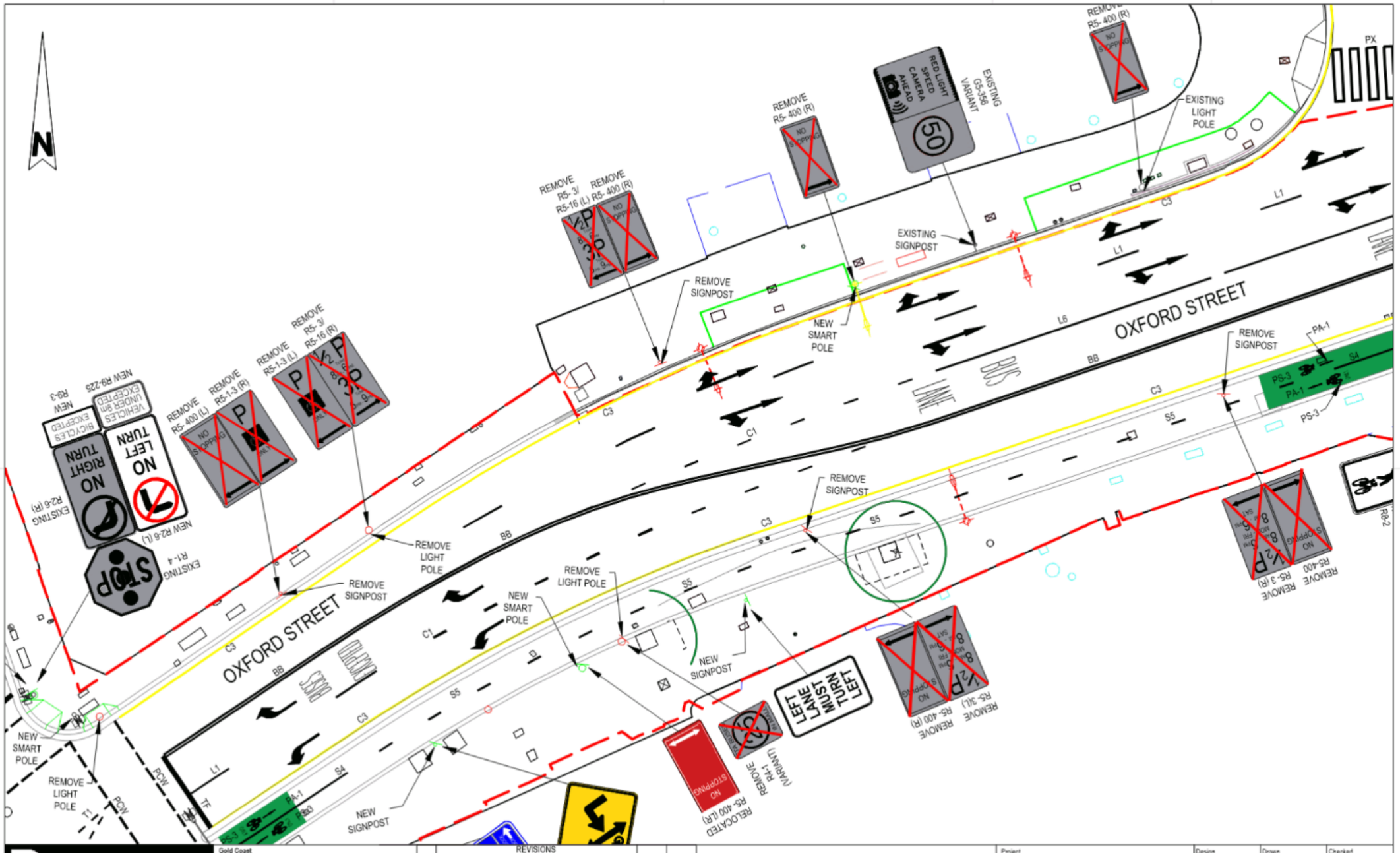
Title: 100% DESIGN SIGNAGE AND LINEMARKING PLAN

Design	Drawn	Checked
C.M	G.Y	T.W

100% DOCUMENTATION

Date: 13.08.2019

Project Number	Sheet Number	Issue
P2996	100	003



BITZIOS consulting
traffic engineering ■ transport planning

Gold Coast
Suite 26, 58 Riverwalk Avenue, Robina QLD 4226.
P: (07) 5562-5377
W: www.bitziosconsulting.com.au
Brisbane
Level 2, 428 Upper Edward Street, Spring Hill 4000.
P: (07) 3831-4442
E: admin@bitziosconsulting.com.au
Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202

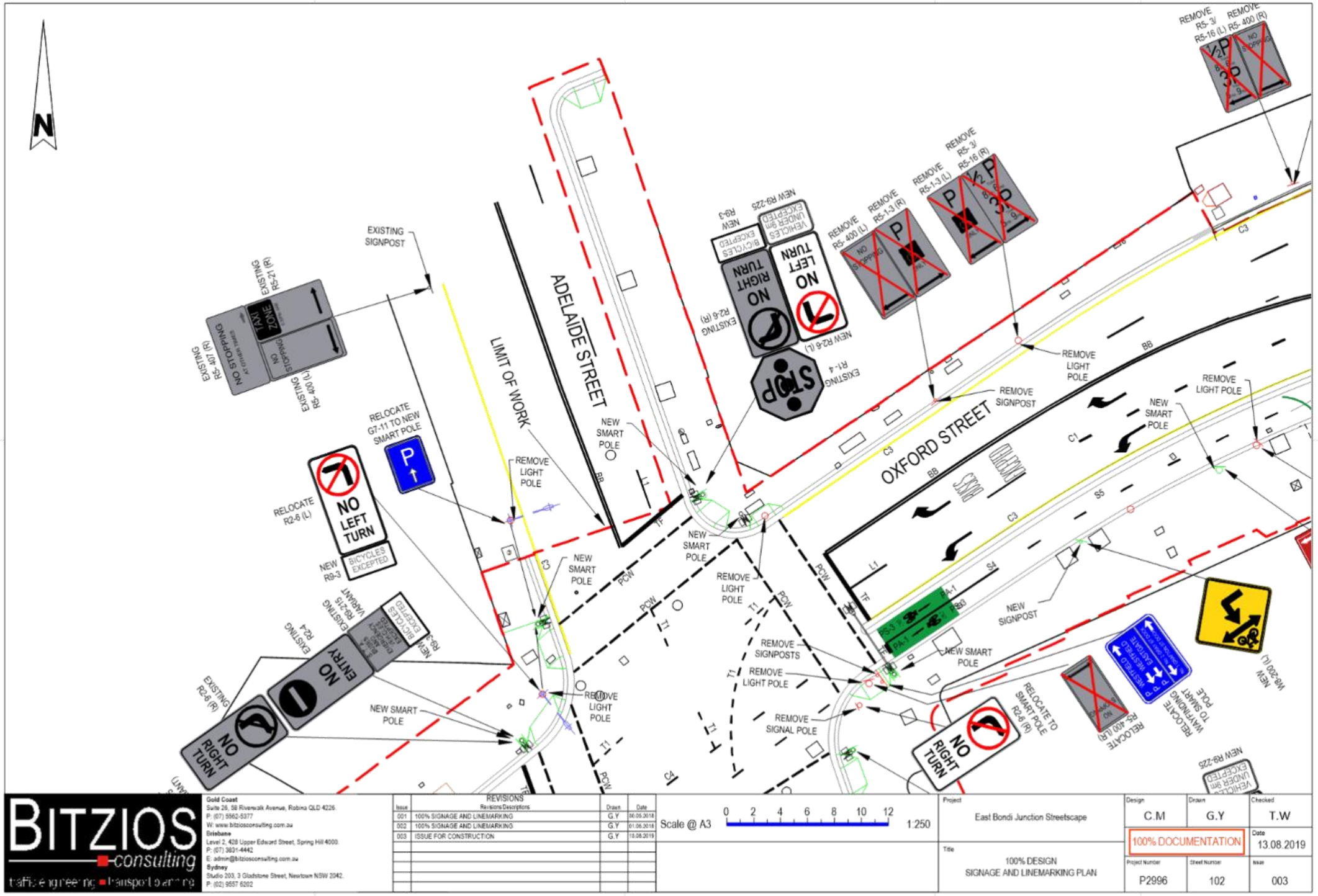
Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	100% SIGNAGE AND LINEMARKING	G.Y	30.05.2018
002	100% SIGNAGE AND LINEMARKING	G.Y	01.06.2018
003	ISSUE FOR CONSTRUCTION	G.Y	13.08.2019

Scale @ A3 0 2 4 6 8 10 12 1:250

Project: East Bondi Junction Streetscape

Title: 100% DESIGN SIGNAGE AND LINEMARKING PLAN

Design	Drawn	Checked
C.M	G.Y	T.W
100% DOCUMENTATION		Date 13.08.2019
Project Number P2996	Sheet Number 101	Issue 003



BITZIOS consulting
traffic engineering ■ transport planning

Gold Coast
Suite 26, 58 Riverwalk Avenue, Robina QLD 4226.
P: (07) 5562-5377
W: www.bitziosconsulting.com.au
Brisbane
Level 2, 428 Upper Edward Street, Spring Hill 4000.
P: (07) 3831-4442
E: admin@bitziosconsulting.com.au
Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202

Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	100% SIGNAGE AND LINEMARKING	G.Y	30.05.2018
002	100% SIGNAGE AND LINEMARKING	G.Y	01.06.2018
003	ISSUE FOR CONSTRUCTION	G.Y	13.08.2019

Scale @ A3 0 2 4 6 8 10 12 1:250

Project: East Bondi Junction Streetscape

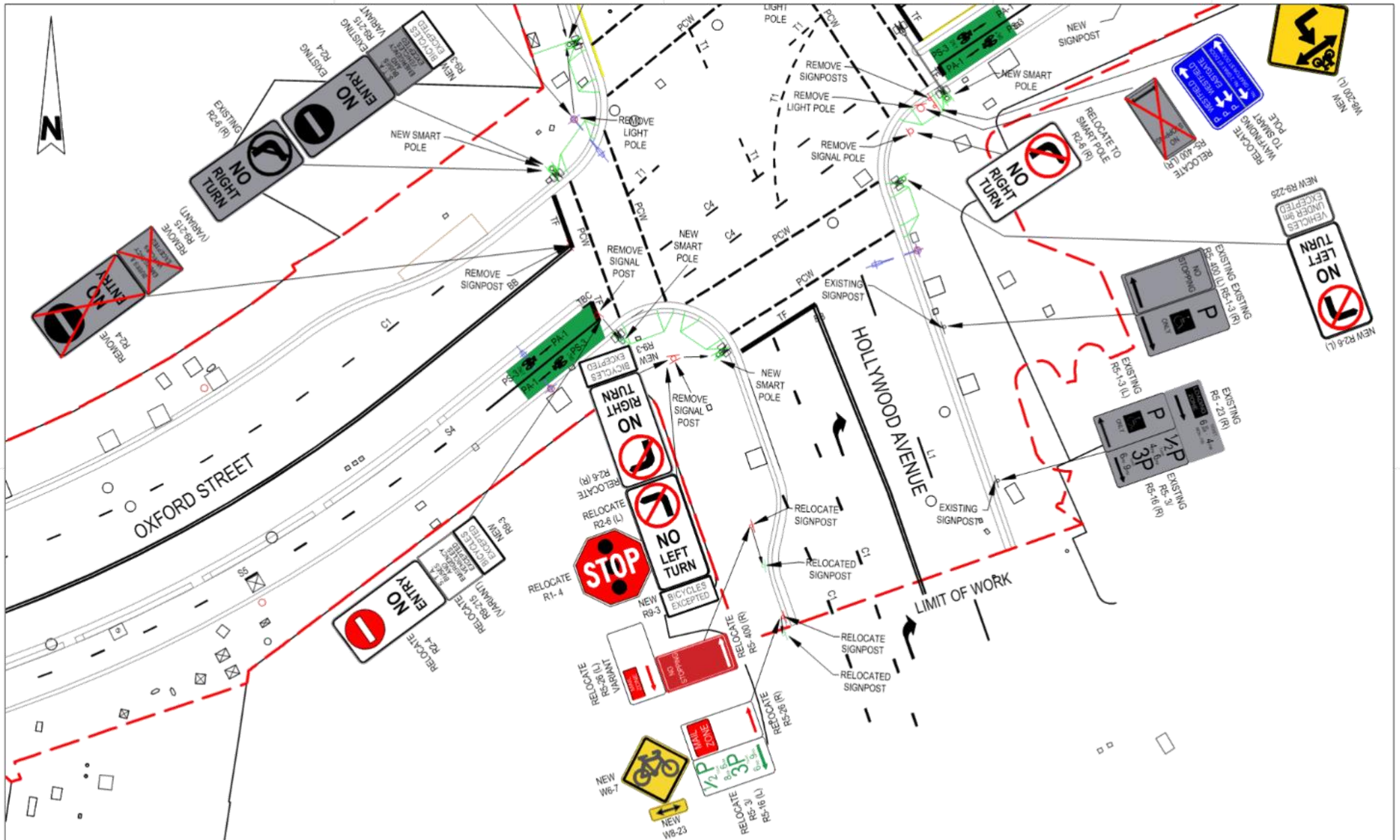
Title: 100% DESIGN SIGNAGE AND LINEMARKING PLAN

Design	Drawn	Checked
C.M	G.Y	T.W

100% DOCUMENTATION

Date: 13.08.2019

Project Number	Sheet Number	Issue
P2996	102	003



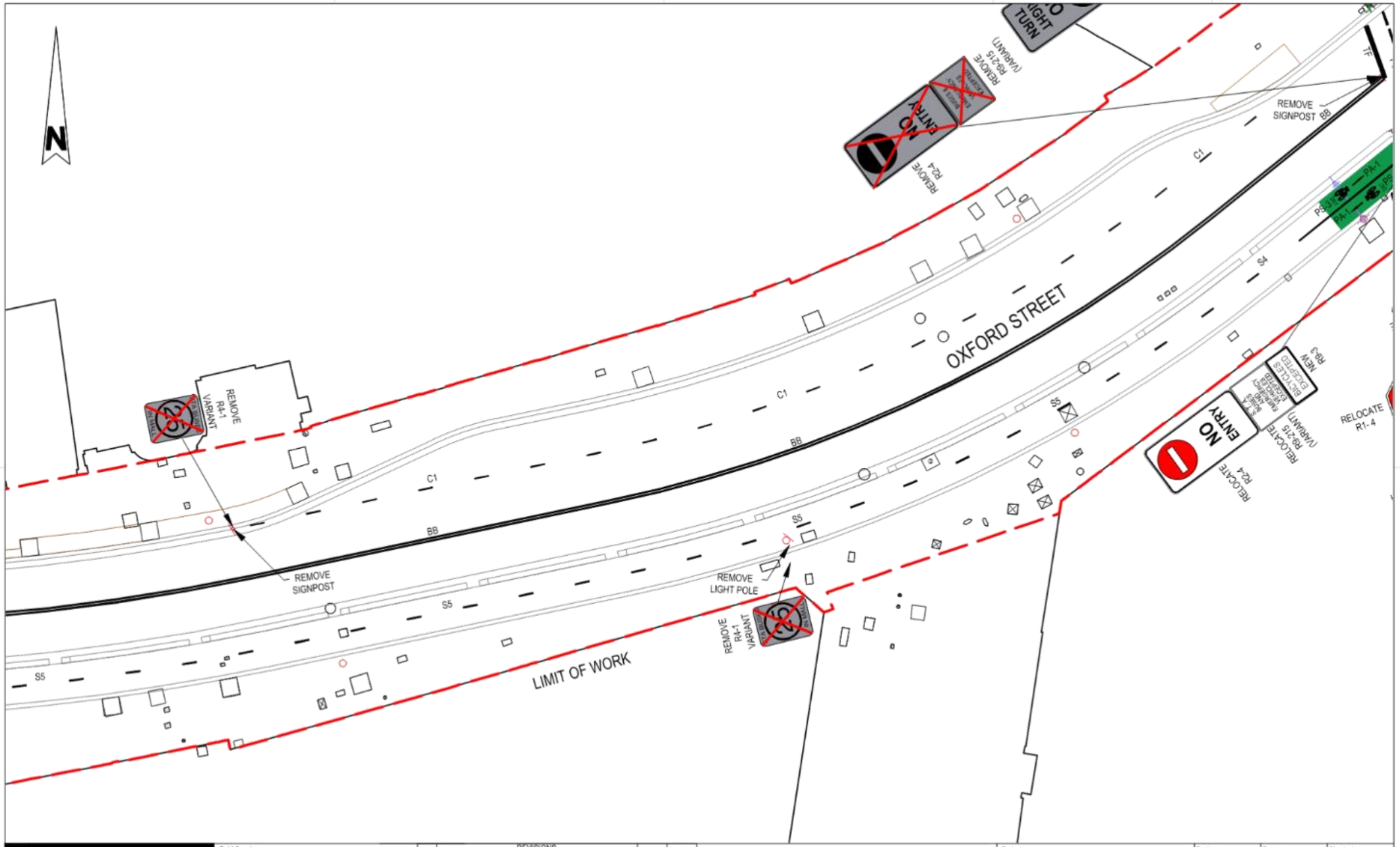
BITZIOS consulting
traffic engineering ■ transport planning

Gold Coast
Suite 26, 58 Riverwalk Avenue, Robina QLD 4226.
P: (07) 5562-5377
W: www.bitziosconsulting.com.au
Brisbane
Level 2, 428 Upper Edward Street, Spring Hill 4000.
P: (07) 3831-4442
E: admin@bitziosconsulting.com.au
Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202

Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	100% SIGNAGE AND LINEMARKING	G.Y	30.05.2018
002	100% SIGNAGE AND LINEMARKING	G.Y	01.06.2018
003	ISSUE FOR CONSTRUCTION	G.Y	13.08.2019

Scale @ A3 0 2 4 6 8 10 12 1:250

Project: East Bondi Junction Streetscape	Design: C.M	Drawn: G.Y	Checked: T.W
	100% DOCUMENTATION		Date: 13.08.2019
Title: 100% DESIGN SIGNAGE AND LINEMARKING PLAN	Project Number: P2996	Sheet Number: 103	Issue: 003



BITZIOS consulting
traffic engineering ■ transport planning

Gold Coast
Suite 26, 58 Riverwalk Avenue, Robina QLD 4226.
P: (07) 5562-5377
W: www.bitziosconsulting.com.au
Brisbane
Level 2, 428 Upper Edward Street, Spring Hill 4000.
P: (07) 3831-4442
E: admin@bitziosconsulting.com.au
Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202

Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	100% SIGNAGE AND LINEMARKING	G.Y	30.05.2018
002	100% SIGNAGE AND LINEMARKING	G.Y	01.06.2018
003	ISSUE FOR CONSTRUCTION	G.Y	13.08.2019

Scale @ A3 0 2 4 6 8 10 12 1:250

Project: East Bondi Junction Streetscape

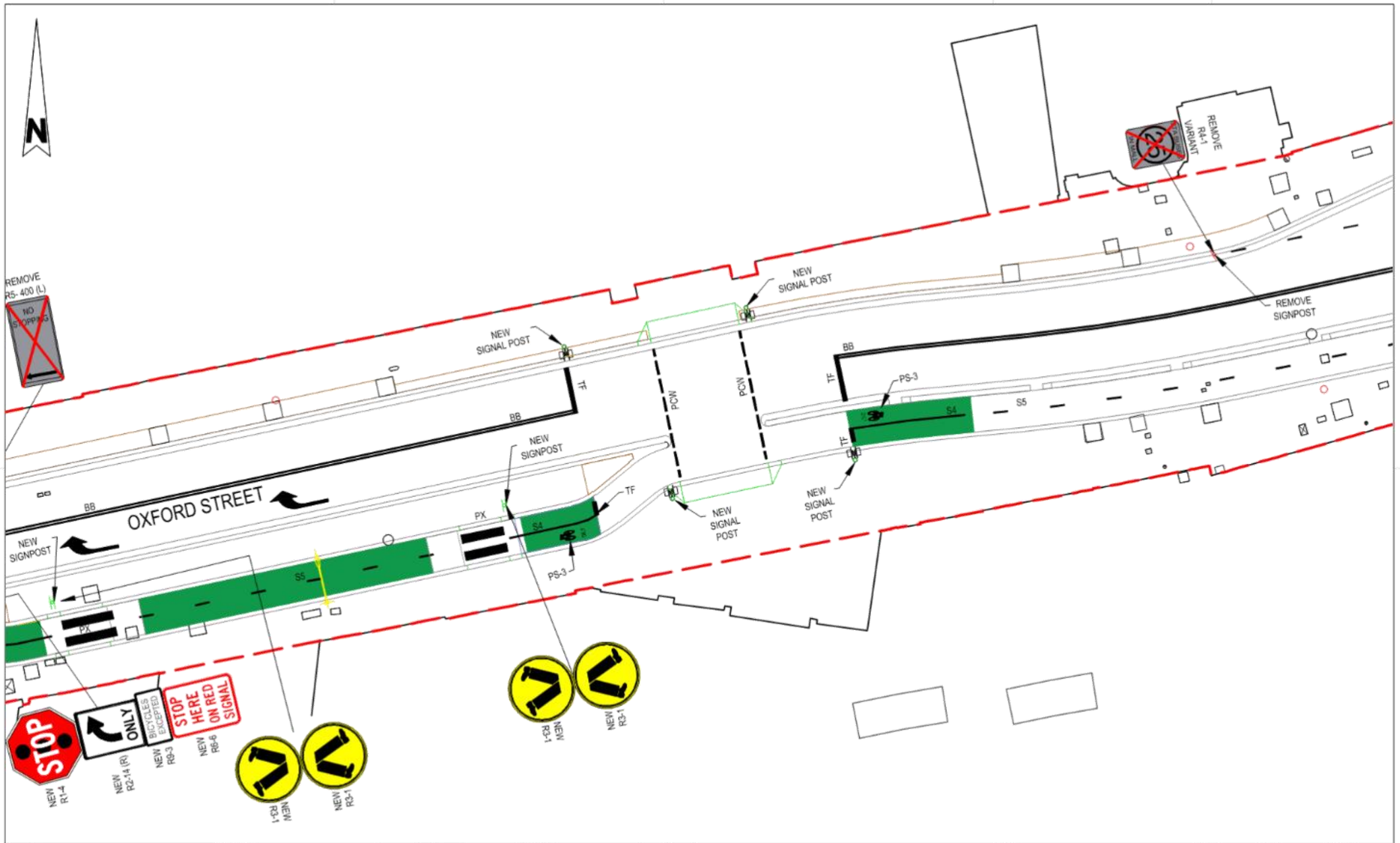
Title: 100% DESIGN SIGNAGE AND LINEMARKING PLAN

Design	Drawn	Checked
C.M	G.Y	T.W

100% DOCUMENTATION

Date: 13.08.2019

Project Number	Sheet Number	Issue
P2996	104	003



BITZIOS consulting
traffic engineering transport planning

Gold Coast
Suite 26, 58 Riverwalk Avenue, Robina QLD 4226.
P: (07) 5562-5377
W: www.bitziosconsulting.com.au
Brisbane
Level 2, 428 Upper Edward Street, Spring Hill 4000.
P: (07) 3831-4442
E: admin@bitziosconsulting.com.au
Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202

Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	100% SIGNAGE AND LINEMARKING	G.Y	30.05.2018
002	100% SIGNAGE AND LINEMARKING	G.Y	01.06.2018
003	ISSUE FOR CONSTRUCTION	G.Y	13.08.2019

Scale @ A3 0 2 4 6 8 10 12 1:250

Project: East Bondi Junction Streetscape

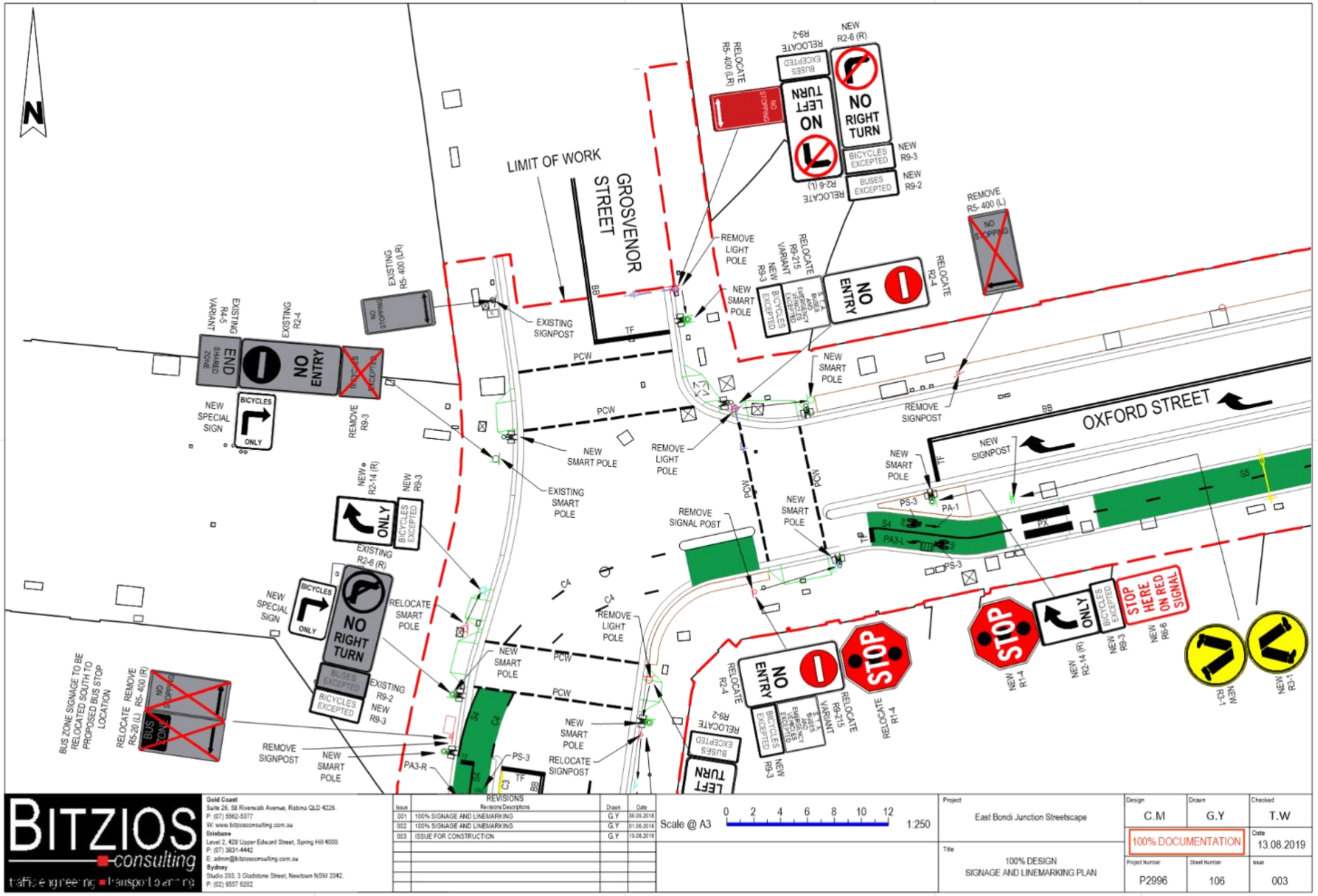
Title: 100% DESIGN SIGNAGE AND LINEMARKING PLAN

Design	Drawn	Checked
C.M	G.Y	T.W

100% DOCUMENTATION

Date: 13.08.2019

Project Number	Sheet Number	Issue
P2996	105	003



BITZIOS consulting
traffic engineering ■ transport planning

Gold Coast
Suite 26, 58 Riversteak Avenue, Robina QLD 4226.
P: (07) 5562-5377
W: www.bitzisconsulting.com.au
Brisbane
Level 2, 428 Upper Edward Street, Spring Hill 4000.
P: (07) 3831-4442
E: admin@bitzisconsulting.com.au
Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202

REVISIONS

Issue	Revisions/Descriptions	Drawn	Date
001	100% SIGNAGE AND LINEMARKING	G.Y	30.05.2018
002	100% SIGNAGE AND LINEMARKING	G.Y	01.06.2018
003	ISSUE FOR CONSTRUCTION	G.Y	13.08.2019

Scale @ A3 0 2 4 6 8 10 12 1:250

Project: East Bondi Junction Streetscape

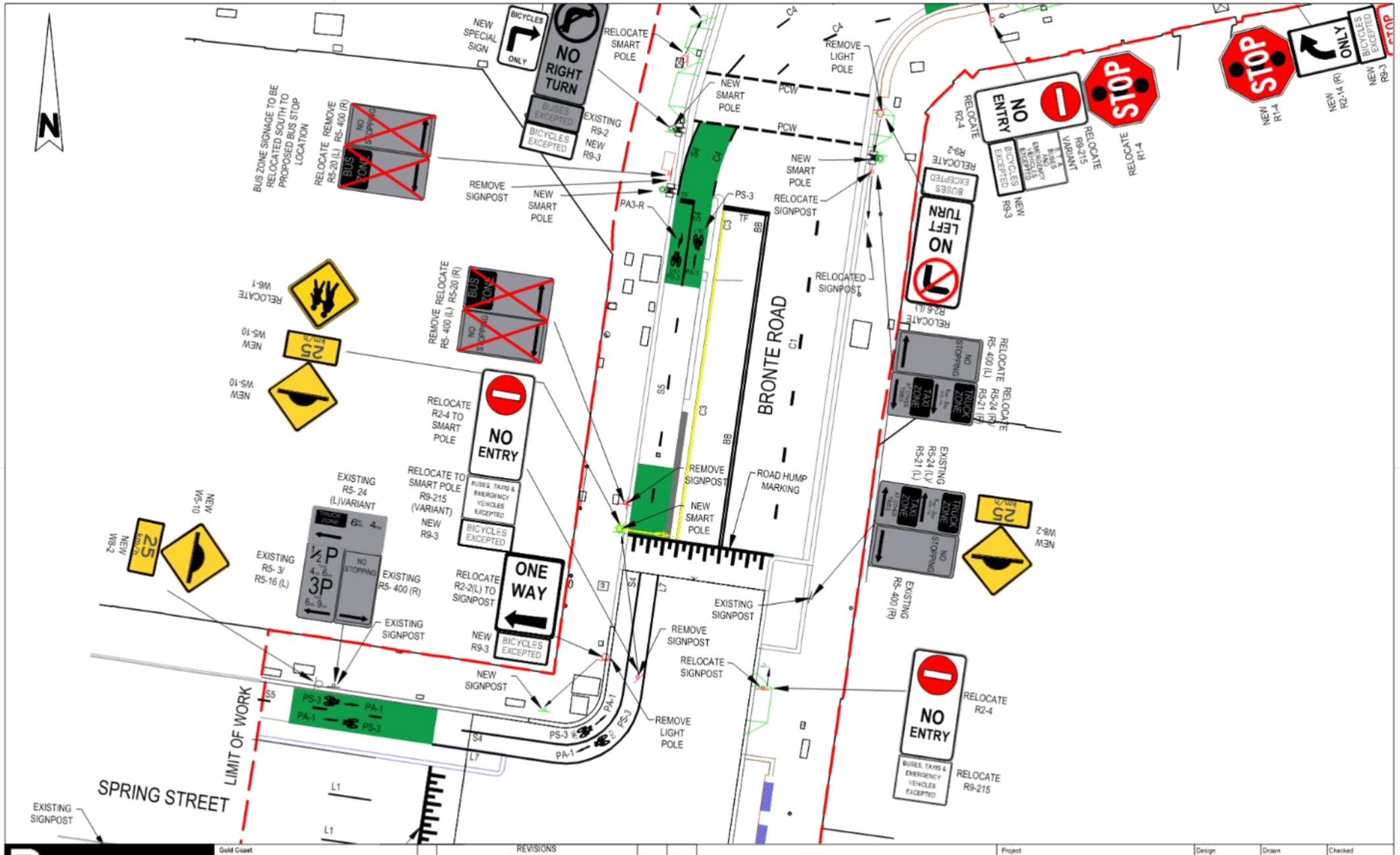
Title: 100% DESIGN SIGNAGE AND LINEMARKING PLAN

Design	Drawn	Checked
C.M	G.Y	T.W

100% DOCUMENTATION

Date: 13.08.2019

Project Number	Sheet Number	Issue
P2996	106	003



BITZIOS consulting
traffic engineering ■ transport planning

Gold Coast
Suite 26, 58 Riverwalk Avenue, Robina QLD 4226.
P: (07) 5562-5377
W: www.bitziosconsulting.com.au
Brisbane
Level 2, 428 Upper Edward Street, Spring Hill 4000.
P: (07) 3831-4442
E: admin@bitziosconsulting.com.au
Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202

REVISIONS			
Issue	Revision/Description	Drawn	Date
001	100% SIGNAGE AND LINEMARKING	G.Y	30.05.2018
002	100% SIGNAGE AND LINEMARKING	G.Y	01.06.2018
003	ISSUE FOR CONSTRUCTION	G.Y	13.08.2019

Scale @ A3 0 2 4 6 8 10 12 1:250

Project: East Bondi Junction Streetscape

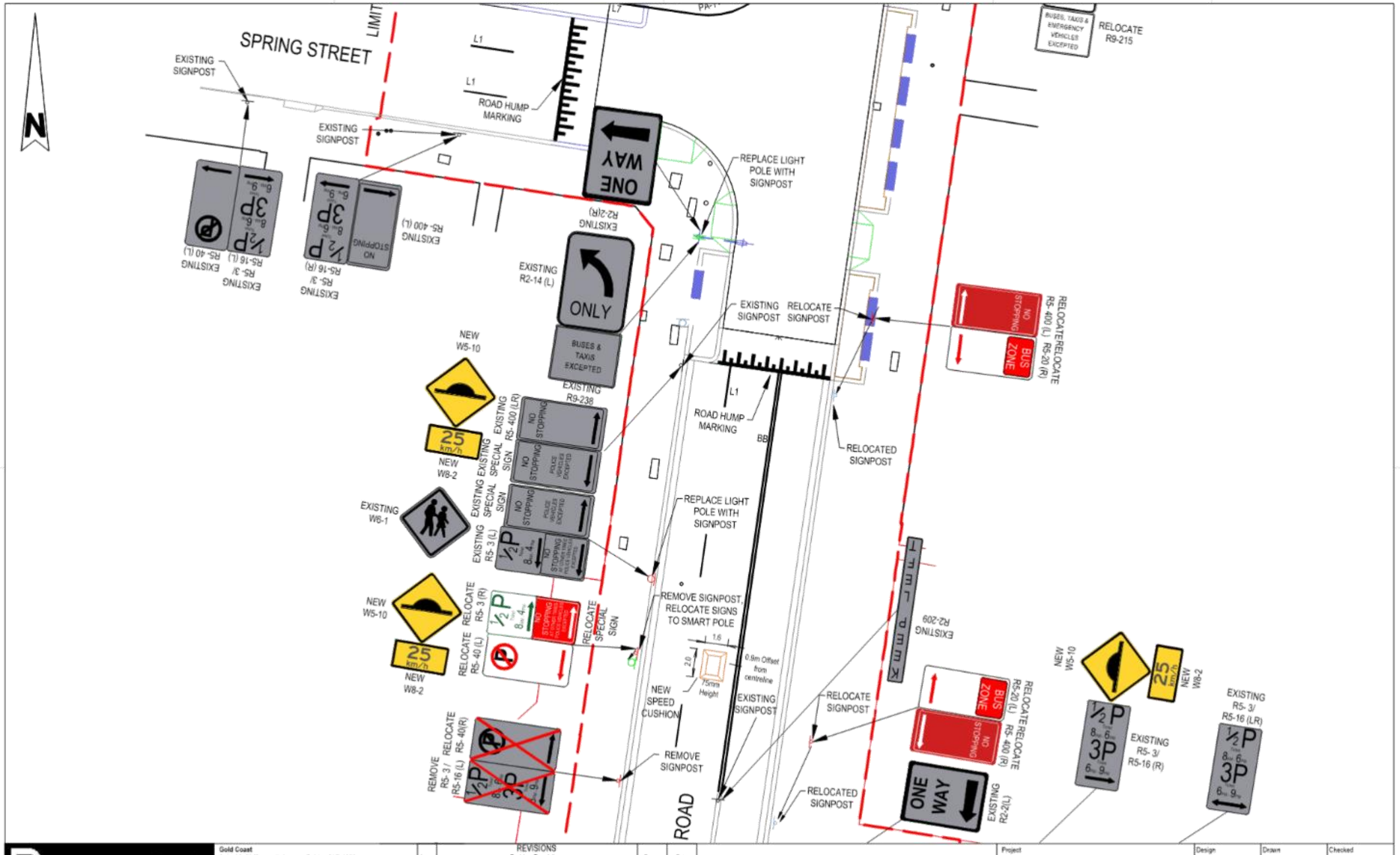
Title: 100% DESIGN SIGNAGE AND LINEMARKING PLAN

Design	Drawn	Checked
C.M	G.Y	T.W

100% DOCUMENTATION

Date: 13.08.2019

Project Number	Sheet Number	Issue
P2996	107	003



BITZIOS consulting
traffic engineering ■ transport planning

Gold Coast
Suite 26, 58 Riverwalk Avenue, Robina QLD 4226.
P: (07) 5562-5377
W: www.bitziosconsulting.com.au
Brisbane
Level 2, 428 Upper Edward Street, Spring Hill 4000.
P: (07) 3831-4442
E: admin@bitziosconsulting.com.au
Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202

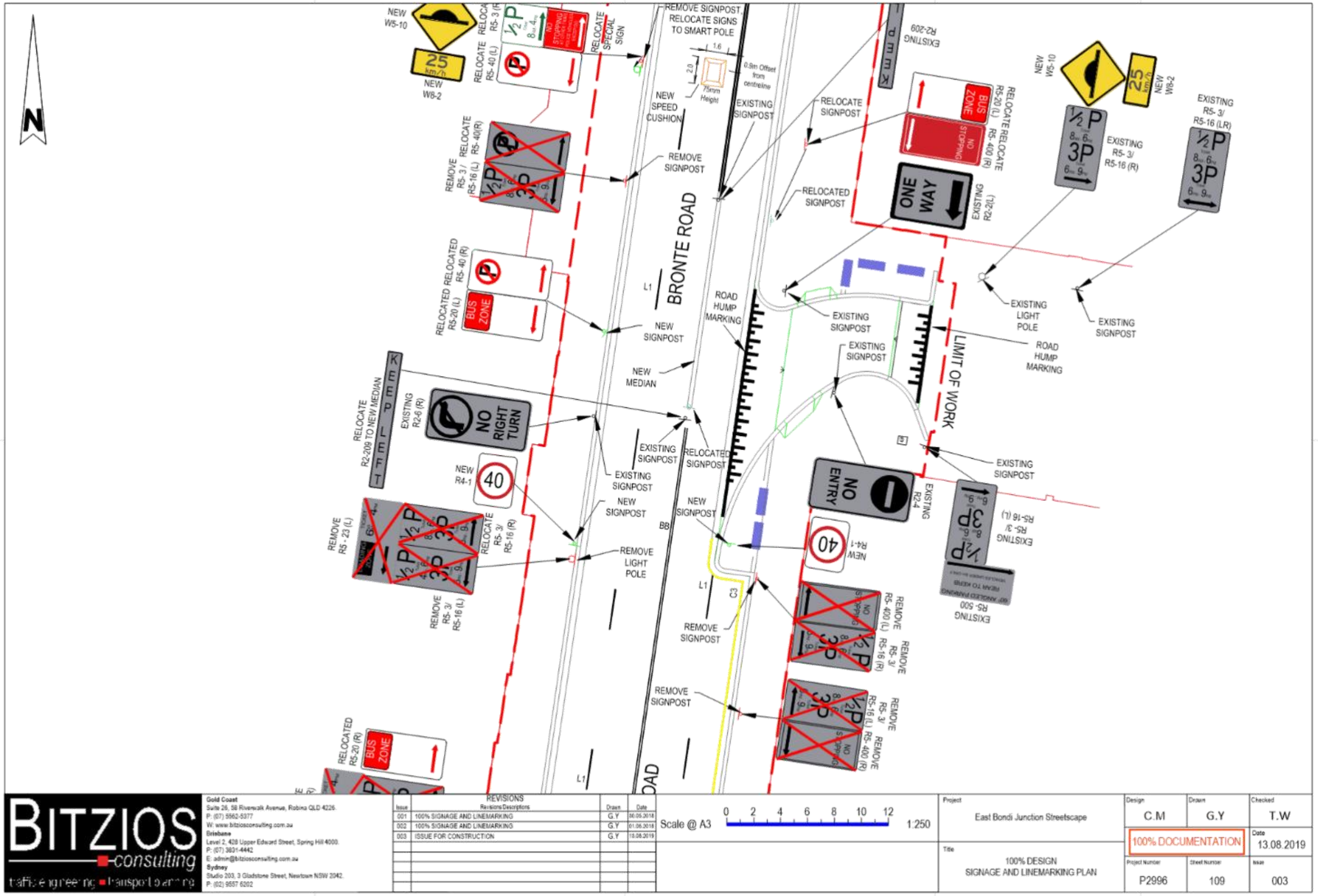
Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	100% SIGNAGE AND LINEMARKING	G.Y	06.05.2019
002	100% SIGNAGE AND LINEMARKING	G.Y	01.06.2019
003	ISSUE FOR CONSTRUCTION	G.Y	13.08.2019

Scale @ A3 0 2 4 6 8 10 12 1:250

Project: East Bondi Junction Streetscape

Title: 100% DESIGN SIGNAGE AND LINEMARKING PLAN

Design	Drawn	Checked
C.M	G.Y	T.W
100% DOCUMENTATION		Date 13.08.2019
Project Number P2996	Sheet Number 108	Issue 003



BITZIOS consulting
traffic engineering ■ transport planning

Gold Coast
Suite 26, 58 Riverwalk Avenue, Robina QLD 4226.
P: (07) 5562-5377
W: www.bitziosconsulting.com.au
Brisbane
Level 2, 428 Upper Edward Street, Spring Hill 4000.
P: (07) 3831-4442
E: admin@bitziosconsulting.com.au
Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202

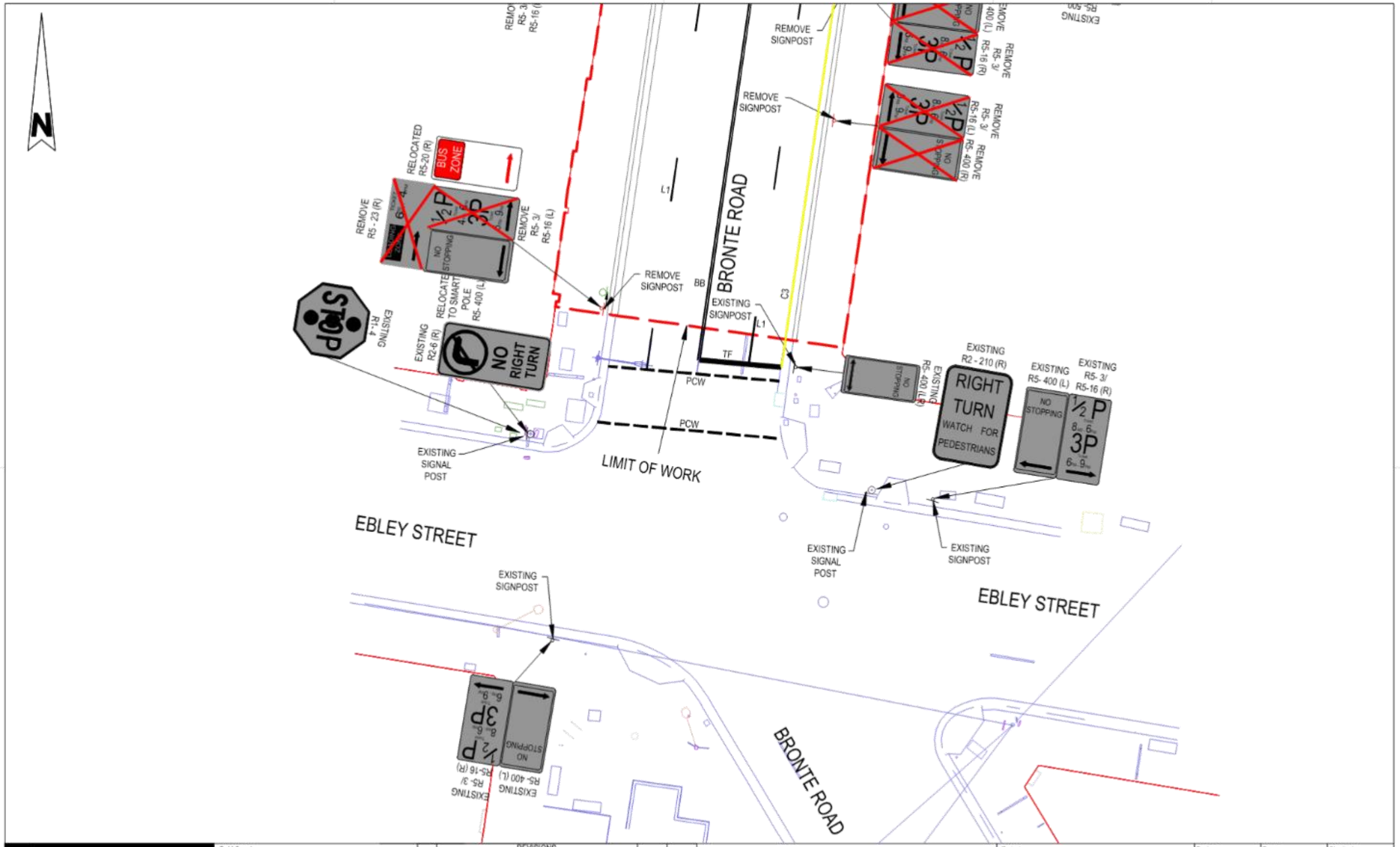
Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	100% SIGNAGE AND LINEMARKING	G.Y	30.05.2018
002	100% SIGNAGE AND LINEMARKING	G.Y	01.06.2018
003	ISSUE FOR CONSTRUCTION	G.Y	13.08.2019

Scale @ A3 0 2 4 6 8 10 12 1:250

Project: East Bondi Junction Streetscape

Title: 100% DESIGN SIGNAGE AND LINEMARKING PLAN

Design	Drawn	Checked
C.M	G.Y	T.W
100% DOCUMENTATION		Date 13.08.2019
Project Number P2996	Sheet Number 109	Issue 003



BITZIOS consulting
traffic engineering ■ transport planning

Gold Coast
Suite 26, 58 Riverwalk Avenue, Robina QLD 4226.
P: (07) 5562-5377
W: www.bitziosconsulting.com.au
Brisbane
Level 2, 428 Upper Edward Street, Spring Hill 4000.
P: (07) 3831-4442
E: admin@bitziosconsulting.com.au
Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202

Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	100% SIGNAGE AND LINEMARKING	G.Y	30.05.2018
002	100% SIGNAGE AND LINEMARKING	G.Y	01.06.2018
003	ISSUE FOR CONSTRUCTION	G.Y	13.08.2019

Scale @ A3 0 2 4 6 8 10 12 1:250

Project: East Bondi Junction Streetscape

Title: 100% DESIGN SIGNAGE AND LINEMARKING PLAN

Design	Drawn	Checked
C.M	G.Y	T.W

100% DOCUMENTATION

Date: 13.08.2019

Project Number	Sheet Number	Issue
P2996	110	003

Spackman Mossop and Michaels

Bondi Junction Cycleway

Traffic, Transport and Parking Assessment

13 April 2015

PARSONS BRINCKERHOFF

Document information
Client: Spackman Mossop and Michaels Title: Bondi Junction Cycleway Subtitle: Traffic, Transport and Parking Assessment Document No: 2196790A-ITP-RPT-3753 Rev B Date: 13 April 2015

Rev	Date	Details
	12/11/2014	Draft Report
	10/04/2015	Revised Draft Report
	13/04/2015	For Issue to Waverley Traffic Committee

Author, Reviewer and Approver details			
Prepared by:	Claire Mead, Chris Chun	Date: 13/04/2015	Signature:
Reviewed by:	Ryan Miller	Date: 13/04/2015	Signature:
Approved by:	Richard West	Date: 13/04/2015	Signature:

Distribution
Spackman Mossop and Michaels, Parsons Brinckerhoff file, Parsons Brinckerhoff Library

©Parsons Brinckerhoff Australia Pty Limited 2014
Copyright in the drawings, information and data recorded in this document (the information) is the property of Parsons Brinckerhoff. This document and the information are solely for the use of the authorised recipient and this document may not be used, copied or reproduced in whole or part for any purpose other than that for which it was supplied by Parsons Brinckerhoff. Parsons Brinckerhoff makes no representation, undertakes no duty and accepts no responsibility to any third party who may use or rely upon this document or the information.

Document owner
Parsons Brinckerhoff Australia Pty Limited *ABN 80 078 004 798* Level 27 Ernst & Young Centre 680 George Street Sydney NSW 2000 GPO Box 5394 Sydney NSW 2001 Australia Tel: +61 2 9272 5100 Fax: +61 2 9272 5101 www.pbworld.com *Certified to ISO 9001, ISO 14001, OHSAS 18001*

Contents

List of tables

List of figures

List of appendices

Glossary

CBD	Central Business District
DoS	Degree of Saturation
IDM	Intersection Diagnostic Monitor
LGA	Local Government Area
LoS	Level of Service
RMS	Roads and Maritime Services
SMM	Spackman Mossop and Michaels
STA	State Transit Authority
TCS	Traffic Control Signal
TfNSW	Transport for NSW
vph	Vehicles per hour

1. Introduction

Parsons Brinckerhoff has been commissioned by Spackman Mossop and Michaels (SMM) on behalf of Waverley Council to prepare a traffic, transport and parking assessment for the proposed Bondi Junction Cycleway project (referred to as the project in this report).

This report assesses the potential traffic, pedestrian, cyclist and parking impacts in the study area associated with the proposed cycleway and recommends mitigation measures to address impacts where appropriate. More specifically, the following items have been covered in this report:

- A review of the existing traffic, pedestrian and cyclist volumes, parking provision and public transport facilities within the study area (refer Figure 1.1).
- Description of the proposed project.
- Review of intersection performance at key intersections with and without the proposed cycleway using the SIDRA 6 network modelling program.
- Identification of potential issues and constraints associated with the proposed cycleway.
- Mitigation measures to ameliorate project related impacts.

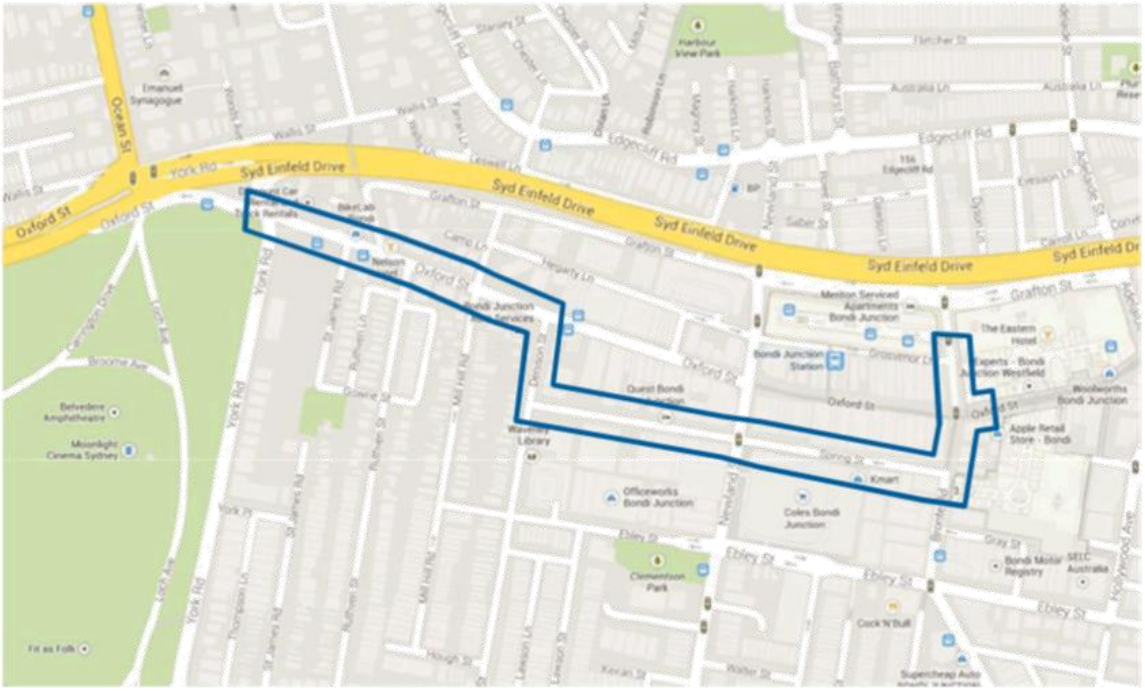
1.1 Background

The 2013 Waverley Bike Plan identifies that there is enormous potential for increased cycling for short to medium transport journeys and that the key strategy to support the cycling demand is through provision of cycling facilities.

1.2 Study area

The study area is located within the Bondi Junction Town Centre which is generally zoned for commercial and mixed use purposes. Bondi Junction also hosts a public transport interchange which is accessed from the Oxford Street mall, Bronte Road and Grafton Street. As such, there is high trip generation during typical business hours and during peak commuter periods.

The study area, which includes the alignment of the proposed cycleway along four local roads and local context, is shown in Figure 1.1.



Source: Google Maps (Base map)

Figure 1.1 Study area

The existing road network in the study area consists of mainly local roads, under the care and control of Waverley Council. These roads are typically two lane two-way roads, with kerbside parallel parking. Oxford Street is considered the main street for the Bondi Junction Centre, carrying high volumes of traffic throughout the day. The study area is in close proximity to Sydney Enfield Drive, a key arterial route connecting the Eastern Suburbs with the CBD, which means roads within the study area are often used as through routes.

Oxford Street between Newland Street and Bronte Road (Oxford Street mall) operates as a shared zone, open to limited through traffic at specific times with vehicle entry controlled by Council. In addition, a bus only section operates along Oxford Street between Bronte Road and Hollywood Avenue, and on Bronte Road between Oxford Street and Spring Street.

1.3 Study scope

The scope of works for the design phases of this project includes:

- attending an inception meeting to confirm the project objectives and assessment requirements with Waverley Council and collect relevant information
- undertaking a review of all relevant studies previous undertaken
- undertaking a site walk of the corridor with a view to auditing the existing traffic management and parking arrangements
- the provision of advice and assistance to the project team as necessary
- attending project team meeting during the design phase
- consultation with relevant road and transport agencies in the development and finalisation of the design
- undertaking traffic, pedestrian and cyclist surveys at key intersections as nominated in the study brief
- undertaking existing and proposed (with cycleway) intersection modelling at the surveyed intersections for both the AM and PM peak periods using SIDRA 6
- undertaking swept path analyses of the proposed design
- undertaking a review of pedestrian zebra crossing and footpath continuation warrants
- preparation of existing and proposed signposting and line marking plans for the corridor
- preparation of traffic signal designs at four signalised intersections
- coordinate the undertaking of a concept design road safety audit by independent third party
- preparation of the traffic, transport and parking assessment report (this report).

1.4 Study process

The following steps were undertaken in preparation of this report:

- document review and site walk to confirm existing traffic, parking, public and active transport situation
- provision of design advice to lead designers based on observations from the site walk, intersection survey data and intersection traffic modelling undertaken
- review of design impacts on intersection performance, vehicle swept paths, parking and all road users
- consultation with the project team and key external stakeholders in preparation of the design.

1.5 Stakeholder consultation

The following stakeholders were consulted by Parsons Brinckerhoff in preparation of this report:

- Waverley Council
- Transport for NSW (TfNSW)
- Roads and Maritime Services (RMS)
- Sydney Buses.

1.6 Structure of the report

The structure of this report is as follows:

- section 2 describes the existing road network, traffic conditions, pedestrian/cyclists movements, public transport services and parking restrictions within the study area
- section 3 documents the proposed cycleway project
- section 4 assesses the pedestrian zebra and footpath continuation warrants
- section 5 presents the intersection and parking impacts of the proposed cycleway in each street corridor
- section 6 describes some of the mitigation measures to remove or ameliorate cycleway design impacts
- section 7 lists the stakeholders which have been consulted in preparation of this report
- section 8 provides a conclusion to the study
- section 9 lists documents referenced during the study.

2. Existing conditions

This section describes the existing situation in the study area regarding the road network, key intersections, traffic conditions, pedestrian/cyclist amenity, parking restrictions and public transport provision.

2.1 Road network

The project site is located within the Waverley Council Local Government Area (LGA) and thus Waverley Council is the roads authority for road control and maintenance. The existing road network within the vicinity of the project site consists of Oxford Street, Bronte Road, Spring Street, Newland Street, Denison Street, Nelson Street and York Street.

Figure 1.1 shows a map of surrounding road network showing the relevant roads, while their description is provided in the section below:

Oxford Street is a local road runs through the centre of Bondi Junction between York Road and Bondi Road in an east-west direction. The eastern side of Oxford Street (between Bronte Road and Hollywood Avenue) is a key part of Bondi Junction's main street and only allows for buses and emergency vehicle travel. It provides a vital link between Westfield shopping centre and Bondi Junction railway station and bus interchange. The western side of Oxford Street (between Newland Street and York Road) is generally a two-lane, two-way undivided road with turn bays provided at intersections. On street parking spaces are available on both sides of Oxford Street.

Oxford Street Mall is centrally located in the centre of Bondi Junction and provides a direct link to both the bus interchange and Bondi Junction railway station. It operates as a Shared Zone with a 10 km/h posted speed limit.

Bronte Road is classified as a regional road. Bronte Road is generally a two-lane, two-way undivided road which runs generally north-south direction within the study area. The section between Oxford Street and Spring Street only permits bus, taxi and emergency vehicle travel.

Spring Street is a local road which runs in an east-west direction. The section between Bronte Road and Newland Street is a one-way road in the westbound direction. This street is mostly used by delivery vehicles servicing premises on the northern side and vehicles exiting from the Eastgate shopping centre. The section between Newland Street and Denison Street is a two-lane, two-way undivided road which provides car park access to and from the high density residential buildings along the road. On street parking spaces are available on both sides of Spring Street.

Newland Street is a local road which runs in a north-south direction. It is a four-lane, two-way road and forms a signalised intersection with Spring Street.

Denison Street is a local road which runs between Oxford Street to the north and Queens Park Road to the south. It forms a priority controlled T-junction with Oxford Street and Spring Street, respectively.

Nelson Street is a local road which forms a signalised T-junction with Oxford Street.

York Road is classified as a regional road. York Road is a generally two-lane, two-way undivided road which runs generally north-south direction. It provides a link between Darley Road to the south and Oxford Street and Sydney Enfield Drive to the north.

All roads listed above with the exception of Oxford Street Mall, have a posted speed limit of 50 km/h.

2.2 Site inspection

A site inspection was carried on Friday 27 June 2014 to understand the function of the adjacent road network and existing traffic, pedestrian and cyclist movements. While on site, observations were made on the following:

- intersection layout
- pedestrian and cyclists movements
- existing pedestrian and cyclist facilities
- existing awning locations
- traffic signal phasing
- vehicle queuing
- parking restrictions.

While at the site, we also observed a number of other traffic/pedestrian related issues:

- Pedestrian movements were strongest around Bronte Road between Oxford Street and Spring Street and on Spring Street.
- There is significant and frequent pedestrian crossing activity at the intersection of Bronte Road and Spring Street where the road surface has been raised and is flush with the footpath on both sides of Bronte Road. There are no formal pedestrian facilities at this location and heavy bus and truck movements.
- There is a mechanic (Jax Tyres) located on the north side of Spring Street at the intersection with Denison Street where vehicles (assumed to be serviced) are parking at 90 degree over the footpath immediately outside the shop doors. This currently obstructs pedestrian movements.
- Infrequent cyclist movements were observed along Spring Street, all on-road. Frequent cyclist movements were observed along Oxford Street from Denison Street to York Road, primarily on-road with some on footpaths, all in east-west directions.
- Vehicle queuing on Oxford Street extended from York Road to Denison Street in the weekday PM peak. There was some queuing on Denison Street adjacent to the service station as vehicles attempted to enter Oxford Street.

2.3 Travel restrictions

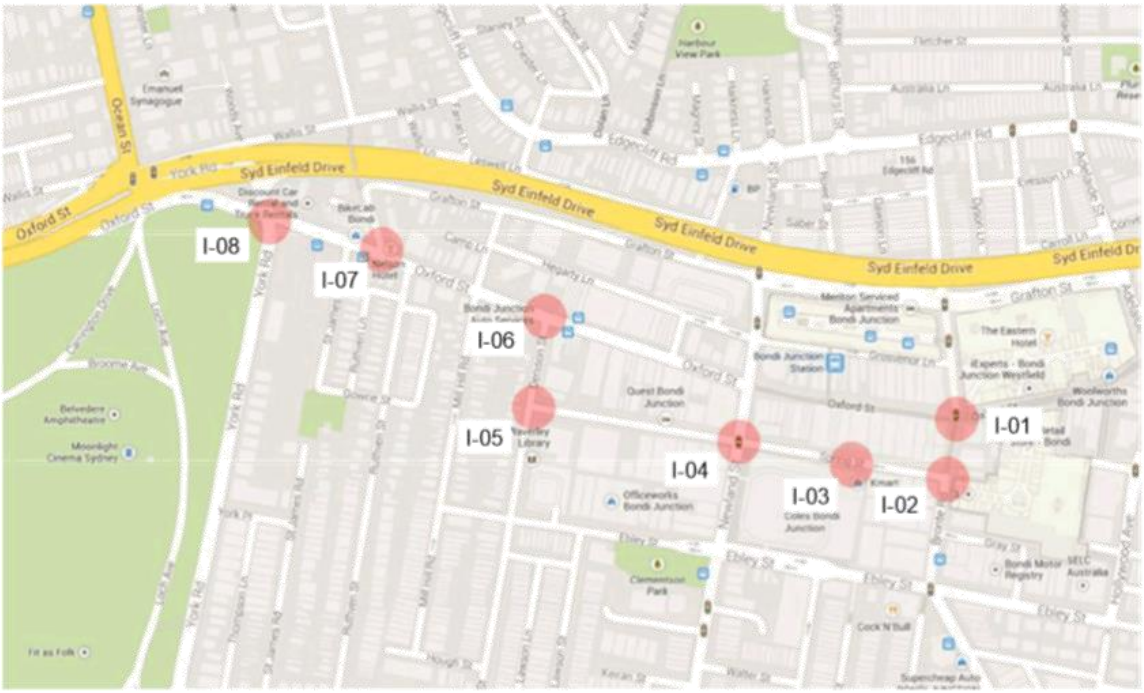
A review of travel restrictions was undertaken during the site inspection and on review of the RMS's Restricted Access Vehicle (RAV) website. The following restrictions apply in the study area:

- load and height limits – none within the study area
- turning restrictions
  - no general traffic travel permitted on Oxford Street between Bronte Road and Hollywood Avenue
  - no general traffic travel permitted on Bronte Road between Oxford Street and Spring Street
  - no entering movements are allowed from the intersection of Newland Street and Spring Street to the eastern approach of Spring Street
  - no right turning movement is allowed from the western approach of Spring Street to Newland Street
  - no right turning movement is allowed from the southern approach of York Road to Oxford Street, except buses.

2.4 Traffic volumes

Intersection traffic surveys were conducted on Thursday 12 June 2014 between 6.00 am and 10.00 am and 3.00 pm and 7.00 pm at the following intersections within the study area (refer to Figure 2.1):

- Oxford Street and Bronte Road (I-01) – signalised T-junction
- Bronte Road and Spring Street (I-02) – priority controlled T-junction
- Mid-block pedestrian crossing on Spring Street (I-03) – signalised pedestrian crossing
- Newland Street and Spring Street (I-04) – signalised cross intersection
- Denison Street and Spring Street (I-05) – priority controlled T-junction
- Oxford Street and Denison Street (I-06) – priority controlled T-junction
- Oxford Street and Nelson Street (I-07) – signalised T-junction
- Oxford Street and York Road (I-08) – signalised cross intersection.



Source: Google Maps (2014)

Figure 2.1 Key intersections within the study area

The volumes of light and heavy vehicles, buses, pedestrians and cyclists and queue lengths on each approach were recorded and utilised for intersection modelling purposes. Data retrieved from the surveys indicate that the weekday AM peak hour generally occurs between 8.00 am and 9.00 am and the weekday PM peak hour between 5.15 pm and 6.15 pm.

Figure 2.2 shows the intersection turning movements volumes in vehicles per hour (vph) during the analysed weekday AM and PM peak hour. These are regarded as the existing volumes for the assessment of the existing conditions.

Intersection diagnostic monitor (IDM) surveys were also conducted at the signalised intersections by RMS to determine traffic signal phasing and cycle times. Traffic signal phasing and cycle times were also measured during the site inspection. This data was then entered into the SIDRA intersection modelling package for review of intersection performance.

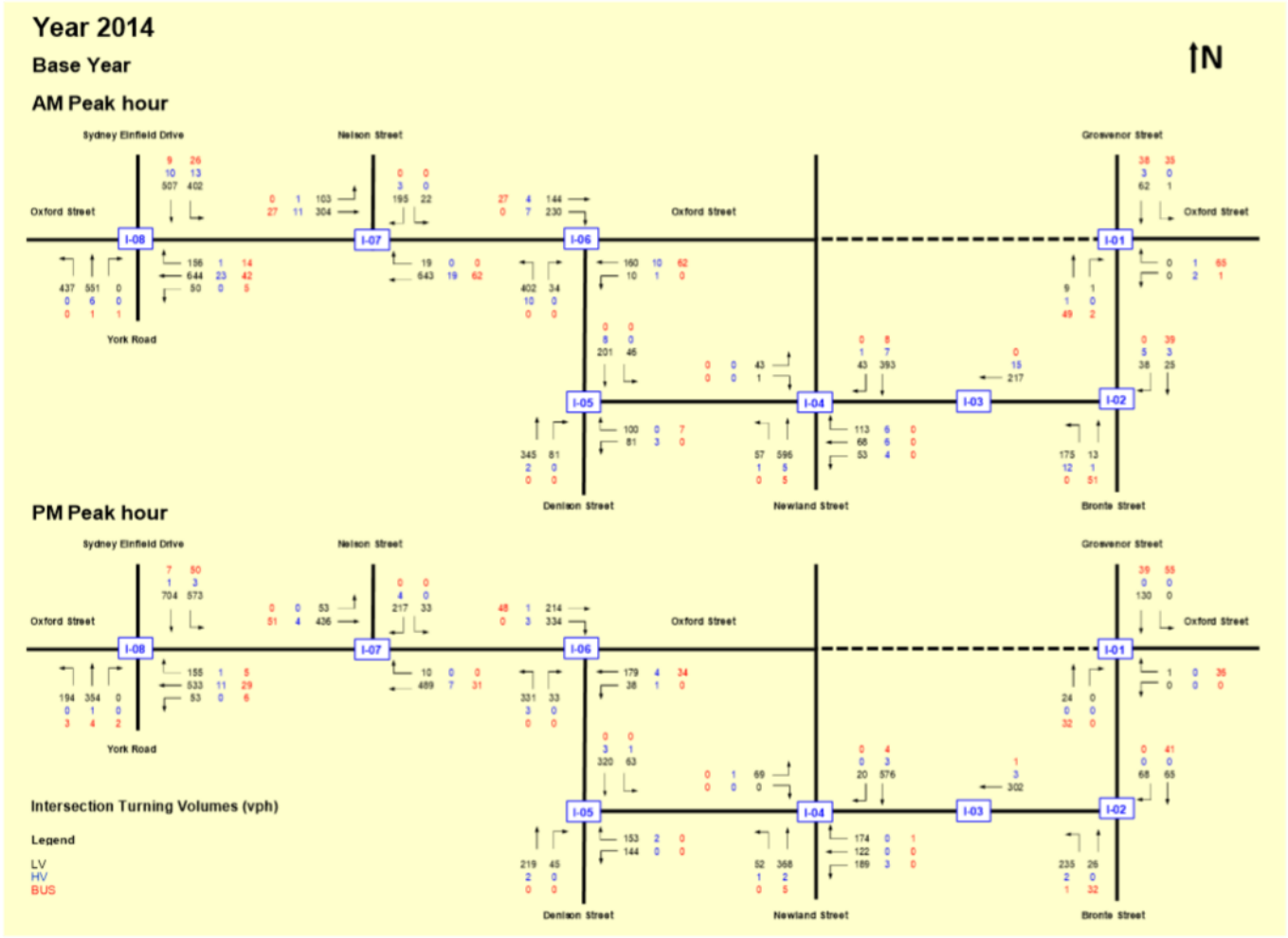


Figure 2.2 Existing weekday AM and PM peak hour vehicle volumes (Year 2014)

2.5 Parking

A summary of existing parking restrictions within the study area are shown in Figure 2.3 and detailed of parking spaces are summarised in Appendix A.

Source: Google Maps (Base map)

Figure 2.3 Existing parking restriction within the study area

In summary, the available on-street parking within the study area consists of:

- five bus zones with capacity for eight buses
- three taxi zones with capacity for 21 taxis
- three truck zones with capacity for up to 13 small to medium rigid trucks
- three loading zones of 11 m, 29 m and 30 m
- one no parking zone with council vehicles excepted
- two no parking zones intended for loading.

2.6 Public transport

Bondi Junction is serviced by both bus and train via the interchange accessible via Grosvenor Street and Newland Street (bus access) and Grosvenor Street, Grafton Street and Oxford Street mall (pedestrian access).

2.6.1 Buses

Bus services currently operate along parts of the proposed cycleway alignment, primarily Bronte Road and Oxford Street which are operated by Sydney Buses. There are three inbound and outbound stops that are located along or in close proximity of the proposed cycleway alignment as presented in in Figure 2.4.

Source: Google Maps (Base map)

Figure 2.4 Existing bus stops within the study area

Existing bus services that operate within the study area are detailed in Table 2.1.

Table 2.1 Bus services within the study area

Bus route	Description	Hours of operation (weekday)	Frequency of Services
Bus services on Oxford Street (west of Newland Street)			
333	Daily service between North Bondi and Circular Quay via Bondi Junction interchange	From North Bondi (from 5.26 am to 11.03 pm)	AM/PM peak: 5–15 minutes Off peak: 10–20 minutes
		From Circular Quay (from 6.20 am to 11.55 pm)	AM/PM peak: 6–20 minutes Off peak: 10–20 minutes
352	Daily service between Bondi Junction and Marrickville via Surry Hills	From Bondi Junction (from 6.55 am to 8.40 pm)	AM/PM peak: 20 minutes Off peak: 30–40 minutes
		From Marrickville (from 7.45 am to 9.00 pm)	AM/PM peak: 20 minutes Off peak: 30–45 minutes
355	Daily service between Bondi Junction and Marrickville via Alexandria	From Bondi Junction (from 6.05 am to 6.10 pm)	AM/PM peak: 30 minutes Off peak: 30 minutes
		From Marrickville (from 5.33 am to 6.33 pm)	AM/PM peak: 30 minutes Off peak: 30 minutes
378	Daily service between Bronte Beach and Railway Square via Bondi Junction interchange	From Bronte Beach (from 5.04 am to 11.17 pm)	AM/PM peak: 5–15 minutes Off peak: 10–30 minutes
		From Railway Square (from 4.51 am to 12.03 am)	AM/PM peak: 7–10 minutes Off peak: 10–30 minutes
380	Daily service between Dover Heights/North Bondi and	From Dover Heights (from 4.25 am to 3.55 am)	AM/PM peak: 6–10 minutes Off peak: 10–20 minutes

Bus route	Description	Hours of operation (weekday)	Frequency of Services
	Circular Quay	From Circular Quay (from 4.09 am to 3.40 am)	AM/PM peak: 5–20 minutes Off peak: 10–30 minutes
389	Daily service between North Bondi and Circular Quay via Bondi Junction interchange	From North Bondi (from 4.27 am to 11.20 pm)	AM/PM peak: 7–15 minutes Off peak: 10–30 minutes
		From Circular Quay (from 5.17 am to 12.16 am)	AM/PM peak: 10 minutes Off peak: 10–30 minutes
M40	Daily service between North Bondi and Circular Quay via Bondi Junction interchange	From Bondi Junction (from 6.46 am to 8.07 pm)	AM/PM peak: 10 minutes Off peak: 15 minutes
		From Chatswood (from 6.38 am to 8.02 pm)	AM/PM peak: 10 minutes Off peak: 15 minutes
Bus services on Bronte Road			
313	Daily service between Bondi Junction to Coogee via Randwick	From Bondi Junction (from 9.24 am to 6.49 pm)	AM/PM peak: 30 minutes Off peak: 30–60 minutes
		From Coogee (from 7.19 am to 4.28 pm)	AM/PM peak: 15–30 minutes Off peak: 30 minutes
314	Daily service between Bondi Junction to Coogee via Randwick	From Bondi Junction (from 6.00 am to 11.39 pm)	AM/PM peak: 10–30 minutes Off peak: 30–40 minutes
		From Coogee (from 6.00 am to 10.31 pm)	AM/PM peak: 15–30 minutes Off peak: 30 minutes
316	Daily service between Bondi Junction to Eastgardens via South Coogee	From Bondi Junction (from 7.12 am to 8.19 pm)	AM/PM peak: 30–60 minutes Off peak: 30–60 minutes
		From Eastgardens (from 6.16 am to 6.14 pm)	AM/PM peak: 30–60 minutes Off peak: 30–60 minutes
317	Daily service between Bondi Junction to Eastgardens via South Coogee	From Bondi Junction (from 6.42 am to 10.44 pm)	AM/PM peak: 30 minutes Off peak: 30 minutes
		From Eastgardens (from 7.04 am to 6.30 pm)	AM/PM peak: 30 minutes Off peak: 30 minutes
348	Monday to Friday service between Bondi Junction and Wolli Creek via UNSW	From Bondi Junction (from 6.29 am to 6.24 pm)	AM/PM peak: 30 minutes Off peak: 30 minutes
		From Wolli Creek (from 6.51 am to 6.21 pm)	AM/PM peak: 30 minutes Off peak: 30 minutes
353	Daily service between Bondi Junction to Eastgardens via South Coogee	From Bondi Junction (from 7.21 am to 8.10 pm)	AM/PM peak: 15–20 minutes Off peak: 30 minutes
		From Eastgardens (from 6.41 am to 7.21 pm)	AM/PM peak: 20 minutes Off peak: 30 minutes
360	Daily service between Bondi Junction to North Clovelly via Waverley	From Bondi Junction (from 7.05 am to 7.29 pm)	AM/PM peak: 10–30 minutes Off peak: 30 minutes
		From North Clovelly (from 6.40 am to 7.18 pm)	AM/PM peak: 15–30 minutes Off peak: 30 minutes

Bus route	Description	Hours of operation (weekday)	Frequency of Services
361	Daily service between Bondi Junction to South Bondi via Waverley	From Bondi Junction (from 6.50 am to 6.58 pm)	AM/PM peak: 20–30 minutes Off peak: 30 minutes
		From South Bondi (from 5.54 am to 6.10 pm)	AM/PM peak: 15–30 minutes Off peak: 30 minutes
378	Daily service between Bronte to Railway Square via Bondi Junction	From Bronte (from 5.04 am to 11.17 pm)	AM/PM peak: 4–10 minutes Off peak: 10–30 minutes
		From Railway Square (from 4.51 am to 12.03 am)	AM/PM peak: 6–10 minutes Off peak: 10–30 minutes
400	Daily service between Bondi Junction to Burwood via Sydney Airport	From Bondi Junction (from 5.00 am to 11.06 pm)	AM/PM peak: 20 minutes Off peak: 20–30 minutes
		From Burwood (from 4.43 am to 10.52 pm)	AM/PM peak: 20 minutes Off peak: 20–30 minutes
410	Monday to Friday peak hour limited service between Bondi Junction and Rockdale via UNSW	From Bondi Junction (from 7.14 am to 5.43 pm)	AM/PM peak: 20–60 minutes
		From Rockdale (from 6.47 am to 5.46 pm)	AM/PM peak: 20–30 minutes

Source: Sydney Buses timetable

2.6.2 Trains

Bondi Junction train station is located within walking distance of the proposed cycleway, as it can be accessed via Grosvenor Street and the Oxford Street Mall. This station is the last stop on the T4 Eastern Suburbs & Illawarra Line and the South Coast Line. Trains stop every 3 to 5 minutes during peak periods and every 10 minutes during off-peak periods. Table 2.2 summarises the number of train services and operating hours at Bondi Junction station.

Table 2.2 Train services at Bondi Junction station

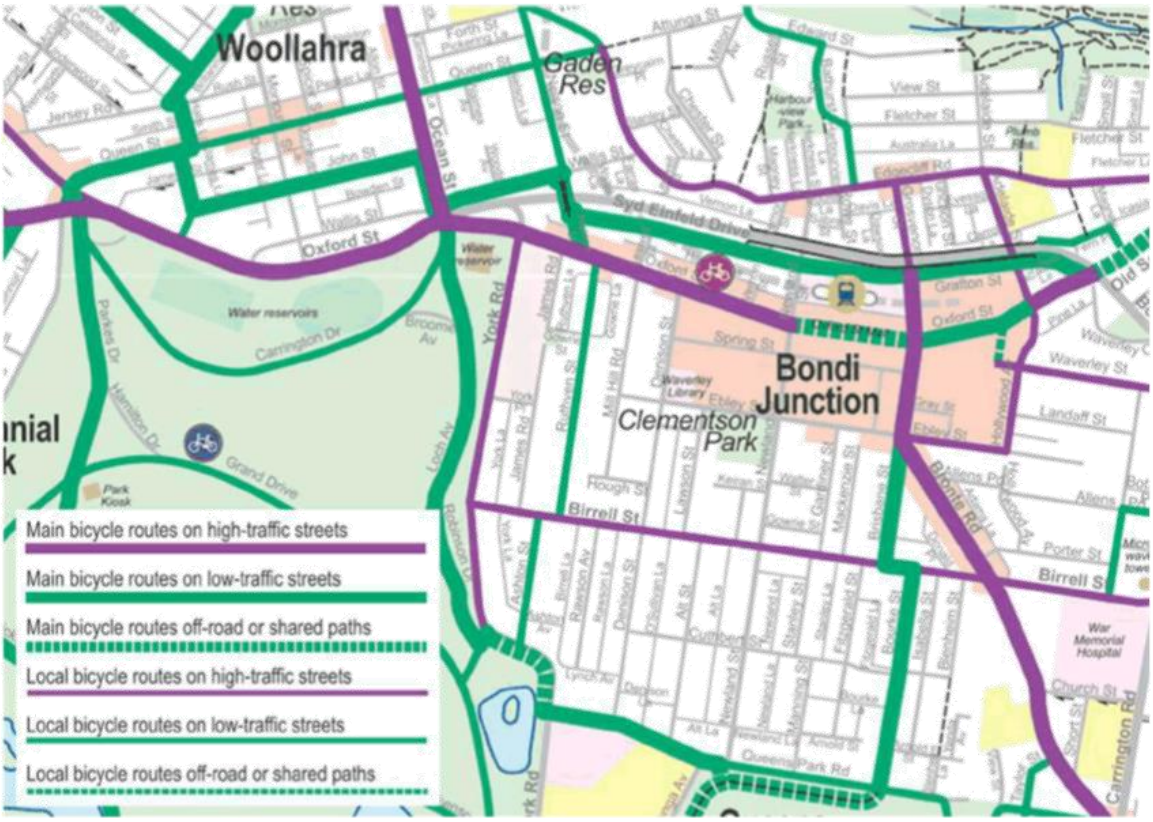
Rail line	Description	Hours of operation (weekday)	Daily services	Frequency of Services
T4 Eastern Suburbs & Illawarra Line	Waterfall or Cronulla to Bondi Junction	From Waterfall or Cronulla (from 3.54 am to 11.24 pm)	181	AM/PM peak: 3–5 minutes Off peak: 10 minutes
		From Bondi Junction (from 4.55 am to 12.55 am)	181	AM/PM peak: 3–5 minutes Off peak: 10 minutes
South Coast Line	Bomaderry or Port Kembla to Central and Bondi Junction	From Bomaderry or Port Kembla (from 5.15 am to 3.55 pm)	9	AM/PM peak: 20–30 minutes
		From Bondi Junction (from 7.59 am to 5.52 pm)	7	AM/PM peak: 15–45 minutes

Source: Transport Sydney Trains timetable

2.7 Cycling

2.7.1 Existing cycle routes

The Waverley Council cycling map presents the existing cycle network within the study area. These routes include a shared path on Oxford Street Mall between Bronte Road and Newland Street, but there is no separated cycling route and cyclists would have to share the traffic lane with motor vehicles. Figure 2.5 presents an extract from Waverley Council cycle route map.



Source: Extract from Waverley council cycle route map (http://www.waverley.nsw.gov.au/__data/assets/pdf_file/0018/7524/CycleRouteMapBrochure.pdf)

Figure 2.5 Waverley Council cycle route map

2.7.2 Cyclist volumes

On and off road cyclist volumes were counted during the traffic surveys conducted on Thursday 12 June 2014. The volume of cyclists observed during the weekday AM and PM peak periods are shown in Figure 2.6. The highest volumes of cyclists were observed on Oxford Street between Denison Street and York Road.

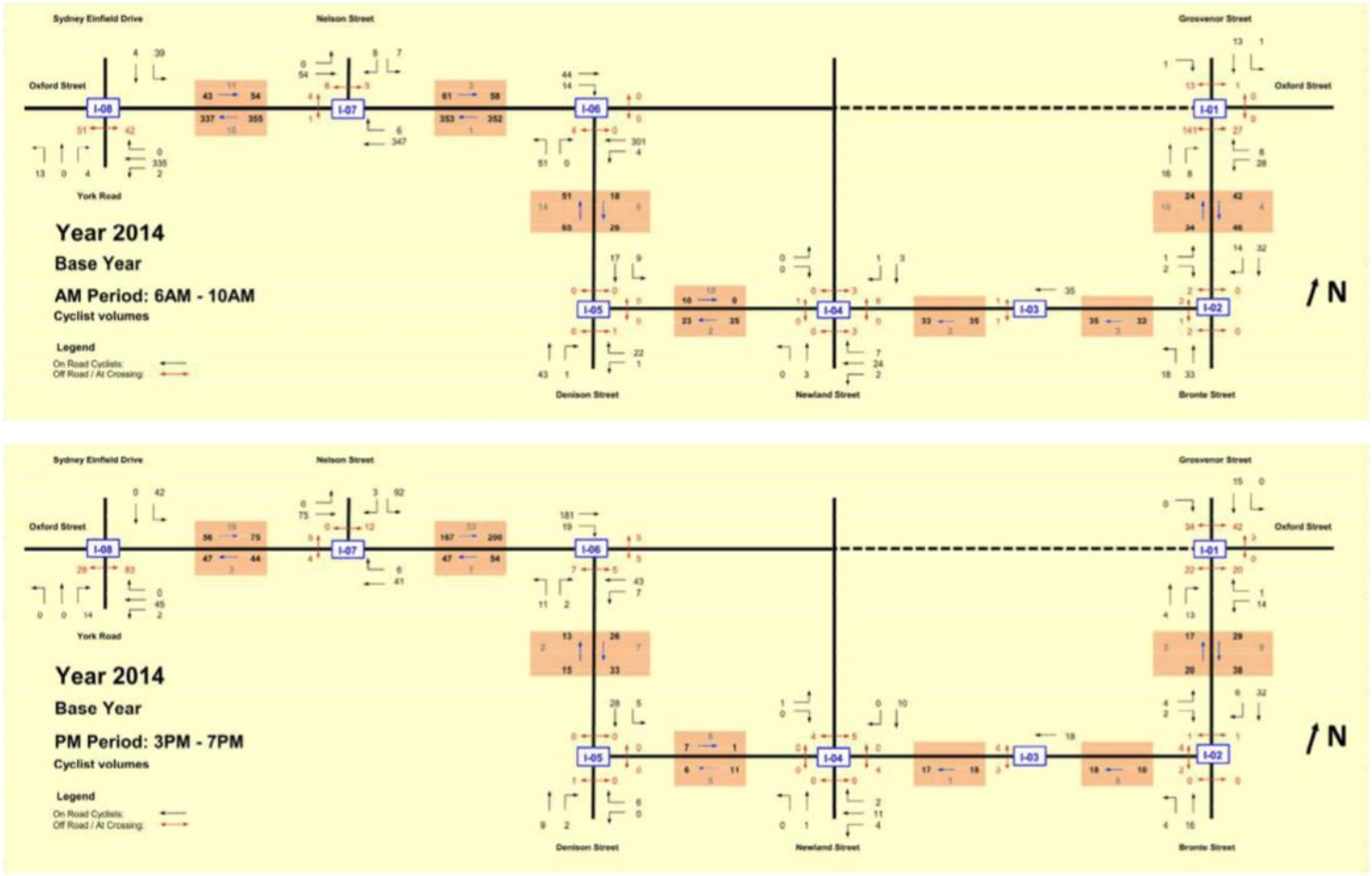
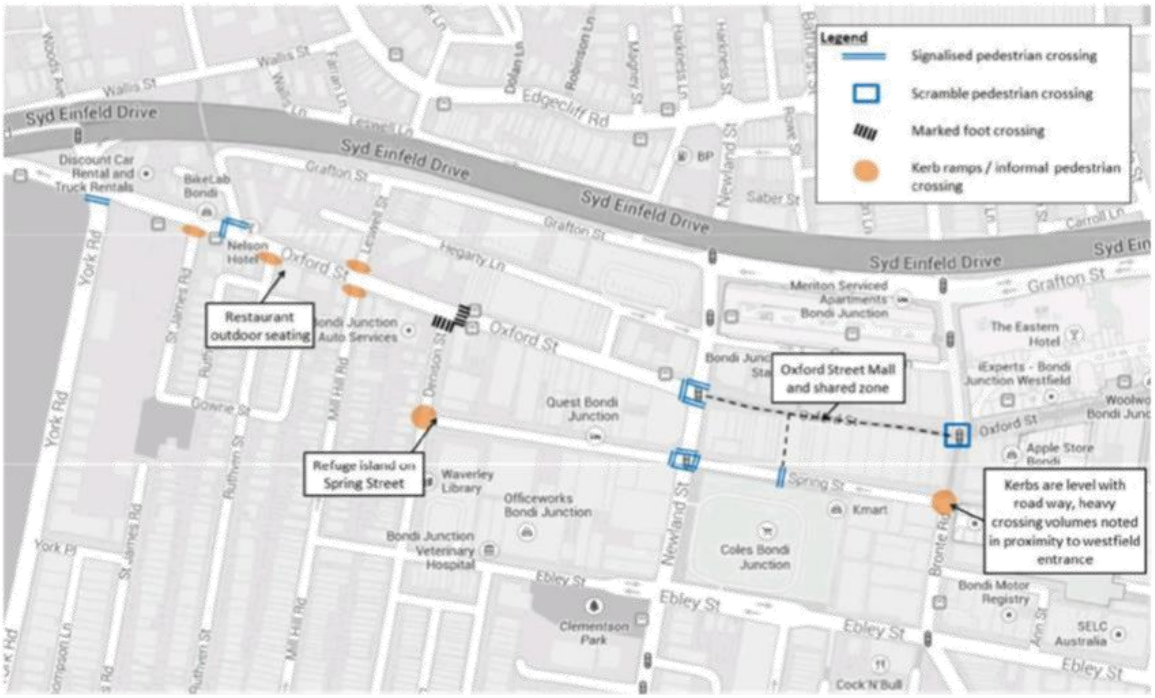


Figure 2.6 Cyclist volumes for weekday AM and PM peak hours

2.8 Pedestrians

Pedestrian footpaths are provided on both sides of the streets within the study area. These footpaths vary in width as building boundary lines and kerb alignments vary. There are also a number of formal and informal pedestrian crossings within the study area. Pedestrian crossings and other relevant features affecting pedestrian amenity are shown in Figure 2.7.



Source: Google Maps (Base map)

Figure 2.7 Existing pedestrian facilities

3. Proposed cycleway design

The proposed cycleway design and road network modifications are shown in Figures 3.1 to Figure 3.5 on the following pages (and in larger format in Appendix B) and detailed in sections 3.1 to 3.6.

The proposed cycleway design and road modifications include:

- upgrade of the intersection of Bronte Road and Spring Street for pedestrian amenity including a proposed pedestrian zebra crossing on Spring Street at Bronte Road
- a separated two way cycleway on the:
  - northern side of Spring Street between Bronte Road and Denison Street
  - western side of Denison Street between Spring Street and Oxford Street
  - southern side of Oxford Street between Denison Street and Nelson Street
- a shared path on the southern side of Oxford Street between Nelson Street and York Road
- a shared path on the southern side of Oxford Street between York Road and Syd Einfeld Drive
- resultant narrowing of Spring Street, Denison Street and Oxford Street traffic and parking lanes
- continued provision of loading zone area on the northern side of Spring Street west of Bronte Road adjacent to the cycleway
- raised Spring Street signalised midblock pedestrian crossing
- removal of left turn lane westbound on Spring Street at Newland Street
- implementation of shared left and through lane and a short right turn lane westbound on Spring Street at Newland Street
- removal of pedestrian refuge on Spring Street at Denison Street
- upgrade of the intersection of Spring Street and Denison Street for pedestrian amenity
- implementation of a raised pedestrian zebra and cycleway crossing on Denison Street at Spring Street
- upgrade of pedestrian crossing at Oxford Street and Denison Street to a raised pedestrian crossing
- removal of bus stops on Oxford Street east of Denison Street
- upgrade of the intersection of Oxford Street, Leswell Street and Mill Hill Road
- upgrade of the intersection of Oxford Street and Ruthven Street
- changed kerb alignment of southern side of Oxford Street between Nelson Street and York Road with a small reduction to westbound traffic lane capacity
- introduction of no right turn into Nelson Street from Oxford Street westbound
- introduction of no right turn into Oxford Street from Denison Street northbound
- realignment of westbound traffic lanes west of York Road and upgrade to bus stop in front of bus depot
- some removal of on-street parking on Spring Street, Denison Street and Oxford Street
- additional bicycle parking on Spring Street
- kerb extensions at upgraded intersections
- footpath continuation treatments and pedestrian facility improvements at intersections
- general streetscape changes.

The design proposes the following traffic lane, parking lane and cycleway dimensions in accordance with relevant Australian Standards, Austroads Guidelines, Council guidelines and design precedent and includes:

- Parallel parking lanes of 2.1 m width for cars and light commercials and 2.6 m width for trucks and buses.
- Minimum traffic lane of 3.0 m width for single lane one way and 2.75 m for one lane traffic in either direction for local roads and 3.2 m width for lanes with designated bus routes. The design has provided a 3.5 m wide single lane on the Spring Street one way section and 2.9 m wide lanes where Spring Street is one lane in either direction which exceeds minimum widths.
- Loading zones of 2.6 m width.
- Minimum separated bi-directional cycleway lane of 2.4 m width with a median separator of 0.4 m along the length of the cycleway which is acceptable due to the direction of the car parking (opposite to the cycleway travel direction). Where there is significant loading activity on Spring Street east the design has provided an increased median separator of 1.4 m.

3.1 Bronte Road and Spring Street intersection

The following works are proposed at the intersection of Bronte Road and Spring Street (as shown in Figure 3.1):

- Increased kerb extensions on Bronte Road and Spring Street with kerb ramps and planter boxes, including formalised pedestrian crossing locations.
- Resultant lane narrowing on Bronte Road (3.3 m for each traffic lane).
- Resultant lane narrowing on Spring Street (3.5 m single traffic lane).
- At-grade zebra crossing on Spring Street at Bronte Road.
- Cycleway exit lane adjacent to northern kerbs on Spring Street (discontinued at pedestrian zebra crossing) with storage for waiting cyclists between the pedestrian zebra crossing and the give way line at Bronte Road.
- A loss of between 3 and 6 m of kerbside parking on each side of the Bronte Road kerb extensions.

Figure 3.1 Bronte Road and Spring Street intersection layout

3.2 Spring Street

The following works are proposed on the eastern section of Spring Street (as shown in Figure 3.2):

- A separated two-way cycleway on the northern side of Spring Street with 1.2 m travel lanes (2.4 m wide cycleway) and 1.4 m buffer to parking lanes.
- Resultant lane narrowing on Spring Street to a 3.5 m wide single traffic lane.
- Kerbside parking lanes of 2.8 m on the northern side and 2.6 m on the southern side
- Increased kerb extensions at Bronte Road with kerb ramps and planter boxes.
- Raised signalised midblock pedestrian crossing with kerb extensions and streetscape work.
- Bicycle parking provided on kerb extensions adjacent to the proposed zebra crossing near Bronte Road
- Removal of left turn lane westbound on Spring Street at Newland Street.
- Implementation of shared left and through lane and a short right turn lane westbound on Spring Street at Newland Street.
- A loss of up to 42 m of total kerbside parking between the signalised pedestrian crossing and Newland Street on Spring Street.

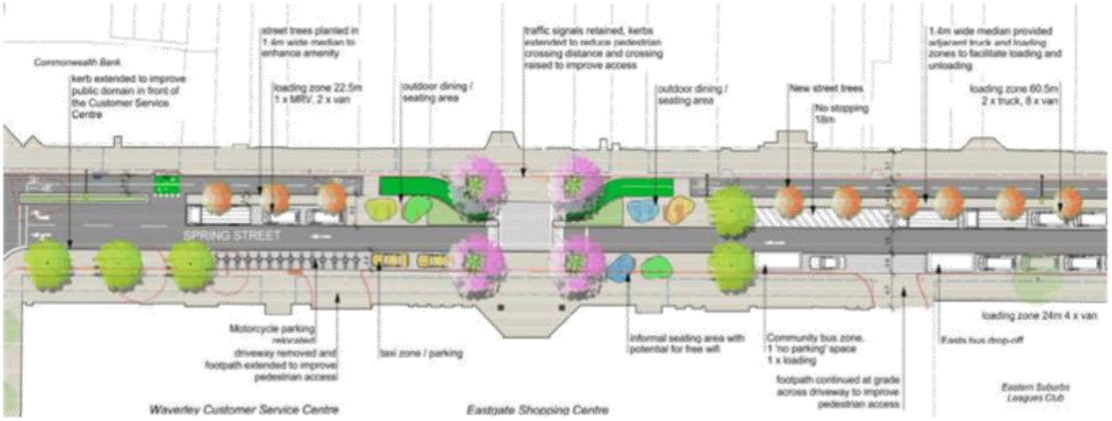


Figure 3.2 Spring Street (east) layout

The following works are proposed on the western section of Spring Street (as shown in Figure 3.3):

- a separated two-way cycleway on the northern side of Spring street with 1.2 m travel lanes (2.4 m wide cycleway) and 0.4 m buffer to parking lanes
- resultant lane narrowing on Spring Street to 2.9 m wide traffic lanes
- kerbside parking lanes of 2.1 m width and loading zones of 2.6 m width
- kerb extensions at Denison Street with kerb ramps
- removal of the pedestrian refuge island at Denison Street
- a loss of parking available to the Jax Tyres business on the corner of Spring Street and Denison Street.

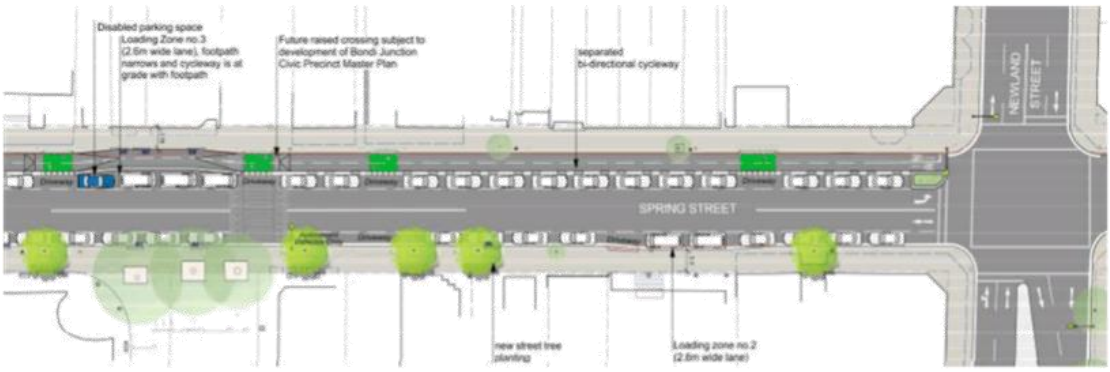


Figure 3.3 Spring Street (west) layout

3.3 Denison Street

The following works are proposed on Denison Street (as shown in Figure 3.4):

- a separated two-way cycleway on the western side of Denison street between Spring Street and Oxford Street with 1.2 m travel lanes (2.4 m wide cycleway) and 0.4 m buffer to parking lanes
- resultant lane narrowing near Spring Street to 2.9 m traffic lanes widening to 3.5 m northbound and 3.0 m southbound near Oxford Street
- kerbside parking lanes of 2.1 m
- kerb extensions north and south of Spring Street
- a raised pedestrian zebra and cycleway crossing between north of Spring Street
- upgrade of the pedestrian refuge island at Oxford Street to a raised pedestrian zebra crossing
- kerb extensions with kerb ramps at Oxford Street
- A loss of up to 12 m of total short term kerbside parking between Oxford Street and Spring Street.

Figure 3.4 Denison Street and Spring Street intersection layout

3.4 Oxford Street and Denison Street intersection

The following works are proposed at the intersection of Oxford Street and Denison Street (as shown in Figure 3.5):

- continuation of a two-way cycleway through the southwest corner of the intersection with 1.2 m travel lanes (2.4 m wide cycleway) and 0.4 m buffer to parking lanes
- kerbside parking lanes of 2.1 m
- kerb extension on the southern side of Oxford Street west of Denison Street
- kerb extension on the eastern side of Denison Street south of Oxford Street
- give way line at Denison Street moved north in line with new kerb line on Oxford Street
- upgrade of the existing pedestrian zebra crossing on Oxford Street to include kerb extension on the southern side
- removal of bus zones east of Denison Street (reclaimed for parking or loading)
- upgrade of the pedestrian refuge island at Oxford Street to an at-grade zebra crossing (as mentioned in section 3.3).

Figure 3.5 Oxford Street and Denison Street intersection layout

3.5 Oxford Street

The following works are proposed on the eastern section of Oxford Street:

- a separated two-way cycleway on the southern side of Oxford Street between Denison Street and Nelson Street with 1.2 m travel lanes (2.4 m wide cycleway) and 0.4 m buffer
- resultant lane narrowing on Oxford Street to minimum 3.25 m traffic lanes
- kerbside parking lanes of 2.1 m
- kerb extensions at Leswell Street, Mill Hill Road and Ruthven Street with kerb ramps and raised threshold treatments
- pedestrian zebra crossings on the proposed raised thresholds on Mill Hill Road and Ruthven Street (set back from cycleway)
- kerb extension on the southern side of Oxford Street at Nelson Street and resulting westbound lanes reduced to a single traffic lane at the intersection
- shared path and upgraded bus stop on the southern side of Oxford Street adjacent to the Sydney Buses bus depot (subject to ongoing discussions with Sydney Buses and Transport for NSW)
- kerbside lane widths between Nelson Street and York Road of 3.10 m width and median lane widths of 3.25 m width (subject to ongoing discussions with Sydney Buses and Transport for NSW)

- a loss of up to 39 m of kerbside parking on Oxford Street between Denison Street and York Road.

3.6 Oxford Street and York Road intersection

The following works are proposed on the intersection of Oxford Street and York Road:

- extended kerb and shared path on the southern side of Oxford Street from Nelson Street up to the entry to Centennial Park
- resultant lane narrowing on Oxford Street to 3.25 m traffic lanes (3.25 m kerbside lanes west of York Road)
- upgraded bus stops on Oxford Street
- realigned pedestrian crossing and stop line on southern leg of the York Road and Oxford Street intersection to meet new kerb alignment.

4. Warrant assessment

Six sites have been proposed with new pedestrian zebra crossings or footpath continuation treatments as below:

- Pedestrian zebra crossing on Ruthven Street at Oxford Street
- Pedestrian zebra crossing on Mill Hill Road at Oxford Street
- Pedestrian zebra crossing with parallel cycle crossing on Denison Street at Spring Street
- Pedestrian zebra crossing on Spring Street at Bronte Road
- New footpath continuation treatment crossing on Leswell Street at Oxford Street
- New footpath continuation treatment crossing on St James Road at Oxford Street.

Traffic and pedestrian surveys were undertaken on Thursday 19 February 2015 to determine whether or not the pedestrian zebra or footpath continuation warrants for these six sites were achieved. The pedestrian zebra and footpath continuation warrant requirements are detailed in section 4.1 and 4.2 and are assessed in section 4.3.

4.1 Pedestrian zebra warrants

A pedestrian zebra crossing should be considered where:

(i) normal warrant:

(a) the product of the measured pedestrian flow per hour (P) and the measured vehicle traffic flow per hour (V), PV, is equal or greater than 60,000 and

(b) the measured flows, P and V are equal of greater than 30 and 500 respectively

(c) the measured flows apply for the three periods of one hour in any day

(ii) special warrant

(d) in certain circumstances where the product of PV is greater or equal to 45,000 (but less than 60,000) and P is greater than or equal to 30 and V is greater than or equal to 500 then consideration can be given to a potential pedestrian zebra crossing site

(iii) reduced warrant for children, the aged or physically impaired pedestrians.

Crossing used by children:

- in two hours of one hour duration immediately before and after school hours P > 30 and V > 200 (PV>6,000).

Crossing for the aged and physically impaired:

- during three periods of one hour in any one day P > 30 (of which 50% using the crossing are aged or physically impaired) and V > 200, and PV > 60,000.

4.2 Footpath continuation warrants

A continuous footpath treatment is applicable where:

- Typically no more than 45 vehicles per hour moving through the intersection to be treated. There should be few, if any, heavy vehicles frequenting the intersection. Measured vehicle flows apply for three periods of one hour in any day. This measure should capture the busiest traffic flows at that location.
- No minimum requirement for measured pedestrian flow per hour.

4.3 Assessment

Table 4.1 shows the existing pedestrian and traffic volumes at the proposed pedestrian zebra crossing on Ruthven Street at Oxford Street. The traffic volumes do not meet the pedestrian zebra warrants, or the continuous footpath warrant. This treatment would need to be approved based on existing treatment precedents.

Table 4.1 Pedestrian Zebra Crossing on Ruthven Street at Oxford Street

Hours	Pedestrian volumes (P)	Traffic volumes (V)	Combination (PV)
6.00 am–7.00 am	68	52	3,536
7.00 am–8.00 am	125	252	31,500
8.00 am–9.00 am	178	290	51,620
9.00 am–10.00 am	128	166	21,248
10.00 am–11.00 am	87	141	12,267
11.00 am–12.00 pm	95	115	10,925
12.00 pm–1.00 pm	121	129	15,609
1.00 pm–2.00 pm	87	114	9,918
2.00 pm–3.00 pm	116	123	14,268
3.00 pm–4.00 pm	123	153	18,819
4.00 pm–5.00 pm	127	121	15,367
5.00 pm–6.00 pm	173	130	22,490
6.00 pm–7.00 pm	188	121	22,748

Table 4.2 Pedestrian Zebra Crossing on Mill Hill Road at Oxford Street

Hours	Pedestrian volumes (P)	Traffic volumes (V)	Combination (PV)
6.00 am–7.00 am	75	18	1,350
7.00 am–8.00 am	168	22	3,696
8.00 am–9.00 am	203	51	10,353
9.00 am–10.00 am	119	41	4,879
10.00 am–11.00 am	93	33	3,069
11.00 am–12.00 pm	142	46	6,532
12.00 pm–1.00 pm	164	30	4,920
1.00 pm–2.00 pm	108	19	2,052
2.00 pm–3.00 pm	97	33	3,201
3.00 pm–4.00 pm	144	19	2,736
4.00 pm–5.00 pm	157	9	1,413
5.00 pm–6.00 pm	160	17	2,720
6.00 pm–7.00 pm	220	3	660

Table 4.2 shows the existing pedestrian and traffic volumes at the proposed pedestrian zebra crossing on Mill Hill Road at Oxford Street. The traffic volumes do not meet the pedestrian zebra warrants, but they do meet the continuous footpath warrant.

Table 4.3 Raised pedestrian Zebra Crossing on Denison Street at Spring Street

Hours	Pedestrian volumes (P)	Traffic volumes (V)	Combination (PV)
6.00 am–7.00 am	12	241	2,892
7.00 am–8.00 am	18	592	10,656
8.00 am–9.00 am	12	672	8,064
9.00 am–10.00 am	12	571	6,852
10.00 am–11.00 am	19	556	10,564
11.00 am–12.00 pm	9	645	5,805
12.00 pm–1.00 pm	19	624	11,856
1.00 pm–2.00 pm	9	585	5,265
2.00 pm–3.00 pm	9	654	5,886
3.00 pm–4.00 pm	7	687	4,809
4.00 pm–5.00 pm	15	684	10,260
5.00 pm–6.00 pm	20	760	15,200
6.00 pm–7.00 pm	25	637	15,925

Table 4.3 shows the existing pedestrian and traffic volumes at the proposed raised pedestrian zebra crossing on Denison Street at Spring Street. The traffic volumes do not meet the pedestrian zebra warrants. This treatment would need to be approved based on existing treatment precedents and safety reasons.

Table 4.4 Pedestrian Zebra Crossing on Spring Street at Bronte Road

Hours	Pedestrian volumes (P)	Traffic volumes (V)	Combination (PV)
6.00 am–7.00 am	58	99	5,742
7.00 am–8.00 am	51	149	7,599
8.00 am–9.00 am	64	188	12,032
9.00 am–10.00 am	89	226	20,114
10.00 am–11.00 am	108	233	25,164
11.00 am–12.00 pm	103	234	24,102
12.00 pm–1.00 pm	121	258	31,218
1.00 pm–2.00 pm	128	264	33,792
2.00 pm–3.00 pm	157	236	37,052
3.00 pm–4.00 pm	165	231	38,115
4.00 pm–5.00 pm	213	283	60,279
5.00 pm–6.00 pm	167	287	47,929
6.00 pm–7.00 pm	241	259	62,419

Table 4.4 demonstrates the existing pedestrian and traffic volumes at the proposed pedestrian zebra crossing on Spring Street at Bronte Road. The values of P multiplying V have two periods of one hour are higher than 60,000 and one period of one hour higher than 45,000 but less than 60,000. A special warrant could be applied for the period between 5 pm and 6 pm.

Table 4.5 shows the existing pedestrian and traffic volumes at the proposed pedestrian zebra crossing on St James Road at Oxford Street. The traffic volumes do not meet the pedestrian zebra warrants, but they do meet the continuous footpath warrant.

Table 4.5 Pedestrian Footpath Continuation Crossing on St James Road at Oxford Street

Hours	Pedestrian volumes (P)	Traffic volumes (V)	Combination (PV)
6.00 am–7.00 am	1	8	8
7.00 am–8.00 am	8	16	128
8.00 am–9.00 am	4	13	52
9.00 am–10.00 am	2	12	24
10.00 am–11.00 am	1	17	17
11.00 am–12.00 pm	0	13	0
12.00 pm–1.00 pm	0	10	0
1.00 pm–2.00 pm	2	13	26
2.00 pm–3.00 pm	8	16	128
3.00 pm–4.00 pm	0	14	0
4.00 pm–5.00 pm	1	9	9
5.00 pm–6.00 pm	1	14	14
6.00 pm–7.00 pm	2	19	38

Table 4.6 shows the existing pedestrian and traffic volumes at the proposed pedestrian zebra crossing on Leswell Street at Oxford Street. The traffic volumes do not meet the pedestrian zebra warrants, nor do they meet the continuous footpath warrant.

Table 4.6 Pedestrian Footpath Continuation Crossing on Leswell Street at Oxford Street

Hours	Pedestrian volumes (P)	Traffic volumes (V)	Combination (PV)
6.00 am–7.00 am	3	56	168
7.00 am–8.00 am	13	224	2,912
8.00 am–9.00 am	27	276	7,452
9.00 am–10.00 am	23	182	4,186
10.00 am–11.00 am	12	137	1,644
11.00 am–12.00 pm	13	168	2,184
12.00 pm–1.00 pm	24	128	3,072
1.00 pm–2.00 pm	38	116	4,408
2.00 pm–3.00 pm	29	120	3,480
3.00 pm–4.00 pm	37	264	9,768
4.00 pm–5.00 pm	23	207	4,761
5.00 pm–6.00 pm	10	215	2,150
6.00 pm–7.00 pm	11	157	1,727

The above assessment and recommendations are summarised in Table 4.7. Pedestrian zebra crossings on Ruthven Street at Oxford Street, and crossing Spring Street at Bronte Road are recommended. Continuous footpath treatments crossing Mill Hill Road at Oxford Street, and crossing St James Road at Oxford Street are both recommended. Pram ramps are recommended at the Leswell Street crossing.

Table 4.7 Summary of proposed treatments, associated warrants and recommendations

Pedestrian activity Site	Proposed design	Meets pedestrian zebra crossing warrant	Meets continuous footpath warrant	Recommendations
Crossing Ruthven Street along Oxford Street	Zebra crossing	×	×	Recommend pedestrian zebra crossing based on precedent
Crossing Mill Hill Road along Oxford Street	Zebra crossing	×	√	Recommend continuous footpath treatment
Crossing Denison Street along Spring Street	Zebra crossing	×	×	Recommend raised pedestrian zebra crossing based on precedent
Crossing Spring Street along Bronte Road	Zebra crossing	√	×	Recommend zebra crossing
Crossing St James Road along Oxford Street	Continuous footpath treatment	×	√	Recommend continuous footpath treatment
Crossing Leswell Street along Oxford Street	Continuous footpath treatment	×	×	Recommend pram ramps

4.3.1 Assessment of Precedent

The pedestrian zebra crossings proposed at Ruthven Street and Oxford Street, and Denison Street near Spring Street are expected to have lower than required pedestrian and/or vehicle volumes. However these crossings have both been proposed in conjunction with a cycle priority crossing, a design which has been utilised for other cycle ways in Sydney to promote both pedestrian and cyclist priority and safety.

Examples of this treatment include:

- Bourke Street Cycleway, Alexandria, at Devonshire Street
- George Street Cycleway, Redfern, at Wellington Street and Allen Street.

The Bourke Street Cycleway runs north-south through Alexandria to the south-east of the CBD. This cycleway follows a key north-south spine within the local area, with several connecting east-west streets. Where Bourke Street meets Devonshire Street, a local collector road, there is a conflict between vehicles utilising the direct Devonshire Corridor and cyclists utilising the bicycle priority on the north-south Bourke Street cycleway. In addition, there are a number of pedestrian attractors near this intersection (e.g. cafes, local business) generating a strong pedestrian desire line across Devonshire Street, which would create high potential for conflict if there were inadequate supporting infrastructure. `

The same arrangement and potential conflicts occur along George Street in Redfern. Although there is unlikely to be pedestrian and/or vehicle volumes high enough to meet typical zebra crossing warrants at these locations, the pedestrian zebra crossing paired with the cycleway crossing provide the necessary priority and safety measures for the combined pedestrian and cyclist crossing volumes. The Bourke Street cycleway crossing at Devonshire Street is shown in Figure 4.1 and the George Street cycleway crossing at Wellington Street is in Figure 4.2.

A similar situation is presented in Bondi Junction where two zebra crossings are proposed in parallel with a cycle crossing. Both are located at a T-junction where potential safety issues are more likely due to reduced sight lines, driver distraction and proximity to high activity areas with increased pedestrian activity. A pedestrian zebra crossing at each of these locations would also improve awareness of the cycle crossing, thus reduce likelihood of a collision and would not add delay to traffic as traffic volumes are relatively low and vehicles are already moving slowly.

Source: Google Maps, 2015

Figure 4.1 Bourke Street Cycleway at Devonshire Street

Source: Google Maps, 2015

Figure 4.2 George Street Cycleway, Redfern at Wellington Street

5. Impact assessment

This section outlines the impact assessment of the proposed cycleway and presents the results of the intersection performance at eight key intersections and associated changes to on-street parking prevision.

5.1 Intersection capacity assessment

Analysis of the existing and future intersection performance was undertaken using SIDRA Intersection 6 to provide and understanding of the current traffic operations within the study area and provides a basis for the impact assessment of the proposed cycleway.

SIDRA Intersection is a traffic engineering micro-analytical traffic evaluation tool used for intersection design and analysis. It is used for the analysis of intersection capacity, level of service and performance. This version of SIDRA allows intersections to be modelled as a network, allowing the interaction of queues between intersections to be modelled and greater accuracy of results.

This package provides several useful indicators to determine the level of intersection performance. These are known as Level of Service (LoS), Degree of Saturation (DoS), Average Delay (seconds) and Maximum Queue Length (metres). An explanation of the results generated by SIDRA is provided in this section. Detailed SIDRA output results have been provided in Appendix C.

Level of Service (LoS)

Level of Service (Los) is a basic performance parameter used to describe the operation of an intersection. Levels of service range from A (indicating good intersection operation) to F (indicating over-saturated conditions with long delays and queues). At signalised intersections, the LoS criteria are related to average intersection delay (seconds per vehicle). At priority controlled (give-way and stop controlled) and roundabout intersections, the LoS is based on the modelled delay (seconds per vehicle) for the most delayed movement (refer to Table 5.1).

Table 5.1 Level of Service criteria for intersections

Level of Service	Average delay (seconds per vehicle)	Traffic signals, roundabout	Give Way and stop signs
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity. At signals, incidents would cause excessive delays. Roundabouts require other control mode.	At capacity; requires other control mode
F	Greater than 71	Unsatisfactory with excessive queuing	Unsatisfactory with excessive queuing; requires other control mode

Source: RMS *Guide to Traffic Generating Developments*, 2002

Degree of saturation (DoS)

The Degree of Saturation (DoS) is the ratio of demand flow to capacity, and therefore has no unit. As it approaches 1.0, extensive queues and delays could be expected. For a satisfactory situation, DoS should be less than the nominated practical degree of saturation, usually 0.9. The intersection DoS is based on the movement with the highest value.

Average vehicle delay

This is the difference between interrupted and uninterrupted travel times through the intersection and is measured in seconds per vehicle. At signalised intersections the average intersection delay is usually reported. At priority controlled intersections and roundabouts, the average delay for the most delayed movement is usually reported.

Queue length

Queue length is measured in metres reflecting the number of vehicles waiting at the stop line and is usually quoted as the 95th percentile back of queue, which is the value below which 95% of all observed queue lengths fall. It reflects the number of vehicles per traffic lane at the start of the green period, when traffic starts moving again after a red signal. The intersection queue length is usually taken from the movement with the longest queue length.

Typically acceptable intersection performance is defined as follows:

- LoS D or better (the worst case scenario of vehicle delay was less than or equal to 56 seconds)
- Degree of Saturation (DoS) less than equal to 0.8 at priority controlled intersection, and 0.90 at a signalised controlled intersection
- 95th percentile back of queue does not interfere with other traffic movements.

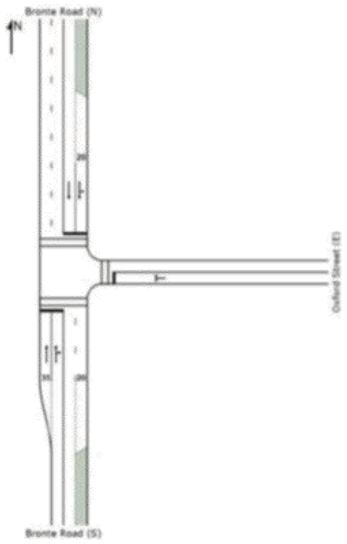
5.2 Intersections assessed

The intersection performance at key intersections has been assessed and considers the existing operation without the cycleway and the future operation with the cycleway.

5.2.1 Intersection of Oxford Street and Bronte Road (I-01)

The layout of the intersection of Oxford Street and Bronte Road is shown as a schematic and satellite image in Figure 5.1.

Exisitng layout



Proposed layout

No upgrade proposed

Source: Google Maps Imagery

Figure 5.1 Oxford Street and Bronte Road Intersection layout

The results of a SIDRA analysis of this intersection are shown in Table 5.2.

Table 5.2 Oxford Street and Bronte Road intersection performance (2014)

Layout	Peak hour	Degree of Saturation	Average Delay (Sec)	Level of Service	95th percentile queue (m)
Existing without cycleway	AM	0.49	21	B	36
	PM	0.35	18	B	37
Future with cycleway	AM	0.49	21	B	36
	PM	0.35	18	B	37

Comment/Assumptions

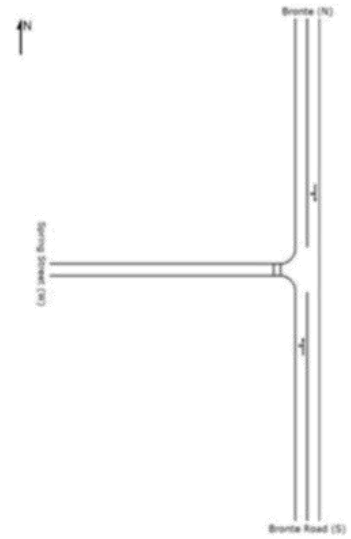
- The observed queue lengths were slightly longer than the model output due to the closely located bus stops and taxi zone on Bronte Road and Oxford Street.
- The intersection would operate at a good level of service (LoS B) for both weekday AM and PM peak hours with or without the cycleway.

5.2.2 Intersection of Spring Street and Bronte Road (I-02)

The layout of the intersection of Spring Street and Bronte Road is shown as a schematic and satellite image in Figure 5.2.

Exisitng layout

Proposed layout



Source: Google Maps Imagery

- An unsignalised pedestrian crossing has been added on Spring Street

Figure 5.2 Spring Street and Bronte Road intersection layout

The results of a SIDRA analysis of this intersection are shown in Table 5.3.

Table 5.3 Spring Street and Bronte Road intersection performance (2014)

Layout	Peak hour	Degree of Saturation	Average Delay (Sec)	Level of Service	95th percentile queue (m)
Existing without cycleway	AM	0.16	5	A	5
	PM	0.18	5	A	6
Future with cycleway	AM	0.26	9	A	13
	PM	0.36	13	A	19

Comment/Assumptions

- The intersection would operate at a good level of service (LoS A) for both weekday AM and PM peak hours under existing and proposed conditions.

5.2.3 Pedestrian crossing on Spring Street (I-03)

The layout of the intersection of Spring Street and the midblock pedestrian crossing is shown as a schematic and satellite image in Figure 5.3.

Exisitng layout

- A signalised pedestrian crossing

Proposed layout

- The mid-block signalised pedestrian crossing would continue to operate as per the existing situation with the exception of it becoming a raised crossing, having a reduced crossing distance due to kerb extensions and the introduction of the cycleway.

Source: Google Maps Imagery

Figure 5.3 Pedestrian crossing layout on Spring Street

The results of a SIDRA analysis of this intersection are shown in Table 5.4.

Table 5.4 Spring Street pedestrian crossing performance (2014)

Layout	Peak hour	Degree of Saturation	Average Delay (Sec)	Level of Service	95th percentile queue (m)
Existing without cycleway (signalised crossing)	AM	0.59	18	B	38
	PM	0.65	17	B	51
Future with cycleway (signalised crossing)	AM	0.45	15	B	34
	PM	0.43	11	A	39

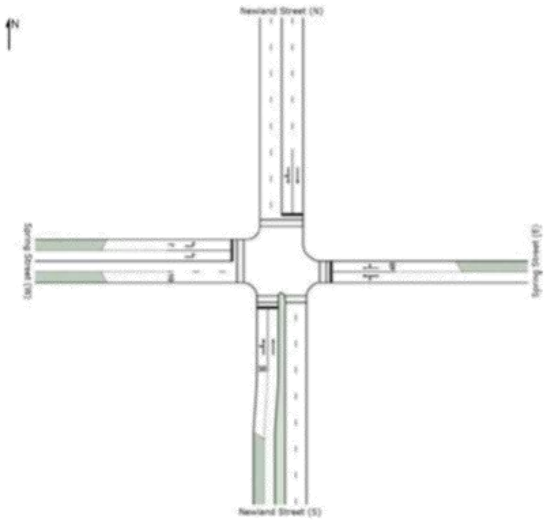
Comment/Assumptions

- The length of the existing pedestrian crossing is set as 12.5 m. The intersection would operate at a good level of service (LoS B) for both weekday AM and PM peak hours under existing conditions (with pedestrian signals).
- The pedestrian crossing distance would be reduced to 7 m would operate at a good level of service (LoS B or better) for both weekday AM and PM peak hours under future conditions.

5.2.4 Intersection of Spring Street and Newland Street (I-04)

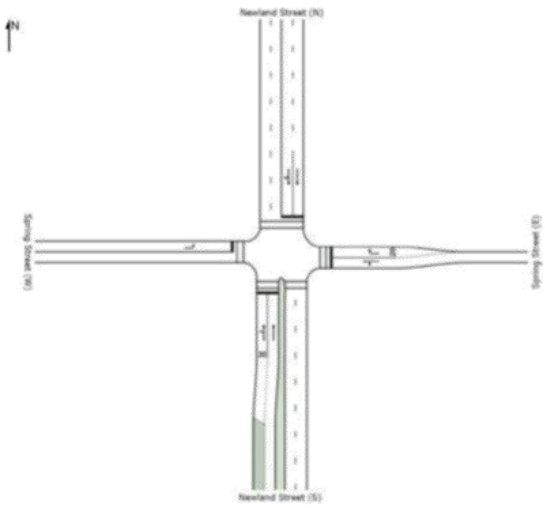
The layout of the intersection of Spring Street and Newland Street is shown as a schematic and satellite image in Figure 5.4.

Exisitng layout



Source: Google Maps Imagery

Proposed layout



- A dedicated cycleway along the northern side of Spring Street
- A single left turn lane on the western approach
- A dedicated short right turn lane on the eastern approach

Figure 5.4 Spring Street and Newland Street intersection layout

The results of a SIDRA analysis of this intersection are shown in Table 5.5.

Table 5.5 Spring Street and Newland Street intersection performance (2014)

Layout	Peak hour	Degree of Saturation	Average Delay (Sec)	Level of Service	95th percentile queue (m)
Existing without cycleway	AM	0.62	18	B	95
	PM	0.64	19	B	78
Future with cycleway	AM	0.79	24	B	132
	PM	0.49	23	B	78

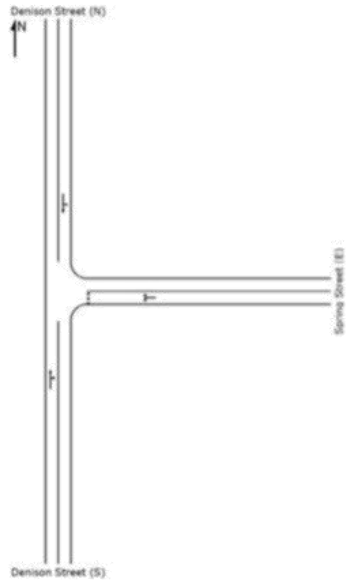
Comment/Assumptions

- The queue on the southern approach would reach up to the intersection of Newland Street and Ebley Street for the weekday AM peak hour. However, the intersection would operate at a good level of service (LoS B) for both weekday AM and PM peak hours without the proposed cycleway.
- With the proposed cycleway, a dedicated two-way cycle lane would be implemented on the northern side of Spring Street.
- It was assumed that the exit from the Eastgate will be closed prior to the completion of the cycleway.
- The cycle time has been increased by 6 seconds for the proposed layout and a 14 second phase time has been allocated for cyclist movements.
- The intersection capacity would be slightly reduced due to the increased cycle time but the intersection would still operate satisfactorily for both the weekday AM and PM peak hours.

5.2.5 Intersection of Spring Street and Denison Street (I-05)

The layout of the intersection of Spring Street and Denison Street is shown as a schematic and satellite image in Figure 5.5.

Exisitng layout



Source: Google Maps Imagery

Proposed layout

No upgrade proposed

Figure 5.5 Spring Street and Denison Street intersection layout

The results of a SIDRA analysis of this intersection are shown in Table 5.6.

Table 5.6 Spring Street and Denison Street intersection performance (2014)

Layout	Peak hour	Degree of Saturation	Average Delay (Sec)	Level of Service	95th percentile queue (m)
Existing without cycleway	AM	0.37	18	B	21
	PM	0.40	9	A	16
Future with cycleway	AM	0.40	22	B	36
	PM	0.42	10	A	18

Comment/Assumptions

- The intersection would operate at a good level of service (LoS B or better) for both weekday AM and PM peak hours without the proposed cycleway.
- The queue from the intersection of Oxford Street and Denison Street may interrupt the exiting movements on Spring Street.

- With the proposed cycleway, the intersection would experience slightly longer queueing and delays during the weekday AM peak hour due to the increased queue on Denison Street from the intersection of Oxford Street and Denison Street.
- The intersection would operate at a satisfactory level of service for both weekday AM and PM peak hours with the proposed cycleway.

5.2.6 Intersection of Oxford Street and Denison Street (I-06)

The layout of the intersection of Oxford Street and Denison Street is shown as a schematic and satellite image in Figure 5.6.

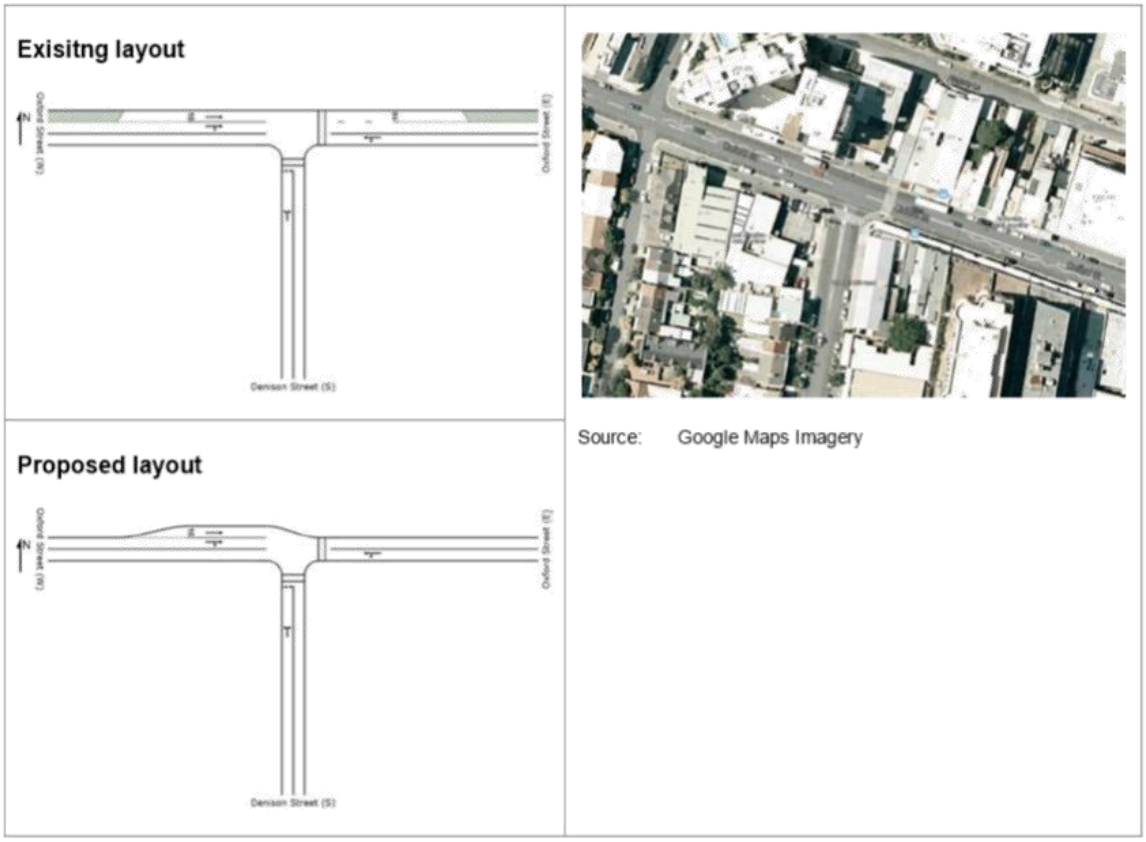


Figure 5.6 Oxford Street and Denison Street intersection layout

The results of a SIDRA analysis of this intersection are shown in Table 5.7.

Table 5.7 Oxford Street and Denison Street intersection performance (2014)

Layout	Peak hour	Degree of Saturation	Average Delay (Sec)	Level of Service	95th percentile queue (m)
Existing without cycleway	AM	0.81	27	B	79
	PM	0.86	35	C	72
Future with cycleway	AM	0.94	62	E	167
	PM	0.91	47	D	96
Future with cycleway and banning the right turn from Denison Street into Oxford Street	AM	0.72	39	C	81
	PM	0.72	19	B	72

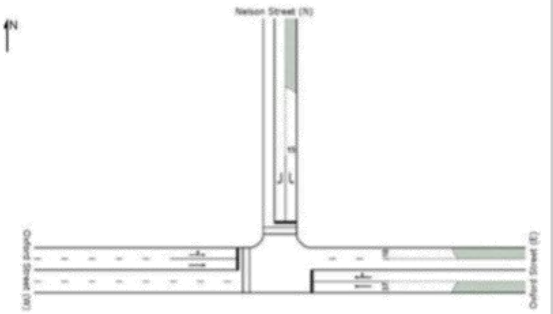
Comment/Assumptions

- The intersection would operate at a satisfactory level of service (LoS C or better) for both weekday AM and PM peak hours under existing conditions. It is expected that the westbound queue on Oxford Street from the intersection of Oxford Street and Nelson Street would not reach up to this intersection under existing conditions.
- The intersection would operate unsatisfactorily (LoS E) during weekday AM peak hour due to the extended westbound queue on Oxford Street from the intersection of Oxford Street and Nelson Street under future conditions.
- It should be noted that the level of service of the most delayed movement is usually reported for the priority controlled intersection. At this intersection, the egressing traffic movements on Denison Street would be the most delayed movement and this movement would operate at an unsatisfactory level of service. However, all other movements would generally operate at a satisfactory level of service (LoS C or better) with the proposed cycleway.
- The intersection would operate at a satisfactory level of service (LoS D) for the weekday PM peak hour with the proposed cycleway.
- The implementation of a 'No Right Turn' from Denison Street into Oxford Street would greatly improve the intersection's operation. The intersection would operate at good levels of services in both the AM and PM peaks.

5.2.7 Intersection of Oxford Street and Nelson Street (I-07)

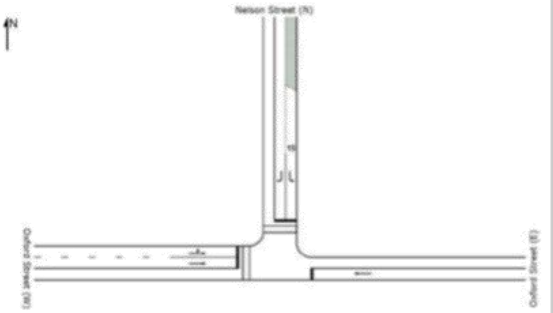
The layout of the intersection of Oxford Street and Nelson Street is shown as a schematic and satellite image in Figure 5.7.

Exisitng layout



Source: Google Maps Imagery

Proposed layout



- Single approach lane on Oxford Street east approach
- Right turn from Oxford Street into Nelson Street will be banned

Figure 5.7 Oxford Street and Nelson Street intersection layout

The results of a SIDRA analysis of this intersection are shown in Table 5.8.

Table 5.8 Oxford Street and Nelson Street intersection performance (2014)

Layout	Peak hour	Degree of Saturation	Average Delay (Sec)	Level of Service	95th percentile queue (m)
Existing without cycleway	AM	0.94	18	B	102
	PM	0.91	17	B	78
Future with cycleway	AM	0.99	30	C	243
	PM	1.06	34	C	140

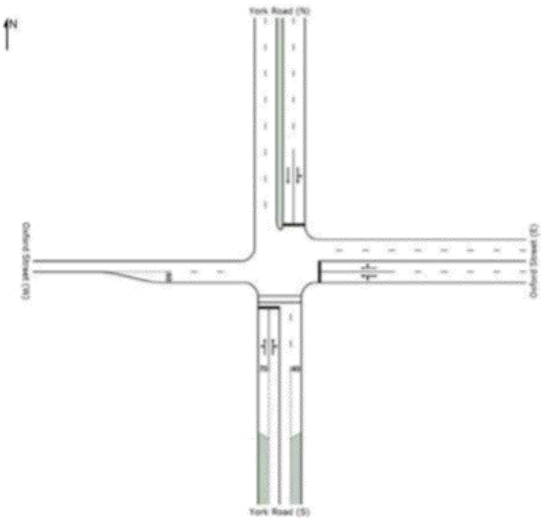
Comment/Assumptions

- The intersection would perform at good levels of service, achieving a LoS B during both weekday AM and PM peak hours under existing conditions.
- With the proposed cycleway, the intersection would perform at a satisfactory level of service (LoS C) for both weekday AM and PM peak hours. However, the Degree of Saturation (DoS) is projected between 0.99 and 1.06 indicating that the intersection would operate at capacity.
- Long westbound queues on Oxford Street would interrupt the operation of adjacent intersections along Oxford Street, including the intersection of Oxford Street and Denison Street.
- The right turning movement on Nelson Street would experience long delays and queues due to the downstream queue during the weekday AM peak hour with the proposed cycleway.

5.2.8 Intersection of Oxford Street and York Road (I-08)

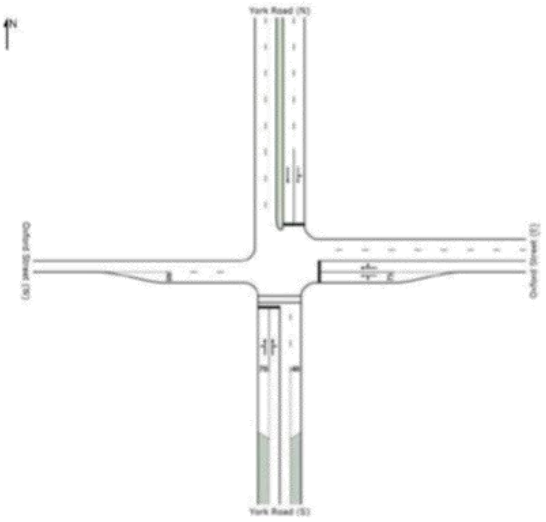
The layout of the intersection of Oxford Street and York Road is shown as a schematic and satellite image in Figure 5.8.

Exisitng layout



Source: Google Maps Imagery

Proposed layout



- The length of the westbound kerb-side lane would be slightly reduced.
- The pedestrian crossing distance on York Street would be increased.

Figure 5.8 Oxford Street and York Road intersection layout

The results of a SIDRA analysis of this intersection are shown in Table 5.9.

Table 5.9 Oxford Street and York Road intersection performance (2014)

Layout	Peak hour	Degree of Saturation	Average Delay (Sec)	Level of Service	95th percentile queue (m)
Existing without cycleway	AM	0.93	24	B	247
	PM	0.70	14	A	122
Future with cycleway	AM	0.93	24	B	247
	PM	0.70	14	A	125

Comment/Assumptions

- The intersection of Oxford Street and York Road would perform at good levels of service, achieving a LoS of B or better during weekday peak hours.
- York Road would experience long delays and a queue of 250 m would be expected during the weekday AM peak hour under existing conditions.
- The intersection performance would remain similar between existing and future conditions.

5.3 Parking impacts

The following impacts to parking are anticipated due to the proposed cycleway:

- loss of one bus zone on Oxford Street (southern side) between St James Road and Ruthven Street
- loss of one car space on Oxford Street (northern side) between Nelson Street and Leswell Street and one space between Leswell Street and Denison Street
- loss of three car spaces on Oxford Street (southern side) between Mill Hill Road and Denison Street
- loss of three car spaces on Denison Street (western side) and gain of two loading zone spaces (eastern side) between Oxford Street and Spring Street
- loss of one space for council vehicles on Spring Street (southern side) between Newland Street and mid-block pedestrian signals
- loss of two car spaces and gain of two loading zone spaces and two car spaces on Spring Street (southern side) between mid-block pedestrian signals and Bronte Road
- loss of nine spaces on Spring Street (northern side) between Newland Street and mid-block pedestrian signals
- loss of six spaces and loss of four loading zone spaces on Spring Street (northern side) between mid-block pedestrian signals and Bronte Road.

A summary of the proposed parking provision is provided in Appendix D.

6. Mitigation measures

The following general mitigation strategies are proposed to remove or ameliorate any cycleway design related impacts on road and footpath users, property access and the general community:

- provide ample space for safe pedestrian and cyclist interaction on shared paths
- provide warning for pedestrians and cyclists of possible safety hazards
- where appropriate, remove or decrease obstacles (potential safety hazards) from pedestrian and cyclist paths
- provide clear cyclist and pedestrian priority at intersections, e.g. local streets connecting to Oxford Street, where possible
- continue to provide pedestrian amenity on/near footpath space
- alleviate any impacts to on-street parking where possible, through relocating spaces
- provide barriers or 'buffer zones' between traffic and pedestrians/cyclists.

Actual mitigation measures to meet these strategies are already incorporated in the proposed design:

- Kerb extensions on Oxford Street (southern side) between Syd Einfeld Drive and York Road to accommodate widening for the share path facility.
- Footpath widening outside the Waverley bus depot on Oxford Street (southern side).
- The implementation of pedestrian and cyclist calming treatments on the shared path facility outside the Waverley bus depot on Oxford Street (southern side) for improved user safety.
- Installation of a slimline bus shelter to improve visibility and pedestrian and cyclist access on the footpath outside the Waverley bus depot on Oxford Street (southern side).
- Footpath continuation across St James Road at Oxford Street to clearly define vehicle, pedestrian and cyclist priority.
- Footpath widening to accommodate users of both the separated cycleway and the footpath on the southern side of Oxford Street (opposite Nelson Street).
- Installation of a pedestrian zebra crossing across Ruthven Street at Oxford Street to clearly define vehicle, pedestrian and cyclist priority.
- Provision for additional outdoor seating on Ruthven Street.
- Installation of a pedestrian zebra crossing across Mill Hill Road at Oxford Street to clearly define vehicle, pedestrian and cyclist priority.
- Increased on-street parking provision on the southern side of Oxford Street between Mill Hill Road and Denison Street (due to the closure of driveway accesses at the property on the south-west corner of Oxford Street and Denison Street).
- Kerb extensions at the Oxford Street and Denison Street intersection.
- Kerb extensions and provision of a raised pedestrian zebra crossing at the Denison Street and Spring Street intersection to assist pedestrian and cyclist crossings.
- Increased outdoor seating and dining area on Spring Street between Newland Street and Bronte Road.
- Widened median between the separated cycleway and truck and loading zones to facilitate truck loading and unloading on Spring Street (northern side).

- Installation of a pedestrian zebra crossing across Spring Street at Bronte Road to clearly define vehicle, pedestrian and cyclist priority.
- Modified kerbs with improved pedestrian crossing provision (kerb ramps) at the Spring Street and Bronte Road intersection for improved safety of pedestrians
- Installation of 'No Right Turn' signage from Oxford Street into Nelson Street and Denison Street into Oxford Street.

7. Stakeholder consultation

The following stakeholder consultation meetings were held in preparation of the cycleway design.

7.1 Transport for NSW

Refer to meeting with Roads and Maritime Services.

7.2 Roads and Maritime Services

An initial meeting was held on Friday 22 August 2014 at Waverley Council offices and attended by the following RMS representatives; Yujin Song, Daryl Ninham and Nicolas Kocoski.

A second meeting was held on Wednesday 1 October 2014 at RMS Transport Management Centre and attended by the following RMS representatives; Chris Smith, Greg Kevill and Yujin Song.

7.3 Sydney Buses

An initial meeting was held on Thursday 18 September 2014 at Waverley Council offices and attended by the following Sydney Buses representatives; Eric Graham and Robert Tarabay.

8. Conclusion

The proposed two-way separated cycleway with sections of shared path will provide improved cycle facilities, key connections within Bondi Junction and improved links to the Sydney CBD via Centennial Park. It will also improve pedestrian amenity and connectivity to key attractors within the Bondi Junction Town Centre.

The impacts associated with the projects implementation include slightly deteriorating intersection performance, leading to increased travel times and delays.

The proposed cycleway results in a loss of 24 on-street car parking spaces. This may be mitigated by future on-street parking improvements on adjoining streets.

Several mitigation measures have been suggested to remove or ameliorate any project related impacts, with a focus on improving safety for pedestrians and cyclists. These have been incorporated into the proposed cycleway and streetscape design.

9. References

The following documents were referenced in preparation of this report:

- Austroads, *Guide to Road Design Part 3: Geometric Design*, 2010.
- Roads and Traffic Authority, *NSW Bicycle Guidelines*, 2005.
- Bitzios Consulting, *Bondi Junction Cycleway – Loading Zone Study*, September 2014.
- GTA Consultants, previous concept cycleway plans.
- Roads and Maritime Services, SCATS IDM and TCS data.
- Waverley Council, *Bondi Junction Complete Streets Project – Draft Report*, August 2013.

Appendix A

Existing parking situation

Table A Existing Parking Situation, Bondi Junction Cycleway

Parking restrictions lengths (spaces)	Bus zone	½, 2 and 3 Hour (1/2P/2P/3P) ticketed[1]	½ hour (1/2P) ticketed[2]	½ and 3 Hour (1/2P/3P) ticketed[3]	Truck zone[5]	No Parking	Other
Oxford Street - south side							
York Road to St James Road	21 m (1)						
St James Road to Ruthven Street	11 m (1)						
Ruthven Street to Mill Hill Road		48 m (7)					
Mill Hill Road to Denison Street		52 m (8)					
TOTAL spaces	**2**	**15**					
Oxford Street – north side							
York Road to Nelson Street	42 m (2)						
Nelson Street to Leswell Street		78 m (12)					
Leswell Street to Zebra Crossing at Denison Street		53 m (8)					No Stopping, Aust. Post vehicles excepted, 7m (1) No Parking, funeral vehicles excepted, 15m (2)
TOTAL spaces	**2**	**20**					**3**
Denison Street							
Oxford Street to Spring Street (west side)			54 m (8)			38 m from giveway	No Parking, funeral vehicles excepted, 4m (1)
Oxford Street to Spring Street (east side)				40 m (6)		27 m from giveway line	
TOTAL spaces			**8**	**6**			**1**

Parking restrictions lengths (spaces)	Bus zone	½, 2 and 3 Hour (1/2P/2P/3P) ticketed[1]	½ hour (1/2P) ticketed[2]	½ and 3 Hour (1/2P/3P) ticketed[3]	Truck zone[5]	No Parking	Other
Spring Street – south side							
Denison Street to Newland Street				134 m (21) 13 m[4] (2)		(driveways)	No Stopping, authorised vehicles and taxis only 10 min, 8 m (1) Loading zone, 6:30am to 4pm, 13 m (2)
Newland Street to signalised pedestrian crossing						(8 m driveway) council vehicles excepted, 15m (2)	No stopping, community buses excepted, 8 m (1)
Signalised pedestrian crossing to Bronte Road				33 m[4] (5) 11 m[4] (2)	Loading Zone, ticket 6:30am to 4pm, 11 m (2)		Taxi zone 16 m (3) No Stopping, buses under 8 m excepted, 9 m (1)
TOTAL spaces				**30**	**2**	**2**	**8**
Spring Street – north side							
Denison Street to Newland Street				139 m (21)		(driveways)	
Newland Street to signalised pedestrian crossing				29 m[4] (5)	29 m (4)		4 hour (4P) motorcycle parking – 19 m (13)
Signalised pedestrian crossing to Bronte Road				87 m[4] (13)	30 m (4)		Loading Zone (ticket, 6:30am to 4pm) 57 m (7)
TOTAL spaces				**39**	**8**		**20**

1. ½ hour ticket parking, 8am to 12pm, 2 hour ticket parking 12pm to 6pm, 3 hour ticket parking 6pm to 9pm (all days)
2. ½ hour ticket parking, 8am to 9pm (all days) permit holders excepted
3. ½ hour ticket parking, 8am to 6pm, 3 hour ticket parking, 6pm to 9pm (all days)
4. ½ hour ticket parking, 4pm to 6pm, 3 hour ticket parking, 6pm to 9pm (all days)
5. Truck zone, 6:30am to 4pm (all days)

** driveways included in this length – these are actually no parking zones

Note: calculation of number of parking spaces uses an estimate for average length required, i.e. minimum 15 metres for a bus and approximately 6.5 metres for a small vehicle. More space may be allocated where rigid trucks were observed to park.

Appendix B

Proposed cycleway design

[illegible]

SHEET	TITLE	SCALE	ISSUE
LANDSCAPE DRAWINGS - DESIGN DEVELOPMENT			
L000	COVER SHEET	1:3500@A3	A
L001	DESIGN DEVELOPMENT	1:400@A3	D
L002	DESIGN DEVELOPMENT	1:400@A3	D
L003	DESIGN DEVELOPMENT	1:400@A3	D
L004	DESIGN DEVELOPMENT	1:400@A3	D
L005	DESIGN DEVELOPMENT	1:400@A3	D
L006	DESIGN DEVELOPMENT	1:400@A3	D
L007	DESIGN DEVELOPMENT	1:400@A3	F
L008	DESIGN DEVELOPMENT	1:400@A3	F

1 KEY PLAN
1:3500@A3

REV	AMENDMENT DESCRIPTION	DRAWN	APPR	DATE
A	FOR TRAFFIC COMMITTEE REVIEW	EA	MD	09.04.19

NORTH | SCALE

PREPARED FOR
WAVERLEY COUNCIL
Cnr Paul Street and Bondi Road, Bondi Junction NSW 2022
T: 02 9369 8000
F: 02 9387 1820
www.waverley.nsw.gov.au

SPACKMAN MOSSOP MICHAELS
PTY LTD ABN 65 065 579 985
www.spackmanmossopmichaels.com
LANDSCAPE ARCHITECTS
P.O. Box 880
Darlinghurst NSW 1300
T: 02 9360 4549
F: 02 9361 4569
info@smm2group.com.au

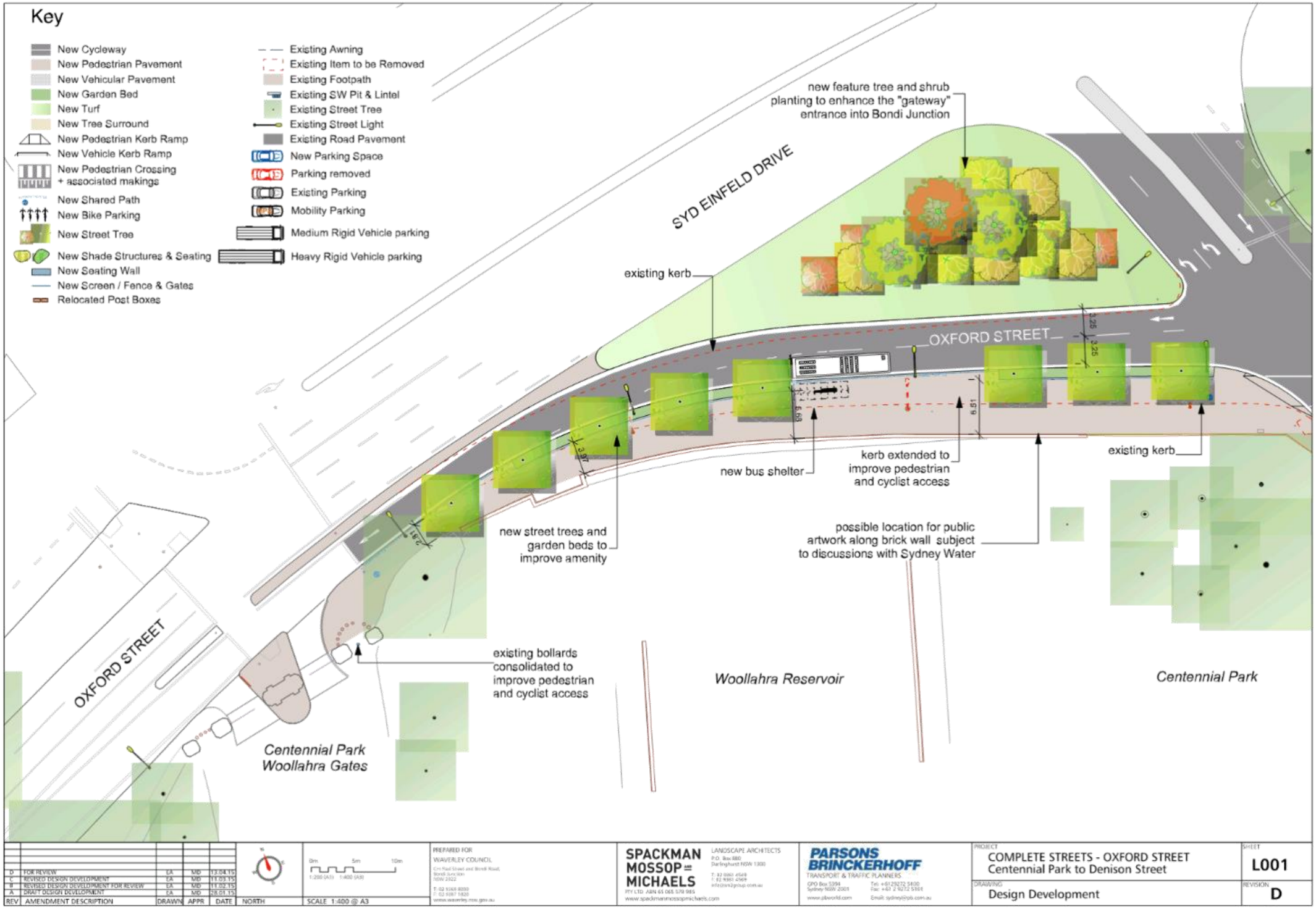
PARSONS BRINCKERHOFF
TRANSPORT & TRAFFIC PLANNERS
GPO Box 5394
Sydney NSW 2001
www.pbworld.com
Tel: +61 2 9272 5400
Fax: +61 2 9272 5101
Email: sydney@pb.com.au

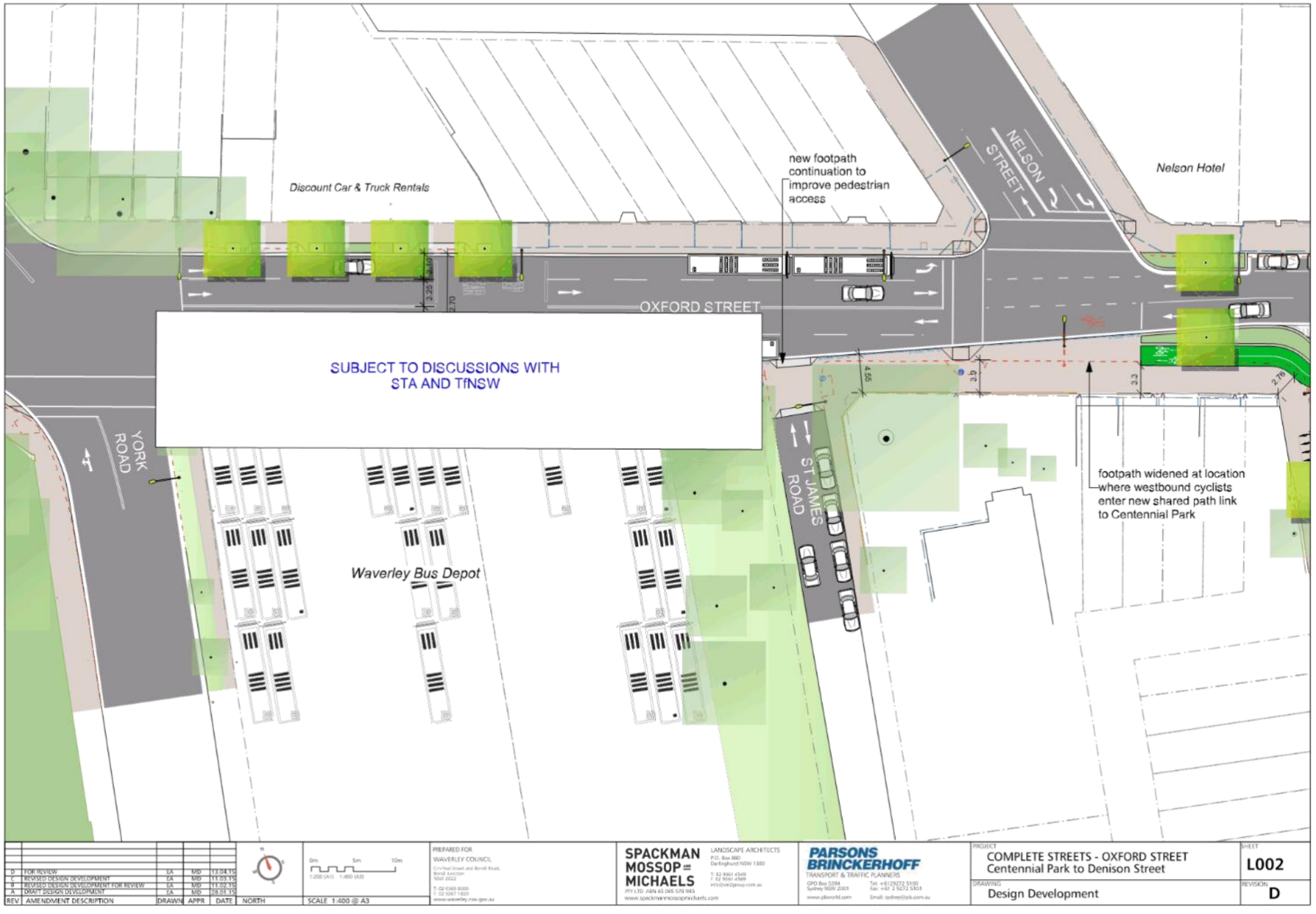
PROJECT
COMPLETE STREETS - SEPERATED CYCLEWAY
Denison Street and Spring Street

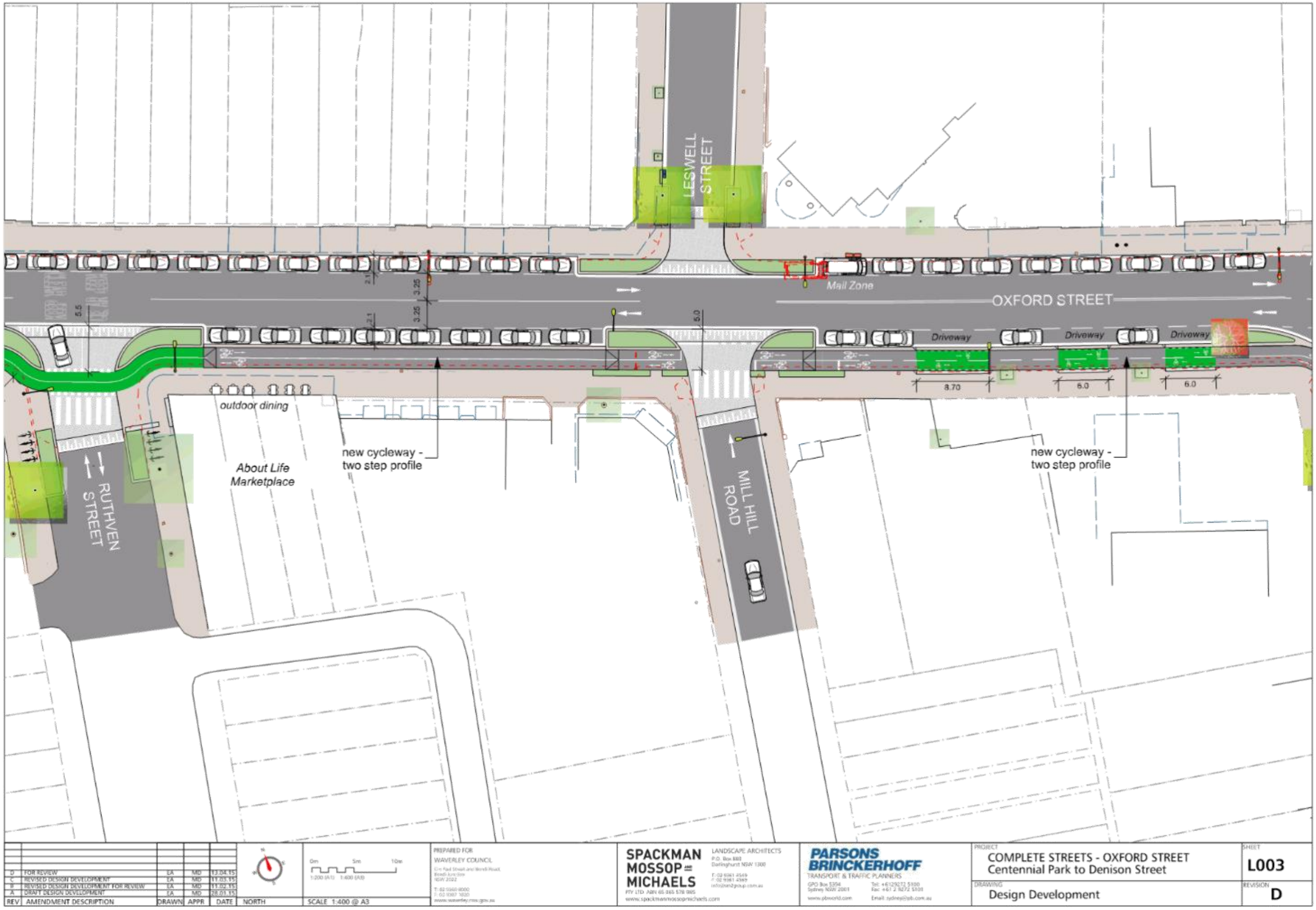
SHEET
L000

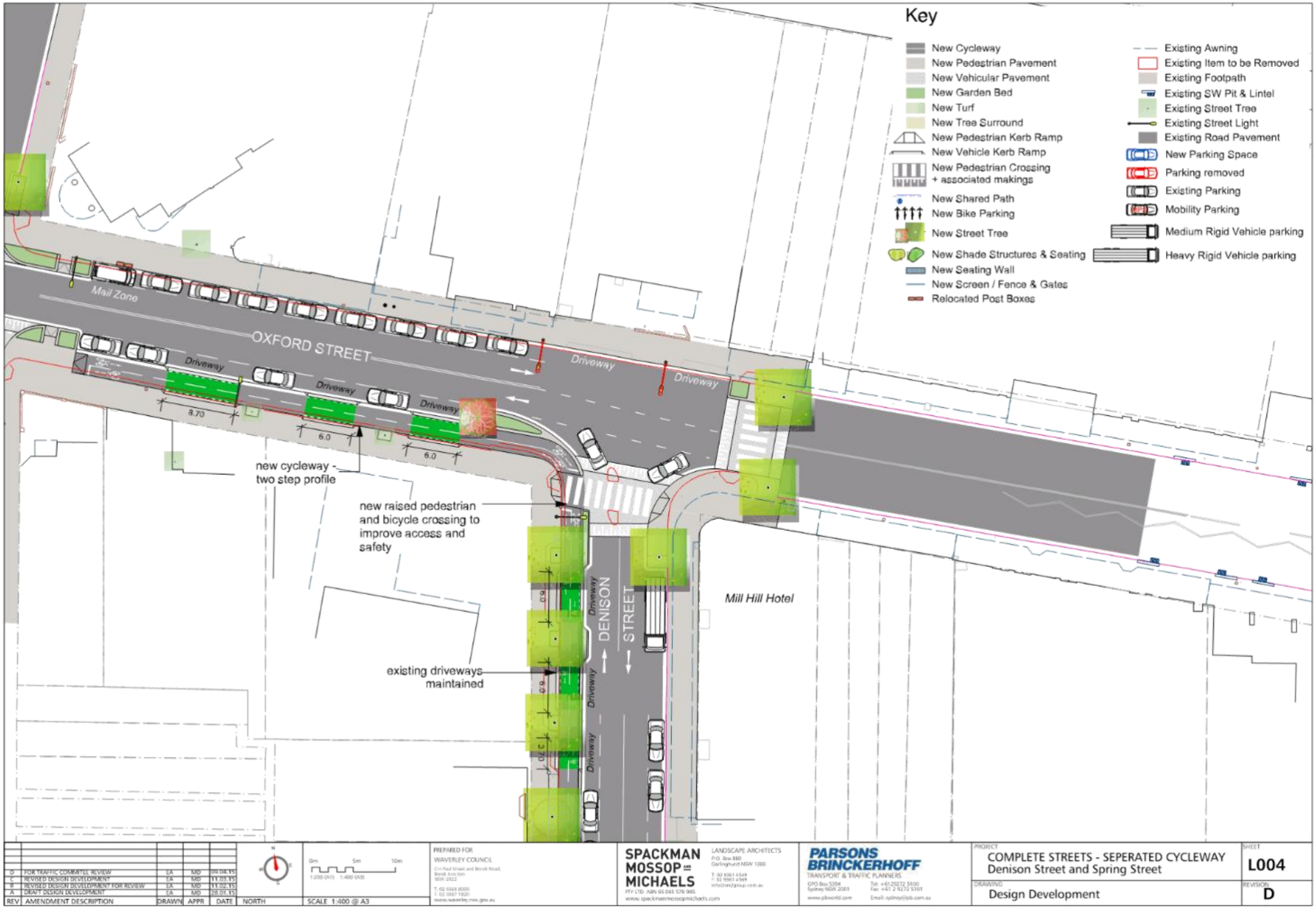
DRAWING
Design Development

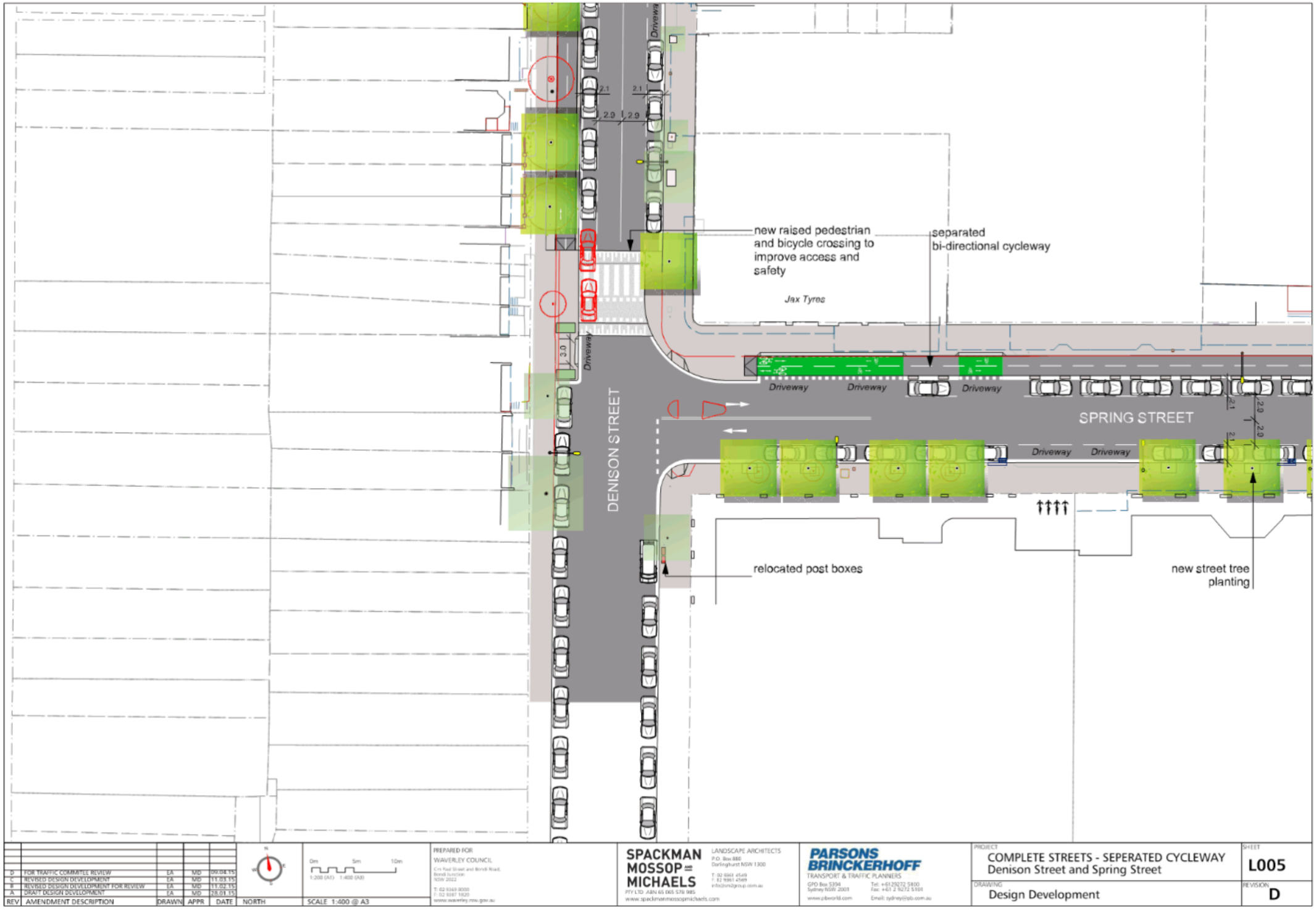
REVISION
A

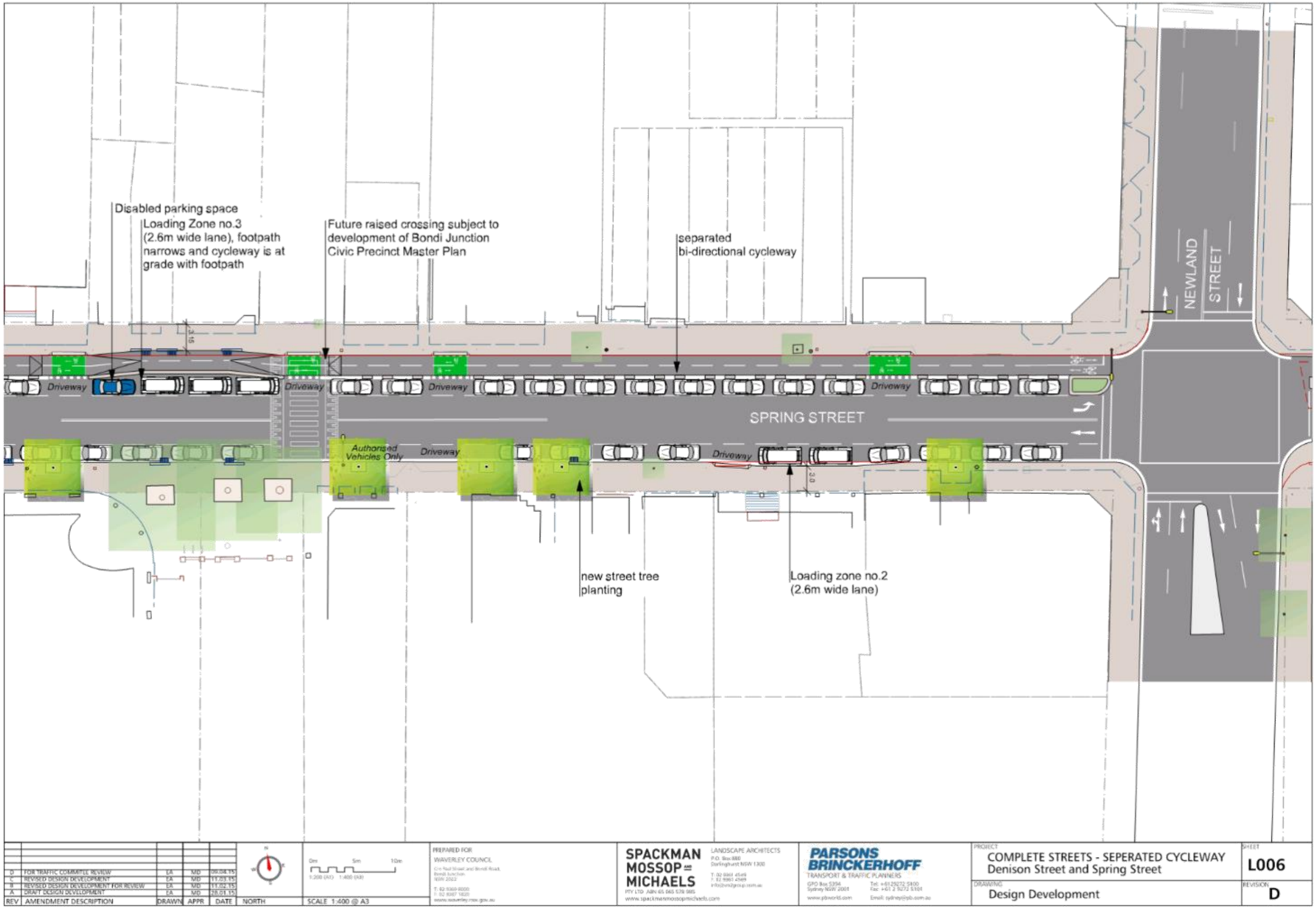

Key
New Cycleway
New Pedestrian Pavement
New Vehicular Pavement
New Garden Bed
New Turf
New Tree Surround
New Pedestrian Kerb Ramp
New Vehicle Kerb Ramp
New Pedestrian Crossing + associated makings
New Shared Path
New Bike Parking
New Street Tree
New Shade Structures & Seating
New Seating Wall
New Screen / Fence & Gates
Relocated Post Boxes
Existing Awning
Existing Item to be Removed
Existing Footpath
Existing SW Pit & Lintel
Existing Street Tree
Existing Street Light
Existing Road Pavement
New Parking Space
Parking removed
Existing Parking
Mobility Parking
Medium Rigid Vehicle parking
Heavy Rigid Vehicle parking
new feature tree and shrub planting to enhance the "gateway" entrance into Bondi Junction
SYD EINFELD DRIVE
existing kerb
OXFORD STREET
3.25
3.25
6.69
6.51
3.97
2.81
new bus shelter
kerb extended to improve pedestrian and cyclist access
existing kerb
new street trees and garden beds to improve amenity
possible location for public artwork along brick wall subject to discussions with Sydney Water
OXFORD STREET
existing bollards consolidated to improve pedestrian and cyclist access
Woollahra Reservoir
Centennial Park
Centennial Park Woollahra Gates
REV AMENDMENT DESCRIPTION DRAWN APPR DATE
D FOR REVIEW EA MD 13.04.15
C REVISED DESIGN DEVELOPMENT EA MD 11.03.15
B REVISED DESIGN DEVELOPMENT FOR REVIEW EA MD 11.02.15
A DRAFT DESIGN DEVELOPMENT EA MD 28.01.15
NORTH
SCALE 1:400 @ A3
PREPARED FOR
WAVERLEY COUNCIL
SPACKMAN MOSSOP MICHAELS
LANDSCAPE ARCHITECTS
PARSONS BRINCKERHOFF
TRANSPORT & TRAFFIC PLANNERS
PROJECT
COMPLETE STREETS - OXFORD STREET
Centennial Park to Denison Street
DRAWING
Design Development
SHEET
L001
REVISION
D

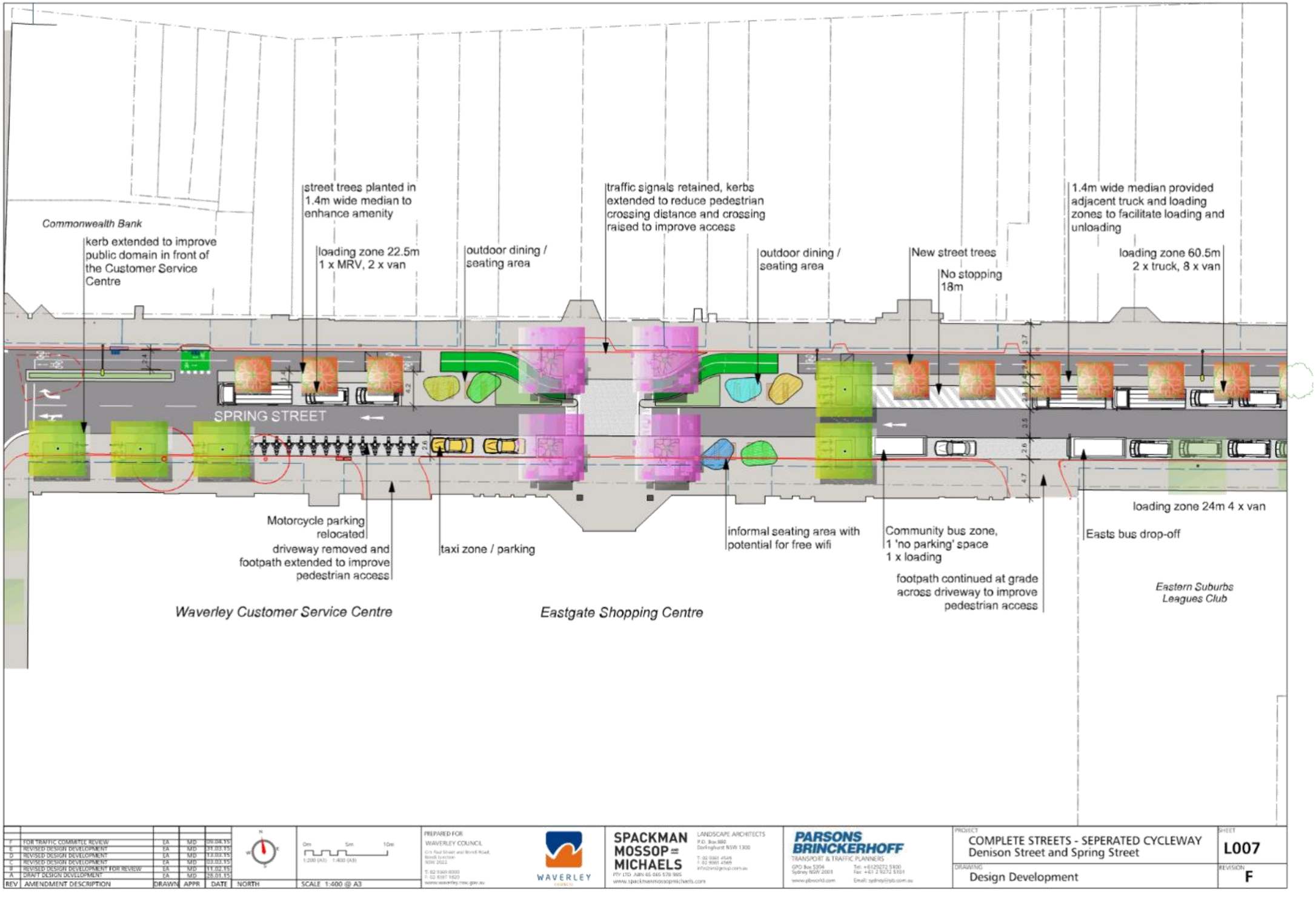

Discount Car & Truck Rentals
new footpath continuation to improve pedestrian access
NELSON STREET
Nelson Hotel
OXFORD STREET
SUBJECT TO DISCUSSIONS WITH STA AND TfNSW
YORK ROAD
Waverley Bus Depot
ST JAMES ROAD
footpath widened at location where westbound cyclists enter new shared path link to Centennial Park
3.25
3.10
2.70
4.55
3.0
3.3
2.76
D FOR REVIEW EA MD 13.04.15
C REVISED DESIGN DEVELOPMENT EA MD 11.03.15
B REVISED DESIGN DEVELOPMENT FOR REVIEW EA MD 11.02.15
A DRAFT DESIGN DEVELOPMENT EA MD 28.01.15
REV AMENDMENT DESCRIPTION DRAWN APPR DATE
NORTH
0m 5m 10m
1:200 (A1) 1:400 (A3)
SCALE 1:400 @ A3
PREPARED FOR
WAVERLEY COUNCIL
SPACKMAN MOSSOP MICHAELS
LANDSCAPE ARCHITECTS
PARSONS BRINCKERHOFF
TRANSPORT & TRAFFIC PLANNERS
PROJECT
COMPLETE STREETS - OXFORD STREET
Centennial Park to Denison Street
SHEET
L002
DRAWING
Design Development
REVISION
D

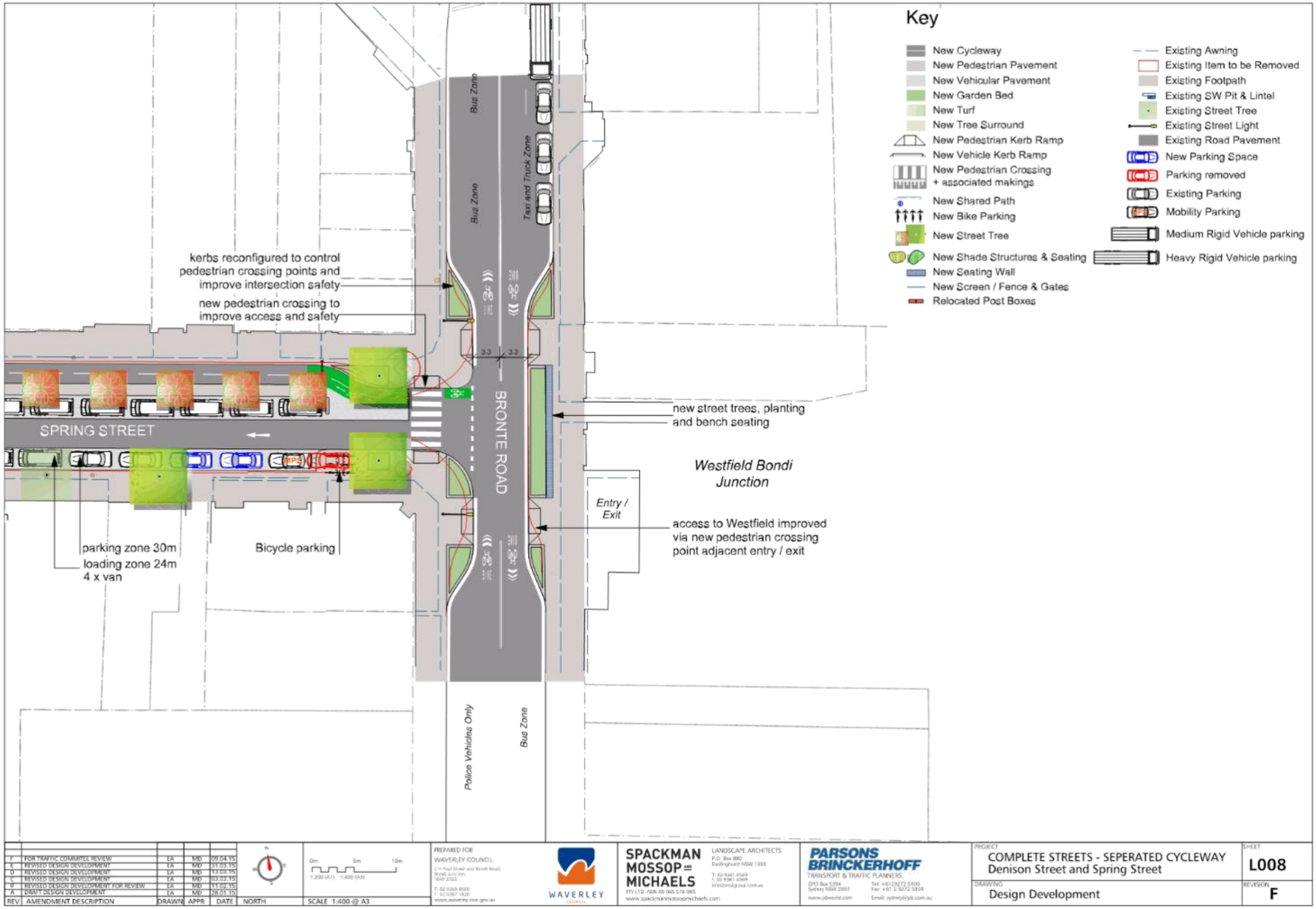

LESWELL STREET
OXFORD STREET
Mail Zone
Driveway
Driveway
Driveway
8.70
6.0
6.0
5.5
3.25
3.25
2.1
2.1
5.0
outdoor dining
About Life Marketplace
new cycleway - two step profile
new cycleway - two step profile
RUTHVEN STREET
MILL HILL ROAD
D FOR REVIEW EA MD 13.04.15
C REVISED DESIGN DEVELOPMENT EA MD 11.03.15
B REVISED DESIGN DEVELOPMENT FOR REVIEW EA MD 11.02.15
A DRAFT DESIGN DEVELOPMENT EA MD 28.01.15
REV AMENDMENT DESCRIPTION DRAWN APPR DATE
NORTH
0m 5m 10m
1:200 (A1) 1:400 (A3)
SCALE 1:400 @ A3
PREPARED FOR
WAVERLEY COUNCIL
SPACKMAN MOSSOP MICHAELS
LANDSCAPE ARCHITECTS
PARSONS BRINCKERHOFF
TRANSPORT & TRAFFIC PLANNERS
PROJECT
COMPLETE STREETS - OXFORD STREET
Centennial Park to Denison Street
DRAWING
Design Development
SHEET
L003
REVISION
D


Key
New Cycleway
New Pedestrian Pavement
New Vehicular Pavement
New Garden Bed
New Turf
New Tree Surround
New Pedestrian Kerb Ramp
New Vehicle Kerb Ramp
New Pedestrian Crossing + associated makings
New Shared Path
New Bike Parking
New Street Tree
New Shade Structures & Seating
New Seating Wall
New Screen / Fence & Gates
Relocated Post Boxes
Existing Awning
Existing Item to be Removed
Existing Footpath
Existing SW Pit & Lintel
Existing Street Tree
Existing Street Light
Existing Road Pavement
New Parking Space
Parking removed
Existing Parking
Mobility Parking
Medium Rigid Vehicle parking
Heavy Rigid Vehicle parking
Mail Zone
OXFORD STREET
Driveway
8.70
6.0
new cycleway - two step profile
new raised pedestrian and bicycle crossing to improve access and safety
existing driveways maintained
DENISON STREET
Mill Hill Hotel
D FOR TRAFFIC COMMITTEE REVIEW EA MD 09.04.15
C REVISED DESIGN DEVELOPMENT EA MD 11.03.15
B REVISED DESIGN DEVELOPMENT FOR REVIEW EA MD 11.02.15
A DRAFT DESIGN DEVELOPMENT EA MD 28.01.15
REV AMENDMENT DESCRIPTION DRAWN APPR DATE
NORTH
SCALE 1:400 @ A3
PREPARED FOR WAVERLEY COUNCIL
SPACKMAN MOSSOP MICHAELS
LANDSCAPE ARCHITECTS
PARSONS BRINCKERHOFF
TRANSPORT & TRAFFIC PLANNERS
PROJECT
COMPLETE STREETS - SEPERATED CYCLEWAY
Denison Street and Spring Street
SHEET
L004
DRAWING
Design Development
REVISION
D


new raised pedestrian and bicycle crossing to improve access and safety
separated bi-directional cycleway
Jax Tyres
Driveway
Driveway
Driveway
Driveway
Driveway
Driveway
Driveway
DENISON STREET
SPRING STREET
relocated post boxes
new street tree planting
2.1
2.9
3.0
D FOR TRAFFIC COMMITTEE REVIEW EA MD 09.04.15
C REVISED DESIGN DEVELOPMENT EA MD 11.03.15
B REVISED DESIGN DEVELOPMENT FOR REVIEW EA MD 11.02.15
A DRAFT DESIGN DEVELOPMENT EA MD 28.01.15
REV AMENDMENT DESCRIPTION DRAWN APPR DATE
NORTH
SCALE 1:400 @ A3
PREPARED FOR
WAVERLEY COUNCIL
SPACKMAN MOSSOP AND MICHAELS
LANDSCAPE ARCHITECTS
PARSONS BRINCKERHOFF
TRANSPORT & TRAFFIC PLANNERS
PROJECT
COMPLETE STREETS - SEPERATED CYCLEWAY
Denison Street and Spring Street
SHEET
L005
DRAWING
Design Development
REVISION
D


Disabled parking space
Loading Zone no.3
(2.6m wide lane), footpath
narrows and cycleway is at
grade with footpath
Future raised crossing subject to
development of Bondi Junction
Civic Precinct Master Plan
separated
bi-directional cycleway
NEWLAND
STREET
SPRING STREET
Driveway
Authorised
Vehicles Only
new street tree
planting
Loading zone no.2
(2.6m wide lane)
D FOR TRAFFIC COMMITEE REVIEW EA MD 09.04.15
C REVISED DESIGN DEVELOPMENT EA MD 11.03.15
B REVISED DESIGN DEVELOPMENT FOR REVIEW EA MD 11.02.15
A DRAFT DESIGN DEVELOPMENT EA MD 28.01.15
REV AMENDMENT DESCRIPTION DRAWN APPR DATE
NORTH
SCALE 1:400 @ A3
PREPARED FOR
WAVERLEY COUNCIL
SPACKMAN MOSSOP MICHAELS
LANDSCAPE ARCHITECTS
PARSONS BRINCKERHOFF
TRANSPORT & TRAFFIC PLANNERS
PROJECT
COMPLETE STREETS - SEPERATED CYCLEWAY
Denison Street and Spring Street
DRAWING
Design Development
SHEET
L006
REVISION
D


Commonwealth Bank
kerb extended to improve public domain in front of the Customer Service Centre
street trees planted in 1.4m wide median to enhance amenity
loading zone 22.5m 1 x MRV, 2 x van
outdoor dining / seating area
traffic signals retained, kerbs extended to reduce pedestrian crossing distance and crossing raised to improve access
outdoor dining / seating area
New street trees
No stopping 18m
1.4m wide median provided adjacent truck and loading zones to facilitate loading and unloading
loading zone 60.5m 2 x truck, 8 x van
SPRING STREET
Motorcycle parking relocated
driveway removed and footpath extended to improve pedestrian access
taxi zone / parking
informal seating area with potential for free wifi
Community bus zone, 1 'no parking' space 1 x loading
footpath continued at grade across driveway to improve pedestrian access
loading zone 24m 4 x van
Easts bus drop-off
Eastern Suburbs Leagues Club
Waverley Customer Service Centre
Eastgate Shopping Centre
F FOR TRAFFIC COMMITEE REVIEW EA MD 09.04.15
E REVISED DESIGN DEVELOPMENT EA MD 31.03.15
D REVISED DESIGN DEVELOPMENT EA MD 13.03.15
C REVISED DESIGN DEVELOPMENT EA MD 03.02.15
B REVISED DESIGN DEVELOPMENT FOR REVIEW EA MD 11.02.15
A DRAFT DESIGN DEVELOPMENT EA MD 28.01.15
REV AMENDMENT DESCRIPTION DRAWN APPR DATE
NORTH
SCALE 1:400 @ A3
PREPARED FOR WAVERLEY COUNCIL
WAVERLEY
SPACKMAN MOSSOP AND MICHAELS
LANDSCAPE ARCHITECTS
PARSONS BRINCKERHOFF
TRANSPORT & TRAFFIC PLANNERS
PROJECT COMPLETE STREETS - SEPERATED CYCLEWAY Denison Street and Spring Street
SHEET L007
DRAWING Design Development
REVISION F


Key
New Cycleway
New Pedestrian Pavement
New Vehicular Pavement
New Garden Bed
New Turf
New Tree Surround
New Pedestrian Kerb Ramp
New Vehicle Kerb Ramp
New Pedestrian Crossing + associated makings
New Shared Path
New Bike Parking
New Street Tree
New Shade Structures & Seating
New Seating Wall
New Screen / Fence & Gates
Relocated Post Boxes
Existing Awning
Existing Item to be Removed
Existing Footpath
Existing SW Pit & Lintel
Existing Street Tree
Existing Street Light
Existing Road Pavement
New Parking Space
Parking removed
Existing Parking
Mobility Parking
Medium Rigid Vehicle parking
Heavy Rigid Vehicle parking
kerbs reconfigured to control pedestrian crossing points and improve intersection safety
new pedestrian crossing to improve access and safety
SPRING STREET
BRONTE ROAD
Bus Zone
Bus Zone
Taxi and Truck Zone
3.3
3.3
new street trees, planting and bench seating
Westfield Bondi Junction
Entry / Exit
access to Westfield improved via new pedestrian crossing point adjacent entry / exit
parking zone 30m
loading zone 24m
4 x van
Bicycle parking
Police Vehicles Only
Bus Zone
F FOR TRAFFIC COMMITEE REVIEW EA MD 09.04.15
E REVISED DESIGN DEVELOPMENT EA MD 31.03.15
D REVISED DESIGN DEVELOPMENT EA MD 13.03.15
C REVISED DESIGN DEVELOPMENT EA MD 03.03.15
B REVISED DESIGN DEVELOPMENT FOR REVIEW EA MD 11.02.15
A DRAFT DESIGN DEVELOPMENT EA MD 28.01.15
REV AMENDMENT DESCRIPTION DRAWN APPR DATE
NORTH
SCALE 1:400 @ A3
PREPARED FOR WAVERLEY COUNCIL
WAVERLEY
SPACKMAN MOSSOP MICHAELS
LANDSCAPE ARCHITECTS
PARSONS BRINCKERHOFF
TRANSPORT & TRAFFIC PLANNERS
PROJECT
COMPLETE STREETS - SEPERATED CYCLEWAY
Denison Street and Spring Street
SHEET
L008
DRAWING
Design Development
REVISION
F

Appendix C

SIDRA movement summaries

PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

1. Intersection of Oxford Street and Bronte Road

Existing without the proposed cycleway

MOVEMENT SUMMARY

Site: 1. Bronte Rd / Oxford St 2014 AM Peak

Network: 2014 BASE AM

Bronte Road and Oxford Street
2014 AM Peak Hour
Signals - Fixed Time Cycle Time = 56 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Bronte Road (S)													
2	T1	62	84.7	62	84.7	0.132	17.4	LOS B	0.9	14.6	0.78	0.59	19.0
3	R2	3	66.7	3	66.7	0.132	21.1	LOS B	0.9	14.6	0.79	0.61	24.2
Approach		65	83.9	65	83.9	0.132	17.6	LOS B	0.9	14.6	0.78	0.59	19.3
East: Oxford Street (E)													
4	L2	3	100.0	3	100.0	0.494	31.6	LOS C	2.1	35.5	0.96	0.78	16.5
6	R2	69	100.0	69	100.0	0.494	31.7	LOS C	2.1	35.5	0.96	0.78	19.8
Approach		73	100.0	73	100.0	0.494	31.7	LOS C	2.1	35.5	0.96	0.78	19.7
North: Bronte Road (N)													
7	L2	38	97.2	38	97.2	0.070	12.7	LOS A	0.5	9.1	0.52	0.65	31.3
8	T1	108	39.8	108	39.8	0.261	18.1	LOS B	2.4	26.8	0.83	0.66	14.7
Approach		146	54.7	146	54.7	0.261	16.7	LOS B	2.4	26.8	0.75	0.65	20.2
All Vehicles		284	73.0	284	73.0	0.494	20.7	LOS B	2.4	35.5	0.81	0.67	19.8

PHASING SUMMARY

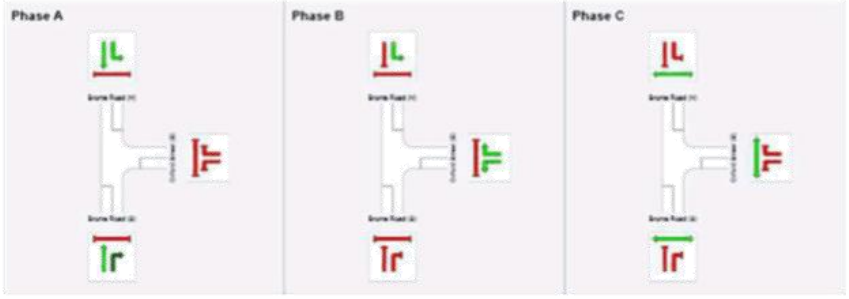
Site: 1. Bronte Rd / Oxford St 2014 AM Peak

Network: 2014 BASE AM

Bronte Road and Oxford Street
2014 AM Peak Hour
Signals - Fixed Time Cycle Time = 56 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	21	35
Green Time (sec)	15	8	15
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	21	14	21
Phase Split	38 %	25 %	38 %



PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

MOVEMENT SUMMARY

Site: 1. Bronte Rd / Oxford St 2014 PM Peak

Network: 2014 BASE PM

Bronte Road and Oxford Street
2014 PM Peak Hour
Signals - Fixed Time Cycle Time = 56 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Bronte Road (S)													
2	T1	59	57.1	59	57.1	0.094	15.4	LOS B	0.8	10.5	0.74	0.56	20.5
3	R2	1	100.0	1	100.0	0.094	19.1	LOS B	0.8	10.5	0.75	0.57	25.9
Approach		60	57.9	60	57.9	0.094	15.5	LOS B	0.8	10.5	0.74	0.56	20.6
East: Oxford Street (E)													
4	L2	1	100.0	1	100.0	0.354	33.2	LOS C	1.1	19.6	0.96	0.74	15.9
6	R2	38	100.0	38	100.0	0.354	33.3	LOS C	1.1	19.6	0.96	0.74	19.2
Approach		39	100.0	39	100.0	0.354	33.3	LOS C	1.1	19.6	0.96	0.74	19.2
North: Bronte Road (N)													
7	L2	58	100.0	58	100.0	0.109	12.6	LOS A	0.8	14.5	0.54	0.66	31.4
8	T1	178	23.1	178	23.1	0.349	16.9	LOS B	3.9	36.8	0.82	0.67	15.5
Approach		236	42.0	236	42.0	0.349	15.8	LOS B	3.9	36.8	0.75	0.67	20.6
All Vehicles		335	51.6	335	51.6	0.354	17.8	LOS B	3.9	36.8	0.77	0.66	20.3

PHASING SUMMARY

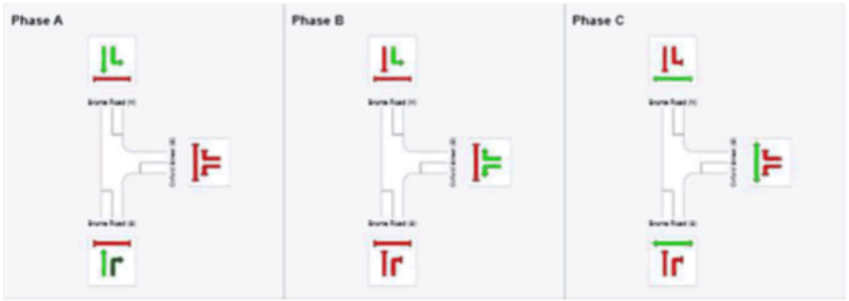
Site: 1. Bronte Rd / Oxford St 2014 PM Peak

Network: 2014 BASE PM

Bronte Road and Oxford Street
2014 PM Peak Hour
Signals - Fixed Time Cycle Time = 56 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	23	35
Green Time (sec)	17	6	15
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	23	12	21
Phase Split	41 %	21 %	38 %



PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

Future with the proposed cycleway

MOVEMENT SUMMARY

Site: 1. Bronte Rd / Oxford St 2014 AM Peak

Network: 2014 OPTION FULL AM

Bronte Road and Oxford Street
2014 AM Peak Hour

Signals - Fixed Time Cycle Time = 56 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Bronte Road (S)													
2	T1	62	84.7	62	84.7	0.132	17.4	LOS B	0.9	14.6	0.78	0.59	19.0
3	R2	3	66.7	3	66.7	0.132	21.1	LOS B	0.9	14.6	0.79	0.61	24.2
Approach		65	83.9	65	83.9	0.132	17.6	LOS B	0.9	14.6	0.78	0.59	19.3
East: Oxford Street (E)													
4	L2	3	100.0	3	100.0	0.494	31.6	LOS C	2.1	35.5	0.96	0.78	16.5
6	R2	69	100.0	69	100.0	0.494	31.7	LOS C	2.1	35.5	0.96	0.78	19.8
Approach		73	100.0	73	100.0	0.494	31.7	LOS C	2.1	35.5	0.96	0.78	19.7
North: Bronte Road (N)													
7	L2	38	97.2	38	97.2	0.070	12.7	LOS A	0.5	9.1	0.52	0.65	31.3
8	T1	108	39.8	108	39.8	0.261	18.1	LOS B	2.4	26.8	0.83	0.66	14.7
Approach		146	54.7	146	54.7	0.261	16.7	LOS B	2.4	26.8	0.75	0.65	20.2
All Vehicles		284	73.0	284	73.0	0.494	20.7	LOS B	2.4	35.5	0.81	0.67	19.8

PHASING SUMMARY

Site: 1. Bronte Rd / Oxford St 2014 AM Peak

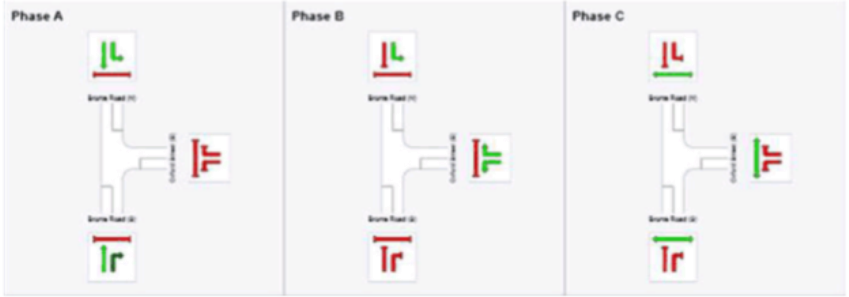
Network: 2014 OPTION FULL AM

Bronte Road and Oxford Street
2014 AM Peak Hour

Signals - Fixed Time Cycle Time = 56 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	21	35
Green Time (sec)	15	8	15
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	21	14	21
Phase Split	38 %	25 %	38 %



PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

MOVEMENT SUMMARY

Site: 1. Bronte Rd / Oxford St 2014 PM Peak

Network: 2014 OPTION FULL PM

Bronte Road and Oxford Street
2014 PM Peak Hour

Signals - Fixed Time Cycle Time = 56 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Bronte Road (S)													
2	T1	59	57.1	59	57.1	0.094	15.4	LOS B	0.8	10.5	0.74	0.56	20.5
3	R2	1	100.0	1	100.0	0.094	19.1	LOS B	0.8	10.5	0.75	0.57	25.9
Approach		60	57.9	60	57.9	0.094	15.5	LOS B	0.8	10.5	0.74	0.56	20.6
East: Oxford Street (E)													
4	L2	1	100.0	1	100.0	0.354	33.2	LOS C	1.1	19.6	0.96	0.74	15.9
6	R2	38	100.0	38	100.0	0.354	33.3	LOS C	1.1	19.6	0.96	0.74	19.2
Approach		39	100.0	39	100.0	0.354	33.3	LOS C	1.1	19.6	0.96	0.74	19.2
North: Bronte Road (N)													
7	L2	58	100.0	58	100.0	0.109	12.6	LOS A	0.8	14.5	0.54	0.66	31.4
8	T1	178	23.1	178	23.1	0.349	16.9	LOS B	3.9	36.8	0.82	0.67	15.5
Approach		236	42.0	236	42.0	0.349	15.8	LOS B	3.9	36.8	0.75	0.67	20.6
All Vehicles		335	51.6	335	51.6	0.354	17.8	LOS B	3.9	36.8	0.77	0.66	20.3

PHASING SUMMARY

Site: 1. Bronte Rd / Oxford St 2014 PM Peak

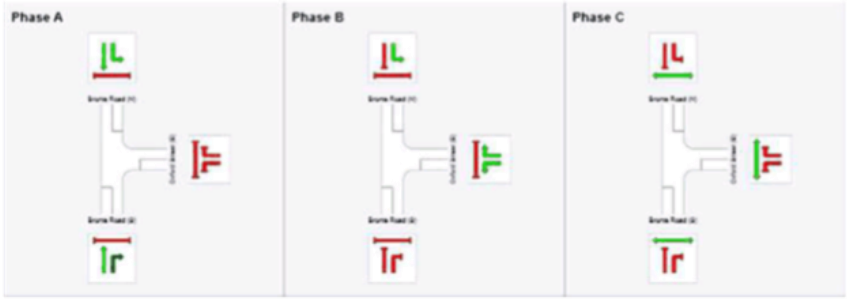
Network: 2014 OPTION FULL PM

Bronte Road and Oxford Street
2014 PM Peak Hour

Signals - Fixed Time Cycle Time = 56 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	23	35
Green Time (sec)	17	6	15
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	23	12	21
Phase Split	41 %	21 %	38 %



PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

2. Intersection of Spring Street and Bronte Road

Existing without the proposed cycleway

MOVEMENT SUMMARY

▽ Site: 2. Bronte Rd / Spring St 2014 AM Peak

Network: 2014 BASE AM

Bronte Road and Spring Street
2014 AM Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Bronte Road (S)													
1	L2	197	6.4	197	6.4	0.164	4.6	LOS A	0.0	0.0	0.00	0.40	34.0
2	T1	68	80.0	68	80.0	0.164	0.0	LOS A	0.0	0.0	0.00	0.40	34.0
Approach		265	25.4	265	25.4	0.164	3.4	NA	0.0	0.0	0.00	0.40	34.0
North: Bronte (N)													
8	T1	71	62.7	71	62.7	0.083	1.2	LOS A	0.4	4.6	0.41	0.30	38.5
9	R2	45	11.6	45	11.6	0.083	5.0	LOS A	0.4	4.6	0.41	0.30	26.3
Approach		116	42.7	116	42.7	0.083	2.7	NA	0.4	4.6	0.41	0.30	35.6
All Vehicles		381	30.7	381	30.7	0.164	3.2	NA	0.4	4.6	0.12	0.37	34.5

MOVEMENT SUMMARY

▽ Site: 2. Bronte Rd / Spring St 2014 PM Peak

Network: 2014 BASE PM

Bronte Road and Spring Street
2014 PM Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Bronte Road (S)													
1	L2	251	1.3	251	1.3	0.179	4.6	LOS A	0.0	0.0	0.00	0.43	34.3
2	T1	61	55.2	61	55.2	0.179	0.0	LOS A	0.0	0.0	0.00	0.43	34.3
Approach		312	11.8	312	11.8	0.179	3.7	NA	0.0	0.0	0.00	0.43	34.3
North: Bronte (N)													
8	T1	112	38.7	112	38.7	0.121	1.2	LOS A	0.6	6.1	0.43	0.29	39.2
9	R2	72	0.0	72	0.0	0.121	5.1	LOS A	0.6	6.1	0.43	0.29	27.3
Approach		183	23.6	183	23.6	0.121	2.8	NA	0.6	6.1	0.43	0.29	36.4
All Vehicles		495	16.2	495	16.2	0.179	3.3	NA	0.6	6.1	0.16	0.38	35.1

PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

Future with the proposed cycleway

MOVEMENT SUMMARY

Site: 2. Bronte Rd / Spring St 2014 AM Peak

Network: 2014 OPTION FULL AM

Bronte Road and Spring Street
2014 AM Peak Hour

Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Bronte Road (S)													
1	L2	197	6.4	197	6.4	0.258	7.1	LOS A	1.3	12.7	0.53	0.61	28.6
2	T1	68	80.0	68	80.0	0.258	2.5	LOS A	1.3	12.7	0.53	0.61	28.6
Approach		265	25.4	265	25.4	0.258	5.9	NA	1.3	12.7	0.53	0.61	28.6
North: Bronte (N)													
8	T1	71	62.7	71	62.7	0.113	4.7	LOS A	0.7	7.7	0.66	0.47	31.3
9	R2	45	11.6	45	11.6	0.113	8.6	LOS A	0.7	7.7	0.66	0.47	18.0
Approach		116	42.7	116	42.7	0.113	6.2	NA	0.7	7.7	0.66	0.47	27.7
All Vehicles		381	30.7	381	30.7	0.258	6.0	NA	1.3	12.7	0.57	0.57	28.3

MOVEMENT SUMMARY

Site: 2. Bronte Rd / Spring St 2014 PM Peak

Network: 2014 OPTION FULL PM

Bronte Road and Spring Street
2014 PM Peak Hour

Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Bronte Road (S)													
1	L2	251	1.3	251	1.3	0.359	9.2	LOS A	2.3	18.7	0.66	0.80	25.4
2	T1	61	55.2	61	55.2	0.359	4.6	LOS A	2.3	18.7	0.66	0.80	25.4
Approach		312	11.8	312	11.8	0.359	8.3	NA	2.3	18.7	0.66	0.80	25.4
North: Bronte (N)													
8	T1	112	38.7	112	38.7	0.212	8.6	LOS A	1.6	15.2	0.87	0.49	26.4
9	R2	72	0.0	72	0.0	0.212	12.5	LOS A	1.6	15.2	0.87	0.49	13.6
Approach		183	23.6	183	23.6	0.212	10.1	NA	1.6	15.2	0.87	0.49	22.7
All Vehicles		495	16.2	495	16.2	0.359	9.0	NA	2.3	18.7	0.74	0.68	24.4

PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

3. Pedestrian crossing on Spring Street

Existing without the proposed cycleway

MOVEMENT SUMMARY

Site: 3. Spring St Ped Crossing 2014 AM Peak — **Network: 2014 BASE AM**

Spring Street midblock pedestrian crossing
2014 AM Peak Hour
Pedestrian Crossing (Signals) - Fixed Time Cycle Time = 45 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
East: Spring Street (E)													
8	T1	244	6.5	244	6.5	0.587	18.1	LOS B	5.1	37.9	0.94	0.79	17.5
Approach		244	6.5	244	6.5	0.587	18.1	LOS B	5.1	37.9	0.94	0.79	17.5
All Vehicles		244	6.5	244	6.5	0.587	18.1	LOS B	5.1	37.9	0.94	0.79	17.5

MOVEMENT SUMMARY

Site: 3. Spring St Ped Crossing 2014 PM Peak — **Network: 2014 BASE PM**

Spring Street midblock pedestrian crossing
2014 PM Peak Hour
Pedestrian Crossing (Signals) - Fixed Time Cycle Time = 46 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
East: Spring Street (E)													
8	T1	322	1.3	322	1.3	0.664	17.1	LOS B	7.2	51.0	0.97	0.86	18.1
Approach		322	1.3	322	1.3	0.664	17.1	LOS B	7.2	51.0	0.97	0.86	18.1
All Vehicles		322	1.3	322	1.3	0.664	17.1	LOS B	7.2	51.0	0.97	0.86	18.1

PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

Future with the proposed cycleway

MOVEMENT SUMMARY

Site: 3. Spring St Ped Crossing 2014 AM Peak - Conversion

Network: 2014 OPTION FULL AM

Spring Street midblock pedestrian crossing
2014 AM Peak Hour

Signals - Fixed Time Cycle Time = 45 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
East: Spring Street (E)													
2	T1	244	6.5	244	6.5	0.452	14.7	LOS B	4.6	33.9	0.86	0.71	19.9
Approach		244	6.5	244	6.5	0.452	14.7	LOS B	4.6	33.9	0.86	0.71	19.9
All Vehicles		244	6.5	244	6.5	0.452	14.7	LOS B	4.6	33.9	0.86	0.71	19.9

MOVEMENT SUMMARY

Site: 3. Spring St Ped Crossing 2014 PM Peak - Conversion

Network: 2014 OPTION FULL PM

Spring Street midblock pedestrian crossing
2014 PM Peak Hour

Signals - Fixed Time Cycle Time = 46 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
East: Spring Street (E)													
2	T1	322	1.3	322	1.3	0.426	11.3	LOS A	5.4	38.5	0.78	0.66	23.1
Approach		322	1.3	322	1.3	0.426	11.3	LOS A	5.4	38.5	0.78	0.66	23.1
All Vehicles		322	1.3	322	1.3	0.426	11.3	LOS A	5.4	38.5	0.78	0.66	23.1

PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

4. Intersection of Spring Street and Newland Street

Existing without the proposed cycleway

MOVEMENT SUMMARY

Site: 4. Newland St / Spring St 2014 AM Peak — **Network: 2014 BASE AM**

Newland Street and Spring Street
2014 AM Peak Hour
Signals - Fixed Time Cycle Time = 79 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Newland Street (S)													
1	L2	61	1.7	61	1.7	0.218	18.5	LOS B	4.3	30.5	0.64	0.60	17.1
2	T1	638	1.7	638	1.7	0.624	14.1	LOS A	13.3	95.3	0.71	0.63	21.2
Approach		699	1.7	699	1.7	0.624	14.5	LOS A	13.3	95.3	0.70	0.63	20.8
East: Spring Street (E)													
4	L2	60	7.0	60	7.0	0.294	29.8	LOS C	4.3	32.2	0.84	0.72	15.5
5	T1	78	8.1	78	8.1	0.294	25.3	LOS B	4.3	32.2	0.84	0.72	8.8
6	R2	125	5.0	125	5.0	0.536	39.7	LOS C	4.7	34.4	0.97	0.79	6.2
Approach		263	6.4	263	6.4	0.536	33.2	LOS C	4.7	34.4	0.90	0.75	8.4
North: Newland Street (N)													
8	T1	429	3.7	429	3.7	0.309	11.6	LOS A	4.7	34.4	0.50	0.44	23.6
9	R2	46	2.3	46	2.3	0.309	20.0	LOS B	4.2	30.3	0.64	0.58	8.6
Approach		476	3.5	476	3.5	0.309	12.4	LOS A	4.7	34.4	0.51	0.45	22.2
West: Spring Street (W)													
10	L2	45	0.0	45	0.0	0.092	29.8	LOS C	1.2	8.7	0.81	0.70	16.6
Approach		45	0.0	45	0.0	0.092	29.8	LOS C	1.2	8.7	0.81	0.70	16.6
All Vehicles		1483	3.1	1483	3.1	0.624	17.6	LOS B	13.3	95.3	0.68	0.59	17.2

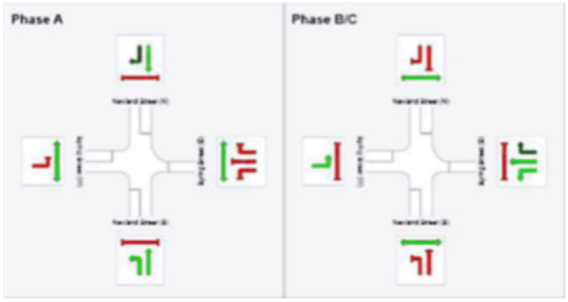
PHASING SUMMARY

Site: 4. Newland St / Spring St 2014 AM Peak — **Network: 2014 BASE AM**

Newland Street and Spring Street
2014 AM Peak Hour
Signals - Fixed Time Cycle Time = 79 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B/C
Reference Phase	Yes	No
Phase Change Time (sec)	0	46
Green Time (sec)	40	27
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	46	33
Phase Split	58 %	42 %



PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

MOVEMENT SUMMARY

Site: 4. Newland St / Spring St 2014 PM Peak

Network: 2014 BASE PM

Newland Street and Spring Street
2014 PM Peak Hour
Signals - Fixed Time Cycle Time = 84 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Newland Street (S)													
1	L2	56	1.9	56	1.9	0.131	19.5	LOS B	2.6	18.6	0.63	0.61	15.8
2	T1	395	1.9	395	1.9	0.375	13.8	LOS A	8.5	61.0	0.65	0.57	21.3
Approach		451	1.9	451	1.9	0.375	14.5	LOS B	8.5	61.0	0.64	0.57	20.6
East: Spring Street (E)													
4	L2	202	1.6	202	1.6	0.640	32.6	LOS C	11.1	78.0	0.91	0.80	14.2
5	T1	128	0.0	128	0.0	0.640	29.1	LOS C	11.1	78.0	0.92	0.81	7.6
6	R2	184	0.6	184	0.6	0.640	38.7	LOS C	8.0	56.7	0.96	0.83	6.4
Approach		515	0.8	515	0.8	0.640	33.9	LOS C	11.1	78.0	0.93	0.82	9.4
North: Newland Street (N)													
8	T1	614	1.2	614	1.2	0.344	10.8	LOS A	5.9	41.7	0.48	0.42	24.5
9	R2	21	0.0	21	0.0	0.344	14.6	LOS B	5.7	40.5	0.49	0.44	12.1
Approach		635	1.2	635	1.2	0.344	11.0	LOS A	5.9	41.7	0.48	0.42	24.2
West: Spring Street (W)													
10	L2	14	0.0	14	0.0	0.024	28.4	LOS B	0.4	2.6	0.75	0.65	16.1
Approach		14	0.0	14	0.0	0.024	28.4	LOS B	0.4	2.6	0.75	0.65	16.1
All Vehicles		1614	1.2	1614	1.2	0.640	19.4	LOS B	11.1	78.0	0.67	0.59	15.9

PHASING SUMMARY

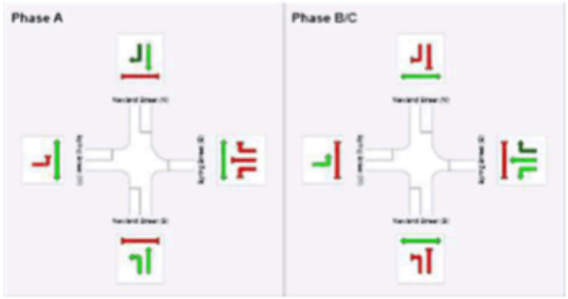
Site: 4. Newland St / Spring St 2014 PM Peak

Network: 2014 BASE PM

Newland Street and Spring Street
2014 PM Peak Hour
Signals - Fixed Time Cycle Time = 84 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B/C
Reference Phase	Yes	No
Phase Change Time (sec)	0	48
Green Time (sec)	42	30
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	48	36
Phase Split	57 %	43 %



PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

Future with the proposed cycleway

MOVEMENT SUMMARY

Site: 4. Newland St / Spring St 2014 AM Peak

Network: 2014 OPTION FULL AM

Newland Street and Spring Street
2014 AM Peak Hour

Signals - Fixed Time Cycle Time = 85 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Newland Street (S)													
1	L2	61	1.7	61	1.7	0.277	24.5	LOS B	5.6	39.6	0.74	0.66	13.2
2	T1	638	1.7	638	1.7	0.790	24.1	LOS B	18.4	131.5	0.83	0.79	14.6
Approach		699	1.7	699	1.7	0.790	24.2	LOS B	18.4	131.5	0.82	0.78	14.5
East: Spring Street (E)													
4	L2	56	7.5	56	7.5	0.179	22.2	LOS B	3.4	25.4	0.68	0.63	19.0
5	T1	72	7.4	72	7.4	0.179	17.7	LOS B	3.4	25.4	0.68	0.63	11.4
6	R2	117	5.4	117	5.4	0.366	36.4	LOS C	4.3	31.4	0.90	0.78	6.5
Approach		244	6.5	244	6.5	0.366	27.7	LOS B	4.3	31.4	0.79	0.70	9.5
North: Newland Street (N)													
8	T1	429	3.7	429	3.7	0.406	19.7	LOS B	7.7	56.2	0.67	0.57	16.8
9	R2	46	2.3	46	2.3	0.406	31.3	LOS C	5.2	37.4	0.81	0.70	5.1
Approach		476	3.5	476	3.5	0.406	20.8	LOS B	7.7	56.2	0.68	0.59	15.6
West: Spring Street (W)													
10	L2	45	0.0	45	0.0	0.094	30.5	LOS C	1.4	10.0	0.79	0.71	16.4
Approach		45	0.0	45	0.0	0.094	30.5	LOS C	1.4	10.0	0.79	0.71	16.4
All Vehicles		1464	3.0	1464	3.0	0.790	23.9	LOS B	18.4	131.5	0.77	0.70	13.9

PHASING SUMMARY

Site: 4. Newland St / Spring St 2014 AM Peak

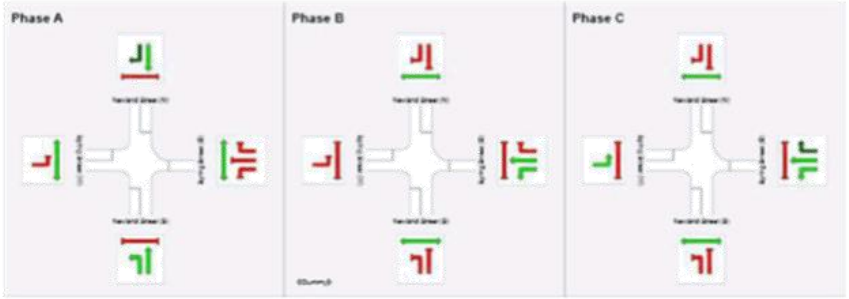
Network: 2014 OPTION FULL AM

Newland Street and Spring Street
2014 AM Peak Hour

Signals - Fixed Time Cycle Time = 85 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	41	55
Green Time (sec)	35	8	24
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	41	14	30
Phase Split	48 %	16 %	35 %



PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

MOVEMENT SUMMARY

Site: 4. Newland St / Spring St 2014 PM Peak

Network: 2014 OPTION FULL PM

Newland Street and Spring Street
2014 PM Peak Hour

Signals - Fixed Time Cycle Time = 90 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Newland Street (S)													
1	L2	56	1.9	56	1.9	0.173	26.7	LOS B	3.4	24.2	0.73	0.66	12.1
2	T1	395	1.9	395	1.9	0.493	21.3	LOS B	10.9	78.0	0.77	0.67	15.9
Approach		451	1.9	451	1.9	0.493	22.0	LOS B	10.9	78.0	0.77	0.67	15.4
East: Spring Street (E)													
4	L2	127	2.5	127	2.5	0.322	23.4	LOS B	6.0	42.8	0.70	0.69	18.0
5	T1	80	0.0	80	0.0	0.322	18.9	LOS B	6.0	42.8	0.70	0.69	10.6
6	R2	115	0.9	115	0.9	0.319	35.3	LOS C	4.2	30.0	0.86	0.77	6.6
Approach		322	1.3	322	1.3	0.322	26.5	LOS B	6.0	42.8	0.76	0.72	11.0
North: Newland Street (N)													
8	T1	614	1.2	614	1.2	0.435	19.8	LOS B	9.0	63.8	0.66	0.58	16.8
9	R2	21	0.0	21	0.0	0.435	24.0	LOS B	8.5	60.0	0.68	0.60	6.7
Approach		635	1.2	635	1.2	0.435	19.9	LOS B	9.0	63.8	0.67	0.58	16.6
West: Spring Street (W)													
10	L2	74	1.4	74	1.4	0.139	30.2	LOS C	2.4	17.0	0.78	0.72	15.6
Approach		74	1.4	74	1.4	0.139	30.2	LOS C	2.4	17.0	0.78	0.72	15.6
All Vehicles		1481	1.4	1481	1.4	0.493	22.5	LOS B	10.9	78.0	0.72	0.64	14.7

PHASING SUMMARY

Site: 4. Newland St / Spring St 2014 PM Peak

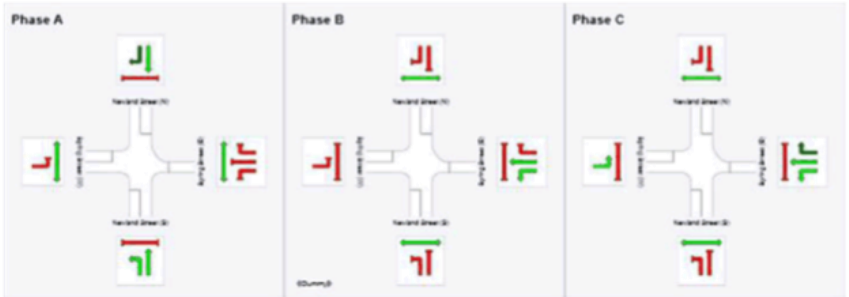
Network: 2014 OPTION FULL PM

Newland Street and Spring Street
2014 PM Peak Hour

Signals - Fixed Time Cycle Time = 90 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	C
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	42	56
Green Time (sec)	36	8	28
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	42	14	34
Phase Split	47 %	16 %	38 %



2196790A Bondi Junction Cycleway 12/24

PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

5. Intersection of Spring Street and Denison Street

Existing without the proposed cycleway

MOVEMENT SUMMARY

▽ Site: 5. Denison St / Spring St 2014 AM Peak

Network: 2014 BASE AM

Denison Street and Spring Street
2014 AM Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Denison Street (S)													
2	T1	365	0.6	365	0.6	0.256	1.8	LOS A	1.9	13.6	0.48	0.12	37.2
3	R2	85	0.0	85	0.0	0.256	6.4	LOS A	1.9	13.6	0.48	0.12	37.2
Approach		451	0.5	451	0.5	0.256	2.7	NA	1.9	13.6	0.48	0.12	37.2
East: Spring Street (E)													
4	L2	88	3.6	88	3.6	0.372	18.3	LOS B	2.8	21.3	0.69	0.86	27.6
6	R2	113	6.5	113	6.5	0.372	18.3	LOS B	2.8	21.3	0.69	0.86	23.4
Approach		201	5.2	201	5.2	0.372	18.3	LOS B	2.8	21.3	0.69	0.86	25.5
North: Denison Street (N)													
7	L2	48	0.0	48	0.0	0.142	4.6	LOS A	0.0	0.0	0.00	0.10	44.5
8	T1	220	3.8	220	3.8	0.142	0.0	LOS A	0.0	0.0	0.00	0.10	47.2
Approach		268	3.1	268	3.1	0.142	0.8	NA	0.0	0.0	0.00	0.10	46.9
All Vehicles		920	2.3	920	2.3	0.372	5.5	NA	2.8	21.3	0.39	0.28	34.0

MOVEMENT SUMMARY

▽ Site: 5. Denison St / Spring St 2014 PM Peak

Network: 2014 BASE PM

Denison Street and Spring Street
2014 PM Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Denison Street (S)													
2	T1	233	0.9	233	0.9	0.160	1.8	LOS A	1.1	7.8	0.51	0.11	37.2
3	R2	47	0.0	47	0.0	0.160	6.3	LOS A	1.1	7.8	0.51	0.11	37.2
Approach		280	0.8	280	0.8	0.160	2.6	NA	1.1	7.8	0.51	0.11	37.2
East: Spring Street (E)													
4	L2	152	0.0	152	0.0	0.399	8.9	LOS A	2.2	15.5	0.57	0.82	35.5
6	R2	163	1.3	163	1.3	0.399	8.9	LOS A	2.2	15.5	0.57	0.82	32.1
Approach		315	0.7	315	0.7	0.399	8.9	LOS A	2.2	15.5	0.57	0.82	34.0
North: Denison Street (N)													
7	L2	67	1.6	67	1.6	0.212	4.6	LOS A	0.0	0.0	0.00	0.09	45.1
8	T1	340	0.9	340	0.9	0.212	0.0	LOS A	0.0	0.0	0.00	0.09	47.5
Approach		407	1.0	407	1.0	0.212	0.8	NA	0.0	0.0	0.00	0.09	47.3
All Vehicles		1002	0.8	1002	0.8	0.399	3.8	NA	2.2	15.5	0.32	0.33	38.8

PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

Future with the proposed cycleway

MOVEMENT SUMMARY

Site: 5. Denison St / Spring St 2014 AM Peak

Network: 2014 OPTION FULL AM

Denison Street and Spring Street
2014 AM Peak Hour

Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Denison Street (S)													
2	T1	365	0.6	365	0.6	0.344	12.6	LOS A	5.2	36.3	0.96	0.13	19.1
3	R2	85	0.0	85	0.0	0.344	17.1	LOS B	5.2	36.3	0.96	0.13	19.1
Approach		451	0.5	451	0.5	0.344	13.4	NA	5.2	36.3	0.96	0.13	19.1
East: Spring Street (E)													
4	L2	88	3.6	88	3.6	0.399	21.6	LOS B	3.4	25.6	0.73	0.91	25.6
6	R2	113	6.5	113	6.5	0.399	21.7	LOS B	3.4	25.6	0.73	0.91	21.3
Approach		201	5.2	201	5.2	0.399	21.7	LOS B	3.4	25.6	0.73	0.91	23.4
North: Denison Street (N)													
7	L2	48	0.0	48	0.0	0.142	4.6	LOS A	0.0	0.0	0.00	0.10	44.5
8	T1	220	3.8	220	3.8	0.142	0.0	LOS A	0.0	0.0	0.00	0.10	47.2
Approach		268	3.1	268	3.1	0.142	0.8	NA	0.0	0.0	0.00	0.10	46.9
All Vehicles		920	2.3	920	2.3	0.399	11.6	NA	5.2	36.3	0.63	0.29	25.5

MOVEMENT SUMMARY

Site: 5. Denison St / Spring St 2014 PM Peak

Network: 2014 OPTION FULL PM

Denison Street and Spring Street
2014 PM Peak Hour

Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Denison Street (S)													
2	T1	233	0.9	233	0.9	0.173	3.2	LOS A	1.4	9.8	0.59	0.12	33.7
3	R2	47	0.0	47	0.0	0.173	7.8	LOS A	1.4	9.8	0.59	0.12	33.7
Approach		280	0.8	280	0.8	0.173	4.0	NA	1.4	9.8	0.59	0.12	33.7
East: Spring Street (E)													
4	L2	152	0.0	152	0.0	0.418	10.3	LOS A	2.6	18.3	0.61	0.86	34.1
6	R2	163	1.3	163	1.3	0.418	10.3	LOS A	2.6	18.3	0.61	0.86	30.4
Approach		315	0.7	315	0.7	0.418	10.3	LOS A	2.6	18.3	0.61	0.86	32.4
North: Denison Street (N)													
7	L2	67	1.6	67	1.6	0.212	4.6	LOS A	0.0	0.0	0.00	0.09	45.1
8	T1	340	0.9	340	0.9	0.212	0.0	LOS A	0.0	0.0	0.00	0.09	47.5
Approach		407	1.0	407	1.0	0.212	0.8	NA	0.0	0.0	0.00	0.09	47.3
All Vehicles		1002	0.8	1002	0.8	0.418	4.7	NA	2.6	18.3	0.36	0.34	37.2

PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

6. Intersection of Oxford Street and Denison Street

Existing without the proposed cycleway

MOVEMENT SUMMARY

▽ Site: 6. Denison St / Oxford St 2014 AM Peak

Network: 2014 BASE AM

Denison St / Oxford St
2014 AM Peak
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Denison Street (S)													
1	L2	434	2.4	434	2.4	0.813	27.3	LOS B	11.0	78.6	0.86	1.68	10.5
3	R2	36	0.0	36	0.0	0.813	27.3	LOS B	11.0	78.6	0.86	1.68	21.9
Approach		469	2.2	469	2.2	0.813	27.3	LOS B	11.0	78.6	0.86	1.68	11.7
East: Oxford Street (E)													
4	L2	12	9.1	12	9.1	0.386	16.8	LOS B	3.6	32.4	0.63	0.41	28.0
5	T1	244	31.0	244	31.0	0.386	12.2	LOS A	3.6	32.4	0.63	0.41	28.0
Approach		256	30.0	256	30.0	0.386	12.4	NA	3.6	32.4	0.63	0.41	28.0
West: Oxford Street (W)													
11	T1	184	17.7	184	17.7	0.503	8.4	LOS A	5.4	42.0	0.50	0.66	36.1
12	R2	249	3.0	249	3.0	0.503	13.8	LOS A	5.4	42.0	0.52	0.77	25.7
Approach		434	9.2	434	9.2	0.503	11.5	NA	5.4	42.0	0.51	0.72	31.3
All Vehicles		1159	11.0	1159	11.0	0.813	18.1	NA	11.0	78.6	0.68	1.04	21.9

MOVEMENT SUMMARY

▽ Site: 6. Denison St / Oxford St 2014 PM Peak

Network: 2014 BASE PM

Denison St / Oxford St
2014 PM Peak
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Denison Street (S)													
1	L2	352	0.9	352	0.9	0.862	34.6	LOS C	10.1	71.5	0.88	1.78	8.6
3	R2	35	0.0	35	0.0	0.862	34.6	LOS C	10.1	71.5	0.88	1.78	19.1
Approach		386	0.8	386	0.8	0.862	34.6	LOS C	10.1	71.5	0.88	1.78	9.9
East: Oxford Street (E)													
4	L2	41	2.6	41	2.6	0.386	14.1	LOS A	3.1	26.7	0.59	0.45	30.4
5	T1	228	17.5	228	17.5	0.386	9.5	LOS A	3.1	26.7	0.59	0.45	30.4
Approach		269	15.2	269	15.2	0.386	10.2	NA	3.1	26.7	0.59	0.45	30.4
West: Oxford Street (W)													
11	T1	277	18.6	277	18.6	0.719	9.3	LOS A	9.4	72.3	0.53	0.73	35.7
12	R2	355	0.9	355	0.9	0.719	17.3	LOS B	9.4	72.3	0.61	1.04	22.4
Approach		632	8.7	632	8.7	0.719	13.8	NA	9.4	72.3	0.57	0.90	29.2
All Vehicles		1287	7.7	1287	7.7	0.862	19.3	NA	10.1	72.3	0.67	1.07	22.2

PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

Future with the proposed cycleway

MOVEMENT SUMMARY

Site: 6. Denison St / Oxford St 2014 AM Peak

Network: 2014 OPTION FULL AM

Denison St and Oxford St
2014 AM Peak

Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Denison Street (S)													
1	L2	434	2.4	434	2.4	0.943	61.9	LOS E	23.5	167.4	0.94	2.58	5.2
3	R2	36	0.0	36	0.0	0.943	61.9	LOS E	23.5	167.4	0.94	2.58	13.0
Approach		469	2.2	469	2.2	0.943	61.9	LOS E	23.5	167.4	0.94	2.58	5.9
East: Oxford Street (E)													
4	L2	12	9.1	12	9.1	0.471	38.5	LOS C	9.1	81.4	0.94	0.72	15.9
5	T1	244	31.0	244	31.0	0.471	33.9	LOS C	9.1	81.4	0.94	0.72	15.9
Approach		256	30.0	256	30.0	0.471	34.1	NA	9.1	81.4	0.94	0.72	15.9
West: Oxford Street (W)													
11	T1	184	17.7	184	17.7	0.461	7.2	LOS A	4.3	32.9	0.48	0.56	37.6
12	R2	249	3.0	249	3.0	0.461	12.7	LOS A	4.3	32.9	0.52	0.76	26.6
Approach		434	9.2	434	9.2	0.461	10.4	NA	4.3	32.9	0.50	0.68	32.5
All Vehicles		1159	11.0	1159	11.0	0.943	36.5	NA	23.5	167.4	0.78	1.46	13.9

MOVEMENT SUMMARY

Site: 6. Denison St / Oxford St 2014 PM Peak

Network: 2014 OPTION FULL PM

Denison St and Oxford St
2014 PM Peak

Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Denison Street (S)													
1	L2	352	0.9	352	0.9	0.912	47.4	LOS D	13.6	95.7	0.90	2.09	6.6
3	R2	35	0.0	35	0.0	0.912	47.4	LOS D	13.6	95.7	0.90	2.09	15.7
Approach		386	0.8	386	0.8	0.912	47.4	LOS D	13.6	95.7	0.90	2.09	7.6
East: Oxford Street (E)													
4	L2	41	2.6	41	2.6	0.410	19.0	LOS B	4.6	39.5	0.67	0.56	25.5
5	T1	228	17.5	228	17.5	0.410	14.4	LOS A	4.6	39.5	0.67	0.56	25.5
Approach		269	15.2	269	15.2	0.410	15.1	NA	4.6	39.5	0.67	0.56	25.5
West: Oxford Street (W)													
11	T1	277	18.6	277	18.6	0.719	9.3	LOS A	9.4	72.3	0.53	0.73	35.7
12	R2	355	0.9	355	0.9	0.719	17.3	LOS B	9.4	72.3	0.61	1.04	22.4
Approach		632	8.7	632	8.7	0.719	13.8	NA	9.4	72.3	0.57	0.90	29.2
All Vehicles		1287	7.7	1287	7.7	0.912	24.1	NA	13.6	95.7	0.69	1.19	19.5

PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

7. Intersection of Oxford Street and Nelson Street

Existing without the proposed cycleway

MOVEMENT SUMMARY

Site: 7. Nelson St / Oxford St 2014 AM Peak

Network: 2014 BASE AM

Nelson Street and Oxford Street
2014 AM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
East: Oxford Street (E)													
5	T1	762	11.2	762	11.2	0.785	10.7	LOS A	12.8	102.3	0.69	0.62	27.4
6	R2	20	0.0	20	0.0	0.785	17.1	LOS B	12.8	102.3	0.76	0.71	32.0
Approach		782	10.9	782	10.9	0.785	10.9	LOS A	12.8	102.3	0.69	0.63	27.6
North: Nelson Street (N)													
7	L2	23	0.0	23	0.0	0.055	24.6	LOS B	0.5	3.8	0.81	0.68	16.3
9	R2	208	1.5	208	1.5	0.941	56.1	LOS D	9.4	66.5	1.00	1.05	8.7
Approach		232	1.4	232	1.4	0.941	53.0	LOS D	9.4	66.5	0.98	1.01	9.1
West: Oxford Street (W)													
10	L2	109	1.0	109	1.0	0.312	15.6	LOS B	2.1	14.9	0.65	0.73	26.4
11	T1	360	11.1	360	11.1	0.344	9.9	LOS A	7.7	61.5	0.76	0.66	21.5
Approach		469	8.7	469	8.7	0.344	11.2	LOS A	7.7	61.5	0.73	0.67	23.4
All Vehicles		1483	8.7	1483	8.7	0.941	17.6	LOS B	12.8	102.3	0.75	0.70	20.4

PHASING SUMMARY

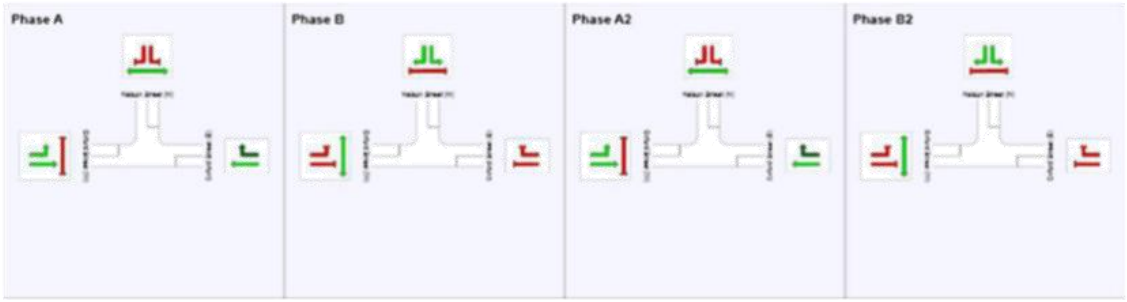
Site: 7. Nelson St / Oxford St 2014 AM Peak

Network: 2014 BASE AM

Nelson Street and Oxford Street
2014 AM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	A2	B2
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	41	60	100
Green Time (sec)	35	13	34	14
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	41	19	40	20
Phase Split	34 %	16 %	33 %	17 %



PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

MOVEMENT SUMMARY

Site: 7. Nelson St / Oxford St 2014 PM Peak

Network: 2014 BASE PM

Nelson Street and Oxford Street
2014 PM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
East: Oxford Street (E)													
5	T1	555	7.2	555	7.2	0.628	9.2	LOS A	8.8	67.5	0.68	0.59	29.3
6	R2	11	0.0	11	0.0	0.628	14.5	LOS B	8.8	67.5	0.73	0.65	34.4
Approach		565	7.1	565	7.1	0.628	9.3	LOS A	8.8	67.5	0.68	0.59	29.4
North: Nelson Street (N)													
7	L2	35	0.0	35	0.0	0.077	23.9	LOS B	0.8	5.7	0.80	0.70	16.7
9	R2	233	1.8	233	1.8	0.909	50.5	LOS D	10.1	71.8	1.00	1.02	9.4
Approach		267	1.6	267	1.6	0.909	47.0	LOS D	10.1	71.8	0.97	0.98	10.0
West: Oxford Street (W)													
10	L2	56	0.0	56	0.0	0.164	15.3	LOS B	1.0	7.1	0.61	0.69	26.7
11	T1	517	11.2	517	11.2	0.509	8.9	LOS A	9.6	78.1	0.66	0.58	22.8
Approach		573	10.1	573	10.1	0.509	9.5	LOS A	9.6	78.1	0.66	0.60	23.5
All Vehicles		1405	7.3	1405	7.3	0.909	16.6	LOS B	10.1	78.1	0.73	0.67	20.0

PHASING SUMMARY

Site: 7. Nelson St / Oxford St 2014 PM Peak

Network: 2014 BASE PM

Nelson Street and Oxford Street
2014 PM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	A2	B2
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	40	60	99
Green Time (sec)	34	14	33	15
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	40	20	39	21
Phase Split	33 %	17 %	33 %	18 %

PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

Future with the proposed cycleway

MOVEMENT SUMMARY

Site: 7. Nelson St / Oxford St 2014 AM Peak

Network: 2014 OPTION FULL AM

Nelson Street and Oxford Street
2014 AM Peak

Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Oxford Street (E)													
5	T1	762	11.2	762	11.2	0.907	29.4	LOS C	30.1	242.6	0.96	1.01	15.5
Approach		762	11.2	762	11.2	0.907	29.4	LOS C	30.1	242.6	0.96	1.01	15.5
North: Nelson Street (N)													
7	L2	23	0.0	23	0.0	0.058	25.1	LOS B	0.5	3.8	0.82	0.68	16.1
9	R2	208	1.5	208	1.5	0.987	75.0	LOS F	11.2	79.3	1.00	1.14	6.8
Approach		232	1.4	232	1.4	0.987	70.0	LOS E	11.2	79.3	0.98	1.09	7.2
West: Oxford Street (W)													
10	L2	109	1.0	109	1.0	0.307	15.2	LOS B	2.1	14.5	0.64	0.72	26.7
11	T1	360	11.1	360	11.1	0.339	9.6	LOS A	7.4	59.8	0.75	0.65	21.9
Approach		469	8.7	469	8.7	0.339	10.9	LOS A	7.4	59.8	0.73	0.67	23.7
All Vehicles		1463	8.8	1463	8.8	0.987	29.9	LOS C	30.1	242.6	0.89	0.91	14.3

PHASING SUMMARY

Site: 7. Nelson St / Oxford St 2014 AM Peak

Network: 2014 OPTION FULL AM

Nelson Street and Oxford Street
2014 AM Peak

Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	A2	B2
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	41	60	101
Green Time (sec)	35	13	35	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	41	19	41	19
Phase Split	34 %	16 %	34 %	16 %

PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

MOVEMENT SUMMARY

Site: 7. Nelson St / Oxford St 2014 PM Peak

Network: 2014 OPTION FULL PM

Nelson Street and Oxford Street
2014 PM Peak

Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Oxford Street (E)													
5	T1	555	7.2	555	7.2	0.842	21.2	LOS B	18.2	140.1	0.91	0.90	19.2
Approach		555	7.2	555	7.2	0.842	21.2	LOS B	18.2	140.1	0.91	0.90	19.2
North: Nelson Street (N)													
7	L2	35	0.0	35	0.0	0.072	23.0	LOS B	0.8	5.5	0.79	0.69	17.1
9	R2	233	1.8	233	1.8	1.055	121.6	LOS F	17.0	120.9	1.00	1.28	4.4
Approach		267	1.6	267	1.6	1.055	108.8	LOS F	17.0	120.9	0.97	1.21	4.9
West: Oxford Street (W)													
10	L2	56	0.0	56	0.0	0.170	16.0	LOS B	1.1	7.4	0.63	0.70	26.2
11	T1	517	11.2	517	11.2	0.525	9.6	LOS A	10.0	81.1	0.69	0.61	21.8
Approach		573	10.1	573	10.1	0.525	10.2	LOS A	10.0	81.1	0.68	0.61	22.6
All Vehicles		1395	7.3	1395	7.3	1.055	33.5	LOS C	18.2	140.1	0.83	0.84	12.4

PHASING SUMMARY

Site: 7. Nelson St / Oxford St 2014 PM Peak

Network: 2014 OPTION FULL PM

Nelson Street and Oxford Street
2014 PM Peak

Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B	A2	B2
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	39	60	98
Green Time (sec)	33	15	32	16
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	39	21	38	22
Phase Split	33 %	18 %	32 %	18 %

PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

8. Intersection of Oxford Street and York Road

Existing without the proposed cycleway

MOVEMENT SUMMARY

Site: 8. York Rd / Oxford St 2014 AM Peak

Network: 2014 BASE AM

York Road and Oxford Street
2014 AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: York Road (S)													
1	L2	460	0.0	460	0.0	0.887	48.8	LOS D	29.3	205.5	0.85	0.93	25.8
2	T1	587	1.3	587	1.3	0.933	55.6	LOS D	34.8	247.2	0.86	1.01	20.6
3	R2	1	100.0	1	100.0	0.933	61.7	LOS E	34.8	247.2	0.86	1.02	19.8
Approach		1048	0.8	1048	0.8	0.933	52.6	LOS D	34.8	247.2	0.86	0.97	23.0
East: Oxford Street (E)													
4	L2	58	9.1	58	9.1	0.560	15.3	LOS B	11.1	86.6	0.43	0.42	39.2
5	T1	746	9.2	746	9.2	0.589	11.8	LOS A	13.4	105.5	0.46	0.47	32.0
6	R2	180	8.8	180	8.8	0.589	17.9	LOS B	13.4	105.5	0.49	0.54	11.8
Approach		984	9.1	984	9.1	0.589	13.1	LOS A	13.4	105.5	0.46	0.48	28.6
North: York Road (N)													
7	L2	464	8.8	464	8.8	0.588	4.7	LOS A	3.2	24.5	0.12	0.48	21.7
8	T1	554	3.6	554	3.6	0.588	2.4	LOS A	3.2	24.5	0.12	0.16	46.8
Approach		1018	6.0	1018	6.0	0.588	3.4	LOS A	3.2	24.5	0.12	0.31	43.5
All Vehicles		3051	5.2	3051	5.2	0.933	23.5	LOS B	34.8	247.2	0.48	0.59	27.5

PHASING SUMMARY

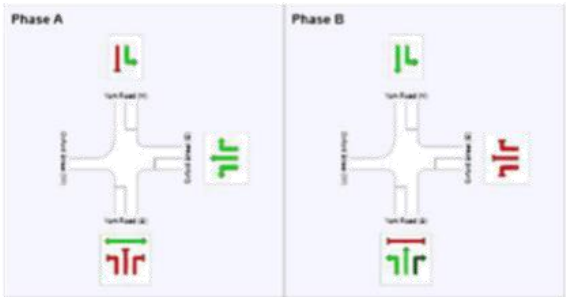
Site: 8. York Rd / Oxford St 2014 AM Peak

Network: 2014 BASE AM

York Road and Oxford Street
2014 AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	63
Green Time (sec)	57	51
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	63	57
Phase Split	53 %	48 %



PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

MOVEMENT SUMMARY

Site: 8. York Rd / Oxford St 2014 PM Peak

Network: 2014 BASE PM

York Road and Oxford Street
2014 PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: York Road (S)													
1	L2	207	1.5	207	1.5	0.296	24.4	LOS B	9.2	65.9	0.64	0.70	34.2
2	T1	378	1.4	378	1.4	0.369	20.6	LOS B	11.7	84.4	0.67	0.60	32.5
3	R2	2	100.0	2	100.0	0.369	25.7	LOS B	11.7	84.4	0.67	0.59	32.1
Approach		587	1.8	587	1.8	0.369	22.0	LOS B	11.7	84.4	0.66	0.64	33.2
East: Oxford Street (E)													
4	L2	62	10.2	62	10.2	0.535	29.2	LOS C	14.8	114.3	0.68	0.62	31.3
5	T1	603	7.0	603	7.0	0.563	24.8	LOS B	16.2	122.3	0.68	0.64	23.4
6	R2	169	3.7	169	3.7	0.563	29.6	LOS C	16.2	122.3	0.69	0.68	9.2
Approach		835	6.6	835	6.6	0.563	26.1	LOS B	16.2	122.3	0.69	0.65	21.2
North: York Road (N)													
7	L2	659	8.5	659	8.5	0.704	4.0	LOS A	3.6	27.9	0.10	0.49	23.8
8	T1	749	1.1	749	1.1	0.704	1.4	LOS A	3.6	25.7	0.10	0.14	47.9
Approach		1408	4.6	1408	4.6	0.704	2.6	LOS A	3.6	27.9	0.10	0.30	44.8
All Vehicles		2831	4.6	2831	4.6	0.704	13.6	LOS A	16.2	122.3	0.39	0.47	32.3

PHASING SUMMARY

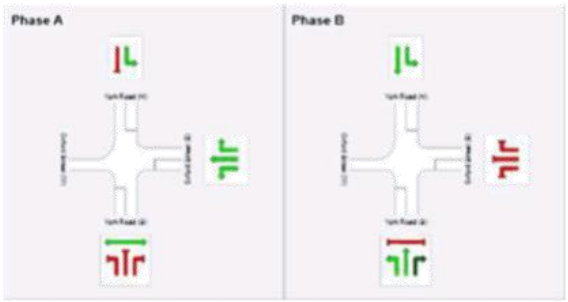
Site: 8. York Rd / Oxford St 2014 PM Peak

Network: 2014 BASE PM

York Road and Oxford Street
2014 PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	56
Green Time (sec)	50	58
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	56	64
Phase Split	47 %	53 %



PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

Future with the proposed cycleway

MOVEMENT SUMMARY

Site: 8. York Rd / Oxford St 2014 AM Peak

Network: 2014 OPTION FULL AM

York Road and Oxford Street
2014 AM Peak Hour

Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: York Road (S)													
1	L2	460	0.0	460	0.0	0.887	48.8	LOS D	29.3	205.5	0.85	0.93	25.8
2	T1	587	1.3	587	1.3	0.933	55.6	LOS D	34.8	247.2	0.86	1.01	20.6
3	R2	1	100.0	1	100.0	0.933	61.7	LOS E	34.8	247.2	0.86	1.02	19.8
Approach		1048	0.8	1048	0.8	0.933	52.6	LOS D	34.8	247.2	0.86	0.97	23.0
East: Oxford Street (E)													
4	L2	58	9.1	58	9.1	0.565	16.1	LOS B	11.5	90.4	0.45	0.44	38.6
5	T1	746	9.2	746	9.2	0.595	12.3	LOS A	13.6	107.0	0.47	0.48	31.6
6	R2	180	8.8	180	8.8	0.595	17.9	LOS B	13.6	107.0	0.50	0.54	11.8
Approach		984	9.1	984	9.1	0.595	13.5	LOS A	13.6	107.0	0.47	0.49	28.3
North: York Road (N)													
7	L2	464	8.8	464	8.8	0.588	4.7	LOS A	3.2	24.5	0.12	0.48	21.7
8	T1	554	3.6	554	3.6	0.588	2.4	LOS A	3.2	24.5	0.12	0.16	46.8
Approach		1018	6.0	1018	6.0	0.588	3.4	LOS A	3.2	24.5	0.12	0.31	43.5
All Vehicles		3051	5.2	3051	5.2	0.933	23.6	LOS B	34.8	247.2	0.49	0.60	27.5

PHASING SUMMARY

Site: 8. York Rd / Oxford St 2014 AM Peak

Network: 2014 OPTION FULL AM

York Road and Oxford Street
2014 AM Peak Hour

Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	63
Green Time (sec)	57	51
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	63	57
Phase Split	53 %	48 %

PARSONS BRINCKERHOFF

Appendix C - SIDRA Movement Summaries

MOVEMENT SUMMARY

Site: 8. York Rd / Oxford St 2014 PM Peak

Network: 2014 OPTION FULL PM

York Road and Oxford Street
2014 PM Peak Hour

Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: York Road (S)													
1	L2	207	1.5	207	1.5	0.296	24.4	LOS B	9.2	65.9	0.64	0.70	34.2
2	T1	378	1.4	378	1.4	0.369	20.6	LOS B	11.7	84.4	0.67	0.60	32.5
3	R2	2	100.0	2	100.0	0.369	25.7	LOS B	11.7	84.4	0.67	0.59	32.1
Approach		587	1.8	587	1.8	0.369	22.0	LOS B	11.7	84.4	0.66	0.64	33.2
East: Oxford Street (E)													
4	L2	62	10.2	62	10.2	0.542	31.0	LOS C	15.2	117.0	0.70	0.64	30.5
5	T1	603	7.0	603	7.0	0.570	25.8	LOS B	16.5	124.6	0.70	0.66	22.9
6	R2	169	3.7	169	3.7	0.570	29.7	LOS C	16.5	124.6	0.70	0.68	9.2
Approach		835	6.6	835	6.6	0.570	27.0	LOS B	16.5	124.6	0.70	0.66	20.8
North: York Road (N)													
7	L2	659	8.5	659	8.5	0.704	4.0	LOS A	3.6	27.9	0.10	0.49	23.8
8	T1	749	1.1	749	1.1	0.704	1.4	LOS A	3.6	25.7	0.10	0.14	47.9
Approach		1408	4.6	1408	4.6	0.704	2.6	LOS A	3.6	27.9	0.10	0.30	44.8
All Vehicles		2831	4.6	2831	4.6	0.704	13.8	LOS A	16.5	124.6	0.39	0.48	32.1

PHASING SUMMARY

Site: 8. York Rd / Oxford St 2014 PM Peak

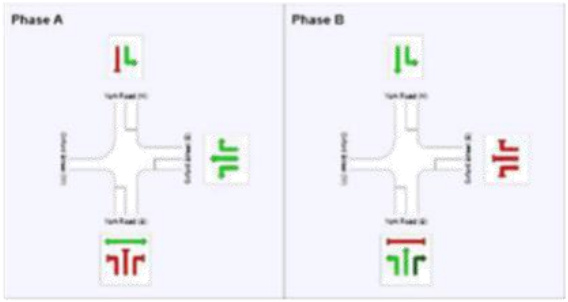
Network: 2014 OPTION FULL PM

York Road and Oxford Street
2014 PM Peak Hour

Signals - Fixed Time Cycle Time = 120 seconds (User-Given Phase Times)

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	56
Green Time (sec)	50	58
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	56	64
Phase Split	47 %	53 %



Appendix D

Proposed parking situation

Table D Proposed Parking Situation, Bondi Junction Cycleway

Parking restrictions lengths (spaces)	Bus zone	½, 2 and 3 Hour (1/2P/2P/3P) ticketed[1]	½ hour (1/2P) ticketed[2]	½ and 3 Hour (1/2P/3P) ticketed[3]	Truck zone[5]	No Parking	Other
Oxford Street - south side							
York Road to St James Road	25 m (1)						
St James Road to Ruthven Street							
Ruthven Street to Mill Hill Road		47 m (7)					
Mill Hill Road to Denison Street		32 m (5)					
TOTAL spaces	**1**	**12**					
Oxford Street – north side							
York Road to Nelson Street	40m (2)						
Nelson Street to Leswell Street		75 m (12)					
Leswell Street to Zebra Crossing at Denison Street		47 m (7)					No Stopping, Aust. Post vehicles excepted, 7m (1) No Parking, funeral vehicles excepted, 15 m (2)
TOTAL spaces	**2**	**19**					**3**
Denison Street							
Oxford Street to Spring Street (west side)			32 m (5)			34 m (driveways)	No Parking, funeral vehicles excepted, 4 m (1)
Oxford Street to Spring Street (east side)				40 m (6)		32 m (driveways)	Loading Zone, 16m (2)
TOTAL spaces			**5**	**6**			**3**

Parking restrictions lengths (spaces)	Bus zone	½, 2 and 3 Hour (1/2P/2P/3P) ticketed[1]	½ hour (1/2P) ticketed[2]	½ and 3 Hour (1/2P/3P) ticketed[3]	Truck zone[5]	No Parking	Other
Spring Street – south side							
Denison Street to Newland Street				139 m (23) 12 m[4] (2)		(driveways)	Loading zone, 6:30am to 4pm, 12 m (2) No Stopping, authorised vehicles and taxis only 10 min, 8 m (1)
Newland Street to signalised pedestrian crossing							Taxi Zone, 13 m (2) 4 hour (4P) motorcycle parking – 23 m (15)
Signalised pedestrian crossing to Bronte Road				23 m[4] (4) 29 m[3] (5)	Loading Zone, ticket 6:30am to 4pm, 23 m (4)	15 m (2)	No Stopping, buses under 8m excepted, 9 m (1)
TOTAL spaces				**34**	**4**	**2**	**21**
Spring Street – north side							
Denison Street to Newland Street				125 m[3] (20) 18 m[4] (3)		(driveways)	Loading Zone (ticket, 6:30am – 4pm) 18 m (3) Accessible parking 6m (1)
Newland Street to signalised pedestrian crossing							Loading Zone (ticket, 6:30am – 4pm) 22 m (3)
Signalised pedestrian crossing to Bronte Road				47 m[4] (7)	19 m (2)		Loading Zone (ticket, 6:30am to 4pm) 47 m (7)
TOTAL spaces				**27**	**2**		**14**

1. ½ hour ticket parking, 8am to 12pm, 2 hour ticket parking 12pm to 6pm, 3 hour ticket parking 6pm to 9pm (all days)
2. ½ hour ticket parking, 8am to 9pm (all days) permit holders excepted
3. ½ hour ticket parking, 8am to 6pm, 3 hour ticket parking, 6pm to 9pm (all days)
4. ½ hour ticket parking, 4pm to 6pm, 3 hour ticket parking, 6pm to 9pm (all days)
5. Truck zone, 6:30am to 4pm (all days)

** driveways included in this length – these are actually no parking zones

Note: calculation of number of parking spaces uses an estimate for average length required, i.e. minimum 15 metres for a bus and approximately 6.5 metres for a small vehicle. More space may be allocated where rigid trucks were observed to park.

PARSONS BRINCKERHOFF

Parsons Brinckerhoff Australia Pty Limited

ABN 80 078 004 798

Level 27 Ernst & Young Centre
680 George Street
Sydney NSW 2000
GPO Box 5394
Sydney NSW 2001
Australia
Tel: +61 2 9272 5100
Fax: +61 2 9272 5101

www.pbworld.com

Certified to ISO 9001, ISO 14001, OHSAS 18001

Memo

Date 20 May 2015

To Sharon Cassidy

Copy Mat Dally, Richard West

From Chris Chun

Ref 2196790A-ITP-MEM-002

Subject Bondi Junction Cycleway - Pedestrian zebra crossing warrant assessment

1. Introduction

This memo presents the warrant assessment of the proposed pedestrian zebra crossing at the intersection of Denison Street and Spring Street, Bondi Junction. A raised pedestrian zebra crossing and cycleway crossing between north of Spring Street has been proposed as part of the cycleway design.

Figure 1 Denison Street and Spring Street intersection layout

PARSONS BRINCKERHOFF

Traffic, pedestrian and cyclist survey were undertaken on Thursday 12 June 2014 to determine whether the pedestrian zebra crossing warrants at this intersection could be achieved. The pedestrian zebra warrant requirements are detailed in section 2 and are assessed in section 3.

2. Pedestrian zebra warrant requirements

A pedestrian zebra crossing should be considered where:

(i) normal warrant:

(a) the product of the measured pedestrian flow per hour (P) and the measured vehicle traffic flow per hour (V), PV, is equal or greater than 60,000 and

(b) the measured flows, P and V are equal of greater than 30 and 500 respectively

(c) the measured flows apply for the three periods of one hour in any day

(ii) special warrant

(d) in certain circumstances where the product of PV is greater or equal to 45,000 (but less than 60,000) and P is greater than or equal to 30 and V is greater than or equal to 500 then consideration can be given to a potential pedestrian zebra crossing site

(iii) reduced warrant for children, the aged or physically impaired pedestrians.

Crossing used by children:

- in two hours of one hour duration immediately before and after school hours P > 30 and V > 200 (PV>6,000).

Crossing for the aged and physically impaired:

- during three periods of one hour in any one day P > 30 (of which 50% using the crossing are aged or physically impaired) and V > 200, and PV > 60,000.

3. Assessment

Under the current condition, a warrant for the pedestrian zebra crossing would not be achieved due to the low pedestrian volume at this intersection. However, once the proposed cycleway has been provided between Spring Street and Denison Street, the number of cyclists who will cross Denison Street would be significantly increased, while existing on-road cyclist volumes on Oxford Street between Newland Street and Denison Street would be reduced. This is due to that cyclist will be prohibited on Oxford Street Mall once the proposed cycleway is implemented along Spring Street. Therefore, it was assumed that most of the existing on-road cyclists on Oxford Street would be diverted onto the proposed cycleway and these volumes were counted as the pedestrian counts to assess the warrant requirements. A sensitivity analysis was undertaken utilising 80% and 90% of existing on-road cyclist volumes on Oxford Street to assess warrant requirements.

PARSONS BRINCKERHOFF

Table 1 shows the existing pedestrian and traffic volumes at the proposed pedestrian zebra crossing on the Denison Street and Spring Street intersection and 90% of existing cyclist volumes at the Oxford Street and Denison Street intersection.

Table 1 Warrant assessment for the Pedestrian Zebra Crossing with 90% diverted cyclist volumes

Hours	Pedestrian volumes (P)	90% of Cyclist volumes (C)	Combined crossing volumes (PC)	Traffic volumes (V)	Combination (PCV)
6.00 – 7.00 am	5	53	58	230	13,340
7.00 – 8.00 am	8	118	126	541	68,166
8.00 – 9.00 am	5	116	121	709	85,789
9.00 – 10.00 am	10	43	53	586	31,058
3.00 – 4.00 pm	15	20	35	682	23,870
4.00 – 5.00 pm	12	39	51	651	33,201
5.00 – 6.00 pm	9	84	93	758	70,494
6.00 – 7.00 pm	7	94	101	602	60,802

Table 2 shows the existing pedestrian and traffic volumes at the proposed pedestrian zebra crossing on the Denison Street and Spring Street intersection and 80% of existing cyclist volumes at the Oxford Street and Denison Street intersection.

Table 2 Warrant assessment for the Pedestrian Zebra Crossing with 80% diverted cyclist volumes

Hours	Pedestrian volumes (P)	80% of Cyclist volumes (C)	Combined crossing volumes (PC)	Traffic volumes (V)	Combination (PCV)
6.00 – 7.00 am	5	47	52	230	11,960
7.00 – 8.00 am	8	105	113	541	61,133
8.00 – 9.00 am	5	103	108	709	76,572
9.00 – 10.00 am	10	38	48	586	28,128
3.00 – 4.00 pm	15	18	33	682	22,506
4.00 – 5.00 pm	12	34	46	651	29,946
5.00 – 6.00 pm	9	74	83	758	62,914
6.00 – 7.00 pm	7	83	90	602	54,180

PARSONS BRINCKERHOFF

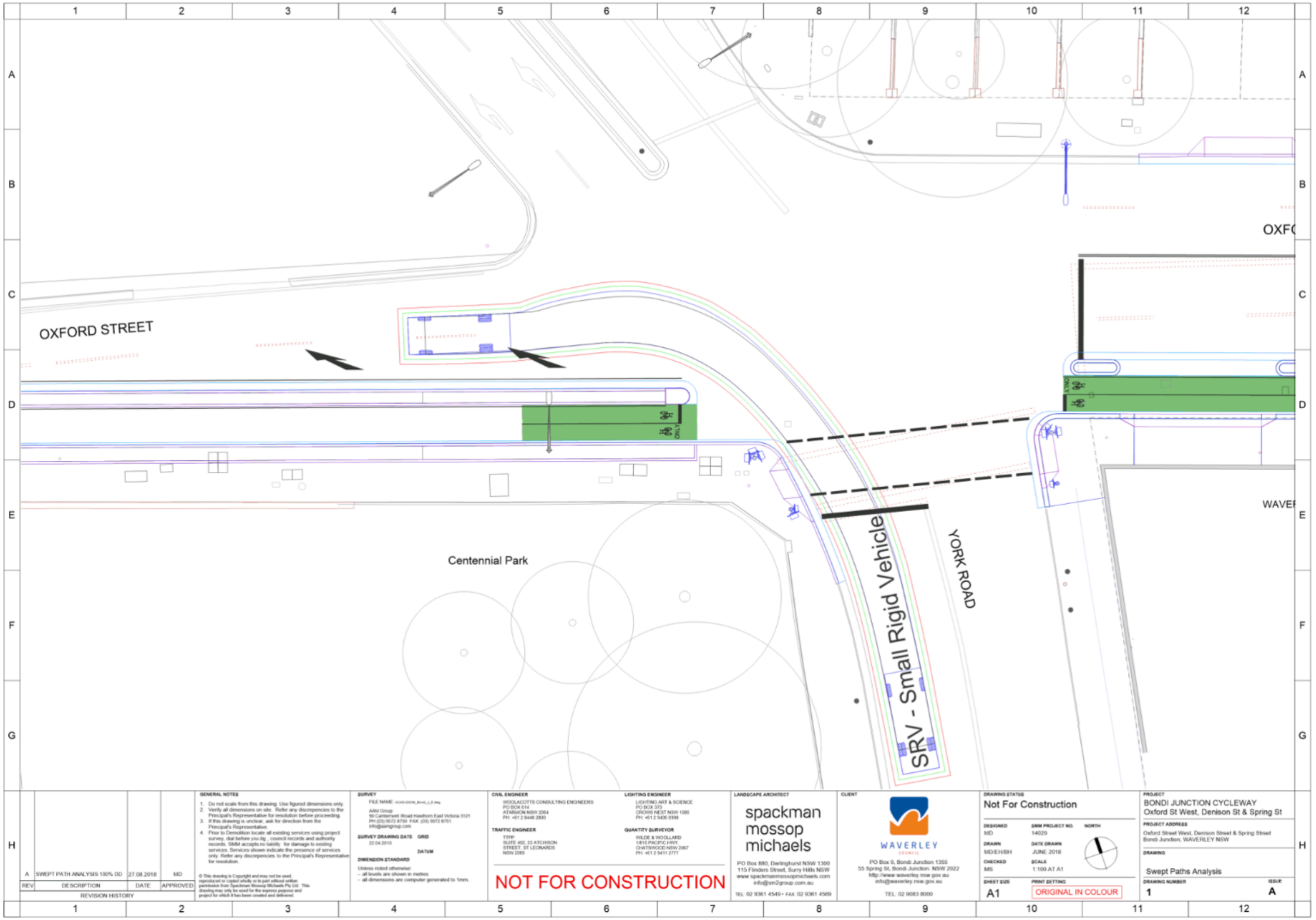
The above assessment and associated warrants are summarised in Table 3. The pedestrian zebra crossing on Denison Street is recommended as the measured flows meet the warrant requirement for more than three periods of on hour in a day.

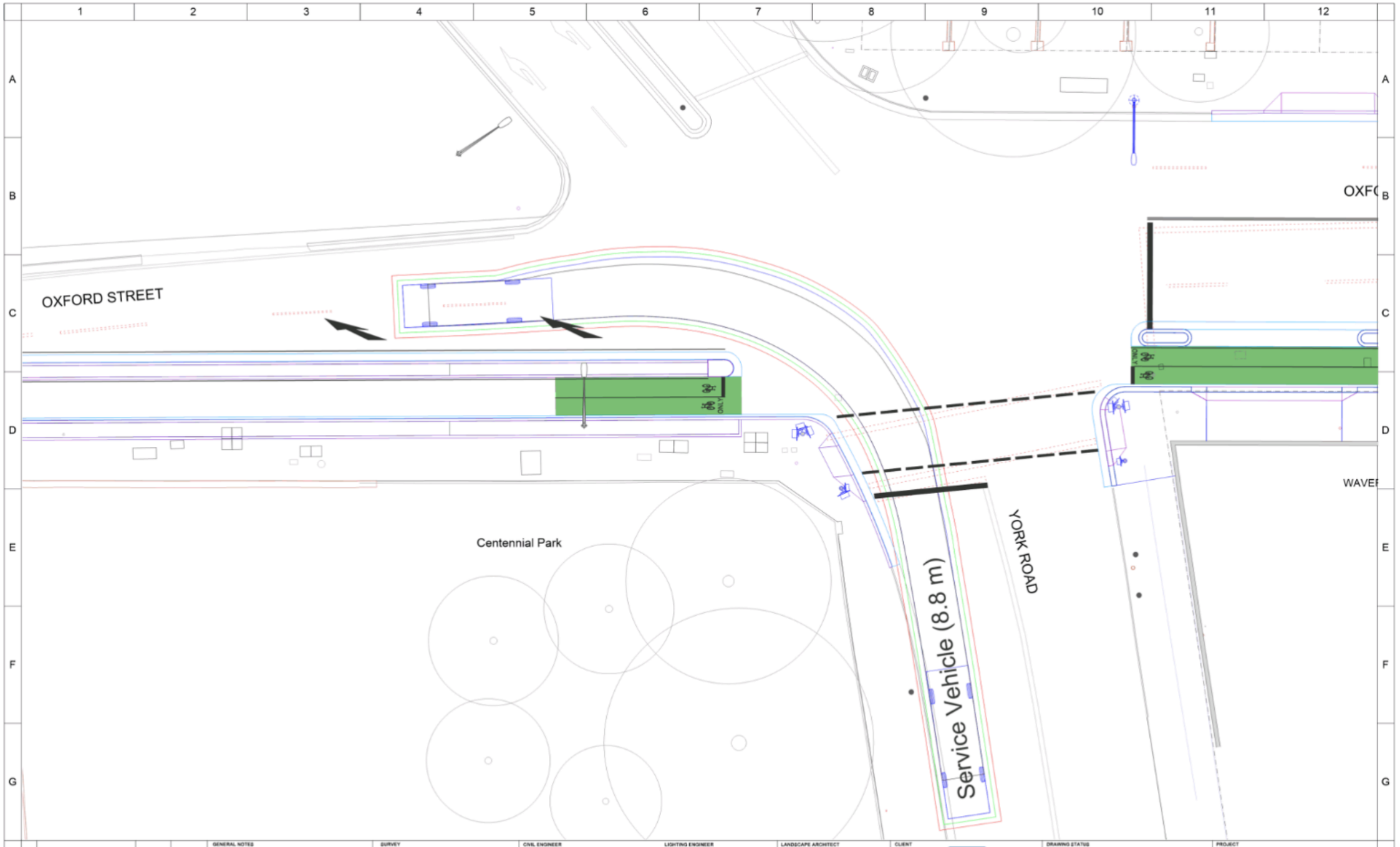
Hours	Meets pedestrian zebra crossing warrant requirement			
	With 90% diverted cyclist volumes		With 80% diverted cyclist volumes	
	Warrant (i) (a)	Warrant (i) (b)	Warrant (i) (a)	Warrant (i) (b)
6.00 – 7.00 am	×	×	×	×
7.00 – 8.00 am	✓	✓	✓	✓
8.00 – 9.00 am	✓	✓	✓	✓
9.00 – 10.00 am	×	✓	×	✓
3.00 – 4.00 pm	×	✓	×	✓
4.00 – 5.00 pm	×	✓	×	✓
5.00 – 6.00 pm	✓	✓	✓	✓
6.00 – 7.00 pm	✓	✓	×	✓

(1) Warrant (i) (a) – PV is equal or greater than 60,000
(2) Warrant (i) (b) – P and V are equal of greater than 30 and 500 respectively

Yours sincerely

Chris Chun
Traffic Engineer


OXFORD STREET
Centennial Park
SRV - Small Rigid Vehicle
YORK ROAD
ONLY
NOT FOR CONSTRUCTION
spackman mossop michaels
WAVERLEY
Not For Construction
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
Swept Paths Analysis
A1
ORIGINAL IN COLOUR



REV	DESCRIPTION	DATE	APPROVED
A	SWEPT PATH ANALYSIS 100% DD	27.08.2018	MD

REVISION HISTORY

GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.

© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.

SURVEY
FILE NAME
AAM Group
90 Camberwell Road Hawthorn East Victoria 3123
PH (03) 9572 8750 FAX (03) 9572 8751
info@aamgroup.com
SURVEY DRAWING DATE 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
– all levels are shown in metres
– all dimensions are computer generated to 1mm.

CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATHERTON NSW 2064
PH: +61 2 6448 2800

TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065

LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 370
CROWS NEST NSW 1585
PH: +61 2 9436 9398

QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777

NOT FOR CONSTRUCTION

LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 • FAX: 02 9361 4569

CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000

DRAWING STATUS
Not For Construction

DESIGNED	MD	SMM PROJECT NO.	14029
DRAWN	MD/EH/BH	DATE DRAWN	JUNE 2018
CHECKED	MS	SCALE	1:100 AT A1
SHEET SIZE	A1	PRINT SETTING	ORIGINAL IN COLOUR

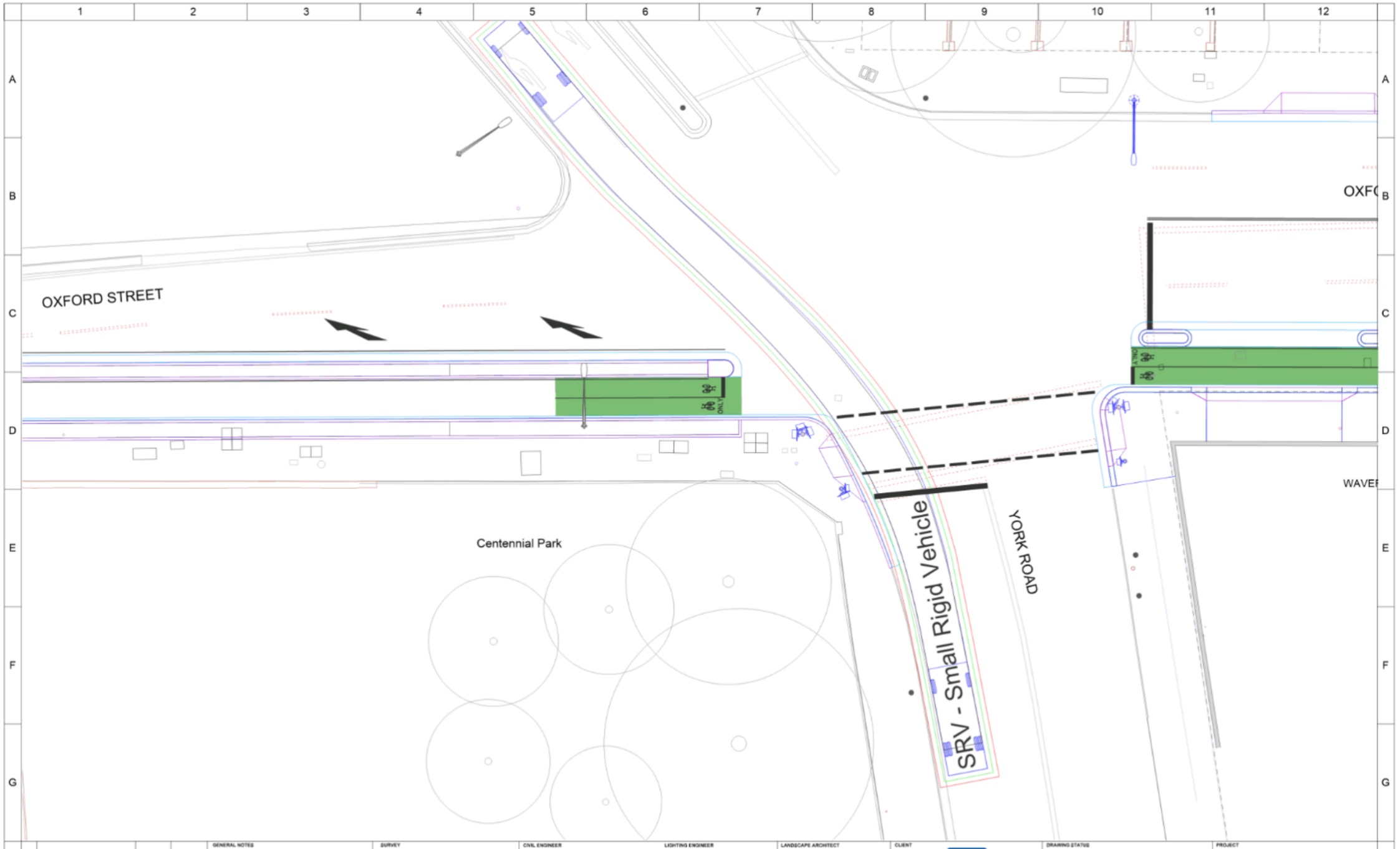
NORTH

PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St

PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW

DRAWING
Swept Paths Analysis

DRAWING NUMBER 2
ISSUE A



REV	DESCRIPTION	DATE	APPROVED
A	SWEPT PATH ANALYSIS 100% DD	27.08.2018	MD

REVISION HISTORY

GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.

© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.

SURVEY
FILE NAME: XCAD-DSYM_Bondi_C_D.dwg
AAM Group
90 Camberwell Road Hawthorn East Victoria 3121
PH: (03) 9572 8750 FAX: (03) 9572 8751
info@aamgroup.com

SURVEY DRAWING DATE: 22.04.2015
GRID
DATUM

DIMENSION STANDARD
Unless noted otherwise:
– all levels are shown in metres
– all dimensions are computer generated to 1mm.

CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 8448 2800

TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON
STREET, ST LEONARDS
NSW 2065

LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 373
CROWS NEST NSW 1585
PH: +61 2 9436 0398

QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777

NOT FOR CONSTRUCTION

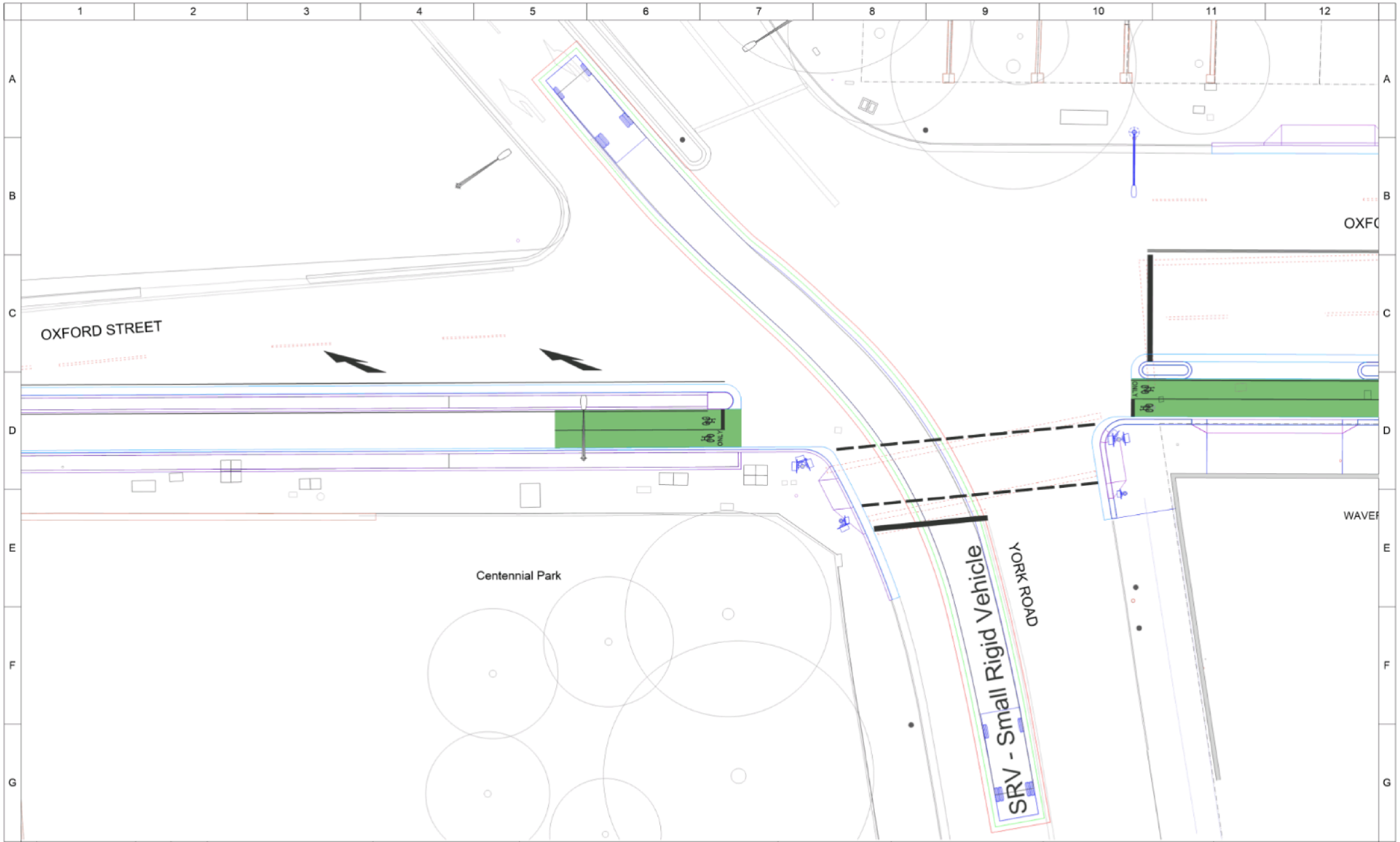
LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 • FAX: 02 9361 4569

CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000

DRAWING STATUS: Not For Construction

DESIGNED	MD
DRAWN	MD/EH/BH
CHECKED	MS
SHEET SIZE	A1
SMM PROJECT NO.	14029
DATE DRAWN	JUNE 2018
SCALE	1:100 AT A1
PRINT SETTING	ORIGINAL IN COLOUR
NORTH	

PROJECT: BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS: Oxford Street West, Denison Street & Spring Street Bondi Junction, WAVERLEY NSW
DRAWING: Swept Paths Analysis
DRAWING NUMBER: 3
ISSUE: A



REV	DESCRIPTION	DATE	APPROVED
A	SWEPT PATH ANALYSIS 100% DD	27.08.2018	MD

REVISION HISTORY

GENERAL NOTES

1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig, council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.

© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.

SURVEY

FILE NAME:

AAM Group
90 Camberwell Road Hawthorn East Victoria 3121
PH (03) 9572 8750 FAX (03) 9572 8751
info@aamgroup.com

SURVEY DRAWING DATE 22.04.2015 **GRID**

DATUM

DIMENSION STANDARD

Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm

CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 8448 2800

LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 373
CROWS NEST NSW 1585
PH: +61 2 9436 0938

TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON
STREET, ST LEONARDS
NSW 2065

QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777

NOT FOR CONSTRUCTION

LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 • FAX: 02 9361 4569

CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction. NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000

DRAWING STATUS
Not For Construction

DESIGNED	SMM PROJECT NO.	NORTH
MD	14029	
DRAWN	**DATE DRAWN**	
MD/EH/BH	JUNE 2018	
CHECKED	**SCALE**	
MS	1:100 AT A1	

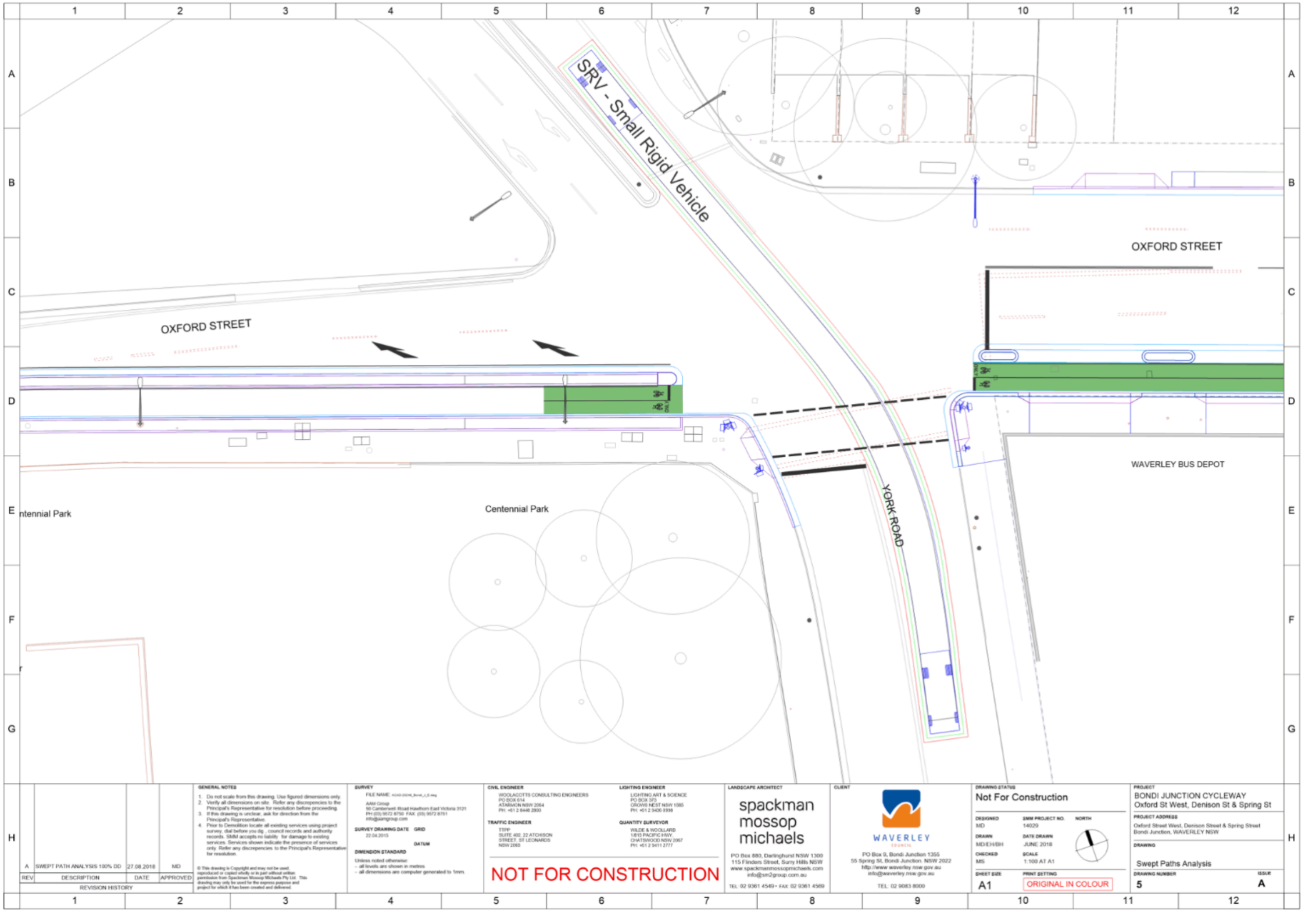
SHEET SIZE A1 **PRINT SETTING** ORIGINAL IN COLOUR

PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St

PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW

DRAWING
Swept Paths Analysis

DRAWING NUMBER 4 **ISSUE** A



REV	DESCRIPTION	DATE	APPROVED
A	SWEPT PATH ANALYSIS 100% DD	27.08.2018	MD

REVISION HISTORY

GENERAL NOTES

1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.

© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.

SURVEY
FILE NAME:
AAM Group
99 Camberwell Road Hawthorn East Victoria 3121
PH: (03) 9572 8750 FAX: (03) 9572 8751
info@aamgroup.com

SURVEY DRAWING DATE 22.04.2015 **GRID** **DATUM**

DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.

CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 6448 2800

TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON
STREET, ST LEONARDS
NSW 2065

LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 370
CROWS NEST NSW 1585
PH: +61 2 9436 9398

QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777

NOT FOR CONSTRUCTION

LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@smm2group.com.au
TEL: 02 9361 4549 • FAX: 02 9361 4569

CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000

DRAWING STATUS
Not For Construction

DESIGNED	MD	SMM PROJECT NO.	14029
DRAWN	MD/EH/BH	DATE DRAWN	JUNE 2018
CHECKED	MS	SCALE	1:100 AT A1
SHEET SIZE	A1	PRINT SETTING	ORIGINAL IN COLOUR

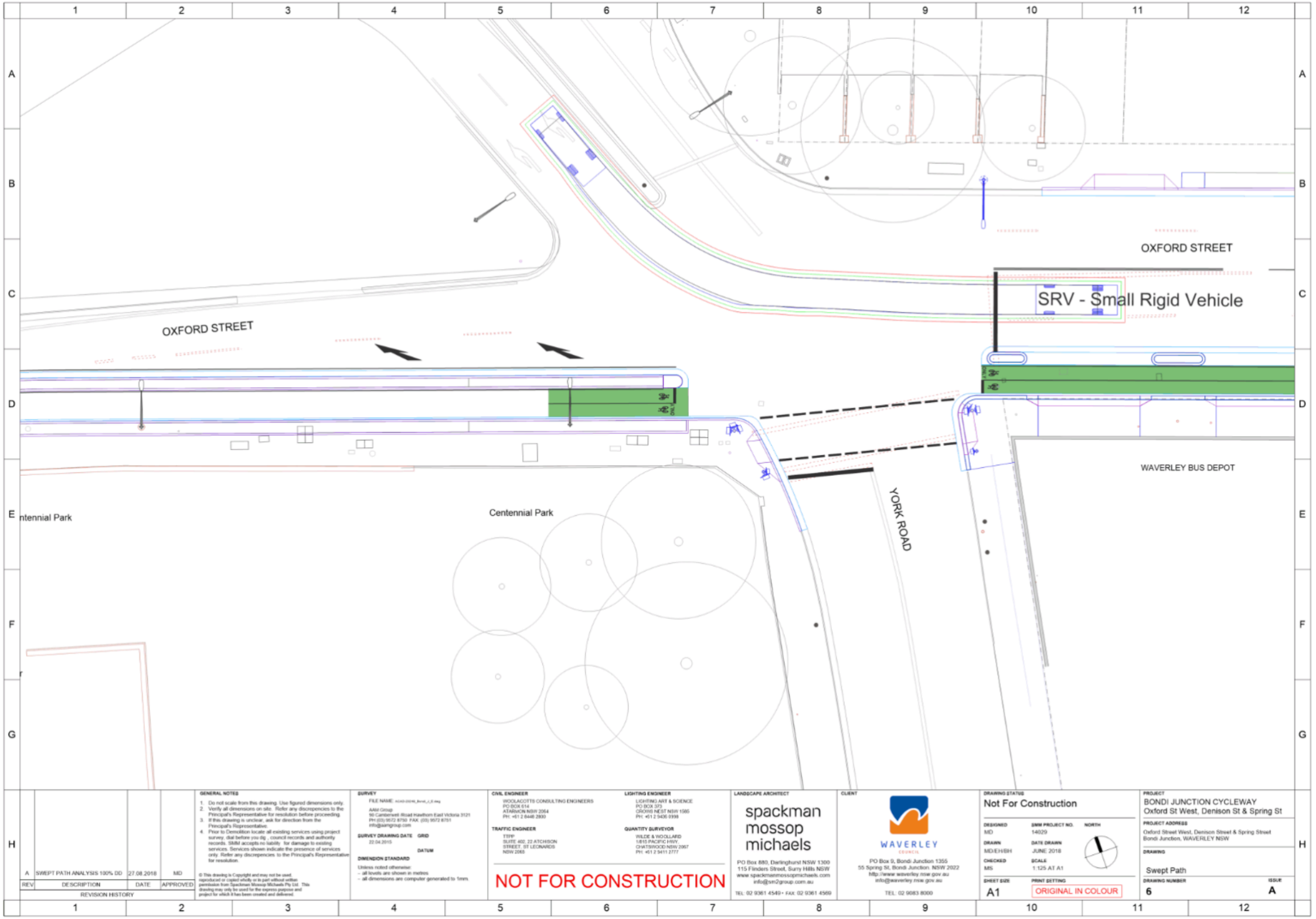
NORTH

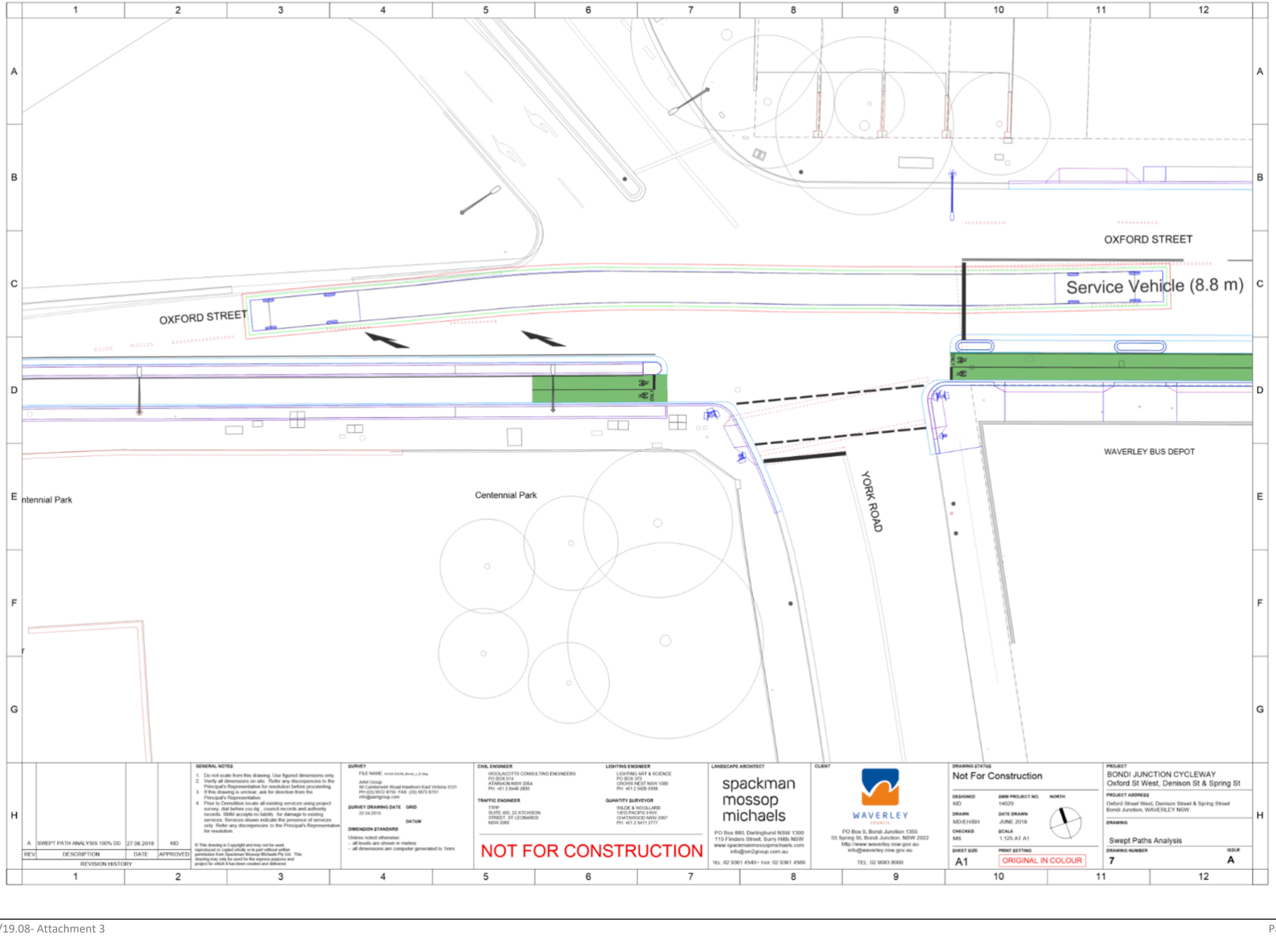
PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St

PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW

DRAWING
Swept Paths Analysis

DRAWING NUMBER 5 **ISSUE** A


OXFORD STREET
SRV - Small Rigid Vehicle
OXFORD STREET
WAVERLEY BUS DEPOT
YORK ROAD
Centennial Park
Centennial Park
NOT FOR CONSTRUCTION
spackman mossop michaels
WAVERLEY
Not For Construction
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
Swept Path
A1
ORIGINAL IN COLOUR



REV	DESCRIPTION	DATE	APPROVED
A	SWEPT PATH ANALYSIS 100% DD	27.08.2018	MD

REVISION HISTORY

GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.

© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.

SURVEY
FILE NAME: ACAD-220190_Bondi_c_D.dwg
AAM Group
90 Camberwell Road Hawthorn East Victoria 3121
PH (03) 9572 8750 FAX (03) 9572 8751
info@aamgroup.com

SURVEY DRAWING DATE: 22.04.2015
GRID
DATUM

DIMENSION STANDARD
Unless noted otherwise:
– all levels are shown in metres
– all dimensions are computer generated to 1mm.

CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATHERTON NSW 2064
PH: +61 2 8448 2800

TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065

LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 373
CROWS NEST NSW 1585
PH: +61 2 9436 0338

QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777

NOT FOR CONSTRUCTION

LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 • FAX: 02 9361 4569

CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction, NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000

DRAWING STATUS
Not For Construction

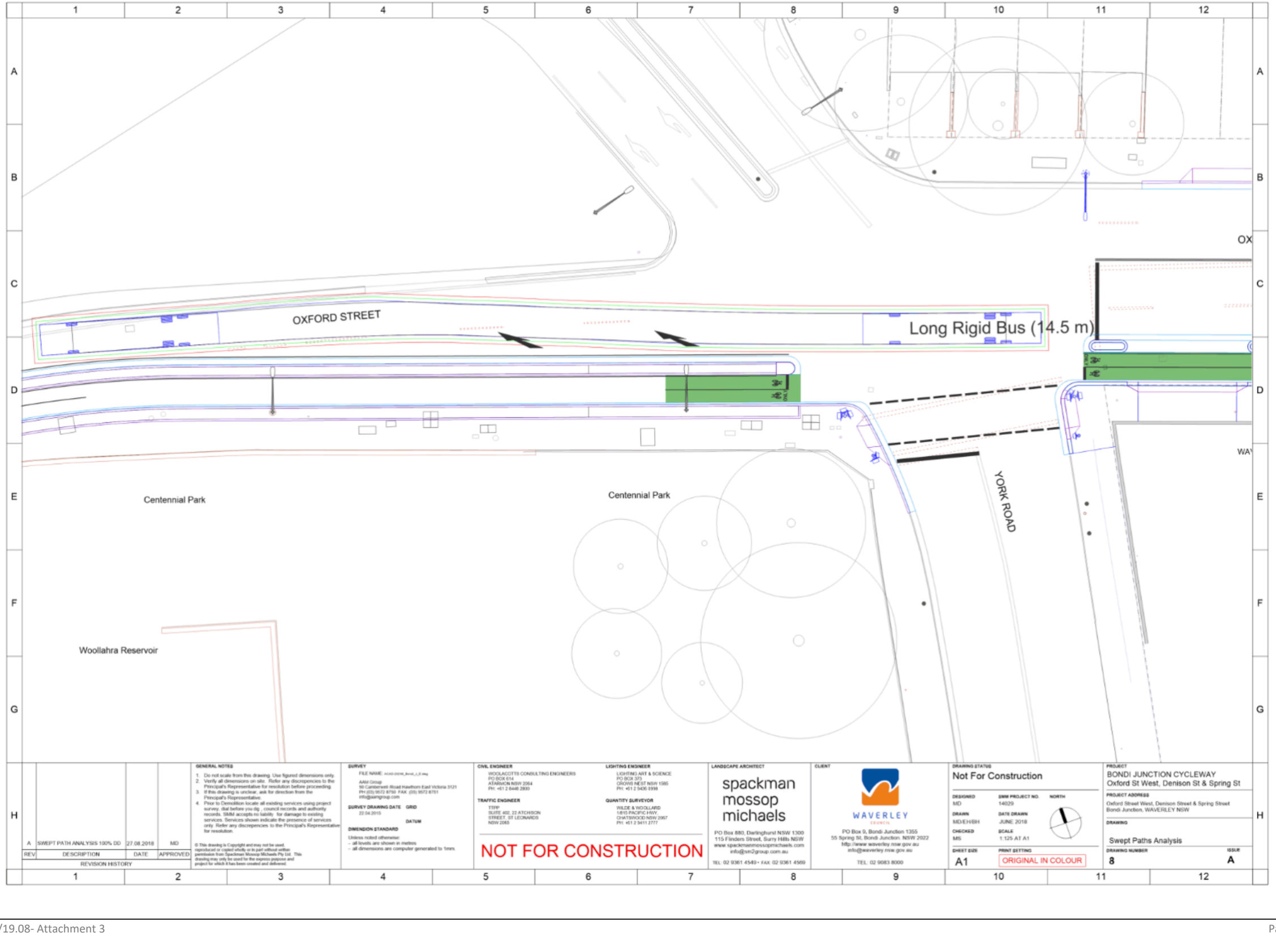
DESIGNED	SMM PROJECT NO.	NORTH
MD	14029	
DRAWN	DATE DRAWN	
MD/EH/BH	JUNE 2018	
CHECKED	SCALE	
MS	1:125 AT A1	
SHEET SIZE	PRINT SETTING	
A1	ORIGINAL IN COLOUR	

PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St

PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW

DRAWING
Swept Paths Analysis

DRAWING NUMBER: 7
ISSUE: A



REV	DESCRIPTION	DATE	APPROVED
A	SWEPT PATH ANALYSIS 100% DD	27.08.2018	MD

REVISION HISTORY

GENERAL NOTES

1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.

© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.

SURVEY
FILE NAME: ACAD-220240_Bondi_J_C.dwg
AAM Group
90 Camberwell Road Hawthorn East Victoria 3123
PH (03) 9572 8750 FAX (03) 9572 8751
info@aamgroup.com

SURVEY DRAWING DATE 22.04.2015
GRID
DATUM

DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.

CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATHERNON NSW 2064
PH: +61 2 6448 2800

TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON
STREET, ST LEONARDS
NSW 2065

LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 373
CROWS NEST NSW 1585
PH: +61 2 9436 0398

QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777

LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 • FAX: 02 9361 4569

CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000

DRAWING STATUS
Not For Construction

DESIGNED	MD
DRAWN	MD/EH/BH
CHECKED	MS
SHEET SIZE	A1
SMM PROJECT NO.	14029
DATE DRAWN	JUNE 2018
SCALE	1:125 AT A1
PRINT SETTING	ORIGINAL IN COLOUR

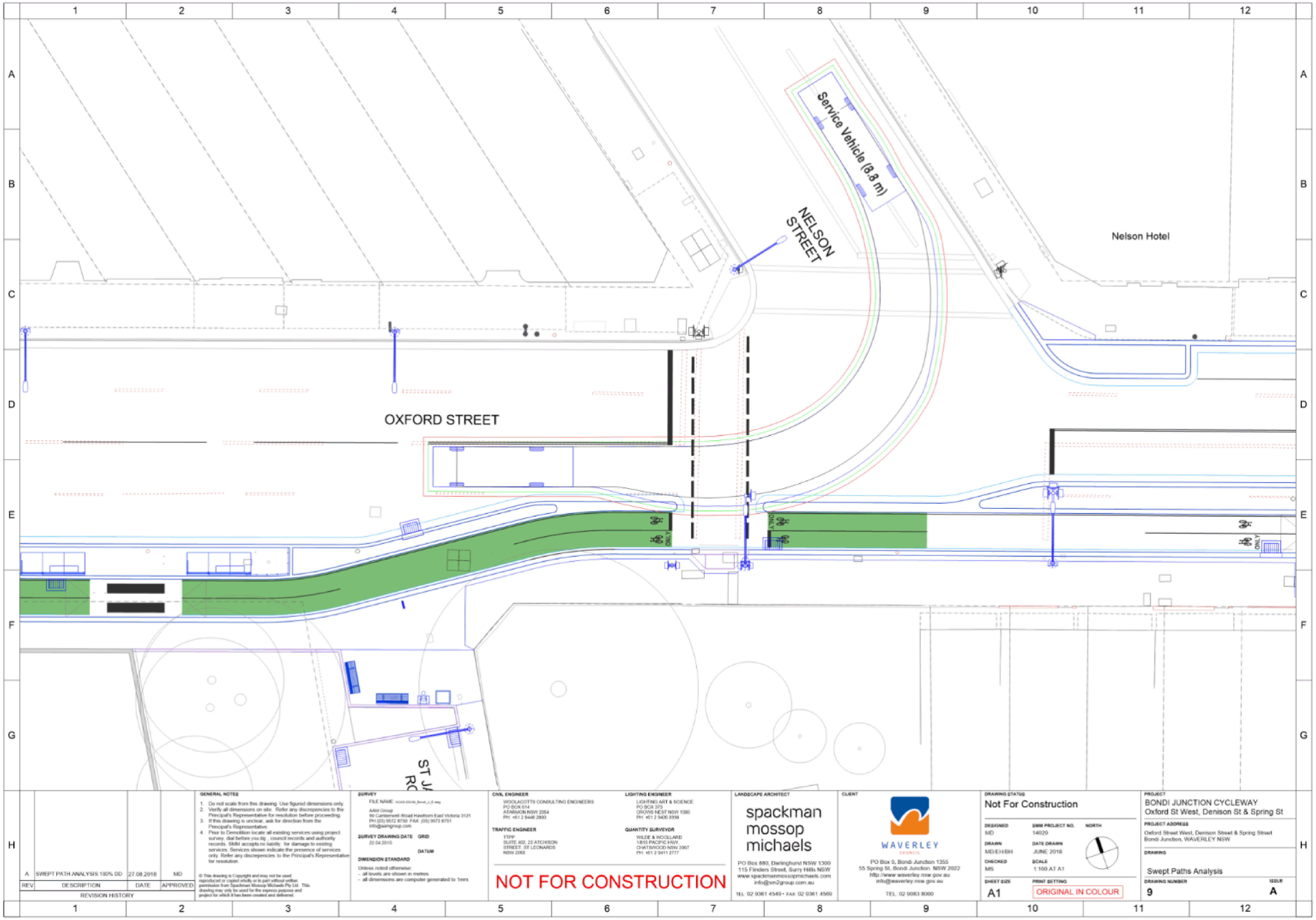
NORTH

PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St

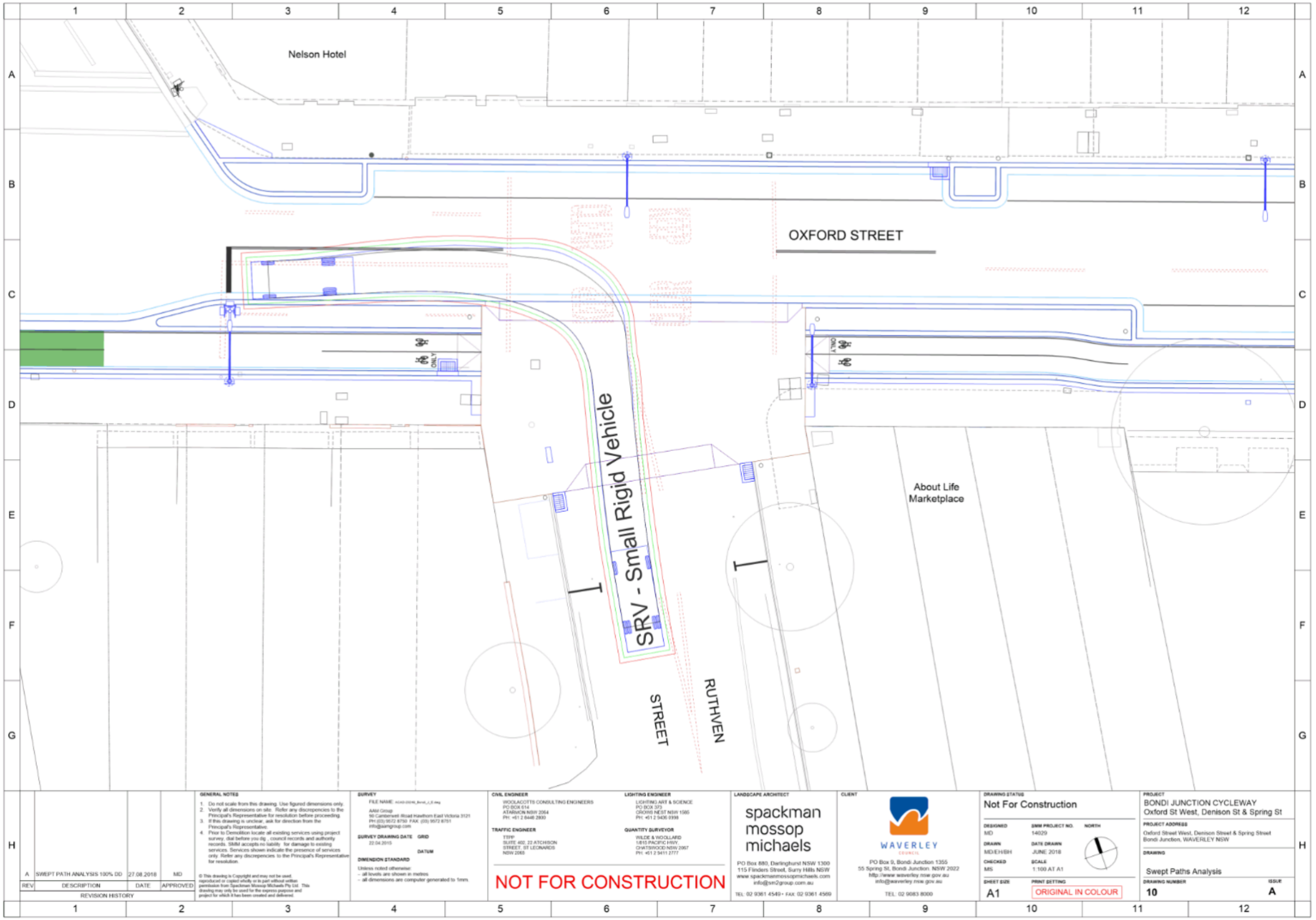
PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW

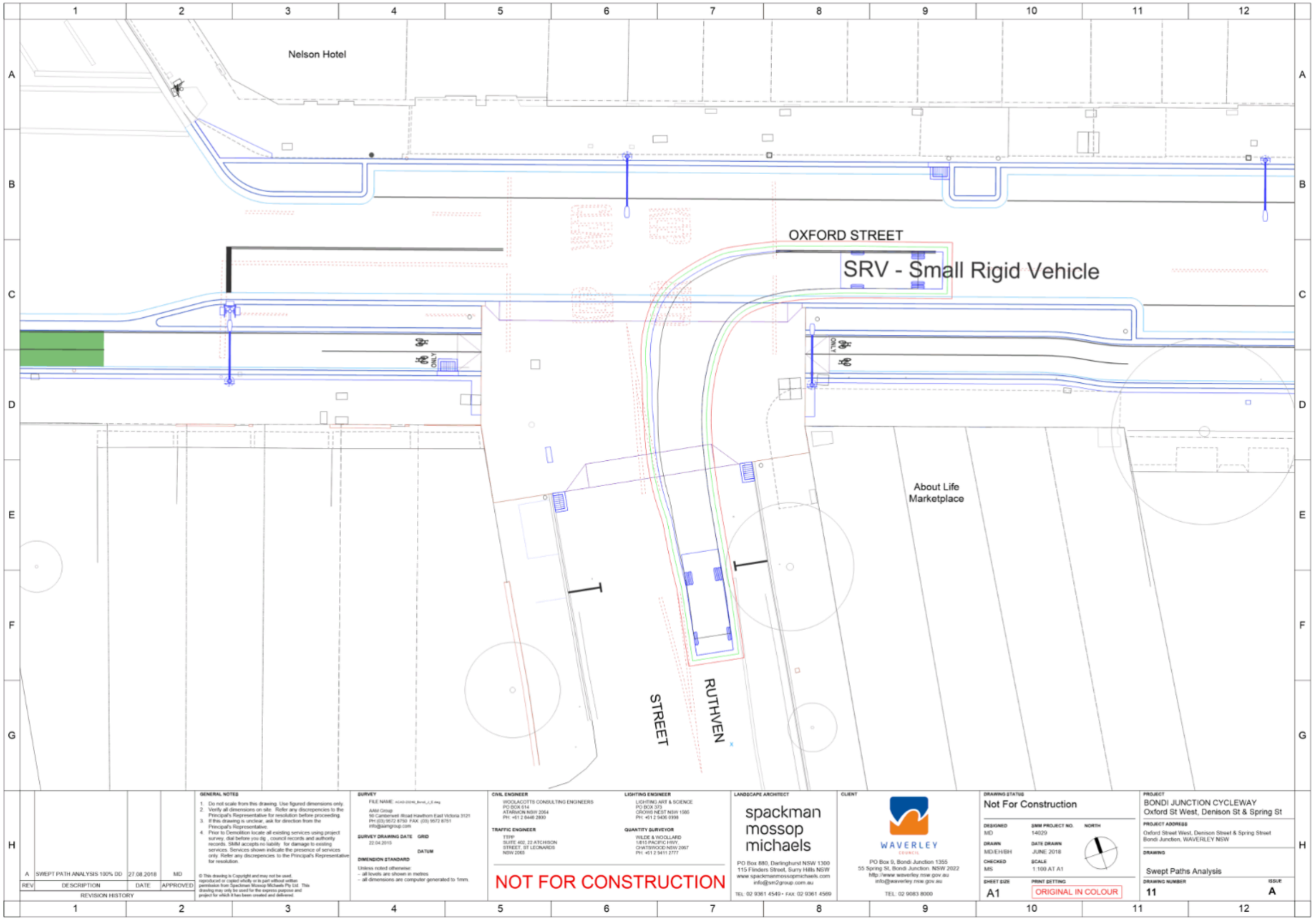
DRAWING
Swept Paths Analysis

DRAWING NUMBER 8
ISSUE A



Service Vehicle (8.8 m)
NELSON STREET
Nelson Hotel
OXFORD STREET
ONLY
GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig, council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.
© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.
A SWEPT PATH ANALYSIS 100% DD 27.08.2018 MD
REV DESCRIPTION DATE APPROVED
REVISION HISTORY
SURVEY
AAM Group
90 Camberwell Road Hawthorn East Victoria 3121
PH (03) 9572 8750 FAX (03) 9572 8751
info@aamgroup.com
SURVEY DRAWING DATE 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.
CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 8448 2800
TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065
LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 373
CROWS NEST NSW 1585
PH: +61 2 9436 0938
QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY, CHATSWOOD NSW 2067
PH: +61 2 9411 2777
NOT FOR CONSTRUCTION
LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 • FAX: 02 9361 4569
CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction. NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000
DRAWING STATUS
Not For Construction
DESIGNED MD
SMM PROJECT NO. 14029
NORTH
DRAWN MD/EH/BH
DATE DRAWN JUNE 2018
CHECKED MS
SCALE 1:100 AT A1
SHEET SIZE A1
PRINT SETTING ORIGINAL IN COLOUR
PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street Bondi Junction, WAVERLEY NSW
DRAWING
Swept Paths Analysis
DRAWING NUMBER 9
ISSUE A


Nelson Hotel
OXFORD STREET
SRV - Small Rigid Vehicle
About Life
Marketplace
RUTHVEN
STREET
GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.
© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.
SURVEY
FILE NAME
AAM Group
SURVEY DRAWING DATE GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
– all levels are shown in metres
– all dimensions are computer generated to 1mm
CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
LIGHTING ENGINEER
LIGHTING ART & SCIENCE
TRAFFIC ENGINEER
TTPP
QUANTITY SURVEYOR
WILDE & WOOLLARD
LANDSCAPE ARCHITECT
spackman mossop michaels
CLIENT
WAVERLEY COUNCIL
NOT FOR CONSTRUCTION
REV DESCRIPTION DATE APPROVED
A SWEPT PATH ANALYSIS 100% DD 27.08.2018 MD
REVISION HISTORY
DRAWING STATUS
Not For Construction
DESIGNED MD
SMM PROJECT NO. 14029
DRAWN MD/EH/BH
DATE DRAWN JUNE 2018
CHECKED MS
SCALE 1:100 AT A1
SHEET SIZE A1
PRINT SETTING ORIGINAL IN COLOUR
NORTH
PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW
DRAWING
Swept Paths Analysis
DRAWING NUMBER 10
ISSUE A



REV	DESCRIPTION	DATE	APPROVED
A	SWEPT PATH ANALYSIS 100% DD	27.08.2018	MD

REVISION HISTORY

GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.

© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.

SURVEY
FILE NAME
AAM Group
90 Camberwell Road Hawthorn East Victoria 3121
PH (03) 9572 8750 FAX (03) 9572 8751
info@aamgroup.com
SURVEY DRAWING DATE 22.04.2015 GRID DATUM
DIMENSION STANDARD
Unless noted otherwise:
– all levels are shown in metres
– all dimensions are computer generated to 1mm

CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 8448 2800

TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON
STREET, ST LEONARDS
NSW 2065

LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 373
CROWS NEST NSW 1585
PH: +61 2 9436 9398

QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY
CHATSWOOD NSW 2067
PH: +61 2 9411 2777

LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 • FAX: 02 9361 4569

CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000

DRAWING STATUS: Not For Construction

DESIGNED	MD
DRAWN	MD/EH/BH
CHECKED	MS
SHEET SIZE	A1
SMM PROJECT NO.	14029
DATE DRAWN	JUNE 2018
SCALE	1:100 AT A1
PRINT SETTING	ORIGINAL IN COLOUR

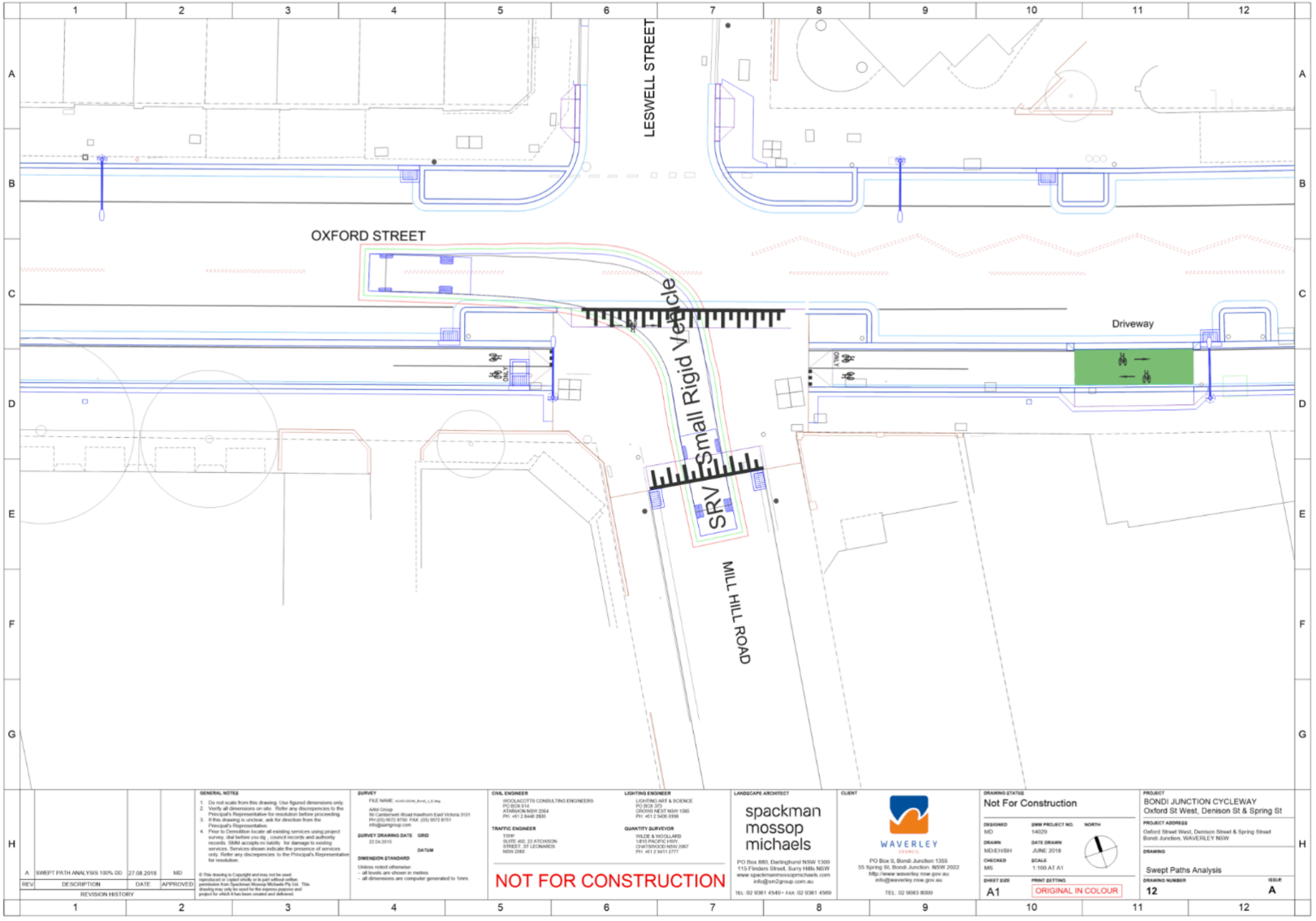
NORTH

PROJECT: BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St

PROJECT ADDRESS: Oxford Street West, Denison Street & Spring Street Bondi Junction, WAVERLEY NSW

DRAWING: Swept Paths Analysis

DRAWING NUMBER: 11 ISSUE: A



REV	DESCRIPTION	DATE	APPROVED
A	SWEPT PATH ANALYSIS 100% DD	27.08.2018	MD

REVISION HISTORY

GENERAL NOTES

1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.

© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.

SURVEY
FILE NAME
AAM Group
90 Camberwell Road Hawthorn East Victoria 3123
PH (03) 9572 8750 FAX (03) 9572 8751
info@aamgroup.com

SURVEY DRAWING DATE 22.04.2015 **GRID** **DATUM**

DIMENSION STANDARD
Unless noted otherwise:
– all levels are shown in metres
– all dimensions are computer generated to 1mm.

CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 8448 2800

TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065

LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 373
CROWS NEST NSW 1585
PH: +61 2 9436 9398

QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777

NOT FOR CONSTRUCTION

LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 • FAX: 02 9361 4569

CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000

DRAWING STATUS
Not For Construction

DESIGNED	MD
DRAWN	MD/EH/BH
CHECKED	MS
SMM PROJECT NO.	14029
DATE DRAWN	JUNE 2018
SCALE	1:100 AT A1
SHEET SIZE	A1
PRINT SETTING	ORIGINAL IN COLOUR

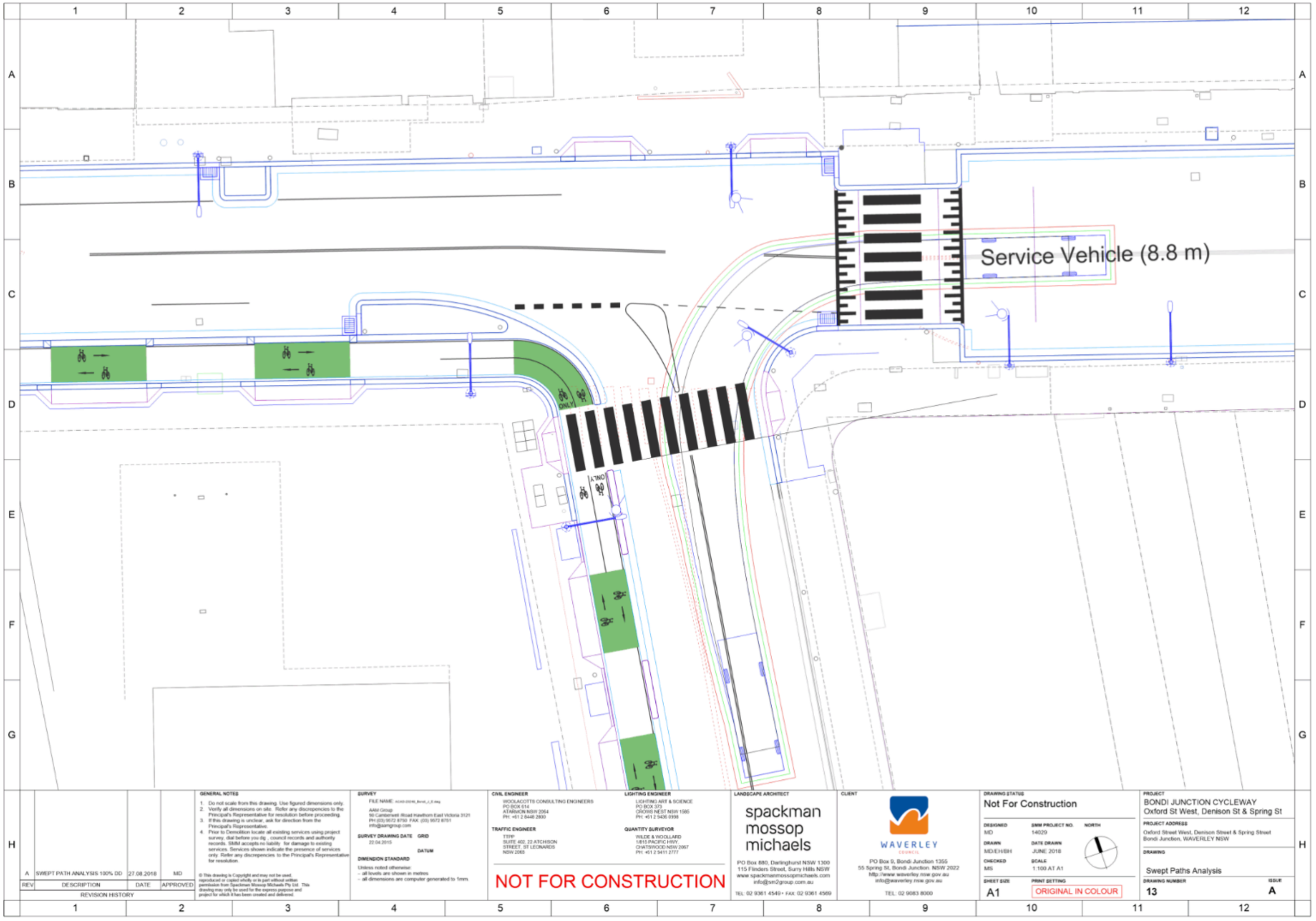
NORTH

PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St

PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW

DRAWING
Swept Paths Analysis

DRAWING NUMBER 12 **ISSUE** A



REV	DESCRIPTION	DATE	APPROVED
A	SWEPT PATH ANALYSIS 100% DD	27.08.2018	MD

REVISION HISTORY

GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.

© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.

SURVEY
FILE NAME
AAM Group
99 Camberwell Road Hawthorn East Victoria 3121
PH (03) 9572 8750 FAX (03) 9572 8751
info@aamgroup.com
SURVEY DRAWING DATE 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.

CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 9448 2800

LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 373
CROWS NEST NSW 1585
PH: +61 2 9436 9398

TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065

QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY
CHATSWOOD NSW 2067
PH: +61 2 9411 2777

LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 • FAX: 02 9361 4569

CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000

DRAWING STATUS
Not For Construction

DESIGNED	MD
DRAWN	MD/EH/BH
CHECKED	MS
SHEET SIZE	A1
SMM PROJECT NO.	14029
DATE DRAWN	JUNE 2018
SCALE	1:100 AT A1
PRINT SETTING	ORIGINAL IN COLOUR

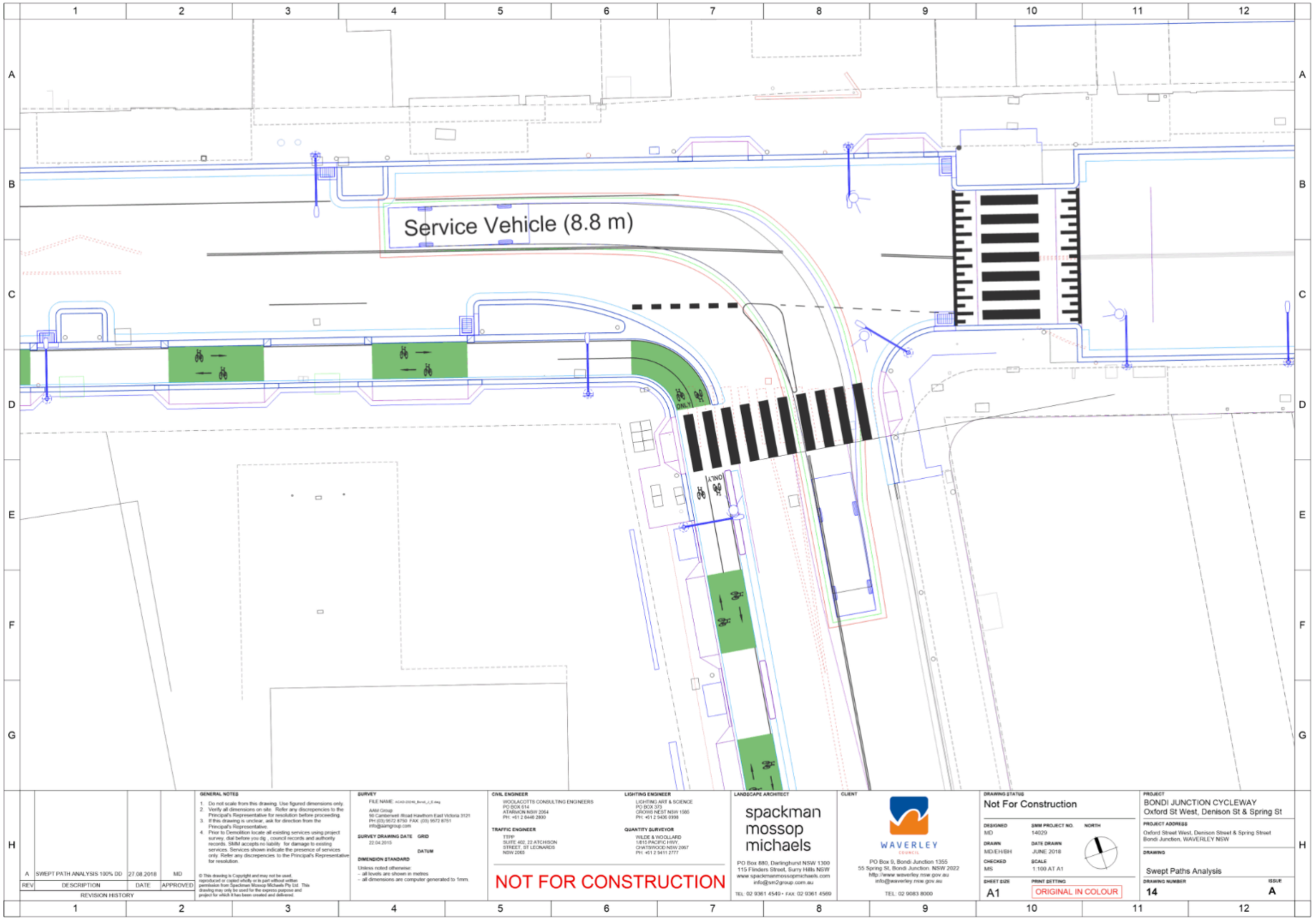
NORTH

PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St

PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW

DRAWING
Swept Paths Analysis

DRAWING NUMBER 13
ISSUE A



REV	DESCRIPTION	DATE	APPROVED
A	SWEPT PATH ANALYSIS 100% DD	27.08.2018	MD

REVISION HISTORY

GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.

© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.

SURVEY
FILE NAME
AAM Group
99 Camberwell Road Hawthorn East Victoria 3123
PH (03) 9572 8750 FAX (03) 9572 8751
info@aamgroup.com
SURVEY DRAWING DATE 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.

CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 8448 2800

TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON
STREET, ST LEONARDS
NSW 2065

LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 373
CROWS NEST NSW 1585
PH: +61 2 9436 9398

QUANTITY SURVEYOR
WILDE & WOLLARD
1/815 PACIFIC HWY
CHATSWOOD NSW 2067
PH: +61 2 9411 2777

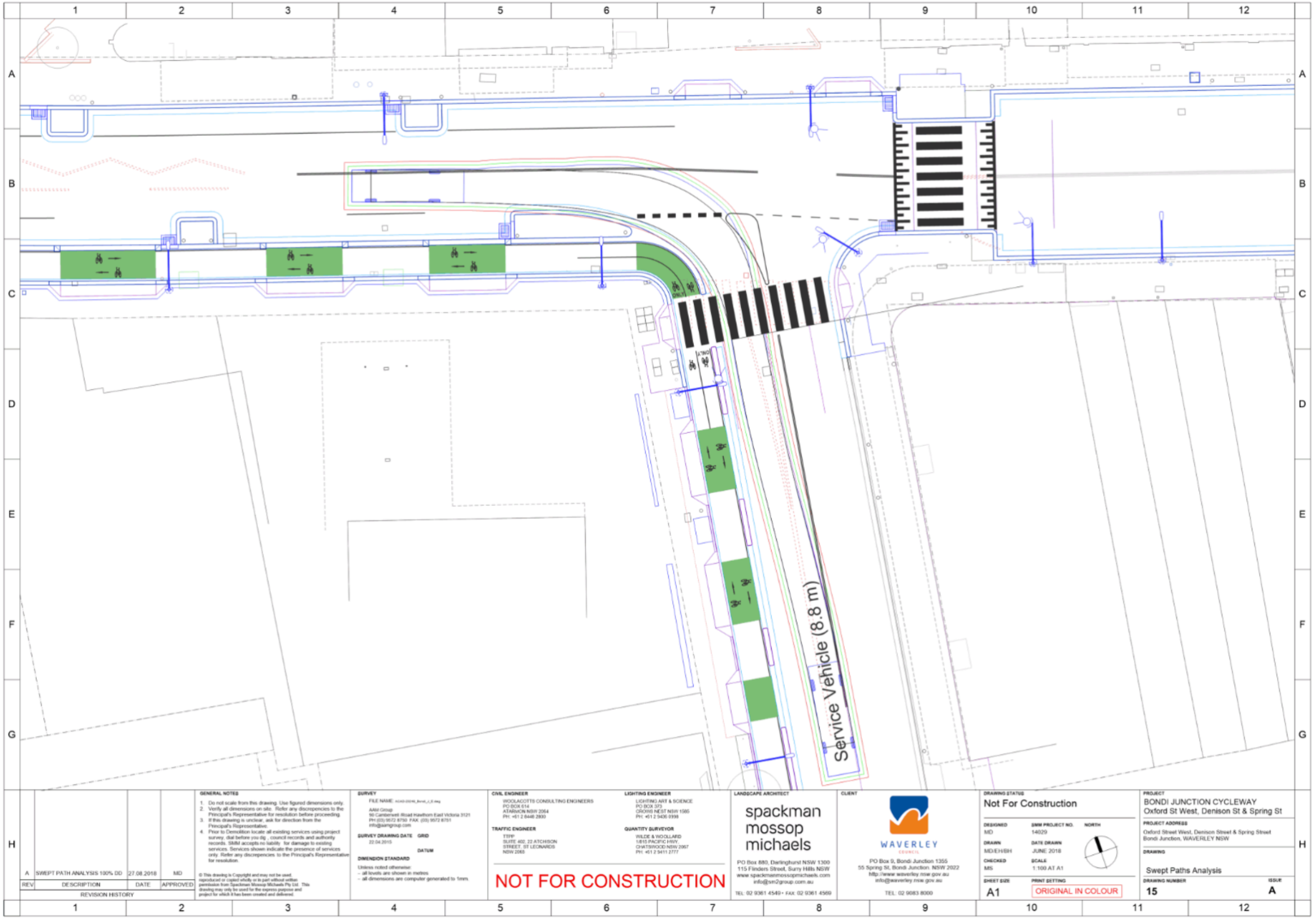
LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 • FAX: 02 9361 4569

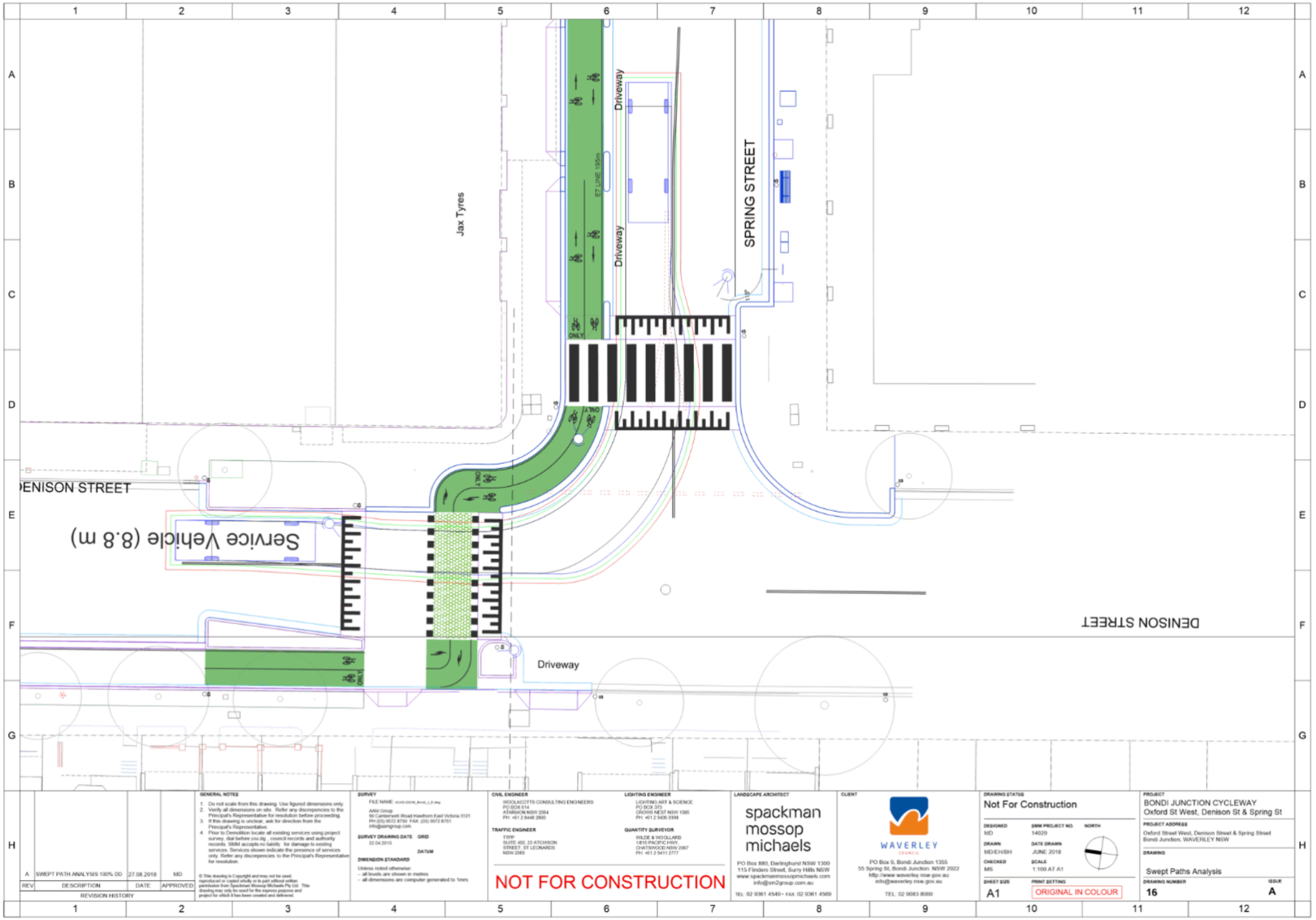
CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000

DRAWING STATUS
Not For Construction

DESIGNED	SMM PROJECT NO.	NORTH
MD	14029	
DRAWN	DATE DRAWN	
MD/EH/BH	JUNE 2018	
CHECKED	SCALE	
MS	1:100 AT A1	
SHEET SIZE	PRINT SETTING	
A1	ORIGINAL IN COLOUR	

PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW
DRAWING
Swept Paths Analysis
DRAWING NUMBER 14
ISSUE A


Service Vehicle (8.8 m)
GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.
© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.
SURVEY
FILE NAME
AAM Group
90 Camberwell Road Hawthorn East Victoria 3123
PH (03) 9572 8750 FAX (03) 9572 8751
info@aamgroup.com
SURVEY DRAWING DATE 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.
CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 8448 2800
LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 373
CROWS NEST NSW 1585
PH: +61 2 9436 9398
TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065
QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777
NOT FOR CONSTRUCTION
LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 • FAX: 02 9361 4569
CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000
DRAWING STATUS
Not For Construction
DESIGNED MD
SMM PROJECT NO. 14029
DRAWN MD/EH/BH
DATE DRAWN JUNE 2018
CHECKED MS
SCALE 1:100 AT A1
NORTH
SHEET SIZE A1
PRINT SETTING ORIGINAL IN COLOUR
PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW
DRAWING
Swept Paths Analysis
DRAWING NUMBER 15
ISSUE A
REVISION HISTORY
REV DESCRIPTION DATE APPROVED
A SWEPT PATH ANALYSIS 100% DD 27.08.2018 MD



REV	DESCRIPTION	DATE	APPROVED
A	SWEPT PATH ANALYSIS 100% DD	27.08.2018	MD

REVISION HISTORY

GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.

© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.

SURVEY
FILE NAME: AGAD-200746_Bondi_LD.dwg
AAM Group
50 Camberwell Road Hawthorn East Victoria 3123
PH (03) 9572 8750 FAX (03) 9572 8751
info@aamgroup.com
SURVEY DRAWING DATE: 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
– all levels are shown in metres
– all dimensions are computer generated to 1mm.

CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 9448 2800

TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065

LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 370
CROWS NEST NSW 1585
PH: +61 2 9436 0398

QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777

NOT FOR CONSTRUCTION

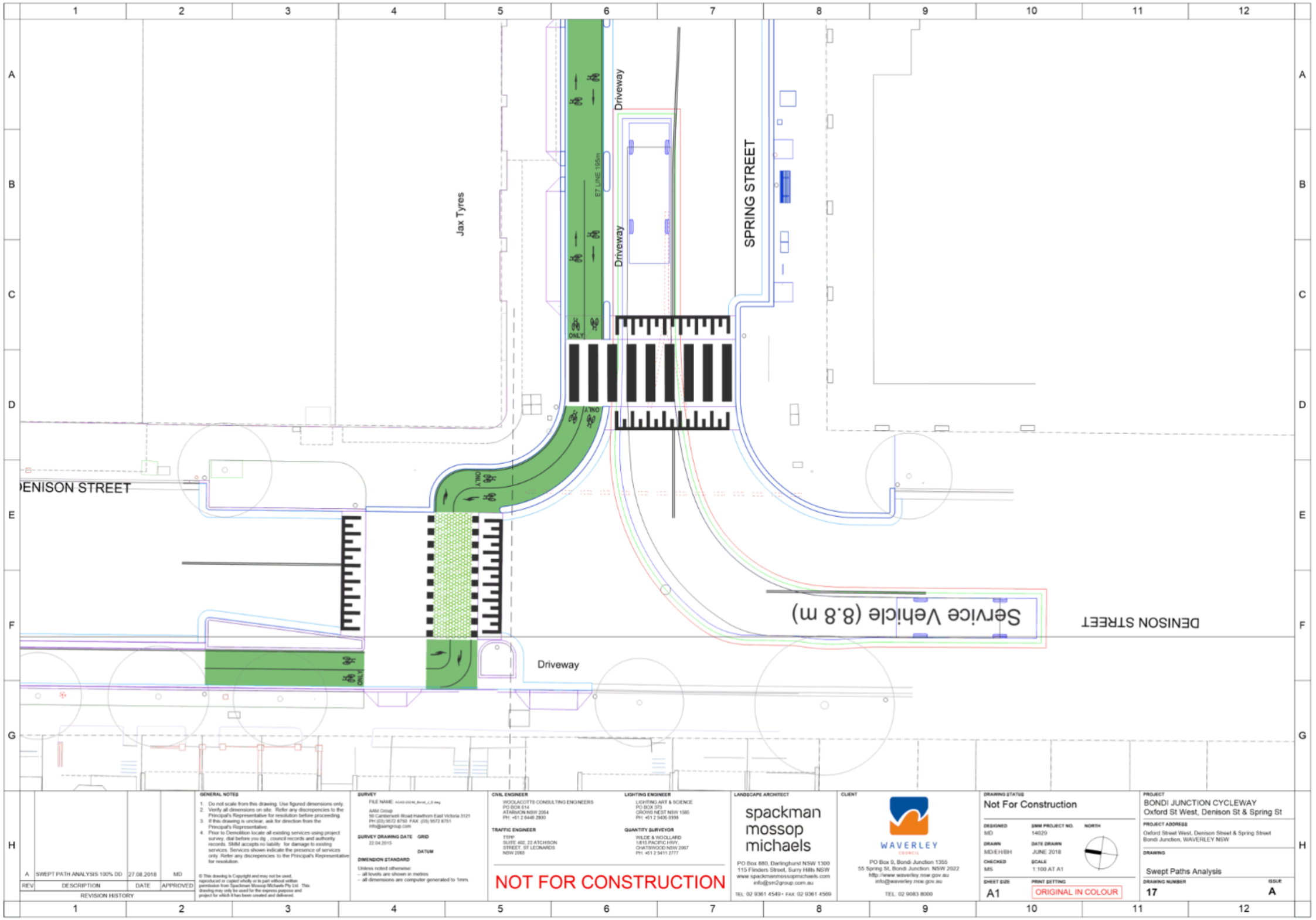
LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 • FAX: 02 9361 4569

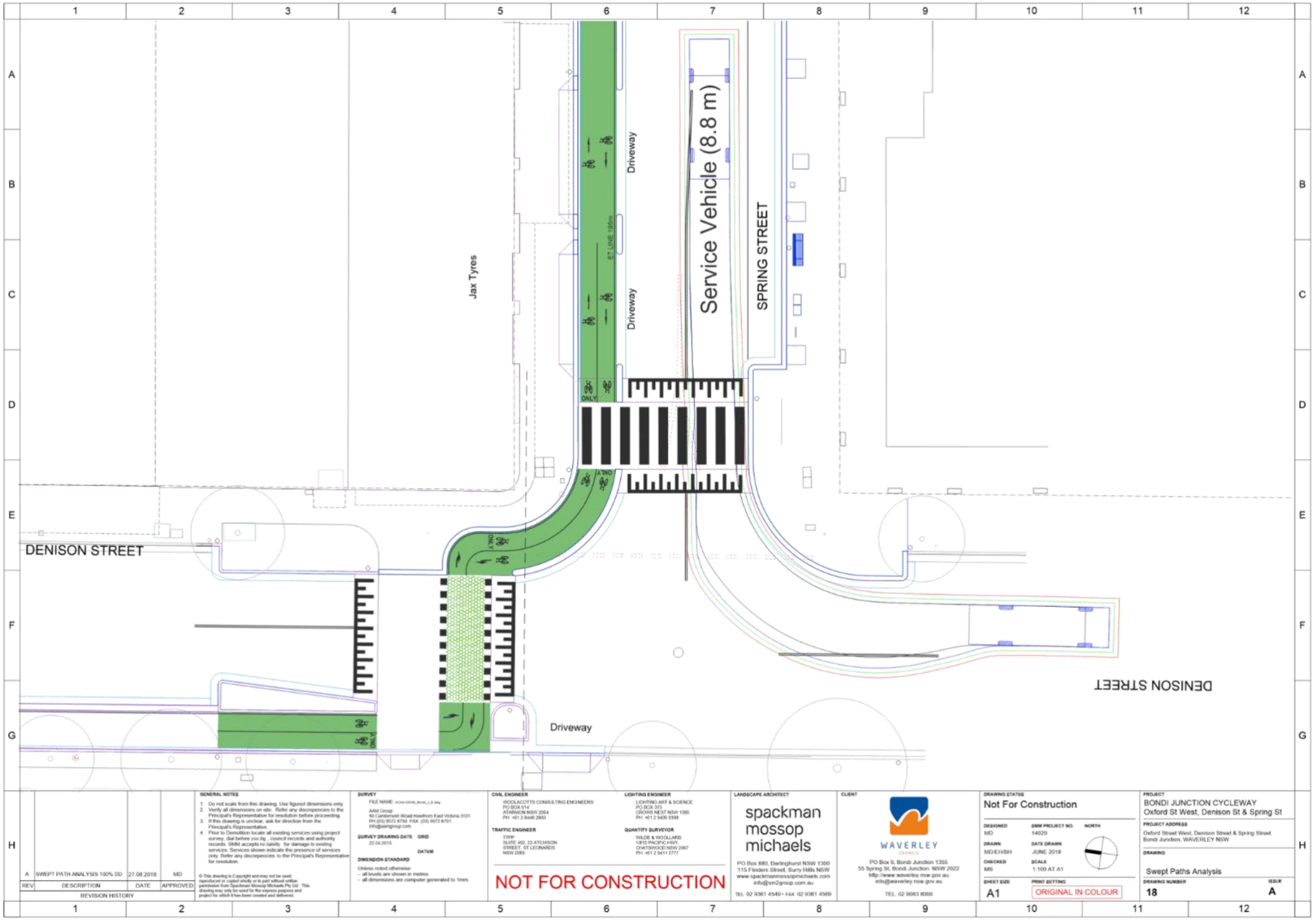
CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000

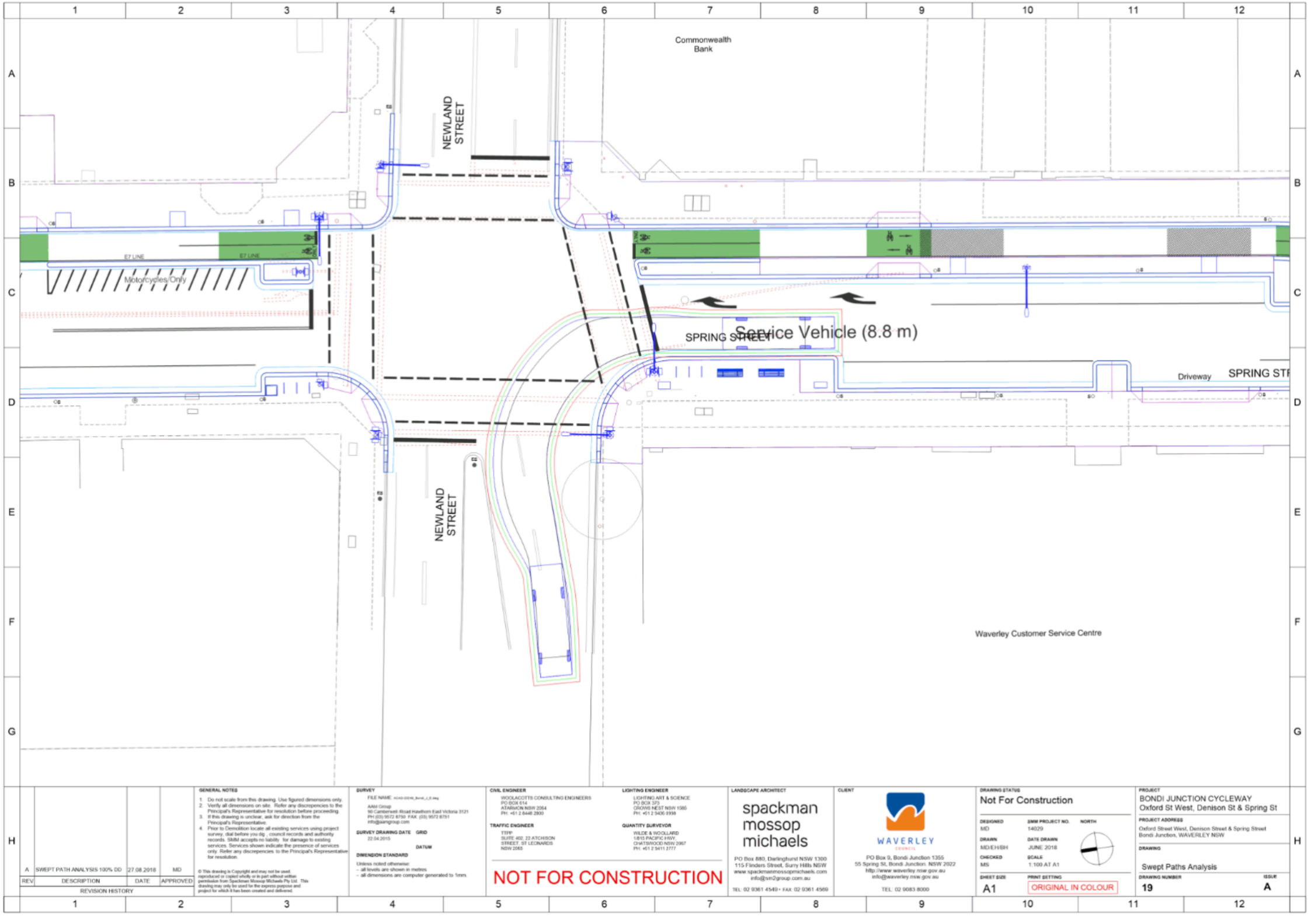
DRAWING STATUS: Not For Construction

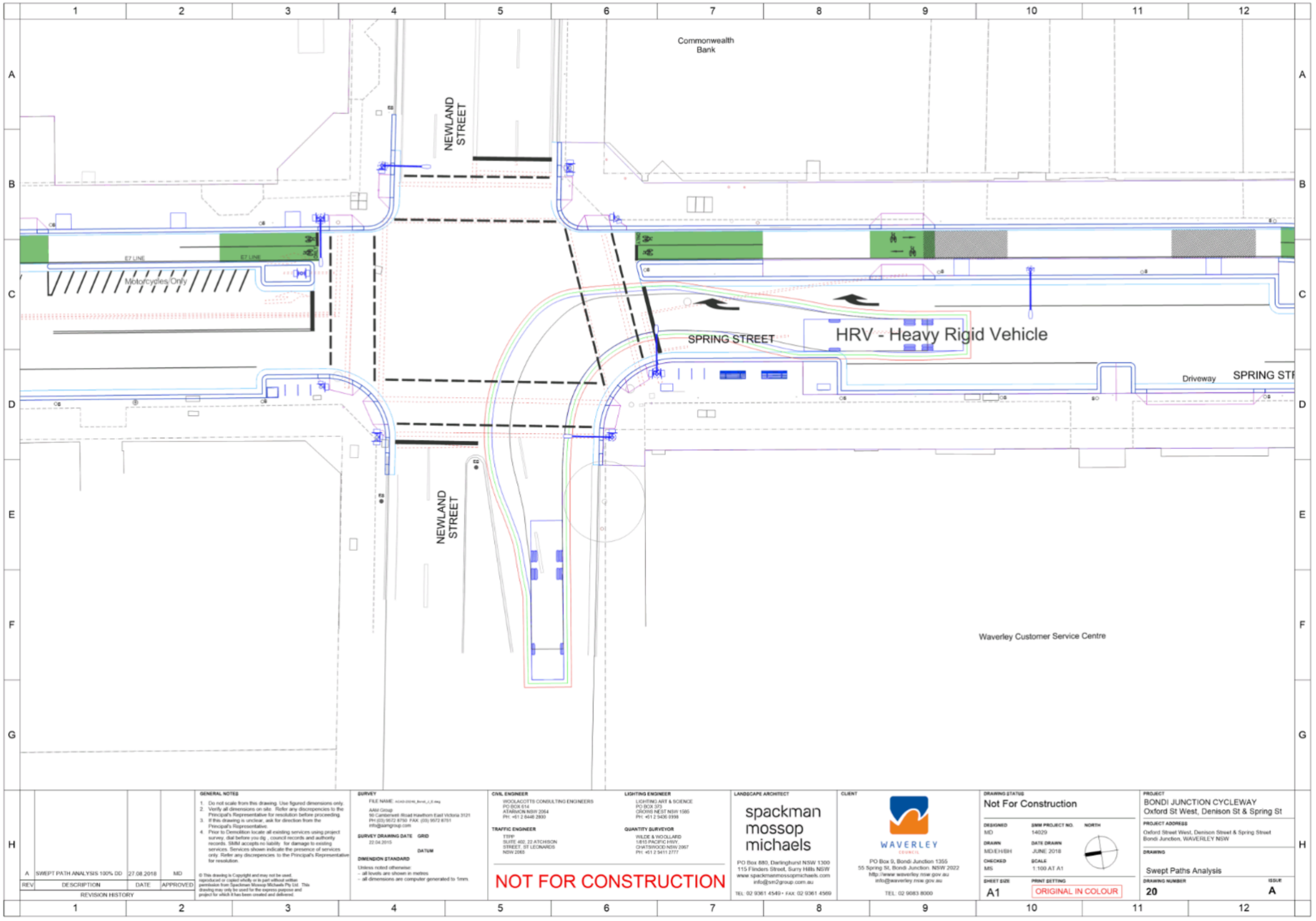
DESIGNED	MD
DRAWN	MD/EH/BH
CHECKED	MS
SHEET SIZE	A1
SMM PROJECT NO.	14029
DATE DRAWN	JUNE 2018
SCALE	1:100 AT A1
PRINT SETTING	ORIGINAL IN COLOUR
NORTH	

PROJECT: BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS: Oxford Street West, Denison Street & Spring Street Bondi Junction, WAVERLEY NSW
DRAWING: Swept Paths Analysis
DRAWING NUMBER: 16
ISSUE: A


Jax Tyres
Driveway
Driveway
SPRING STREET
E7 LINE 195m
ONLY
ONLY
ONLY
ONLY
ENISON STREET
Service Vehicle (8.8 m)
DENISON STREET
Driveway
NOT FOR CONSTRUCTION
spackman mossop michaels
WAVERLEY COUNCIL
Not For Construction
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
Swept Paths Analysis
17
A
A1
ORIGINAL IN COLOUR
A SWEPT PATH ANALYSIS 100% DD 27.08.2018 MD
REV DESCRIPTION DATE APPROVED
REVISION HISTORY


Service Vehicle (8.8 m)
SPRING STREET
Driveway
Driveway
Jax Tyres
DENISON STREET
Driveway
DENISON STREET
ONLY
ONLY
ONLY
ONLY
NOT FOR CONSTRUCTION
spackman mossop michaels
WAVERLEY
Not For Construction
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
Swept Paths Analysis
A1
ORIGINAL IN COLOUR
18
A
A SWEPT PATH ANALYSIS 100% DD 27.08.2018 MD
REVISION HISTORY


Commonwealth Bank
NEWLAND STREET
E7 LINE
E7 LINE
Motorcycles Only
SPRING STREET
Service Vehicle (8.8 m)
Driveway
SPRING STR
NEWLAND STREET
Waverley Customer Service Centre
A SWEPT PATH ANALYSIS 100% DD 27.08.2018 MD
REV DESCRIPTION DATE APPROVED
REVISION HISTORY
GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.
© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.
SURVEY
FILE NAME
AAM Group
56 Camberwell Road Hawthorn East Victoria 3121
PH: (03) 9572 8750 FAX: (03) 9572 8751
info@aamgroup.com
SURVEY DRAWING DATE 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.
CIVIL ENGINEER
WOLLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 8448 2800
LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 373
CROWS NEST NSW 1585
PH: +61 2 9436 9398
TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065
QUANTITY SURVEYOR
WILDE & WOLLARD
1/815 PACIFIC HWY
CHATSWOOD NSW 2067
PH: +61 2 9411 2777
NOT FOR CONSTRUCTION
LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 • FAX: 02 9361 4569
CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000
DRAWING STATUS
Not For Construction
DESIGNED MD
DRAWN MD/EH/BH
CHECKED MS
SHEET SIZE A1
SMM PROJECT NO. 14029
DATE DRAWN JUNE 2018
SCALE 1:100 AT A1
PRINT SETTING ORIGINAL IN COLOUR
NORTH
PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW
DRAWING
Swept Paths Analysis
DRAWING NUMBER 19
ISSUE A



REV	DESCRIPTION	DATE	APPROVED
A	SWEPT PATH ANALYSIS 100% DD	27.08.2018	MD

REVISION HISTORY

GENERAL NOTES

1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.

© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.

SURVEY
FILE NAME: ACAD-222140_Bondi_c_E.dwg
AAM Group
90 Camberwell Road Hawthorn East Victoria 3123
PH (03) 9572 8750 FAX (03) 9572 8751
info@aamgroup.com
SURVEY DRAWING DATE: 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.

CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATHERTON NSW 2064
PH: +61 2 6448 2800

TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065

LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 373
CROWS NEST NSW 1585
PH: +61 2 9436 0398

QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777

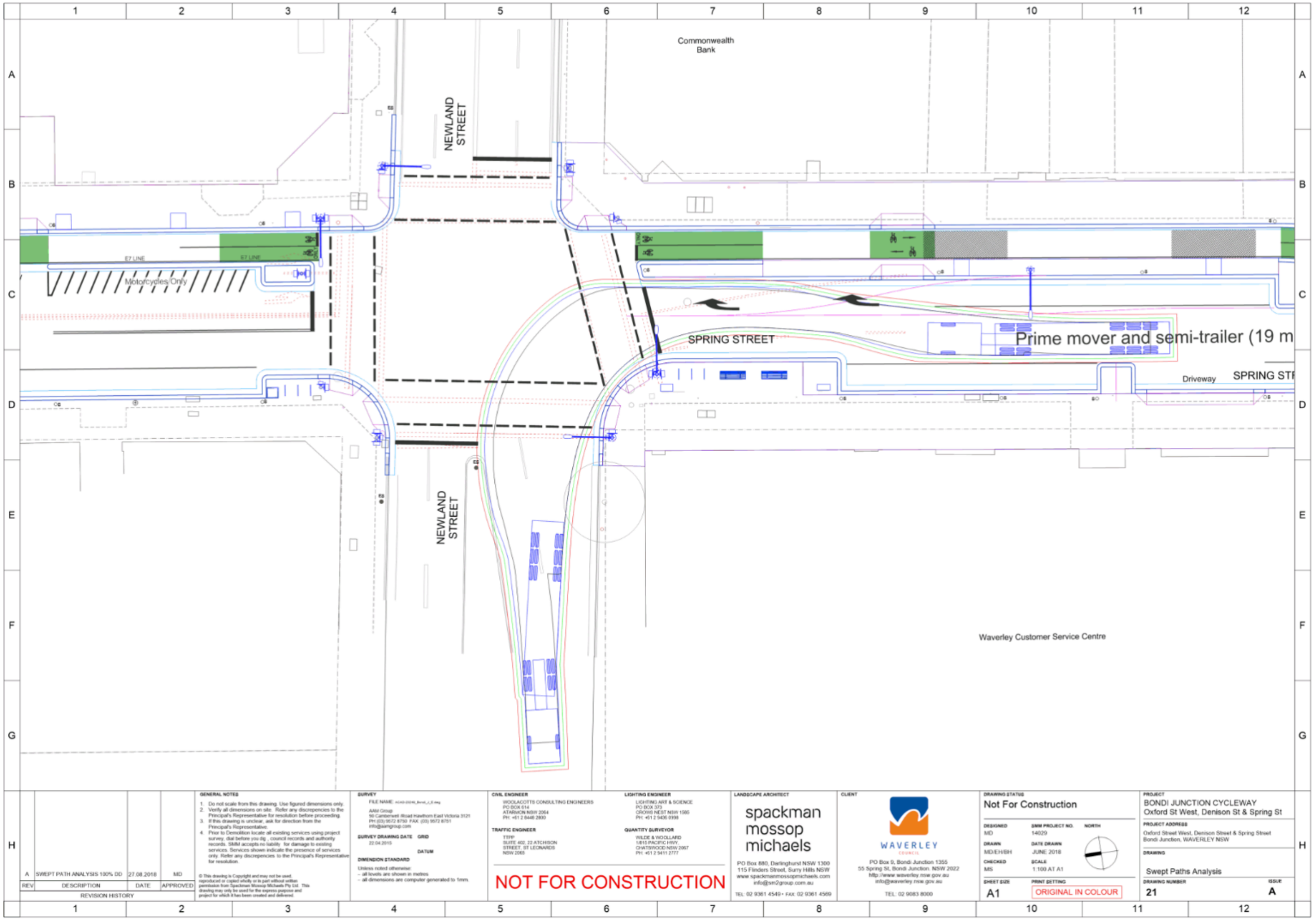
NOT FOR CONSTRUCTION

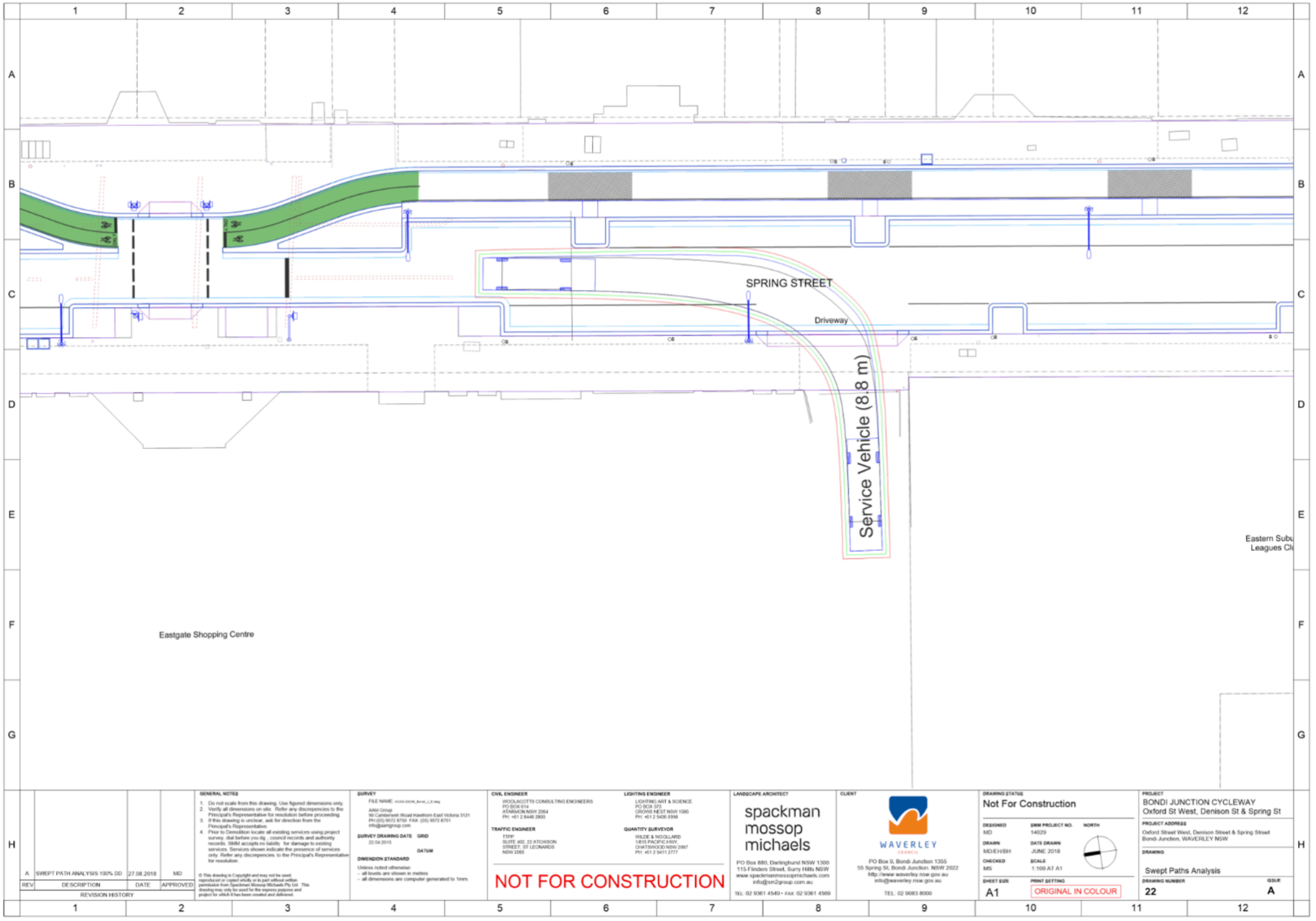
LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 • FAX: 02 9361 4569

CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000

DRAWING STATUS: Not For Construction
DESIGNED: MD
SMM PROJECT NO.: 14029
DRAWN: MD/EH/BH
DATE DRAWN: JUNE 2018
CHECKED: MS
SCALE: 1:100 AT A1
NORTH
SHEET SIZE: A1
PRINT SETTING: ORIGINAL IN COLOUR

PROJECT: BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS: Oxford Street West, Denison Street & Spring Street Bondi Junction, WAVERLEY NSW
DRAWING: Swept Paths Analysis
DRAWING NUMBER: 20
ISSUE: A


Commonwealth Bank
NEWLAND STREET
NEWLAND STREET
E7 LINE
E7 LINE
Motorcycles Only
SPRING STREET
Prime mover and semi-trailer (19 m
Driveway
SPRING STR
Waverley Customer Service Centre
A SWEPT PATH ANALYSIS 100% DD 27.08.2018 MD
REV DESCRIPTION DATE APPROVED
REVISION HISTORY
GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.
© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.
SURVEY
FILE NAME
AAM Group
50 Camberwell Road Hawthorn East Victoria 3121
PH (03) 9572 8750 FAX (03) 9572 8751
info@aamgroup.com
SURVEY DRAWING DATE GRID
22.04.2015
DATUM
DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.
CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 8448 2800
LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 373
CROWS NEST NSW 1585
PH: +61 2 9436 9399
TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065
QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777
NOT FOR CONSTRUCTION
LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 • FAX: 02 9361 4569
CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000
DRAWING STATUS
Not For Construction
DESIGNED MD
SMM PROJECT NO. 14029
DRAWN MD/EH/BH
DATE DRAWN JUNE 2018
CHECKED MS
SCALE 1:100 AT A1
NORTH
SHEET SIZE A1
PRINT SETTING ORIGINAL IN COLOUR
PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW
DRAWING
Swept Paths Analysis
DRAWING NUMBER 21
ISSUE A



REV	DESCRIPTION	DATE	APPROVED
A	SWEPT PATH ANALYSIS 100% DD	27.08.2018	MD

REVISION HISTORY

GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.

© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.

SURVEY
FILE NAME:
AAM Group
50 Camberwell Road Hawthorn East Victoria 3123
PH (03) 9572 8750 FAX (03) 9572 8751
info@aamgroup.com

SURVEY DRAWING DATE: 22.04.2015
GRID
DATUM

DIMENSION STANDARD
Unless noted otherwise:
- all levels are shown in metres
- all dimensions are computer generated to 1mm.

CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATARMON NSW 2064
PH: +61 2 8448 2800

TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON
STREET, ST LEONARDS
NSW 2065

LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 373
CROWS NEST NSW 1585
PH: +61 2 9436 9398

QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY
CHATSWOOD NSW 2067
PH: +61 2 9411 2777

LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmemossopmichaels.com
info@svn2group.com.au
TEL: 02 9361 4549 • FAX: 02 9361 4569

CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000

DRAWING STATUS
Not For Construction

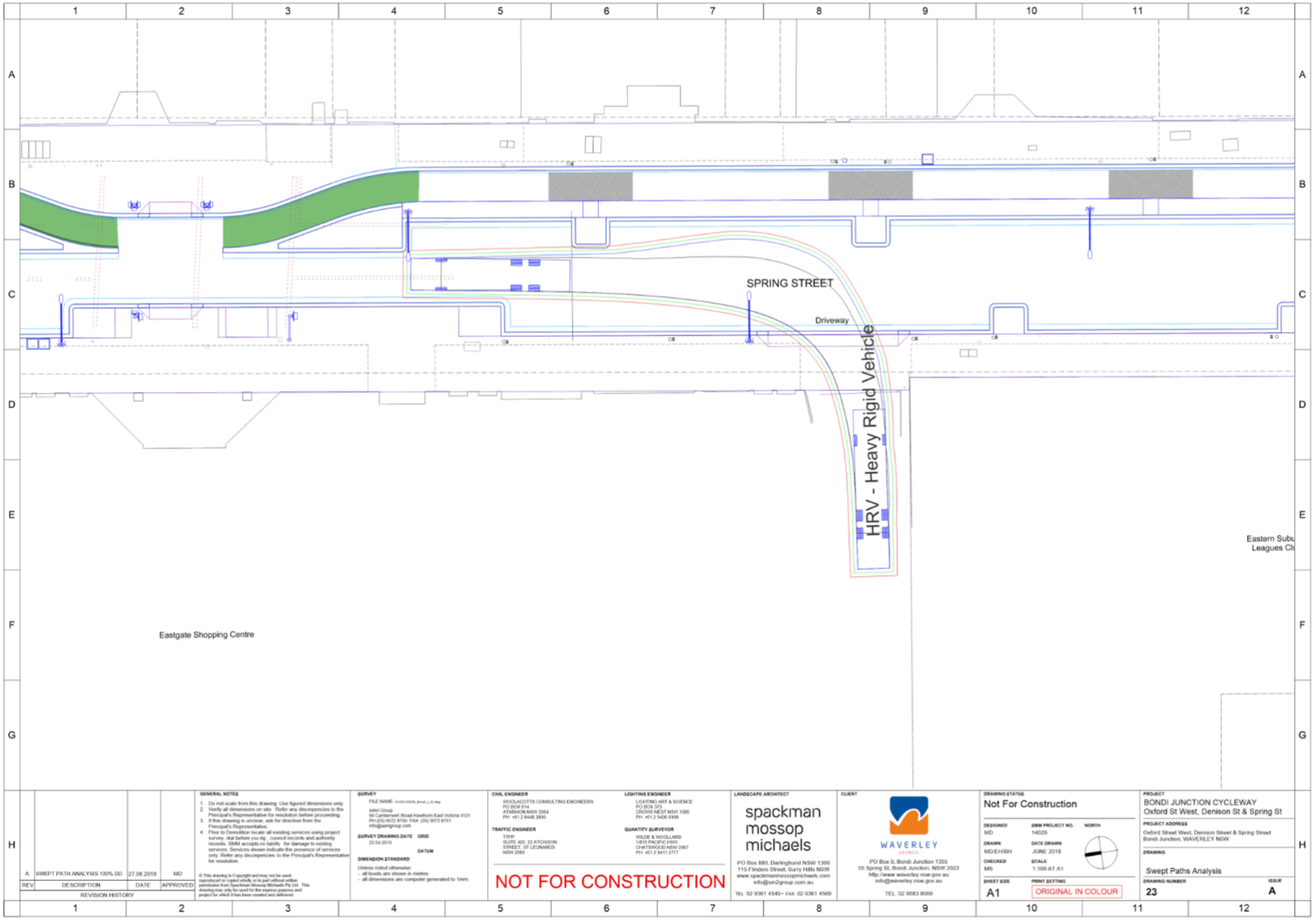
DESIGNED	SMM PROJECT NO.	NORTH
MD	14029	
DRAWN	DATE DRAWN	
MD/EH/BH	JUNE 2018	
CHECKED	SCALE	
MS	1:100 AT A1	
SHEET SIZE	PRINT SETTING	
A1	ORIGINAL IN COLOUR	

PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St

PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW

DRAWING
Swept Paths Analysis

DRAWING NUMBER: 22
ISSUE: A



REV	DESCRIPTION	DATE	APPROVED
A	SWEPT PATH ANALYSIS 100% DD	27.08.2018	MD

REVISION HISTORY

GENERAL NOTES
1. Do not scale from this drawing. Use figured dimensions only.
2. Verify all dimensions on site. Refer any discrepencies to the Principal's Representative for resolution before proceeding.
3. If this drawing is unclear, ask for direction from the Principal's Representative.
4. Prior to Demolition locate all existing services using project survey, dial before you dig , council records and authority records. SMM accepts no liability for damage to existing services. Services shown indicate the presence of services only. Refer any discrepencies to the Principal's Representative for resolution.

© This drawing is Copyright and may not be used, reproduced or copied wholly or in part without written permission from Spackman Mossop Michaels Pty Ltd. This drawing may only be used for the express purpose and project for which it has been created and delivered.

SURVEY
FILE NAME:
AAM Group
90 Camberwell Road Hawthorn East Victoria 3123
PH: (03) 9572 8750 FAX: (03) 9572 8751
info@aamgroup.com
SURVEY DRAWING DATE: 22.04.2015
GRID
DATUM
DIMENSION STANDARD
Unless noted otherwise:
– all levels are shown in metres
– all dimensions are computer generated to 1mm.

CIVIL ENGINEER
WOOLACOTTS CONSULTING ENGINEERS
PO BOX 614
ATHERTON NSW 2064
PH: +61 2 8448 2800

LIGHTING ENGINEER
LIGHTING ART & SCIENCE
PO BOX 373
CROWS NEST NSW 1585
PH: +61 2 9436 9398

TRAFFIC ENGINEER
TTPP
SUITE 402, 22 ATCHISON STREET, ST LEONARDS NSW 2065

QUANTITY SURVEYOR
WILDE & WOOLLARD
1/815 PACIFIC HWY,
CHATSWOOD NSW 2067
PH: +61 2 9411 2777

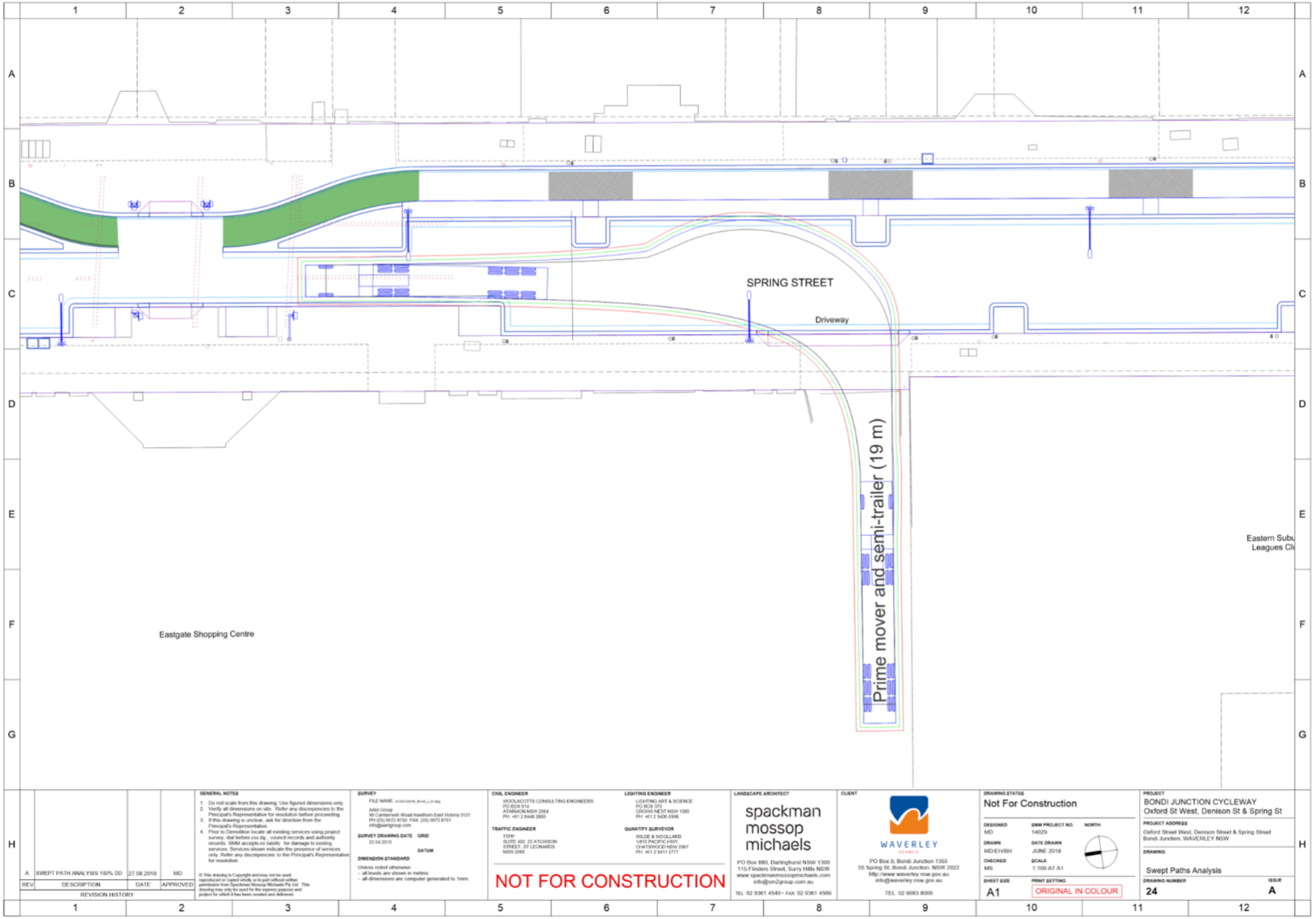
LANDSCAPE ARCHITECT
spackman mossop michaels
PO Box 880, Darlinghurst NSW 1300
115 Flinders Street, Surry Hills NSW
www.spackmanmossopmichaels.com
info@sm2group.com.au
TEL: 02 9361 4549 • FAX: 02 9361 4569

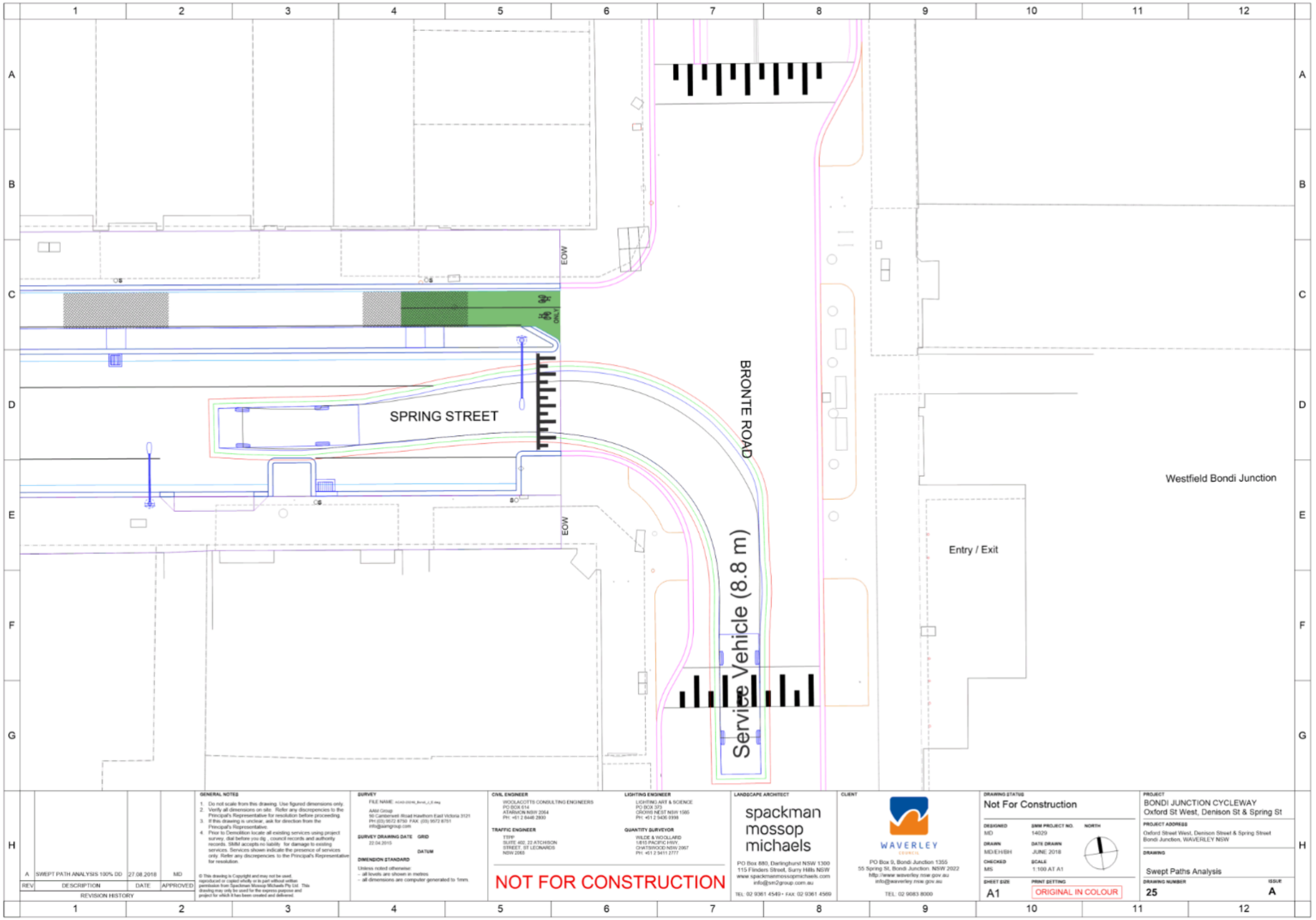
CLIENT
WAVERLEY COUNCIL
PO Box 9, Bondi Junction 1355
55 Spring St, Bondi Junction, NSW 2022
http://www.waverley.nsw.gov.au
info@waverley.nsw.gov.au
TEL: 02 9083 8000

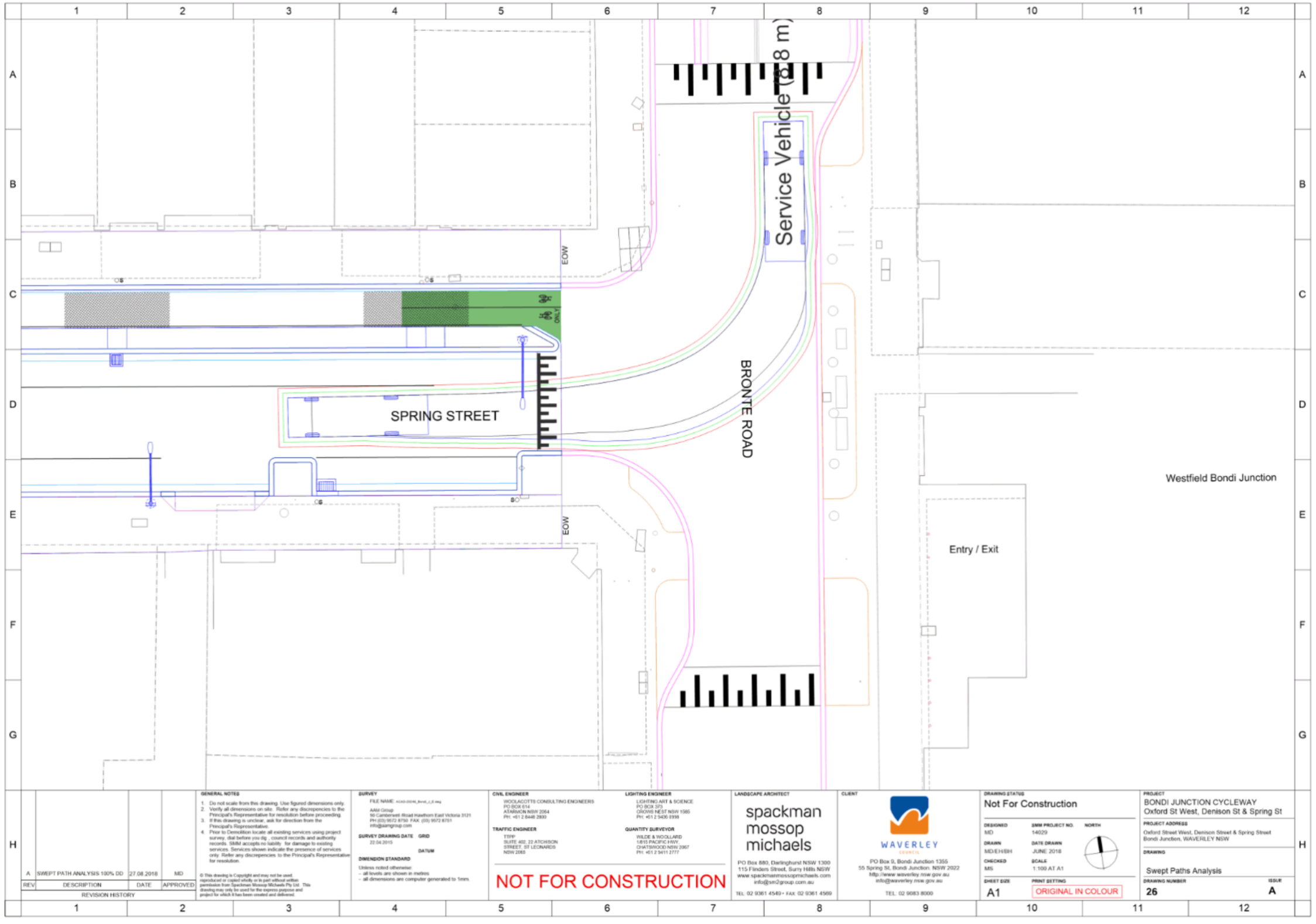
DRAWING STATUS
Not For Construction

DESIGNED: MD
SMM PROJECT NO.: 14029
DRAWN: MD/EH/BH
DATE DRAWN: JUNE 2018
CHECKED: MS
SCALE: 1:100 AT A1
NORTH
SHEET SIZE: A1
PRINT SETTING: ORIGINAL IN COLOUR

PROJECT
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
PROJECT ADDRESS
Oxford Street West, Denison Street & Spring Street
Bondi Junction, WAVERLEY NSW
DRAWING
Swept Paths Analysis
DRAWING NUMBER: 23
ISSUE: A


SPRING STREET
Driveway
Prime mover and semi-trailer (19 m)
Eastgate Shopping Centre
Eastern Subu
Leagues Cl
NOT FOR CONSTRUCTION
spackman mossop michaels
WAVERLEY
Not For Construction
A1
ORIGINAL IN COLOUR
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
Swept Paths Analysis
24
A
A SWEPT PATH ANALYSIS 100% DD 27.08.2018 MD


SPRING STREET
BRONTE ROAD
EOW
EOW
ONLY
Service Vehicle (8.8 m)
Entry / Exit
Westfield Bondi Junction
NOT FOR CONSTRUCTION
spackman mossop michaels
WAVERLEY COUNCIL
Not For Construction
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
Swept Paths Analysis
A SWEPT PATH ANALYSIS 100% DD 27.08.2018 MD
REV DESCRIPTION DATE APPROVED
REVISION HISTORY


Service Vehicle (8.8 m)
BRONTE ROAD
SPRING STREET
EOW
EOW
ONLY
Westfield Bondi Junction
Entry / Exit
NOT FOR CONSTRUCTION
spackman mossop michaels
WAVERLEY COUNCIL
Not For Construction
BONDI JUNCTION CYCLEWAY
Oxford St West, Denison St & Spring St
Swept Paths Analysis
A1
ORIGINAL IN COLOUR
26
A
SWEPT PATH ANALYSIS 100% DD 27.08.2018 MD

Issue History

File Name	Prepared by	Reviewed by	Issued by	Date	Issued to
P3850.001D Bondi Junction Loading Study – Traffic Counts Evaluation	J. Yang	T Wheatley	M. Hearne	26/10/2018	Mathew Dally Spackman Mossop Michaels
P3850.002D Bondi Junction Loading Study – Traffic Counts Evaluation	M. Hearne	T Wheatley	M. Hearne	21/12/2018	Mathew Dally Spackman Mossop Michaels

Bondi Junction Traffic Counts Evaluation

1. BACKGROUND

Bitzios Consulting was engaged by Spackman Mossop Michaels to evaluate whether previously prepared SIDRA models are still fit for purpose to accurately represent traffic conditions within Bondi Junction. As part of this evaluation, up-to-date traffic surveys were undertaken at the following intersections:

- Oxford Street and Bronte Road;
- Bronte Road and Spring Street;
- Spring Street (mid-block pedestrian crossing);
- Spring Street and Newland Street;
- Spring Street and Denison Street;
- Oxford Street and Denison Street;
- Oxford Street and Leswell Street;
- Oxford Street and Nelson Street;
- Oxford Street and St James Road; and
- Oxford Street and York Road.

A quantitative evaluation between the old 2014 traffic counts and the new 2018 counts was carried out to determine the magnitude of difference in traffic conditions, and whether the previous 2014 SIDRA models were capable of suitably accommodating the increase in traffic since then.

The previous counts were undertaken on Thursday 12 June 2014, and the new counts were undertaken on Monday 27 August 2018.

2. TRAFFIC SURVEY DATA

2.1 NETWORK PEAK PERIODS

The network peak periods were calculated from an assessment of the surveyed hour period with the greatest flow of vehicles through the entire network. The periods were determined to be:

- AM Peak Hour: 7:45am – 8:45am; and
- PM Peak Hour: 5:00pm – 6:00pm.

2.2 TRAFFIC COUNT DIAGRAMS

Network traffic count diagrams for the new 2018 surveys are attached in **Appendix A**, along with the previous diagrams for 2014 (received).

3. COMPARISON OF TRAFFIC COUNTS

3.1 AM PEAK PERIOD

A comparison of the traffic counts recorded at each intersection for the AM peak period is tabulated below in Table 3.1. A positive value in the difference column reports an increase in vehicles from 2014 to 2018, while a negative value indicates a decrease in vehicles.

Table 3.1: Comparison of Traffic Counts – AM Peak Period

Intersection	Approach	Movement	2014 Counts			2018 Counts			Difference (veh)			Difference (%)		
			Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus
Oxford Street and Bronte Road	North	Through	62	3	38	34	4	45	-28	1	7	-45%	33%	18%
		Left	1	0	35	0	0	40	-1	0	5	-100%	0%	14%
	East	Right	0	1	65	6	0	58	6	-1	-7	-	-100%	-11%
		Left	0	2	1	2	1	1	2	-1	0	-	-50%	0%
	South	Right	1	0	2	0	0	2	-1	0	0	-100%	0%	0%
		Through	9	1	49	9	1	48	0	0	-1	0%	0%	-2%
Bronte Road and Spring Street	North	Right	38	5	0	26	4	0	-12	-1	0	-32%	-20%	0%
		Through	25	3	39	11	3	46	-14	0	7	-56%	0%	18%
	South	Through	13	1	51	10	1	49	-3	0	-2	-23%	0%	-4%
		Left	175	12	0	159	15	0	-16	3	0	-9%	25%	0%
	West	Right	0	0	0	0	0	0	0	0	0	0%	0%	0%
		Left	0	0	0	0	0	0	0	0	0	0%	0%	0%
Spring Street Pedestrian Crossing	East	Through	217	15	0	189	22	0	-28	7	0	-13%	47%	0%
	West	Through	0	0	0	0	0	0	0	0	0	0%	0%	0%

Bondi Junction - Traffic Counts Evaluation BITZIOS consulting

Intersection	Approach	Movement	2014 Counts			2018 Counts			Difference (veh)			Difference (%)		
			Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus
Spring Street and Newland Street	North	Right	43	1	0	32	1	0	-11	0	0	-26%	0%	0%
		Through	393	7	8	383	4	6	-10	-3	-2	-3%	-43%	-25%
		Left	0	0	0	0	0	0	0	0	0	0%	0%	0%
	East	Right	113	6	0	68	6	0	-45	0	0	-40%	0%	0%
		Through	68	6	0	58	7	0	-10	1	0	-15%	17%	0%
		Left	53	4	0	55	7	0	2	3	0	4%	75%	0%
	South	Right	0	0	0	0	0	0	0	0	0			0%
		Through	596	5	5	601	8	4	5	3	-1	1%	60%	-20%
		Left	57	1	0	31	2	0	-26	1	0	-46%	100%	0%
	West	Right	1	0	0	0	0	0	-1	0	0	-100%		0%
		Through	0	0	0	0	0	0	0	0	0			0%
		Left	43	0	0	38	3	0	-5	3	0	-12%		0%
Spring Street and Denison Street	North	Through	201	8	0	156	11	0	-45	3	0	-22%	38%	0%
		Left	46	0	0	32	2	0	-14	2	0	-30%		0%
	East	Right	100	0	7	93	9	0	-7	9	-7	-7%		-100%
		Left	81	3	0	46	4	0	-35	1	0	-43%	33%	0%
	South	Right	81	0	0	44	1	0	-37	1	0	-46%		0%
		Through	345	2	0	366	6	0	21	4	0	6%	200%	0%

Bondi Junction - Traffic Counts Evaluation BITZIOS consulting

Intersection	Approach	Movement	2014 Counts			2018 Counts			Difference (veh)			Difference (%)		
			Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus
Oxford Street and Denison Street	East	Through	160	62	10	109	12	50	-51	-50	40	-32%	-81%	400%
		Left	10	1	0	18	1	0	8	0	0	80%	0%	0%
	South	Right	34	0	0	25	2	0	-9	2	0	-26%		0%
		Left	402	10	0	431	14	0	29	4	0	7%	40%	0%
	West	Right	230	7	0	169	10	0	-61	3	0	-27%	43%	0%
		Through	144	4	27	103	5	36	-41	1	9	-28%	25%	33%
Oxford Street and Leswell Street	North	Right	-	-	-	44	1	0	-	-	-	-	-	-
		Through	-	-	-	0	0	0	-	-	-	-	-	-
		Left	-	-	-	70	1	0	-	-	-	-	-	-
	East	Right	-	-	-	96	1	0	-	-	-	-	-	-
		Through	-	-	-	455	24	51	-	-	-	-	-	-
		Left	-	-	-	0	0	0	-	-	-	-	-	-
	South	Right	-	-	-	1	0	0	-	-	-	-	-	-
		Through	-	-	-	8	0	0	-	-	-	-	-	-
		Left	-	-	-	79	0	0	-	-	-	-	-	-
	West	Right	-	-	-	0	0	0	-	-	-	-	-	-
		Through	-	-	-	205	12	34	-	-	-	-	-	-
		Left	-	-	-	61	1	0	-	-	-	-	-	-

Project No: P3850 Version: 002 Page 4

Bondi Junction - Traffic Counts Evaluation BITZIOS consulting

Intersection	Approach	Movement	2014 Counts			2018 Counts			Difference (veh)			Difference (%)		
			Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus
Oxford Street and Nelson Street	North	Right	195	3	0	175	1	1	-20	-2	1	-10%	-67%	-
		Left	0	0	22	8	2	0	8	2	-22	-	-	-100%
	East	Right	19	0	0	16	1	0	-3	1	0	-16%	-	0%
		Through	643	19	62	628	22	51	-15	3	-11	-2%	16%	-18%
	West	Through	304	11	27	224	13	35	-80	2	8	-26%	18%	30%
		Left	103	1	0	83	2	0	-20	1	0	-19%	100%	0%
Oxford Street and St James Road	East	Through	-	-	-	785	21	51	-	-	-	-	-	-
		Left	-	-	-	5	0	0	-	-	-	-	-	-
	South	Right	-	-	-	0	0	0	-	-	-	-	-	-
		Left	-	-	-	15	0	0	-	-	-	-	-	-
	West	Right	-	-	-	0	0	0	-	-	-	-	-	-
		Through	-	-	-	306	18	37	-	-	-	-	-	-

Project No: P3850 Version: 002 Page 5

Bondi Junction - Traffic Counts Evaluation

Intersection	Approach	Movement	2014 Counts			2018 Counts			Difference (veh)			Difference (%)		
			Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus
Oxford Street and York Road	North	Right	0	0	0	0	0	0	0	0	0	0%	0%	0%
		Through	507	10	9	555	8	6	48	-2	-3	9%	-20%	-33%
		Left	402	13	26	303	14	31	-99	1	5	-25%	8%	19%
	East	Right	156	1	14	144	5	12	-12	4	-2	-8%	400%	-14%
		Through	644	23	42	602	17	32	-42	-6	-10	-7%	-26%	-24%
		Left	50	0	5	39	0	10	-11	0	5	-22%	0%	100%
	South	Right	0	0	1	0	0	0	0	0	-1	0%	0%	-100%
		Through	551	6	1	419	3	2	-132	-3	1	-24%	-50%	100%
		Left	437	0	0	504	5	0	67	5	0	15%	-	0%
	West	Right	0	0	0	0	0	0	0	0	0	0%	0%	0%
		Through	0	0	0	0	0	0	0	0	0	0%	0%	0%
		Left	0	0	0	0	0	0	0	0	0	0%	0%	0%

3.2 PM PEAK PERIOD

Similarly, a comparison of the vehicle volumes for the PM peak period is tabulated below in Table 3.2. A positive value in the difference column reports an increase in vehicles from 2014 to 2018, while a negative value indicates a decrease in vehicles.

Table 3.2: Comparison of Traffic Counts – AM Peak Period

Intersection	Approach	Movement	2014 Counts			2018 Counts			Difference (veh)			Difference (%)		
			Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus
Oxford Street and Bronte Road	North	Through	130	0	39	103	2	36	-27	2	-3	-21%	0%	-8%
		Left	0	0	55	0	0	48	0	0	-7	0%	0%	-13%
	East	Right	1	0	36	0	0	38	-1	0	2	-100%	0%	6%
		Left	0	0	0	0	0	0	0	0	0	0%	0%	0%
	South	Right	0	0	0	0	0	0	0	0	0	0%	0%	0%
		Through	24	0	32	25	0	33	1	0	1	4%	0%	3%
Bronte Road and Spring Street	North	Right	68	0	0	46	0	0	-22	0	0	-32%	0%	0%
		Through	65	0	41	61	2	37	-4	2	-4	-6%	0%	-10%
	South	Through	26	0	32	26	0	34	0	0	2	0%	0%	6%
		Left	235	2	1	230	0	0	-5	-2	-1	-2%	-100%	-100%
	West	Right	0	0	0	0	0	0	0	0	0	0%	0%	0%
		Left	0	0	0	0	0	0	0	0	0	0%	0%	0%
Spring Street Pedestrian Crossing	East	Through	302	3	1	276	0	0	-26	-3	-1	-9%	-100%	-100%
	West	Through	0	0	0	0	0	0	0	0	0	0%	0%	0%

Bondi Junction - Traffic Counts Evaluation

BITZIOS consulting

Intersection	Approach	Movement	2014 Counts			2018 Counts			Difference (veh)			Difference (%)		
			Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus
Spring Street and Newland Street	North	Right	20	0	0	34	0	0	14	0	0	70%	0%	0%
		Through	576	3	4	561	4	3	-15	1	-1	-3%	33%	-25%
		Left	0	0	0	0	0	0	0	0	0	0%	0%	0%
	East	Right	174	0	1	94	1	0	-80	1	-1	-46%	0%	-100%
		Through	122	0	0	125	0	0	3	0	0	2%	0%	0%
		Left	189	3	0	160	0	0	-29	-3	0	-15%	-100%	0%
	South	Right	0	0	0	0	0	0	0	0	0	0%	0%	0%
		Through	368	2	5	351	2	3	-17	0	-2	-5%	0%	-40%
		Left	52	1	0	51	0	0	-1	-1	0	-2%	-100%	0%
	West	Right	0	0	0	0	0	0	0	0	0	0%	0%	0%
		Through	0	0	0	0	0	0	0	0	0	0%	0%	0%
		Left	13	0	0	73	0	0	60	0	0	462%	0%	0%
Spring Street and Denison Street	North	Through	320	3	0	264	6	0	-56	3	0	-18%	100%	0%
		Left	63	1	0	42	1	0	-21	0	0	-33%	0%	0%
	East	Right	153	2	0	167	0	0	14	-2	0	9%	-100%	0%
		Left	144	0	0	129	0	0	-15	0	0	-10%	0%	0%
	South	Right	45	0	0	41	1	0	-4	1	0	-9%	0%	0%
		Through	219	2	0	189	2	0	-30	0	0	-14%	0%	0%

Bondi Junction - Traffic Counts Evaluation BITZIOS consulting

Intersection	Approach	Movement	2014 Counts			2018 Counts			Difference (veh)			Difference (%)		
			Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus
Oxford Street and Denison Street	East	Through	179	4	34	102	7	42	-77	3	8	-43%	75%	24%
		Left	38	1	0	39	0	0	1	-1	0	3%	-100%	0%
	South	Right	33	0	0	32	0	0	-1	0	0	-3%	0%	0%
		Left	331	3	0	329	2	0	-2	-1	0	-1%	-33%	0%
	West	Right	334	3	0	259	1	0	-75	-2	0	-22%	-67%	0%
		Through	214	1	48	190	2	55	-24	1	7	-11%	100%	15%
Oxford Street and Leswell Street	North	Right	-	-	-	53	1	0	-	-	-	-	-	-
		Through	-	-	-	0	0	0	-	-	-	-	-	-
		Left	-	-	-	116	1	0	-	-	-	-	-	-
	East	Right	-	-	-	59	1	0	-	-	-	-	-	-
		Through	-	-	-	361	5	47	-	-	-	-	-	-
		Left	-	-	-	0	0	0	-	-	-	-	-	-
	South	Right	-	-	-	3	0	0	-	-	-	-	-	-
		Through	-	-	-	3	0	0	-	-	-	-	-	-
		Left	-	-	-	38	0	0	-	-	-	-	-	-
	West	Right	-	-	-	0	0	0	-	-	-	-	-	-
		Through	-	-	-	356	6	54	-	-	-	-	-	-
		Left	-	-	-	50	2	0	-	-	-	-	-	-

Bondi Junction - Traffic Counts Evaluation BITZIOS consulting

Intersection	Approach	Movement	2014 Counts			2018 Counts			Difference (veh)			Difference (%)		
			Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus
Oxford Street and Nelson Street	North	Right	217	4	0	212	4	0	-5	0	0	-2%	0%	0%
		Left	33	0	0	30	0	0	-3	0	0	-9%	0%	0%
	East	Right	10	0	0	12	0	0	2	0	0	20%	0%	0%
		Through	489	7	31	426	6	47	-63	-1	16	-13%	-14%	52%
	West	Through	436	4	51	372	8	55	-64	4	4	-15%	100%	8%
		Left	53	0	0	64	2	0	11	2	0	21%	0%	0%
Oxford Street and St James Road	East	Through	-	-	-	614	13	46	-	-	-	-	-	-
		Left	-	-	-	1	0	0	-	-	-	-	-	-
	South	Right	-	-	-	0	0	0	-	-	-	-	-	-
		Left	-	-	-	6	0	0	-	-	-	-	-	-
	West	Right	-	-	-	4	1	0	-	-	-	-	-	-
		Through	-	-	-	420	16	55	-	-	-	-	-	-

Bondi Junction - Traffic Counts Evaluation

BITZIOS consulting

Intersection	Approach	Movement	2014 Counts			2018 Counts			Difference (veh)			Difference (%)		
			Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus	Light	Heavy	Bus
Oxford Street and York Road	North	Right	0	0	0	0	0	0	0	0	0	0%	0%	0%
		Through	704	1	7	758	9	14	54	8	7	8%	800%	100%
		Left	573	3	50	462	9	37	-111	6	-13	-19%	200%	-26%
	East	Right	155	1	5	127	1	9	-28	0	4	-18%	0%	80%
		Through	533	11	29	427	11	30	-106	0	1	-20%	0%	3%
		Left	53	0	6	45	1	9	-8	1	3	-15%	0%	50%
	South	Right	0	0	2	0	0	4	0	0	2	0%	0%	100%
		Through	354	1	4	385	2	6	31	1	2	9%	100%	50%
		Left	194	0	3	252	6	2	58	6	-1	30%	0%	-33%
	West	Right	0	0	0	0	0	0	0	0	0	0%	0%	0%
		Through	0	0	0	0	0	0	0	0	0	0%	0%	0%
		Left	0	0	0	0	0	0	0	0	0	0%	0%	0%

4. EVALUATION

4.1 AM PEAK PERIOD

The comparison of traffic volumes for each intersection movement throughout the AM network shows some notable differences in vehicle counts between 2014 and 2018. It should be noted that on occasions the magnitude of percentage difference is misleading due to the low volume of vehicles (i.e. an increase from 1 to 2 vehicles is reported as a 100% increase).

In terms of light vehicles, against expectations there appears to be a decrease of around 30-50 vehicles per hour at a number of intersection movements, especially in the section of the study area between Denison Street and York Road. Some significant examples include:

- The westbound left turn and northbound right turn at the Spring Street / Denison Road intersection report a decrease of 35 and 37 vehicles respectively, a change in vehicle volumes of around 45%;
- the eastbound through movement at the Oxford Street / Nelson Street intersection reports a decrease of 80 vehicles; and
- the southbound left turn and northbound through movement at the Oxford Street / York Road intersection report a decrease of 99 and 132 vehicles respectively, a change in vehicle volumes of around 25%.

For heavy vehicles, the 2014 and 2018 counts appear largely similar, both reporting low volumes of heavy vehicular traffic with only minor differences between the two years. However, there is a notable exception to this: for the westbound through movement at the Oxford Street / Denison Street intersection, there is a decrease from 62 heavy vehicles in 2014 to 12 in 2018, a change of 50 vehicles (around 80% decrease). The heavy vehicle percentage recorded in 2014 appears high comparative to the volumes at nearby intersections, therefore it is likely that the previous surveys captured an outlier period of high construction activity.

For buses, similar to the heavy vehicle counts, the 2014 and 2018 counts are not significantly different through the network with the exception of the Oxford Street / Denison Street intersection. The new 2018 counts record 50 westbound through buses travelling on Oxford Street, as opposed to 10 in 2014. This is a difference of 40 buses, a 400% increase of volumes in 2014. This indicates a substantial change in bus movements at this intersection.

This intersection also saw a significant decrease in light vehicles (160 to 109. The number of heavy vehicles decreased by a larger amount (62 to 12) than the increases in buses (10 to 50). As a result, it is considered that the overall reduction in traffic volumes would mean that the 2014 counts is likely to result in worse intersection performance than 2018.

4.2 PM PEAK PERIOD

The PM peak period shows similar results to that of the AM peak. Light vehicle volumes are observed to be similar at some intersections, but a number of other intersection movements record decreases in volume of around 20%. Decreases in traffic volume at an intersection would make the 2014 case a worse case than 2018, and would provide a more conservative estimation of the performance of the intersection.

One issue that was identified was that the eastbound left turn at the Spring Street / Newland Street intersection (which is the only movement available to all traffic on the west approach at this intersection) shows an increase from 13 vehicles in 2014 to 73 in 2018 – over 450% increase in volume. This is likely due to an anomaly in the data, as there were zero vehicles recorded during a one-hour period in the afternoon on the day of the 2014 surveys. Despite this discrepancy, the total intersection volume in 2014 was around 4.5% higher than 2018. This indicates that the 2014 volumes are more of a worse case than the 2018 counts despite the data anomaly.

For heavy vehicles, traffic counts between 2014 and 2018 are very similar, with no change in volume of over 10 vehicles. Due to the overall low heavy vehicle volumes, percentage was not used as a meaningful indicator here.

For buses, like heavy vehicles, most counts are similar in volume (within 10 vehicles), with the exception of an increase of 16 westbound through buses at the Oxford Street / Nelson Street intersection, and a decrease of 13 southbound left turning buses at the Oxford Street / York Road intersection.

5. CONCLUSIONS

The evaluation of the traffic counts for 2014 and 2018 indicate that there are notable changes in vehicle volumes, distributions and turning movements between the two surveyed periods. These occur significantly at the intersections on the western side of the study area (west of Denison Street). It was observed that 2014 traffic volumes are generally higher than 2018, indicating that the previous counts would provide a worst case.

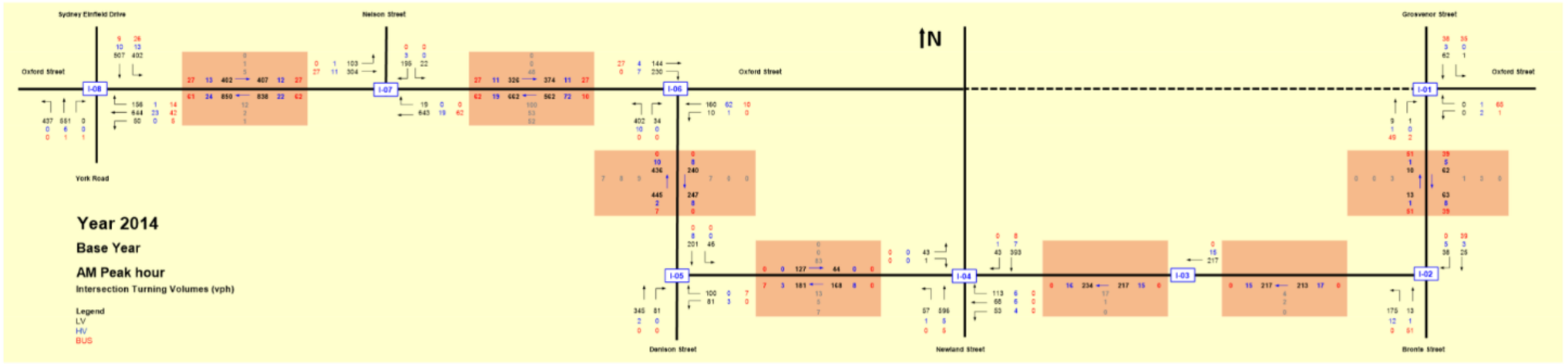
Significant differences in heavy vehicle and bus volumes at the Oxford Street / Denison Road intersection may be indicative of a change in traffic conditions at the intersection, however, the total number of buses and heavy vehicles is generally lower in 2018 than 2014.

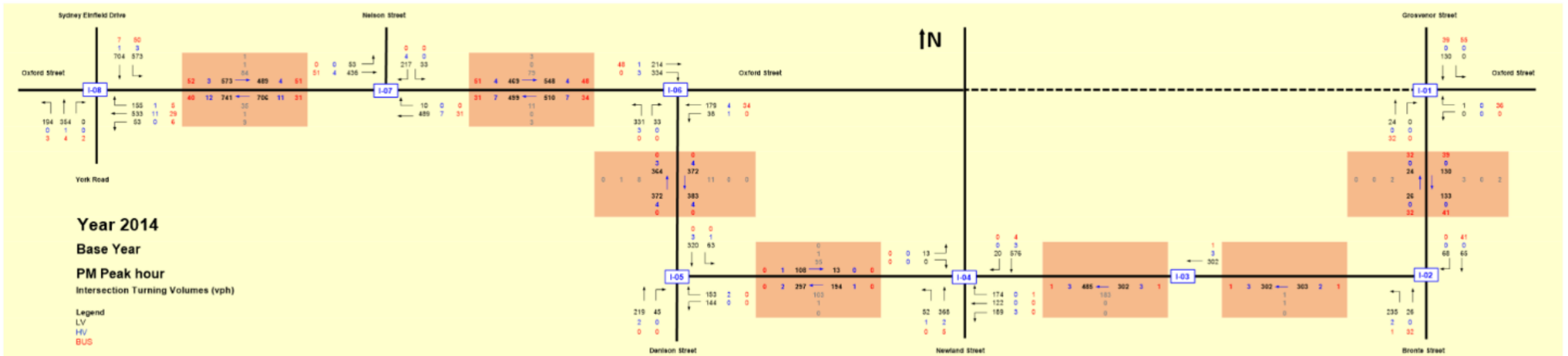
There are also widespread differences in light vehicles, with a consistent decrease in volumes at a large number of the surveyed intersections. While unclear as to the specific reason for the change, it indicates that the overall traffic volumes within the study area in 2014 are a worse case than if the analysis was undertaken using the 2018 counts.

For these reasons, it is considered satisfactory that the 2014 traffic models are acceptable due the generally higher traffic volumes than in 2018.

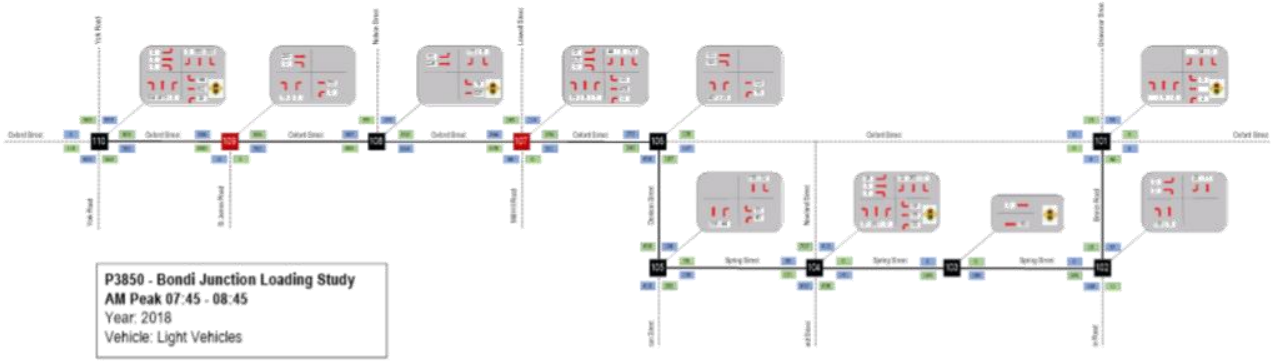
ATTACHMENT A

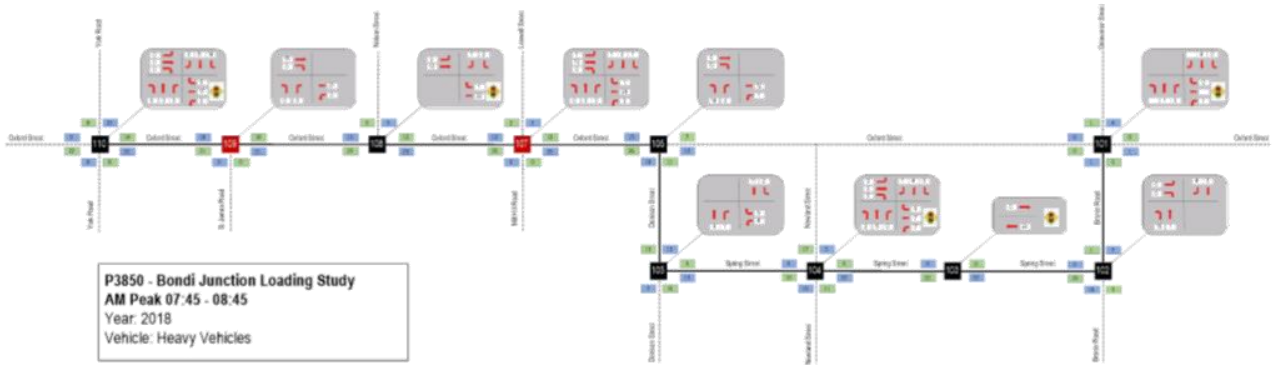
NETWORK TRAFFIC DIAGRAMS

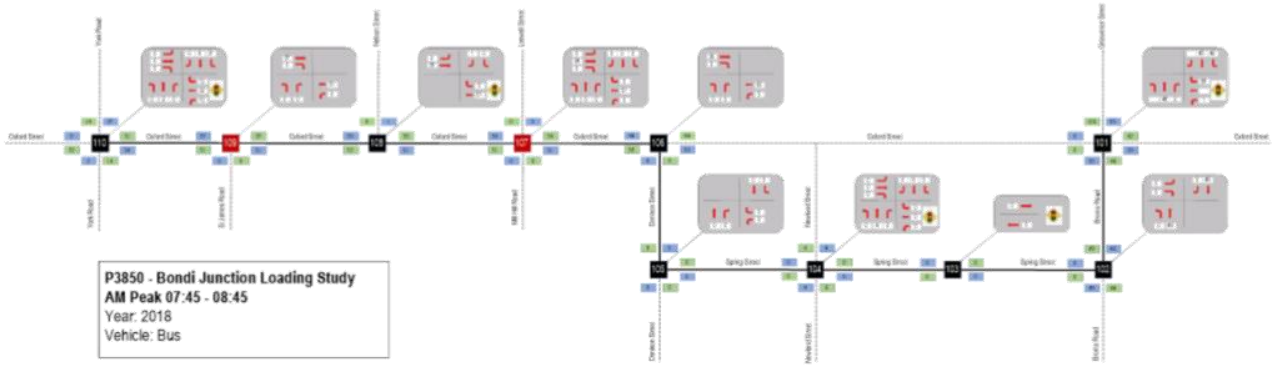


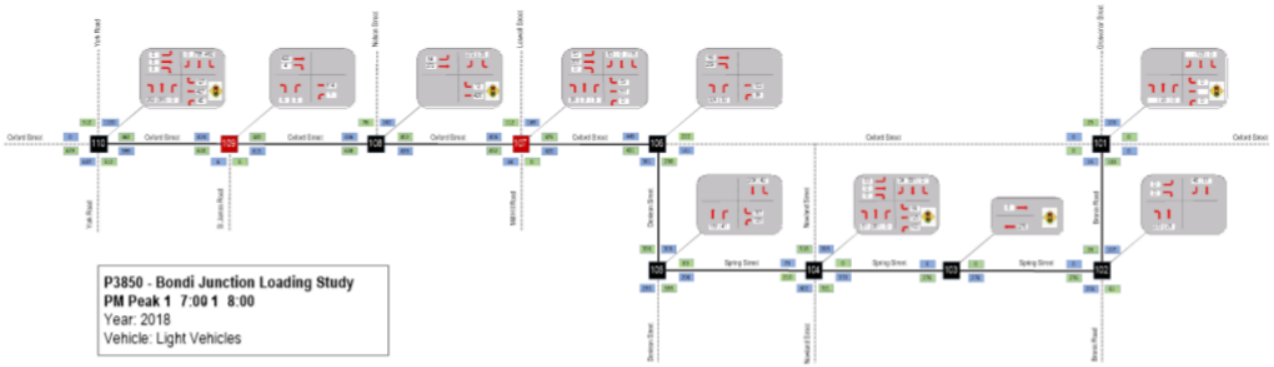


\\APSYDFIL03\proj\51\Spackman_and_Mossop\2196790A_Bondi_Junction_Cycleway\05_WIP\Papers\WIP\Draft\Traffic analysis\02 Traffic distribution.xlsx\Stick diagram


P3850 - Bondi Junction Loading Study
AM Peak 07:45 - 08:45
Year: 2018
Vehicle: Light Vehicles


P3850 - Bondi Junction Loading Study
AM Peak 07:45 - 08:45
Year: 2018
Vehicle: Heavy Vehicles


P3850 - Bondi Junction Loading Study
AM Peak 07:45 - 08:45
Year: 2018
Vehicle: Bus


P3850 - Bondi Junction Loading Study
PM Peak 1 7:00 1 8:00
Year: 2018
Vehicle: Light Vehicles


P3850 - Bondi Junction Loading Study
PM Peak 1 7:00 - 1 8:00
Year: 2018
Vehicle: Heavy Vehicles


P3850 - Bondi Junction Loading Study
PM Peak 1 7:00 - 1 8:00
Year: 2018
Vehicle: Bus

Issue History

File Name	Prepared by	Reviewed by	Issued by	Date	Issued to
P2996.001T TRACT East Bondi Junction Streetscape Traffic SIDRA Modelling Technical Note	S. Daizli	A. Giyahi	M.Thompson	20/2/2018	Linda Hoang, Tract Consultants

TRACT East Bondi Junction Streetscape Traffic SIDRA Modelling Technical Note

1. INTRODUCTION

Bitzios Consulting was commissioned by Tract Consultants on behalf of Waverley Council to undertake design and intersection modelling in East Bondi Junction. Waverley Council and Tract have identified the need to modify traffic signals operation to facilitate the construction of the East Bondi Junction cycleway. The subject signalised intersections are listed below and shown in Figure 1.1.

1. TCS 369 – Grosvenor Street/Bronte Road/Oxford Street (existing);
2. Oxford Street mid-block crossing (proposed, approximately 46 metres east of Grosvenor Street/Bronte Road/Oxford Street); and
3. TCS 1038 – Oxford Street/Adelaide Street/Hollywood Avenue (existing).

Adapted from Google Maps

Figure 1.1: Intersection Locations

The proposed changes are anticipated to impact on the performance of the existing intersections and as such intersection modelling was undertaken to assess different options. SIDRA Intersection Version 7 was used to assess the performance of each intersection using the information provided and the methodology outlined in this technical note. This technical note summarises the outcomes of the proposed network SIDRA analysis.

2. BASE MODEL DEVELOPMENT

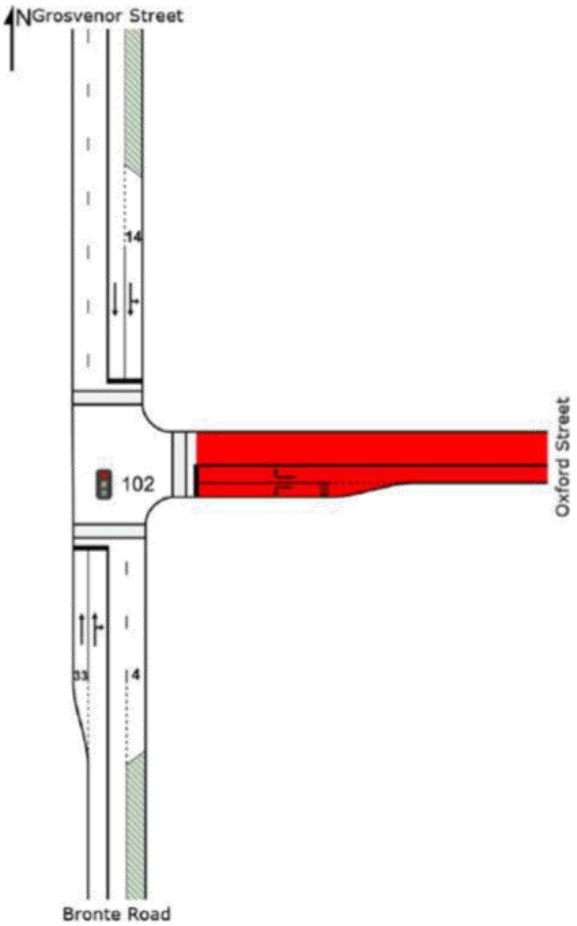
2.1 METHODOLOGY OVERVIEW

The existing condition traffic models for the weekday AM and PM peaks were modelled and calibrated to existing conditions using the following information:

- the intersection geometry, layouts and parking restrictions were adopted from detailed aerial images and confirmed during the site visits;
- traffic surveys were undertaken by Traffic Data & Control to collect traffic volumes and vehicle queue data at each intersection. The vehicle queue data formed the baseline data to calibrate the SIDRA models; and
- SCATS data obtained from Roads and Maritime Services (RMS), including the signal phasing sequences and phase times.

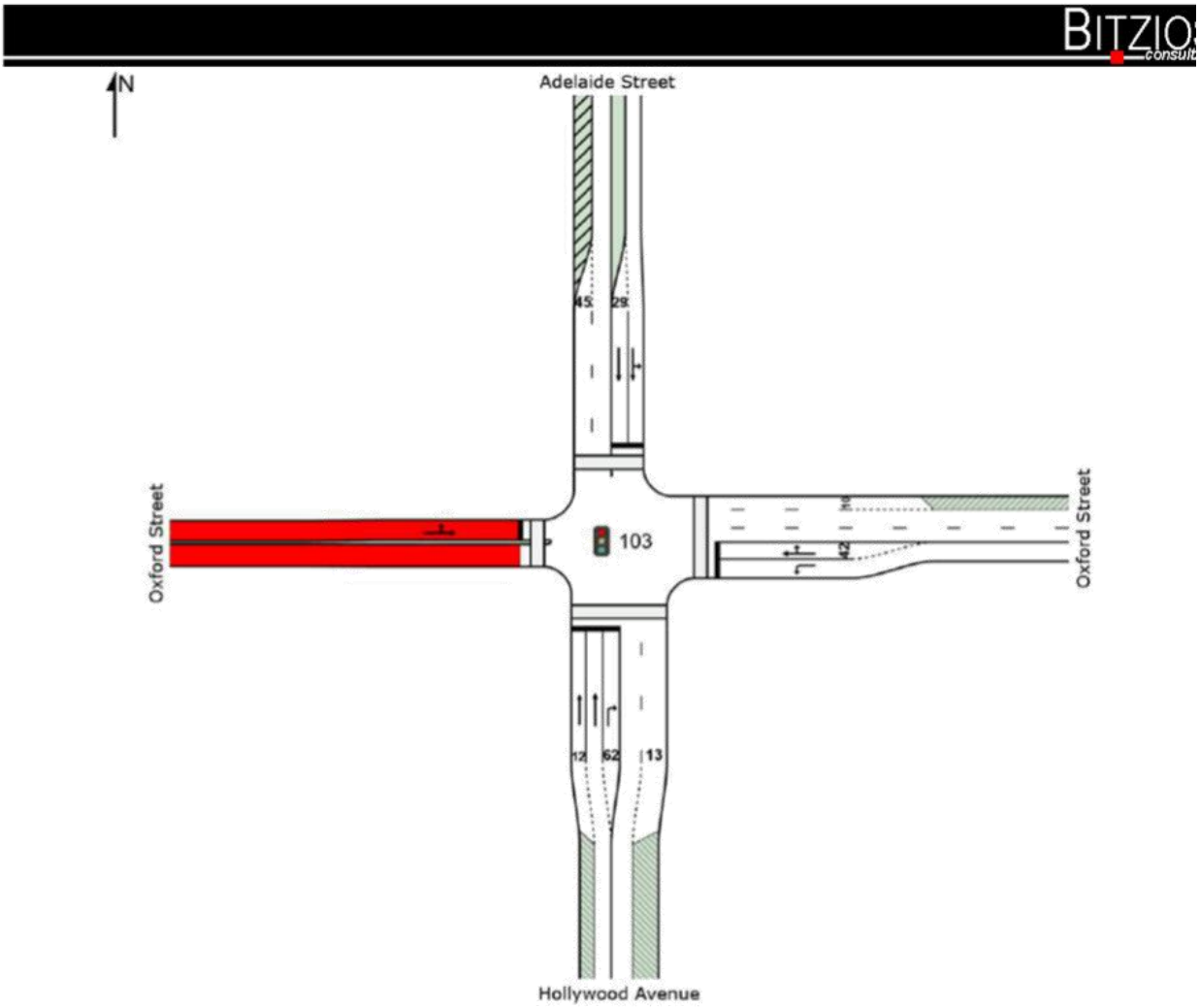
2.2 INTERSECTION LAYOUTS

Figure 2.1 and Figure 2.2 show the SIDRA intersection layouts adopted for each intersection base model assessment. The red shading on Oxford Street signifies that it is a Bus Only road. Note that the SIDRA layouts do not exactly mirror the actual intersection layout and the orientations shown are slightly different. However, this does not impact the intersection operations or performance in a significant manner.



Source: SIDRA Intersection V7

Figure 2.1: Grosvenor Street/Bronte Road/Oxford Street Intersection Base Model Layout



Source: SIDRA Intersection V7

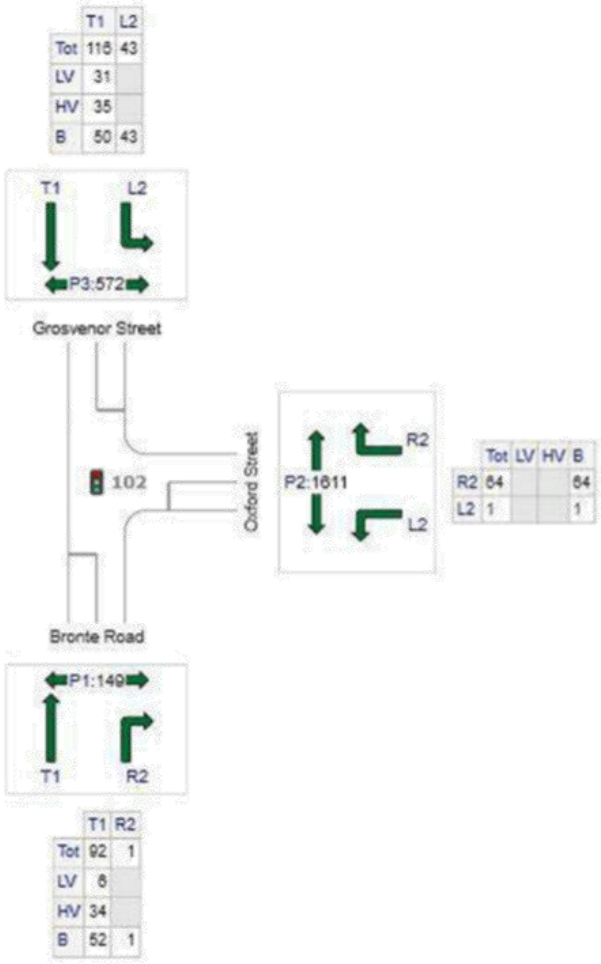
Figure 2.2: Oxford Street/Adelaide Street/Hollywood Avenue Intersection Base Model Layout

2.3 TRAFFIC SURVEYS

Traffic surveys were undertaken by Traffic Data & Control on Thursday 7 December 2017 between 7:00am-9:00am in the AM peak and between 4:00pm-6:00pm in the PM peak. From the traffic surveys, the critical peak hours were identified and the traffic volumes are provided below.

2.3.1 Grosvenor Street/Bronte Road/Oxford Street Intersection

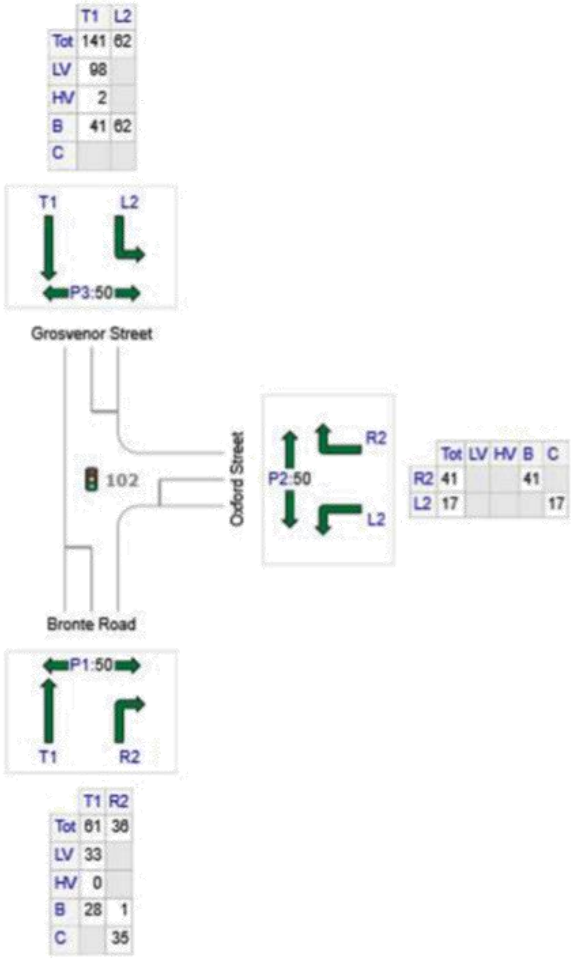
Figure 2.3 provides a summary of the traffic volumes between 8:00am and 9:00am for the AM peak period.



Source: SIDRA Intersection V7

Figure 2.3: Grosvenor Street/Bronte Road/Oxford Street Intersection AM Peak Traffic Distribution

Figure 2.4 provides a summary of the traffic volumes between 5:00pm and 6:00pm for the PM peak period.

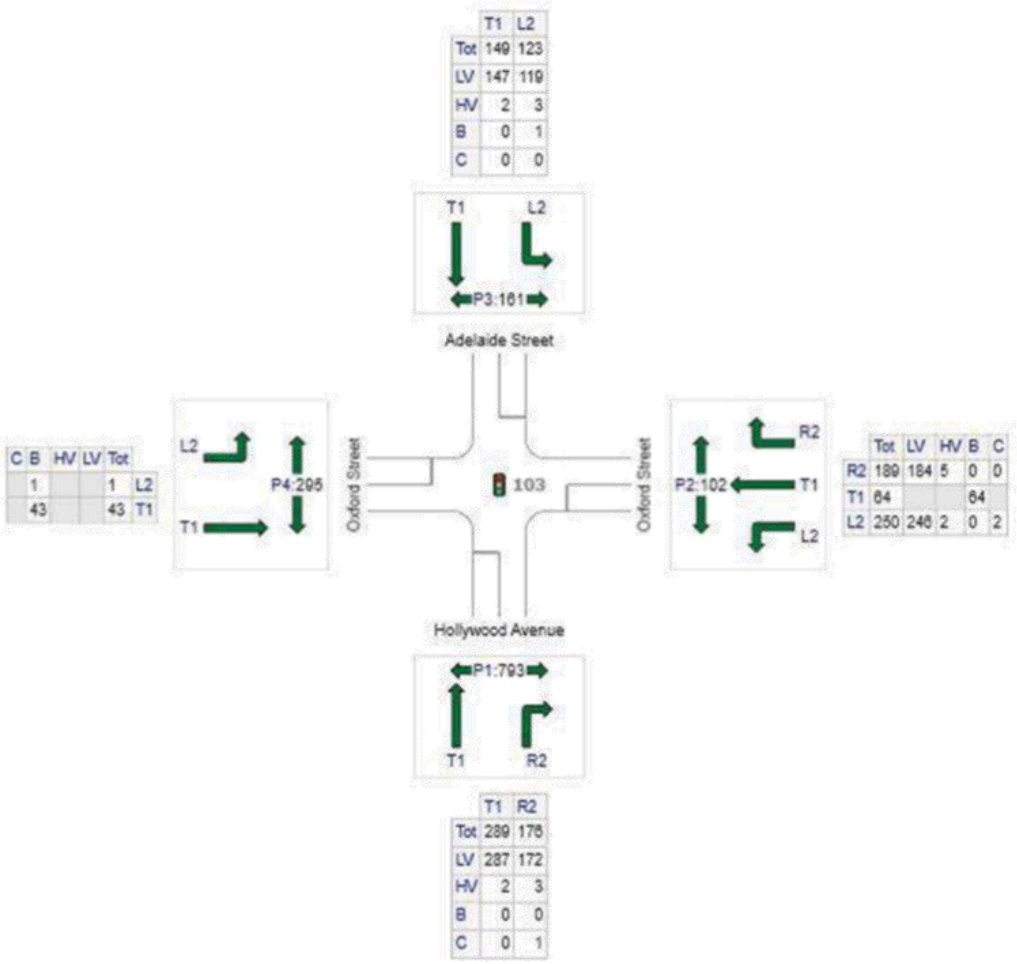


Source: SIDRA Intersection V7

Figure 2.4: Grosvenor Street/Bronte Road/Oxford Street Intersection PM Peak Traffic Distribution

2.3.2 Oxford Street/Adelaide Street/Hollywood Avenue Intersection

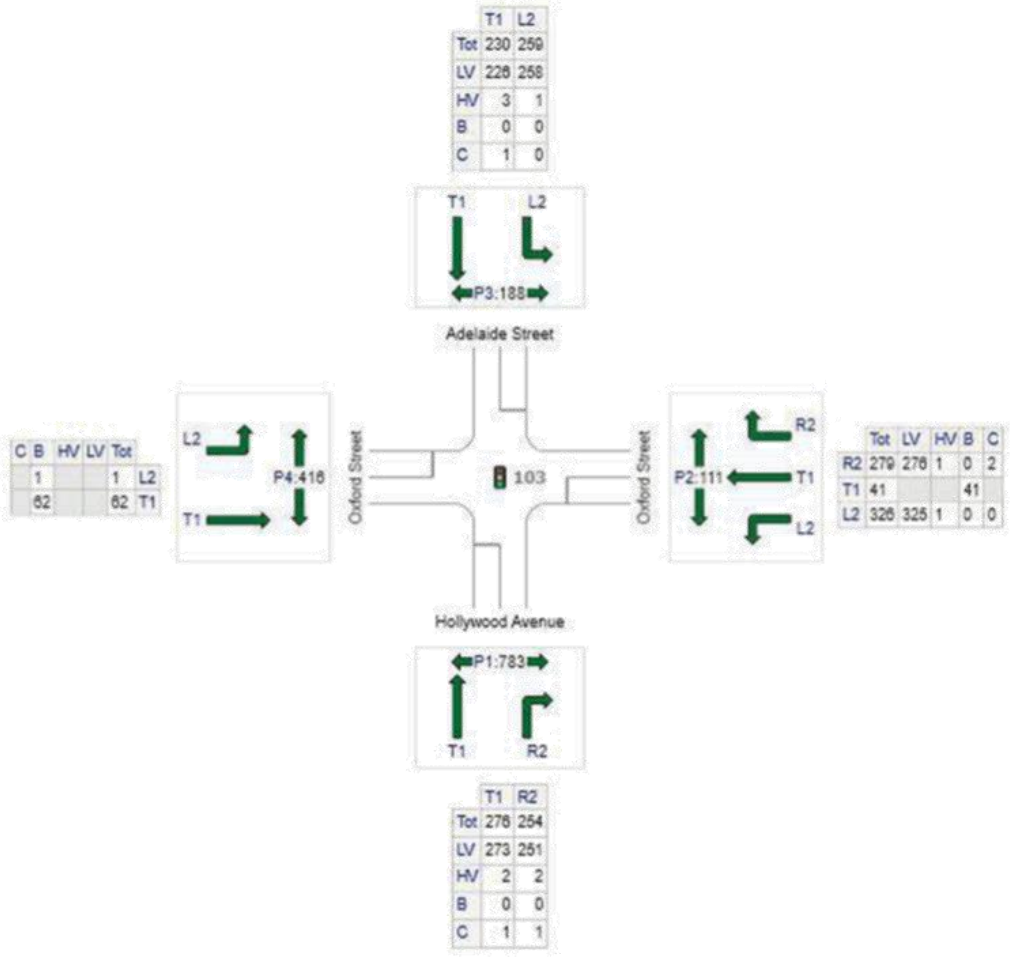
Figure 2.5 provides a summary of the traffic volumes between 8:00am and 9:00am for the AM peak period.



Source: SIDRA Intersection V7

Figure 2.5: Oxford Street/Adelaide Street/Hollywood Avenue Intersection AM Peak Traffic Distribution

Figure 2.6 provides a summary of the traffic volumes between 5:00pm and 6:00pm for the PM peak period.



Source: SIDRA Intersection V7

Figure 2.6: Oxford Street/Adelaide Street/Hollywood Avenue Intersection PM Peak Traffic Distribution

Detailed traffic surveys are provided in **Attachment A**.

2.4 BASE MODEL CALIBRATION

During the calibration and validation process, selected default SIDRA parameters, including right-turn critical gaps and follow-up headways (as per Austroads recommended values for gap acceptance parameters), as well as approach and exit cruise speeds were adjusted. These adjustments were made to calibrate the queue lengths in the models similar to those collected during the traffic surveys. To achieve this, the 'Arrival Type', 'Start Loss', 'End Gain' and 'Phase & Timing' options were adjusted in SIDRA. The key input parameters used for each AM and PM peak intersection model are provided in **Attachment B**.

2.4.1 Grosvenor Street/Bronte Road/Oxford Street Intersection

Table 2.1 provides a comparison of the observed and modelled (i.e. SIDRA 95th percentile back of queue) queue distances at the Grosvenor Street/Bronte Road/Oxford Street intersection. Queue surveys were not conducted at the Oxford Street East approach as it is a Bus Only road with small traffic volumes.

Table 2.1: Comparison of Observed and Modelled Queue Lengths at the Grosvenor Street/Bronte Road/Oxford Street Intersection

Approach	Peak Period	Observed Queue (m)	Modelled Queue (m) – SIDRA 95th Percentile Back of Queue
Grosvenor Street (North)	AM	23	27
	PM	25	27
Bronte Road (South)	AM	15	15
	PM	10	9

2.4.2 Oxford Street/Adelaide Street/Hollywood Avenue Intersection

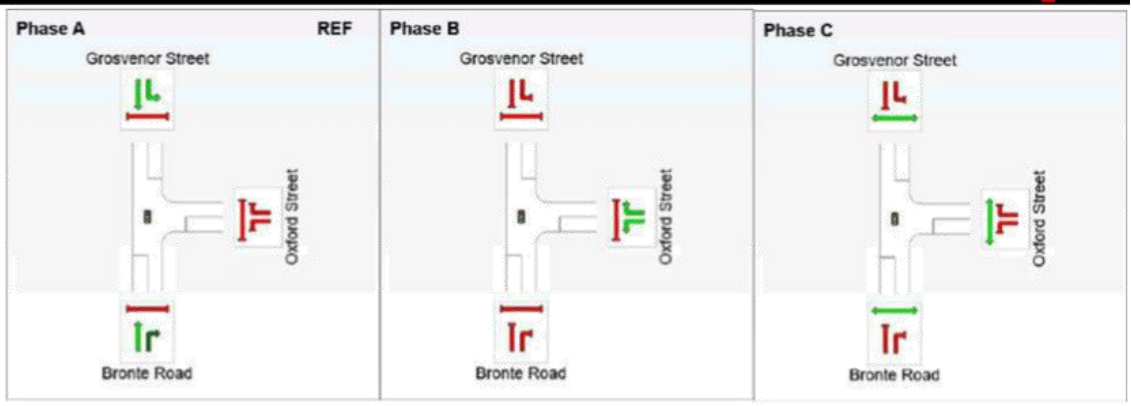
Table 2.2 provides a comparison of the observed and modelled (i.e. SIDRA 95th percentile back of queue) queue distances at the Oxford Street/Adelaide Street/Hollywood Avenue intersection. Queue surveys were not conducted at the Oxford Street West approach as it is a Bus Only road with small traffic volumes.

Table 2.2: Comparison of Observed and Modelled Queue Lengths at the Oxford Street/Adelaide Street/Hollywood Avenue Intersection

Approach	Peak Period	Direction	Observed Queue (m)	Modelled Queue (m) – SIDRA 95th Percentile Back of Queue
Adelaide Street (North)	AM	Left	21	26
		Through	34	49
	PM	Left	36	39
		Through	51	63
Oxford Street (East)	AM	Left	29	28
		Right	32	33
	PM	Left	36	44
		Right	36	48
Hollywood Avenue (South)	AM	Through	28	25
		Right	33	42
	PM	Through	30	37
		Right	41	50

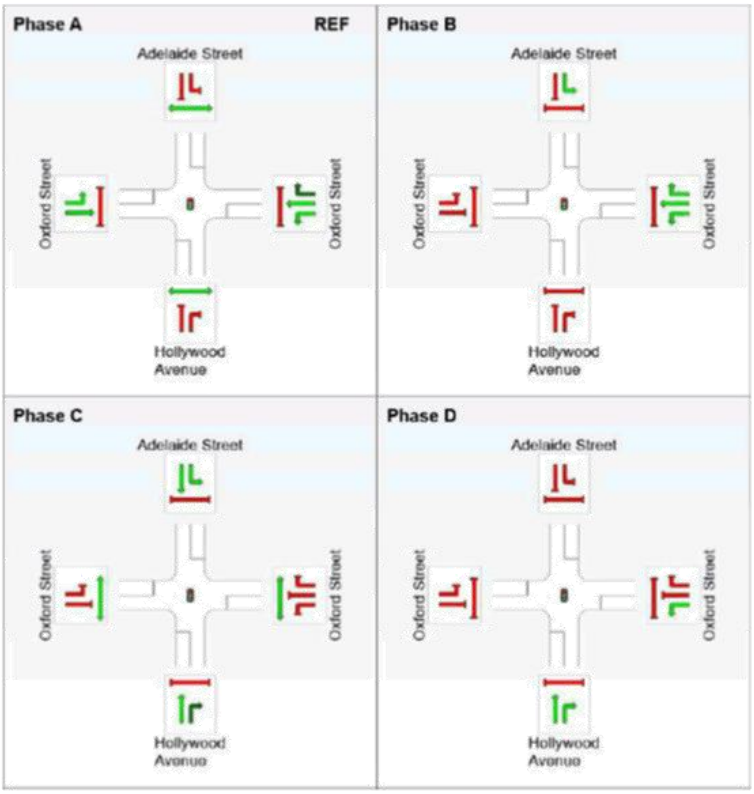
2.4.3 Signal Phasing

Signal data was provided by RMS for a typical weekday, being Thursday 16 December 2017. The average cycle times identified at the Grosvenor Street/Bronte Road/Oxford Street intersection were 60 seconds and 70 seconds in the AM and PM peaks respectively. The average cycle time identified at the Oxford Street/Adelaide Street/Hollywood Avenue intersection was 110 seconds in both the AM and PM peaks. The signal phase sequences of both intersections are shown in Figure 2.7 and Figure 2.8.



Source: SIDRA Intersection V7

Figure 2.7: Grosvenor Street/Bronte Road/Oxford Street Intersection Signal Phases



Source: SIDRA Intersection V7

Figure 2.8: Oxford Street/Adelaide Street/Hollywood Avenue Intersection Signal Phases

As shown above, the models appropriately replicate the existing traffic conditions attained through the traffic surveys and vehicle queue data and are therefore considered "fit for purpose" for testing alternative network configuration options as detailed below.

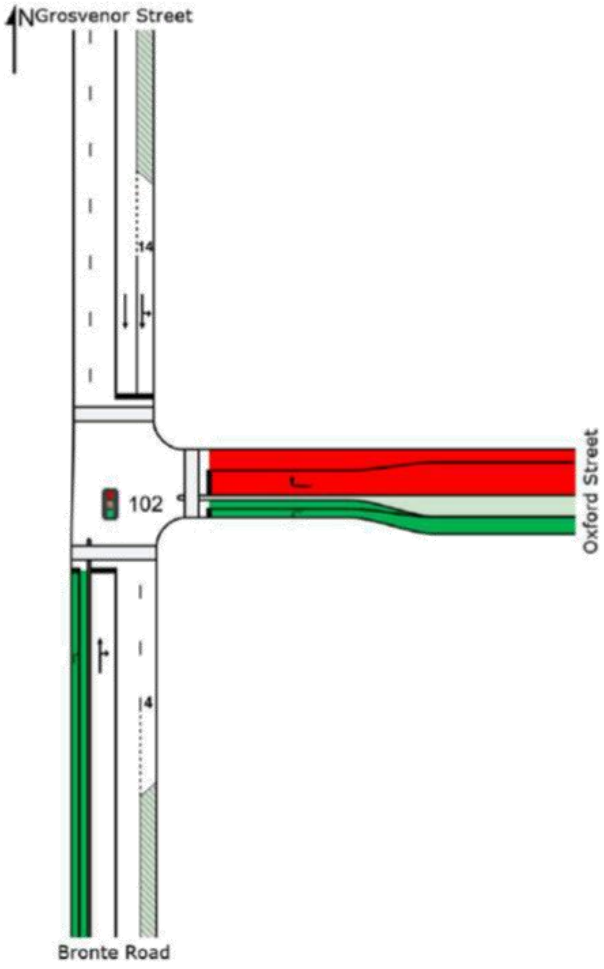
3. UPGRADED INTERSECTION ASSESSMENT

A number of changes were made to the subject intersections as part of the traffic signal upgrades to facilitate the construction of the East Bondi Junction cycleway. The upgraded intersections have been assessed using the calibrated base models, along with geometric layout changes, and are "fit for purpose". The future models incorporate the proposed cycleway, existing traffic volumes (i.e. no traffic growth rates have been applied to the future models), and all intersections were modelled as a network in SIDRA. This section details the changes to each intersection and their performance before and after the upgrades.

3.1 GROSVENOR STREET/BRONTE ROAD/OXFORD STREET INTERSECTION

Upgrades to the Grosvenor Street/Bronte Road/Oxford Street intersection are summarised below and illustrated in Figure 3.1.

- replacing the 33m short lane on the Bronte Road south approach with a two-way cycleway (green shade);
- replacing the 60m short lane on the Oxford Road east approach with a two-way cycleway (green shade; and
- banning the left turn from Oxford Street (east approach) onto Bronte Road (south approach), allowing the cycleway to run during Phase B.



Source: SIDRA Intersection V7

Figure 3.1: Grosvenor Street/Bronte Road/Oxford Street Upgraded Intersection Layout

Table 3.1 shows the criteria adopted by RMS in assessing the level of service of signalised intersections.

Table 3.1: RMS Level of Service Criteria for Signalised Intersections

Level of Service	Average Delay (seconds/vehicle)	Traffic Signals
A	<14	Good operation
B	15 to 28	Good with acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Operating near capacity
E	57 to 70	At capacity, at signals, incidents will cause excessive delays

Source: RMS RTA Guide to Traffic Development (2002)

Table 3.2 and Table 3.3 summarise the SIDRA results assessing both the base and upgraded models for the Grosvenor Street/Bronte Road/Oxford Street intersection in the AM and PM peak periods respectively. The existing phase times were used for the upgraded models.

Table 3.2: Grosvenor Street/Bronte Road/Oxford Street Intersection AM Peak SIDRA Results Summary

Approach	Degree of Saturation (v/c)	Level of Service	Average Delay (sec/veh)	95th Percentile Queue (m)	Degree of Saturation (v/c)	Level of Service	Average Delay (sec/veh)	95th Percentile Queue (m)
	Base Model				Upgraded Model			
Grosvenor Street (North)	0.126	B	17.9	26.7	0.294	B	17.9	26.5
Oxford Street (East)	0.525	C	31.6	25.4	0.501	C	28.6	25.7
Bronte Road (South)	0.302	B	17.6	14.5	0.240	B	19.2	29.7
Intersection	**0.525**	**B**	**20.6**	**26.7**	**0.501**	**B**	**22.2**	**29.7**

Table 3.3: Grosvenor Street/Bronte Road/Oxford Street Intersection PM Peak SIDRA Results Summary

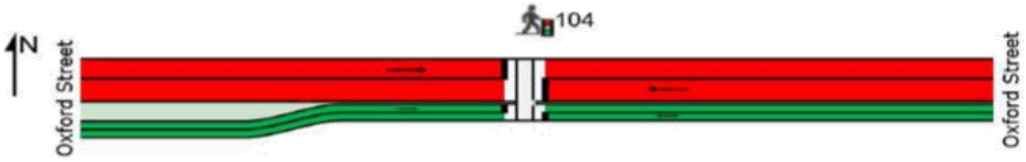
Approach	Degree of Saturation (v/c)	Level of Service	Average Delay (sec/veh)	95th Percentile Queue (m)	Degree of Saturation (v/c)	Level of Service	Average Delay (sec/veh)	95th Percentile Queue (m)
	Base Model				Upgraded Model			
Grosvenor Street (North)	0.284	B	18.7	26.9	0.295	B	19.7	27.7
Oxford Street (East)	0.458	C	38.3	19.6	0.202	B	27.9	16.4
Bronte Road (South)	0.063	B	18.5	8.2	0.126	B	22.4	16.9
Intersection	**0.458**	**B**	**21.3**	**26.9**	**0.295**	**B**	**21.8**	**27.7**

When compared to the existing intersection layout, the upgrades will not impact the subject intersection. The following conclusions were made:

- the upgraded intersection will have a similar overall level of service (LOS) compared with the base model, with both operating at a LOS B;
- the upgraded Oxford Street east approach will operate at a LOS B in the PM peak and have a degree of saturation of 0.202, compared with a LOS C and 0.458 in the base model;
- the upgraded intersection will have a reduced overall degree of saturation compared with the base model; and
- the upgraded intersection will have a slightly longer overall average delay compared with the base model.

3.2 OXFORD STREET MID-BLOCK CROSSING (PROPOSED)

A signalised mid-block crossing is proposed on Oxford Street, approximately 46 metres east of the Grosvenor Street/Bronte Road/Oxford Street intersection. Figure 3.2 shows the proposed layout.



Source: SIDRA Intersection V7

Figure 3.2: Oxford Street Mid-Block Crossing Layout (Proposed)

Table 3.4 summarises the SIDRA results assessing the proposed model for the Oxford Street mid-block crossing in the AM and PM peak periods. 50 and 60 second cycle times were used for the AM and PM peak models respectively, with SIDRA allocating fixed phase times.

Table 3.4: Grosvenor Street/Bronte Road/Oxford Street Intersection AM Peak SIDRA Results Summary

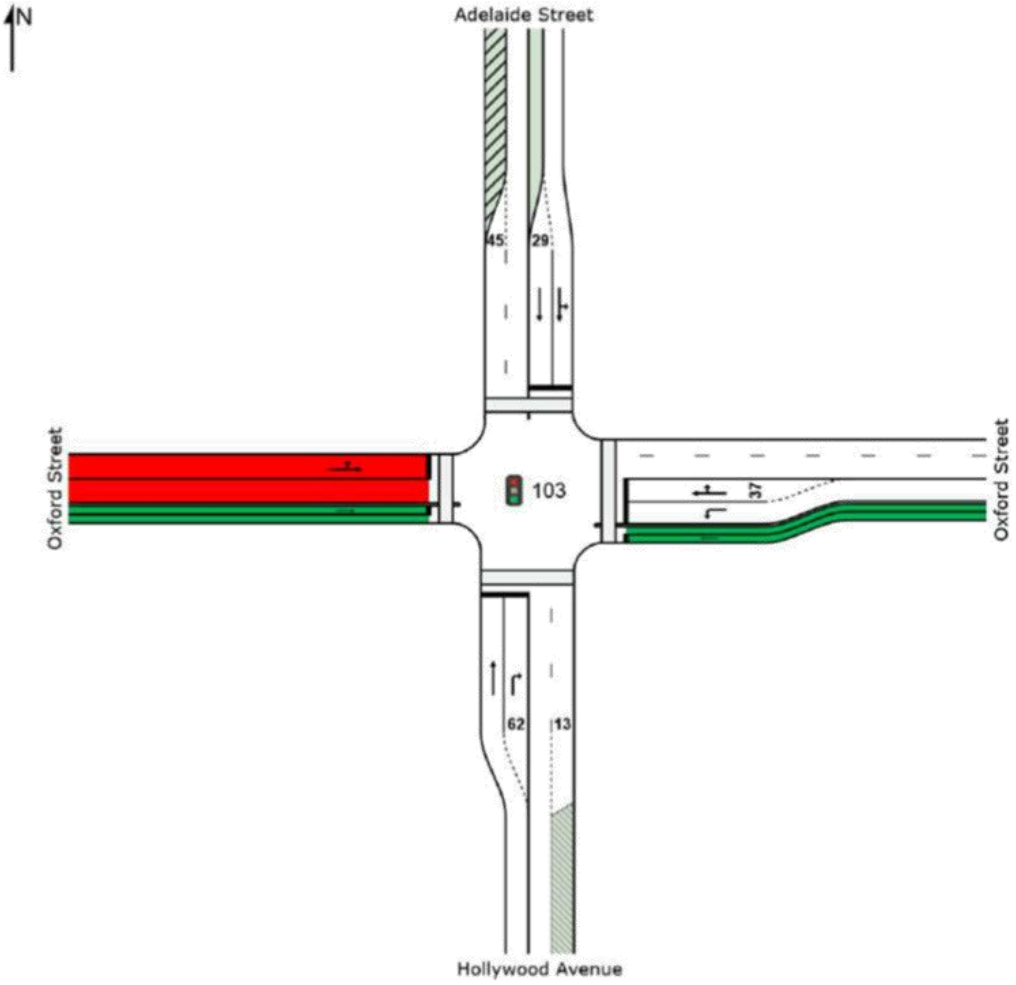
Approach	Degree of Saturation (v/c)	Level of Service	Average Delay (sec/veh)	95th Percentile Queue (m)	Degree of Saturation (v/c)	Level of Service	Average Delay (sec/veh)	95th Percentile Queue (m)
	AM Peak				PM Peak			
Oxford Street (East)	0.128	A	9.3	12.9	0.090	A	12.7	10.2
Oxford Street (West)	0.088	A	9.5	8.5	0.139	A	12.8	15.8
Intersection	**0.128**	**A**	**9.4**	**12.9**	**0.139**	**A**	**12.8**	**15.8**

The proposed mid-block crossing will operate at a LOS A with a negligible overall degree of saturation and average delay.

3.3 OXFORD STREET/ADELAIDE STREET/HOLLYWOOD AVENUE INTERSECTION

Upgrades to the Oxford Street/Adelaide Street/Hollywood Avenue intersection are summarised below and illustrated in Figure 3.3.

- add a two-way cycleway along the southern side of the Oxford Street east and west approaches (green shade);
- reduce the 42m through/right turn short lane on the Oxford Street east approach to 37m;
- remove the 12m short lane with parking on the Hollywood Avenue south approach; and
- allow the Oxford Street (east) left turn onto Hollywood Avenue (south) to only run during Phase B while the cycleway and southern pedestrian crossing run during Phase A.



Source: SIDRA Intersection V7

Figure 3.3: Oxford Street/Adelaide Street/Hollywood Avenue Upgraded Intersection Layout

Table 3.5 and Table 3.6 summarise the SIDRA results assessing both the base and upgraded models for the Oxford Street/Adelaide Street/Hollywood Avenue intersection in the AM and PM peak periods respectively. The existing 110 second cycle time was used for the upgraded models, with SIDRA allocating fixed phase times.

Table 3.5: Oxford Street/Adelaide Street/Hollywood Avenue Intersection AM Peak SIDRA Results Summary

Approach	Degree of Saturation (v/c)	Level of Service	Average Delay (sec/veh)	95th Percentile Queue (m)	Degree of Saturation (v/c)	Level of Service	Average Delay (sec/veh)	95th Percentile Queue (m)
	Base Model				Upgraded Model			
Adelaide Street (North)	0.558	C	31.5	49.4	0.472	B	28.1	46.0
Oxford Street (East)	0.433	A	10.5	32.6	0.409	B	18.6	33.3
Hollywood Avenue (South)	0.411	B	16.5	41.7	0.356	A	12.4	34.2
Oxford Street (West)	0.222	D	43.8	27.4	0.369	D	52.2	30.7
Intersection	**0.558**	**B**	**18.3**	**49.4**	**0.472**	**B**	**19.7**	**46.0**

Table 3.6 Oxford Street/Adelaide Street/Hollywood Avenue Intersection PM Peak SIDRA Results Summary

Approach	Degree of Saturation (v/c)	Level of Service	Average Delay (sec/veh)	95th Percentile Queue (m)	Degree of Saturation (v/c)	Level of Service	Average Delay (sec/veh)	95th Percentile Queue (m)
	Base Model				Upgraded Model			
Adelaide Street (North)	0.748	B	22.3	63.0	0.923	B	26.5	76.8
Oxford Street (East)	0.554	A	12.6	47.9	0.498	A	13.9	43.0
Hollywood Avenue (South)	0.518	B	19.1	50.2	0.454	B	19.2	51.5
Oxford Street (West)	0.316	D	44.7	40.1	0.528	D	51.9	44.9
Intersection	**0.748**	**B**	**18.5**	**63.0**	**0.923**	**B**	**21.0**	**76.8**

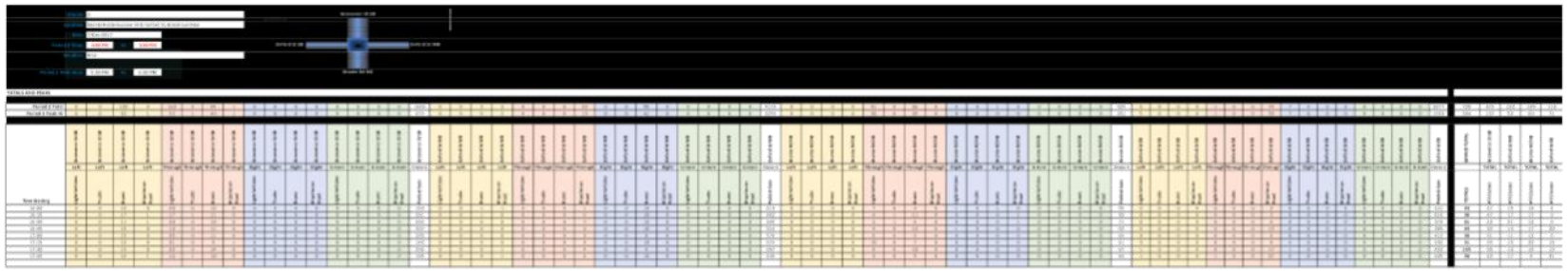
4. CONCLUSIONS

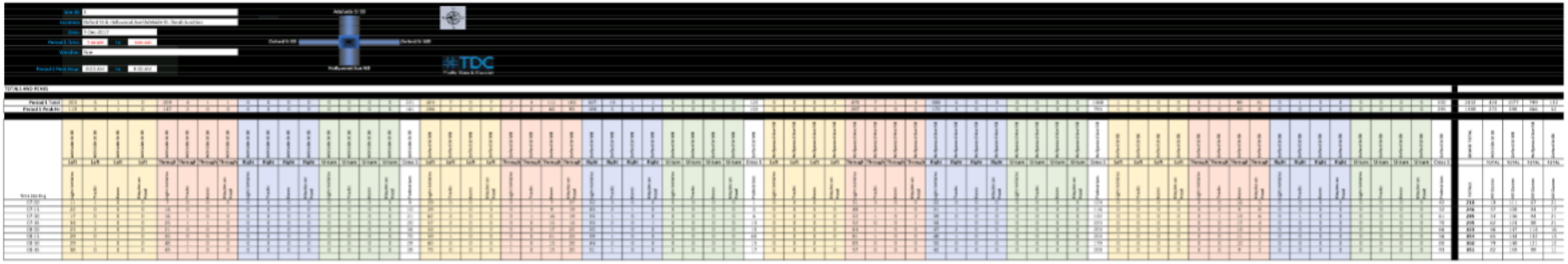
When compared to the existing intersection layout, the upgrades will slightly impact the subject intersections. It should be noted that the results for the upgraded PM peak model may only give an approximation of potential performance, given fixed phase times were allocated by SIDRA. The phase times can fluctuate based on demand, as is the current case, to optimise performance. The following observations were made:

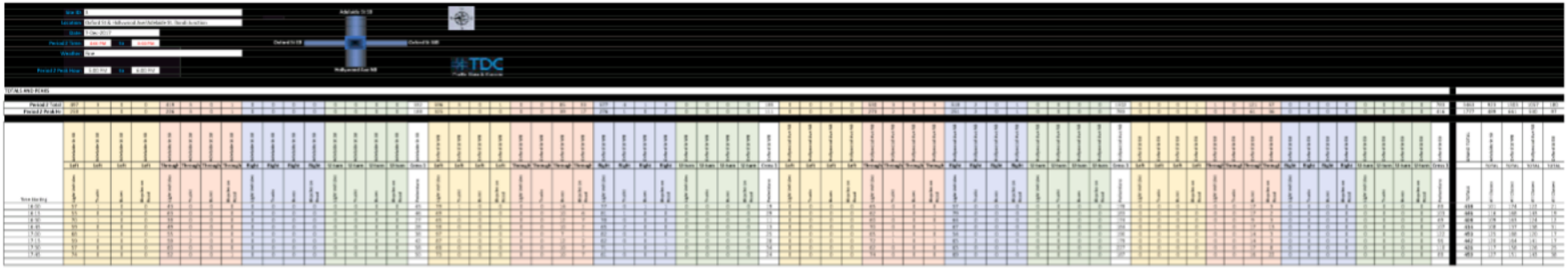
- the upgraded intersections will have a similar overall level of service (LOS) compared with the base model, with both operating at a LOS B;
- the upgraded intersections will have a reduced overall degree of saturation in the AM peak, but have a higher degree of saturation in the PM peak in comparison with the base model; and
- the upgraded Oxford Street east approach will have an average delay of 18.6 seconds in the AM peak, compared with 10.5 seconds in the base model.

ATTACHMENT A

TRAFFIC SURVEYS







ATTACHMENT B

SIDRA INPUT PARAMETERS

Grosvenor Street/Bronte Road/Oxford Street

Grosvenor Street north approach

Signal Coordination

- Arrival Type – 4 (left and through)

Bronte Road south approach

Gap Acceptance

- Follow-up Headway – 2.50 sec (right)

Signal Coordination

- Arrival Type – 2 (through and right)

Phasing & Timing

Phase Time (Optional) – AM Peak

- Phase A – 25 sec
- Phase B – 13 sec
- Phase C – 22 sec

Phase Time (Optional) – AM Peak

- Phase A – 29 sec
- Phase B – 19 sec
- Phase C – 22 sec

Yellow Time

- Phase C – 0 sec

All-Red Time

- Phase C – 6 sec

Timing Options

- User-Given Phase Times

Oxford Street Mid-Block Crossing

Phasing & Timing

Timing Options – AM Peak

- User-Given Cycle Time – 50 sec

Timing Options – PM Peak

- User-Given Cycle Time – 60 sec

Oxford Street/Adelaide Street/Hollywood Avenue – AM Peak

Adelaide Street north approach

Signal Coordination

- Arrival Type – 6 (through)

Oxford Street east approach

Gap Acceptance

- Critical Gap – 5.50 sec (right)
- Follow-up Headway – 3.50 sec (right)

Signal Coordination

- Arrival Type – 6 (through and right)
- End Gain – 2 sec (left, through and right)

Hollywood Avenue south approach

Signal Coordination

- Arrival Type – 6 (through and right)
- End Gain – 4 sec (through)

Phasing & Timing

Timing Options

- User-Given Cycle Time – 110 sec

Oxford Street/Adelaide Street/Hollywood Avenue – PM Peak

Adelaide Street north approach

Signal Coordination

- Arrival Type – 4 (left), 6 (through)
- Start Loss – 2 sec (left and through)
- End Gain – 4 sec (through)

Oxford Street east approach

Gap Acceptance

- Critical Gap – 5.50 sec (right)
- Follow-up Headway – 3.50 sec (right)

Signal Coordination

- Arrival Type – 6 (through and right)
- Start Loss – 2 sec (left, through and right)
- End Gain – 5 sec (left), 4 sec (through and right)

Hollywood Avenue south approach

Signal Coordination

- Arrival Type – 4 (through), 6 (right)
- Start Loss – 2 sec (right)
- End Gain – 4 sec (right)

Phasing & Timing

Timing Options

- User-Given Cycle Time – 110 sec

ATTACHMENT C

SIDRA OUTPUTS

MOVEMENT SUMMARY

Site: 102 [Grosvenor Street/Bronte Road/Oxford Street_AM Peak Base]

0800 - 0900
Signals - Fixed Time Coordinated Cycle Time = 60 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Bronte Road											
8	T1	92	93.5	0.126	17.5	LOS B	1.2	14.5	0.85	0.65	19.0
7	R2	1	100.0	0.126	21.1	LOS B	1.2	14.5	0.85	0.65	18.6
Approach		93	93.5	0.126	17.6	LOS B	1.2	14.5	0.85	0.65	19.0
East: Oxford Street											
6	L2	1	100.0	0.008	27.8	LOS B	0.0	0.4	0.90	0.56	14.4
4	R2	64	100.0	0.525	31.7	LOS C	2.0	26.0	0.98	0.82	15.3
Approach		65	100.0	0.525	31.7	LOS C	2.0	26.0	0.98	0.81	15.3
North: Grosvenor Street											
3	L2	43	100.0	0.132	20.7	LOS B	0.8	10.5	0.64	0.68	20.1
2	T1	116	73.3	0.302	16.9	LOS B	2.3	26.7	0.69	0.56	19.7
Approach		159	80.5	0.302	17.9	LOS B	2.3	26.7	0.68	0.59	19.9
All Vehicles		317	88.3	0.525	20.6	LOS B	2.3	26.7	0.79	0.66	18.1

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	149	22.7	LOS C	0.2	0.2	0.87	0.87
P2	East Full Crossing	1611	23.2	LOS C	2.5	2.5	0.91	0.91
P3	North Full Crossing	572	23.1	LOS C	0.9	0.9	0.89	0.89
All Pedestrians		2332	23.2	LOS C			0.90	0.90

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

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Wednesday, 14 February 2018 12:34:32 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Base\P2996.001M East Bondi Jct_Base.sip7

PHASING SUMMARY

Site: 102 [Grosvenor Street/Bronte Road/Oxford Street_AM Peak Base]

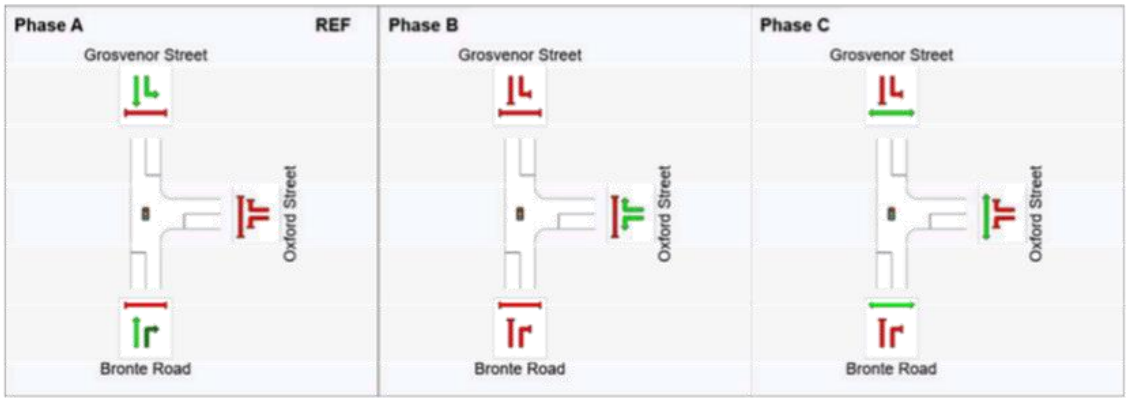
0800 - 0900
Signals - Fixed Time Coordinated Cycle Time = 60 seconds (User-Given Phase Times)

Phase Times specified by the user
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

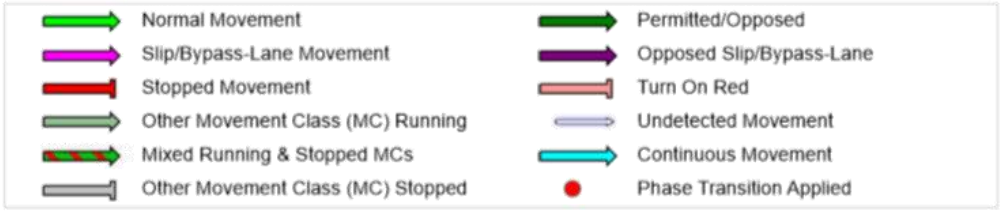
Phase Timing Results

Phase	A	B	C
Phase Change Time (sec)	0	25	38
Green Time (sec)	19	7	16
Phase Time (sec)	25	13	22
Phase Split	42%	22%	37%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase



SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Wednesday, 14 February 2018 12:34:32 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Base\P2996.001M East Bondi Jct_Base.sip7

MOVEMENT SUMMARY

Site: 103 [Oxford Street/Adelaide Street/Hollywood Avenue_AM Peak Base]

0800 - 0900
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hollywood Avenue											
9	T1	289	0.7	0.325	9.5	LOS A	3.6	25.4	0.31	0.26	29.6
8	R2	176	1.7	0.411	27.9	LOS B	5.9	41.7	0.66	0.75	18.1
Approach		465	1.1	0.411	16.5	LOS B	5.9	41.7	0.44	0.45	23.4
East: Oxford Street											
6	L2	250	0.8	0.187	9.2	LOS A	4.0	28.1	0.33	0.64	31.0
5	T1	64	100.0	0.433	11.5	LOS A	3.8	32.6	0.31	0.65	23.3
4	R2	189	2.6	0.433	12.1	LOS A	3.8	32.6	0.31	0.65	24.7
Approach		503	14.1	0.433	10.5	LOS A	4.0	32.6	0.32	0.64	27.2
North: Adelaide Street											
3	L2	123	3.3	0.146	20.9	LOS B	3.6	25.7	0.58	0.70	19.1
2	T1	149	1.3	0.558	40.2	LOS C	7.0	49.4	0.89	0.72	12.8
Approach		272	2.2	0.558	31.5	LOS C	7.0	49.4	0.75	0.71	15.0
West: Oxford Street											
12	L2	1	100.0	0.222	44.8	LOS D	2.1	27.4	0.90	0.69	12.2
11	T1	43	100.0	0.222	43.7	LOS D	2.1	27.4	0.90	0.69	13.7
Approach		44	100.0	0.222	43.8	LOS D	2.1	27.4	0.90	0.69	13.7
All Vehicles		1284	9.8	0.558	18.3	LOS B	7.0	49.4	0.47	0.59	21.6

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	793	48.9	LOS E	2.4	2.4	0.96	0.96
P2	East Full Crossing	102	48.4	LOS E	0.3	0.3	0.94	0.94
P3	North Full Crossing	161	44.9	LOS E	0.5	0.5	0.91	0.91
P4	West Full Crossing	295	45.1	LOS E	0.8	0.8	0.91	0.91
All Pedestrians		1351	47.6	LOS E			0.94	0.94

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

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Wednesday, 14 February 2018 12:34:33 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Base\P2996.001M East Bondi Jct_Base.sip7

PHASING SUMMARY

Site: 103 [Oxford Street/Adelaide Street/Hollywood Avenue_AM Peak Base]

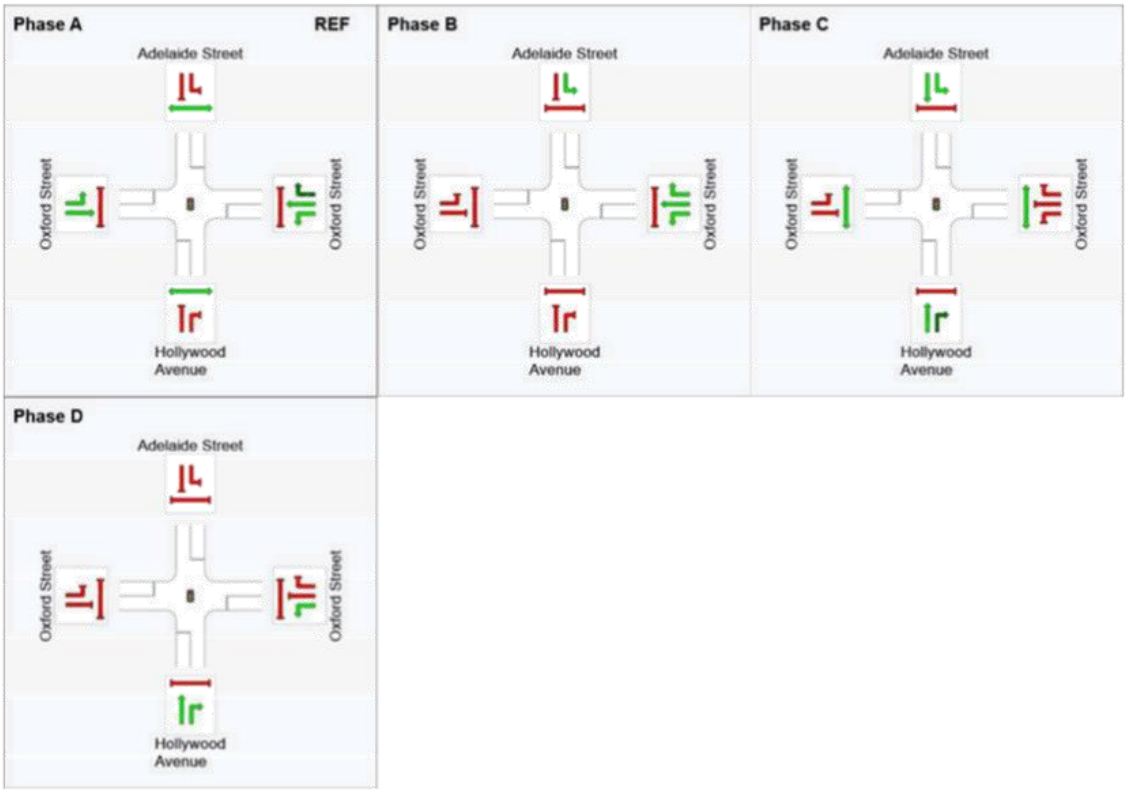
0800 - 0900
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (User-Given Cycle Time)

Phase Times determined by the program
Green Split Priority applies
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

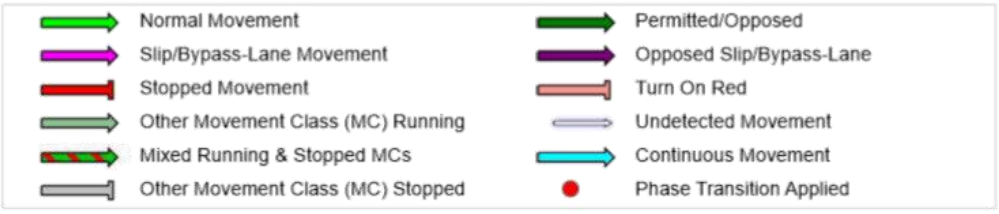
Phase Timing Results

Phase	A	B	C	D
Phase Change Time (sec)	0	25	63	85
Green Time (sec)	19	32	16	19
Phase Time (sec)	25	38	22	25
Phase Split	23%	35%	20%	23%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase



SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Wednesday, 14 February 2018 12:34:33 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Base\P2996.001M East Bondi Jct_Base.sip7

MOVEMENT SUMMARY

Site: 102 [Grosvenor Street/Bronte Road/Oxford Street_AM Peak Future]

Network: N101 [AM Peak_Future]

0800 - 0900
Signals - Fixed Time Coordinated Cycle Time = 60 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Bronte Road													
8	T1	92	93.5	92	93.5	0.240	18.3	LOS B	2.4	29.7	0.87	0.70	17.3
7	R2	10	10.0	10	10.0	0.240	27.1	LOS B	2.4	29.7	0.94	0.64	5.3
Approach		102	85.3	102	85.3	0.240	19.2	LOS B	2.4	29.7	0.88	0.69	16.1
East: Oxford Street													
6	L2	93	0.0	93	0.0	0.135	26.7	LOS B	2.4	6.6	0.93	0.70	8.1
4	R2	64	100.0	64	100.0	0.501	31.5	LOS C	2.0	25.7	0.98	0.79	11.1
Approach		157	40.8	157	40.8	0.501	28.6	LOS C	2.4	25.7	0.95	0.74	9.5
North: Grosvenor Street													
3	L2	43	100.0	43	100.0	0.134	20.7	LOS B	0.8	10.5	0.64	0.68	13.9
2	T1	116	73.3	116	73.3	0.294	16.8	LOS B	2.3	26.5	0.69	0.56	18.5
Approach		159	80.5	159	80.5	0.294	17.9	LOS B	2.3	26.5	0.68	0.59	17.2
All Vehicles		418	66.7	418	66.7	0.501	22.2	LOS B	2.4	29.7	0.83	0.67	13.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	23.5	LOS C	0.1	0.1	0.89	0.89
P2	East Full Crossing	50	21.7	LOS C	0.1	0.1	0.85	0.85
P3	North Full Crossing	50	23.5	LOS C	0.1	0.1	0.89	0.89
All Pedestrians		150	22.9	LOS C			0.87	0.87

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

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Thursday, 15 February 2018 4:43:37 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Future\P2996.001M East Bondi Jct_Future_AG.sip7

PHASING SUMMARY

Site: 102 [Grosvenor Street/Bronte Road/Oxford Street_AM Peak Future]

Network: N101 [AM Peak_Future]

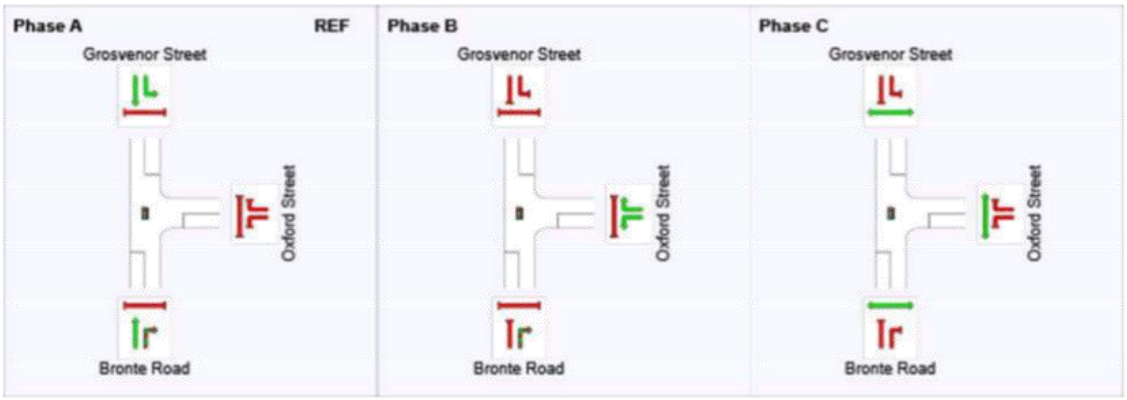
0800 - 0900
Signals - Fixed Time Coordinated Cycle Time = 60 seconds (User-Given Phase Times)

Phase Times specified by the user
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

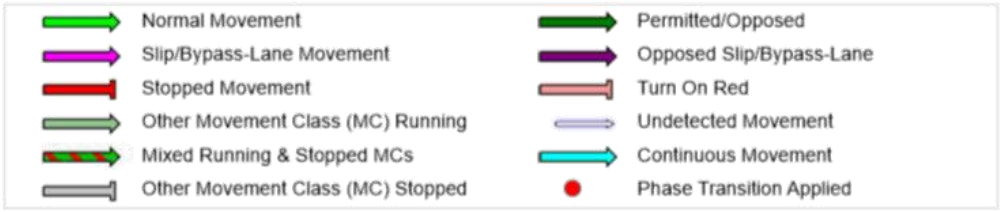
Phase Timing Results

Phase	A	B	C
Phase Change Time (sec)	0	25	38
Green Time (sec)	19	7	16
Phase Time (sec)	25	13	22
Phase Split	42%	22%	37%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase



SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Thursday, 15 February 2018 4:43:37 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Future\P2996.001M East Bondi Jct_Future_AG.sip7

MOVEMENT SUMMARY

Site: 104 [Oxford Street Mid-Block Crossing_AM Peak Future]

Network: N101 [AM Peak_Future]

0800 - 0900
Pedestrian Crossing (Signals) - Fixed Time Isolated Cycle Time = 50 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Oxford Street													
5	T1	157	40.8	157	40.8	0.128	9.3	LOS A	1.3	3.5	0.63	0.48	16.6
Approach		157	40.8	157	40.8	0.128	9.3	LOS A	1.3	12.9	0.63	0.48	16.6
West: Oxford Street													
11	T1	52	82.7	52	82.7	0.088	9.5	LOS A	0.7	8.5	0.62	0.47	11.2
Approach		52	82.7	52	82.7	0.088	9.5	LOS A	0.7	8.5	0.62	0.47	11.2
All Vehicles		209	51.2	209	51.2	0.128	9.4	LOS A	1.3	12.9	0.62	0.48	15.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	West Full Crossing	327	19.6	LOS B	0.4	0.4	0.89	0.89
All Pedestrians		327	19.6	LOS B			0.89	0.89

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

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Thursday, 15 February 2018 4:43:37 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Future\P2996.001M East Bondi Jct_Future_AG.sip7

PHASING SUMMARY

Site: 104 [Oxford Street Mid-Block Crossing_AM Peak Future]

Network: N101 [AM Peak_Future]

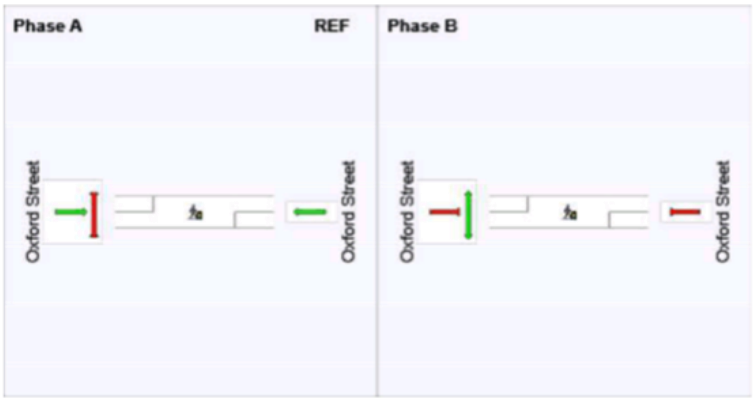
0800 - 0900
Pedestrian Crossing (Signals) - Fixed Time Isolated Cycle Time = 50 seconds (User-Given Cycle Time)

Phase Times determined by the program
Phase Sequence: Two-Phase
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Results

Phase	A	B
Phase Change Time (sec)	0	27
Green Time (sec)	21	17
Phase Time (sec)	27	23
Phase Split	54%	46%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Thursday, 15 February 2018 4:43:37 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Future\P2996.001M East Bondi Jct_Future_AG.sip7

MOVEMENT SUMMARY

Site: 103 [Oxford Street/Adelaide Street/Hollywood Avenue_AM Peak Future]

Network: N101 [AM Peak_Future]

0800 - 0900
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hollywood Avenue													
9	T1	289	0.7	289	0.7	0.356	6.6	LOS A	3.6	25.2	0.25	0.21	34.2
8	R2	176	1.7	176	1.7	0.347	22.0	LOS B	4.8	34.2	0.55	0.68	21.0
Approach		465	1.1	465	1.1	0.356	12.4	LOS A	4.8	34.2	0.36	0.39	27.1
East: Oxford Street													
6	L2	250	0.8	250	0.8	0.271	13.4	LOS A	4.5	31.4	0.61	0.72	26.8
5	T1	157	40.8	157	40.8	0.409	33.5	LOS C	4.2	11.2	0.65	0.71	12.7
4	R2	189	2.6	189	2.6	0.409	13.2	LOS A	3.9	33.3	0.32	0.71	23.9
Approach		596	11.9	596	11.9	0.409	18.6	LOS B	4.5	33.3	0.53	0.71	20.4
North: Adelaide Street													
3	L2	123	3.3	123	3.3	0.128	17.5	LOS B	3.2	22.8	0.52	0.68	21.2
2	T1	149	1.3	149	1.3	0.472	36.9	LOS C	6.5	46.0	0.84	0.68	13.9
Approach		272	2.2	272	2.2	0.472	28.1	LOS B	6.5	46.0	0.69	0.68	16.4
West: Oxford Street													
12	L2	1	100.0	1	100.0	0.369	54.3	LOS D	2.4	30.7	0.97	0.74	9.1
11	T1	52	82.7	52	82.7	0.369	52.1	LOS D	2.4	30.7	0.96	0.71	10.8
Approach		53	83.0	53	83.0	0.369	52.2	LOS D	2.4	30.7	0.96	0.71	10.8
All Vehicles		1386	9.1	1386	9.1	0.472	19.7	LOS B	6.5	46.0	0.52	0.60	20.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	49.3	LOS E	0.1	0.1	0.95	0.95
P2	East Full Crossing	50	49.3	LOS E	0.1	0.1	0.95	0.95
P3	North Full Crossing	50	49.3	LOS E	0.1	0.1	0.95	0.95
P4	West Full Crossing	50	44.6	LOS E	0.1	0.1	0.90	0.90
All Pedestrians		200	48.1	LOS E			0.94	0.94

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

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Thursday, 15 February 2018 4:43:37 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Future\P2996.001M East Bondi Jct_Future_AG.sip7

PHASING SUMMARY

Site: 103 [Oxford Street/Adelaide Street/Hollywood Avenue_AM Peak Future]

Network: N101 [AM Peak_Future]

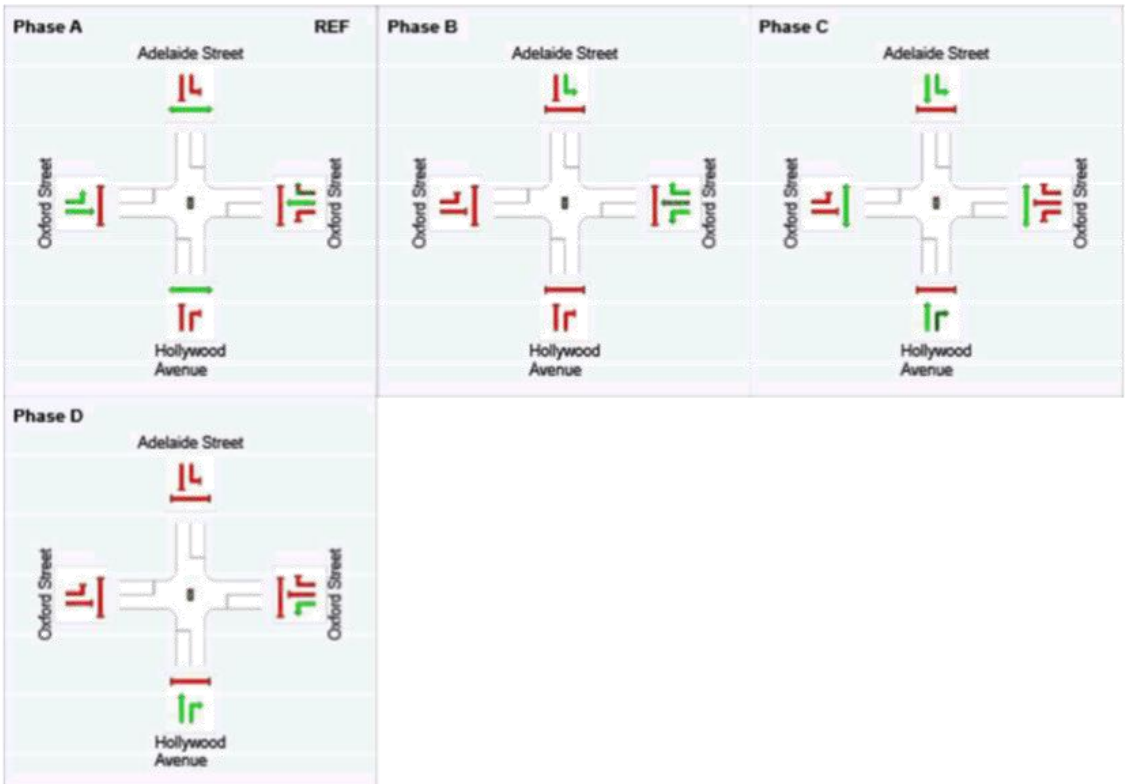
0800 - 0900
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (User-Given Cycle Time)

Phase Times determined by the program
Green Split Priority applies
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Phase Timing Results

Phase	A	B	C	D
Phase Change Time (sec)	0	17	59	83
Green Time (sec)	11	36	18	21
Phase Time (sec)	17	42	24	27
Phase Split	15%	38%	22%	25%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Thursday, 15 February 2018 4:43:37 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Future\P2996.001M East Bondi Jct_Future_AG.sip7

MOVEMENT SUMMARY

Site: 102 [Grosvenor Street/Bronte Road/Oxford Street_PM Peak Base]

1700 - 1800
Signals - Fixed Time Coordinated Cycle Time = 70 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Bronte Road											
8	T1	61	45.9	0.063	18.4	LOS B	0.8	8.2	0.81	0.61	18.7
7	R2	1	100.0	0.063	22.0	LOS B	0.8	8.2	0.81	0.62	18.6
Approach		62	46.8	0.063	18.5	LOS B	0.8	8.2	0.81	0.61	18.7
East: Oxford Street											
6	L2	1	100.0	0.011	34.9	LOS C	0.0	0.4	0.93	0.57	13.0
4	R2	41	100.0	0.458	38.4	LOS C	1.5	19.6	0.99	0.75	13.9
Approach		42	100.0	0.458	38.3	LOS C	1.5	19.6	0.99	0.75	13.9
North: Grosvenor Street											
3	L2	62	100.0	0.176	21.7	LOS B	1.3	16.8	0.62	0.69	19.7
2	T1	141	30.5	0.284	17.4	LOS B	3.0	26.9	0.65	0.53	19.4
Approach		203	51.7	0.284	18.7	LOS B	3.0	26.9	0.64	0.58	19.5
All Vehicles		307	57.3	0.458	21.3	LOS B	3.0	26.9	0.72	0.61	18.0

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	261	22.6	LOS C	0.4	0.4	0.81	0.81
P2	East Full Crossing	2259	23.9	LOS C	3.9	3.9	0.87	0.87
P3	North Full Crossing	879	23.3	LOS C	1.5	1.5	0.83	0.83
All Pedestrians		3399	23.6	LOS C			0.85	0.85

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

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Wednesday, 14 February 2018 12:34:34 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Base\P2996.001M East Bondi Jct_Base.sip7

PHASING SUMMARY

Site: 102 [Grosvenor Street/Bronte Road/Oxford Street_PM Peak Base]

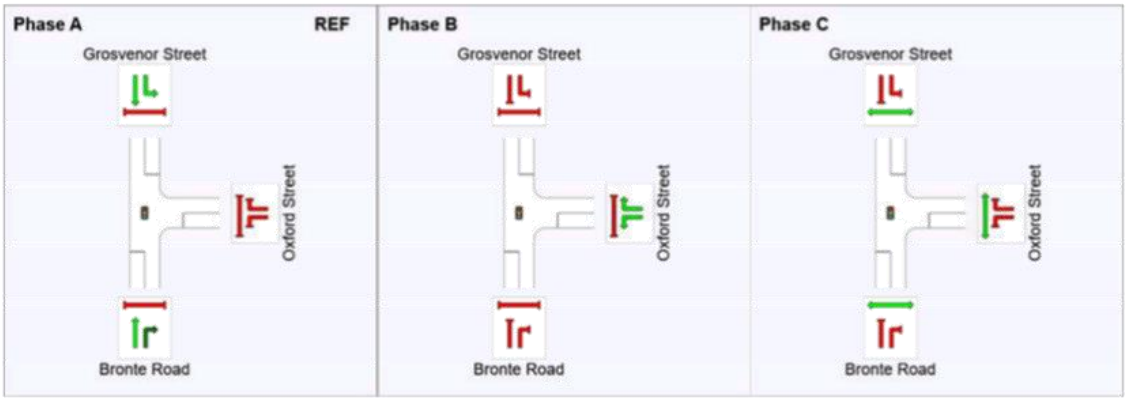
1700 - 1800
Signals - Fixed Time Coordinated Cycle Time = 70 seconds (User-Given Cycle Time)

Phase Times determined by the program
Green Split Priority applies
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

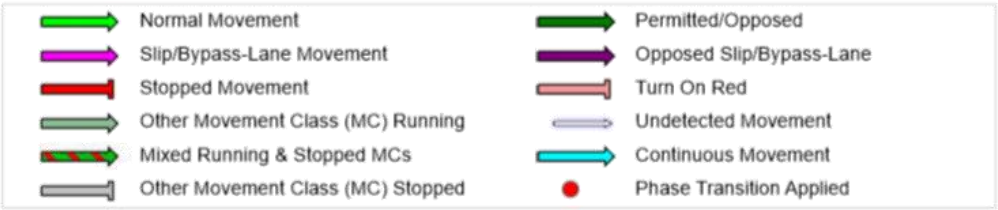
Phase Timing Results

Phase	A	B	C
Phase Change Time (sec)	0	30	42
Green Time (sec)	24	6	22
Phase Time (sec)	30	12	28
Phase Split	43%	17%	40%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase



SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Wednesday, 14 February 2018 12:34:34 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Base\P2996.001M East Bondi Jct_Base.sip7

MOVEMENT SUMMARY

Site: 103 [Oxford Street/Adelaide Street/Hollywood Avenue_PM Peak Base]

1700 - 1800
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hollywood Avenue											
9	T1	276	0.7	0.290	17.5	LOS B	5.3	37.4	0.51	0.42	22.1
8	R2	254	0.8	0.518	20.9	LOS B	7.1	50.2	0.56	0.77	21.3
Approach		530	0.8	0.518	19.1	LOS B	7.1	50.2	0.53	0.58	21.7
East: Oxford Street											
6	L2	326	0.3	0.257	10.9	LOS A	6.3	44.0	0.39	0.66	29.2
5	T1	41	100.0	0.554	13.9	LOS A	6.2	47.9	0.40	0.75	22.1
4	R2	279	0.4	0.554	14.4	LOS A	6.2	47.9	0.40	0.75	22.5
Approach		646	6.7	0.554	12.6	LOS A	6.3	47.9	0.39	0.71	25.6
North: Adelaide Street											
3	L2	259	0.4	0.291	17.0	LOS B	5.5	38.6	0.43	0.67	21.6
2	T1	230	1.3	0.748	28.3	LOS B	8.9	63.0	0.75	0.64	16.4
Approach		489	0.8	0.748	22.3	LOS B	8.9	63.0	0.58	0.65	18.8
West: Oxford Street											
12	L2	1	100.0	0.316	45.8	LOS D	3.1	40.1	0.92	0.72	12.1
11	T1	62	100.0	0.316	44.6	LOS D	3.1	40.1	0.92	0.72	13.6
Approach		63	100.0	0.316	44.7	LOS D	3.1	40.1	0.92	0.72	13.6
All Vehicles		1728	6.6	0.748	18.5	LOS B	8.9	63.0	0.51	0.65	21.4

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	783	48.9	LOS E	2.3	2.3	0.96	0.96
P2	East Full Crossing	111	41.2	LOS E	0.3	0.3	0.87	0.87
P3	North Full Crossing	188	44.9	LOS E	0.5	0.5	0.91	0.91
P4	West Full Crossing	416	38.3	LOS D	1.1	1.1	0.84	0.84
All Pedestrians		1498	44.9	LOS E			0.91	0.91

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

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Wednesday, 14 February 2018 12:34:35 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Base\P2996.001M East Bondi Jct_Base.sip7

PHASING SUMMARY

Site: 103 [Oxford Street/Adelaide Street/Hollywood Avenue_PM Peak Base]

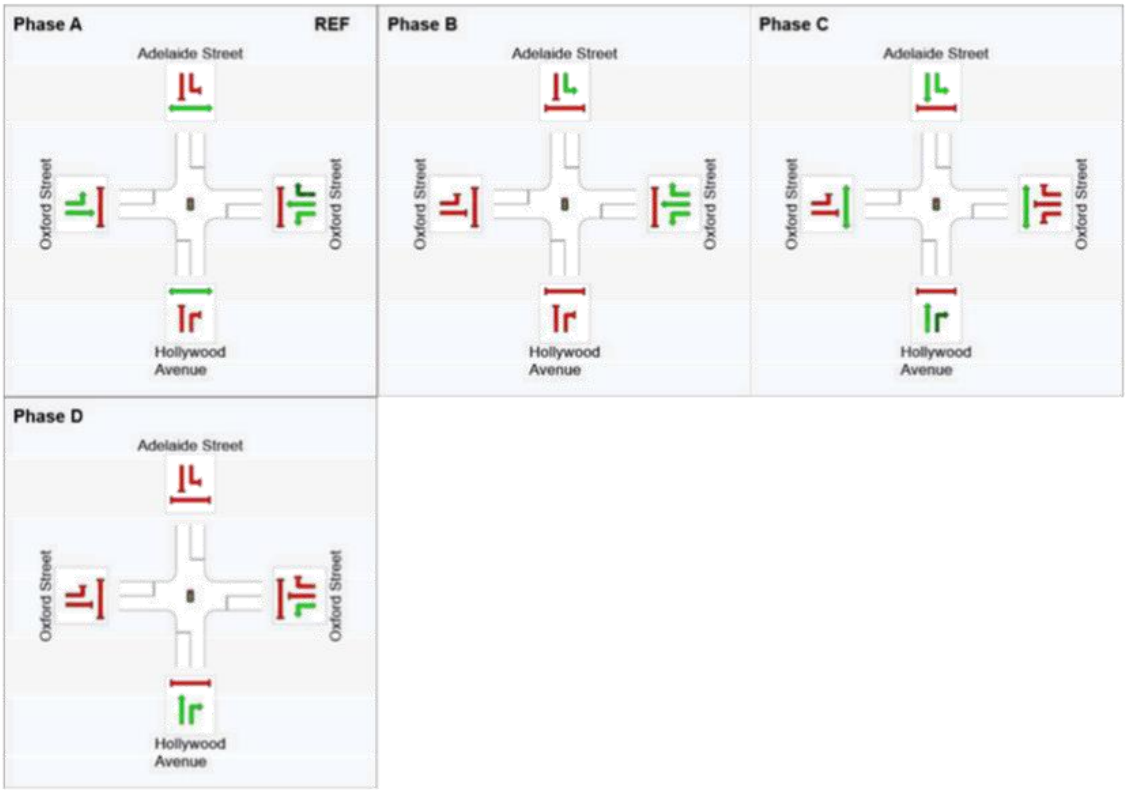
1700 - 1800
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (User-Given Cycle Time)

Phase Times determined by the program
Green Split Priority applies
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

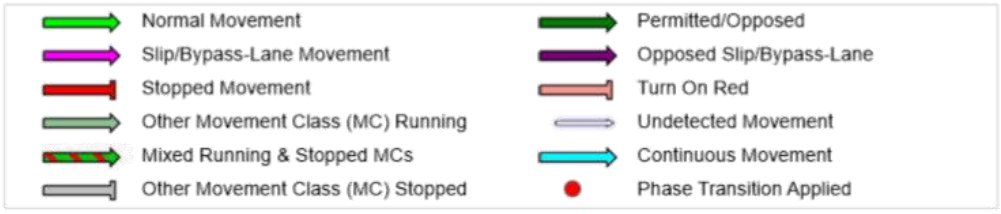
Phase Timing Results

Phase	A	B	C	D
Phase Change Time (sec)	0	25	56	86
Green Time (sec)	19	25	24	18
Phase Time (sec)	25	31	30	24
Phase Split	23%	28%	27%	22%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase



SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Wednesday, 14 February 2018 12:34:35 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Base\P2996.001M East Bondi Jct_Base.sip7

MOVEMENT SUMMARY

Site: 102 [Grosvenor Street/Bronte Road/Oxford Street_PM Peak Future]

Network: N101 [PM Peak_Future]

1700 - 1800
Signals - Fixed Time Coordinated Cycle Time = 70 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Bronte Road													
8	T1	61	45.9	61	45.9	0.126	19.5	LOS B	1.7	16.9	0.84	0.66	16.8
7	R2	36	2.8	36	2.8	0.126	27.3	LOS B	1.7	16.9	0.91	0.69	5.2
Approach		97	29.9	97	29.9	0.126	22.4	LOS B	1.7	16.9	0.87	0.67	12.4
East: Oxford Street													
6	L2	17	0.0	17	0.0	0.016	25.5	LOS B	0.5	1.2	0.84	0.60	8.4
4	R2	41	100.0	41	100.0	0.202	29.0	LOS C	1.3	16.4	0.88	0.70	11.7
Approach		58	70.7	58	70.7	0.202	27.9	LOS B	1.3	16.4	0.87	0.67	10.9
North: Grosvenor Street													
3	L2	62	100.0	62	100.0	0.186	22.8	LOS B	1.3	17.5	0.64	0.69	12.9
2	T1	141	30.5	141	30.5	0.295	18.3	LOS B	3.1	27.7	0.67	0.55	17.5
Approach		203	51.7	203	51.7	0.295	19.7	LOS B	3.1	27.7	0.66	0.59	16.0
All Vehicles		358	48.9	358	48.9	0.295	21.8	LOS B	3.1	27.7	0.75	0.63	13.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue Pedestrian	Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P1	South Full Crossing	50	28.4	LOS C	0.1	0.1	0.90	0.90
P2	East Full Crossing	50	26.6	LOS C	0.1	0.1	0.87	0.87
P3	North Full Crossing	50	28.4	LOS C	0.1	0.1	0.90	0.90
All Pedestrians		150	27.8	LOS C			0.89	0.89

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

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Thursday, 15 February 2018 4:44:01 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Future\P2996.001M East Bondi Jct_Future_AG.sip7

PHASING SUMMARY

Site: 102 [Grosvenor Street/Bronte Road/Oxford Street_PM Peak Future]

Network: N101 [PM Peak_Future]

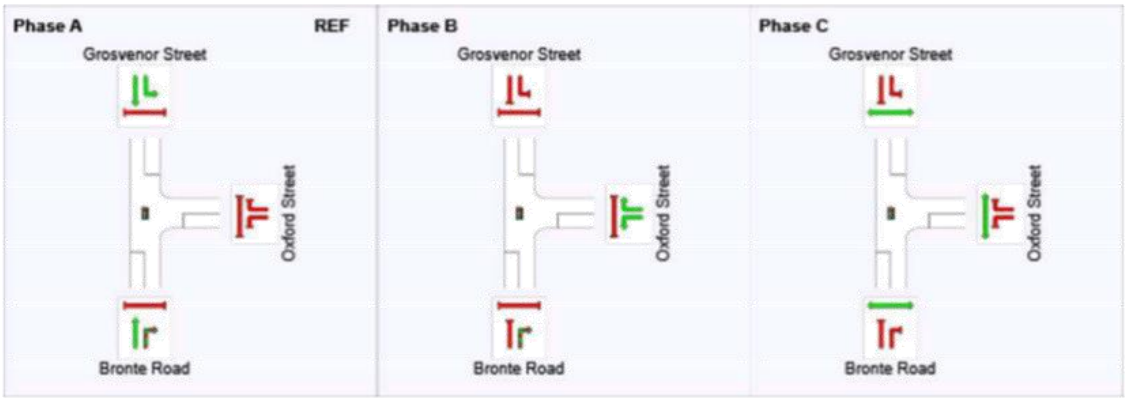
1700 - 1800
Signals - Fixed Time Coordinated Cycle Time = 70 seconds (User-Given Phase Times)

Phase Times specified by the user
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

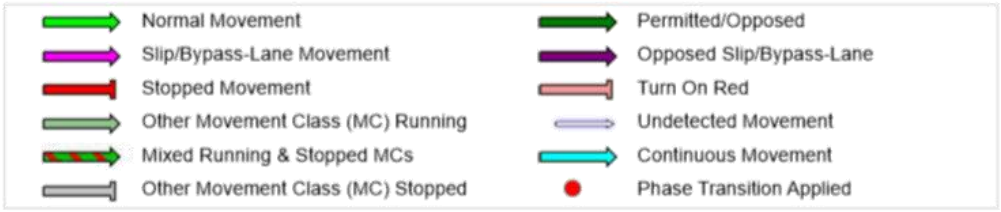
Phase Timing Results

Phase	A	B	C
Phase Change Time (sec)	0	29	48
Green Time (sec)	23	13	16
Phase Time (sec)	29	19	22
Phase Split	41%	27%	31%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase



SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Thursday, 15 February 2018 4:44:01 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Future\P2996.001M East Bondi Jct_Future_AG.sip7

MOVEMENT SUMMARY

Site: 104 [Oxford Street Mid-Block Crossing_PM Peak Future] **Network: N101 [PM Peak_Future]**

1700 - 1800
Pedestrian Crossing (Signals) - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Oxford Street													
5	T1	58	70.7	58	70.7	0.090	12.7	LOS A	0.8	10.2	0.66	0.49	14.8
Approach		58	70.7	58	70.7	0.090	12.7	LOS A	0.8	10.2	0.66	0.49	14.8
West: Oxford Street													
11	T1	97	63.9	97	63.9	0.139	12.8	LOS A	1.2	15.8	0.67	0.51	9.4
Approach		97	63.9	97	63.9	0.139	12.8	LOS A	1.2	15.8	0.67	0.51	9.4
All Vehicles		155	66.5	155	66.5	0.139	12.8	LOS A	1.2	15.8	0.66	0.50	11.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	West Full Crossing	500	24.8	LOS C	0.8	0.8	0.92	0.92
All Pedestrians		500	24.8	LOS C			0.92	0.92

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

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Thursday, 15 February 2018 4:44:01 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Future\P2996.001M East Bondi Jct_Future_AG.sip7

PHASING SUMMARY

Site: 104 [Oxford Street Mid-Block Crossing_PM Peak Future]

Network: N101 [PM Peak_Future]

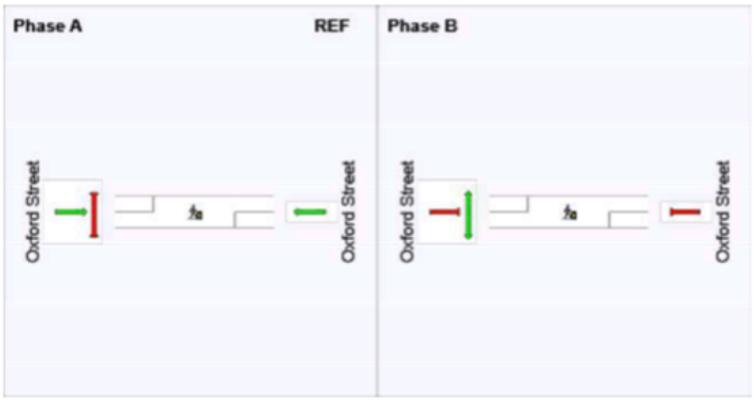
1700 - 1800
Pedestrian Crossing (Signals) - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)

Phase Times determined by the program
Phase Sequence: Two-Phase
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Results

Phase	A	B
Phase Change Time (sec)	0	29
Green Time (sec)	23	25
Phase Time (sec)	29	31
Phase Split	48%	52%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Thursday, 15 February 2018 4:44:01 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Future\P2996.001M East Bondi Jct_Future_AG.sip7

MOVEMENT SUMMARY

Site: 103 [Oxford Street/Adelaide Street/Hollywood Avenue_PM Peak Future]

Network: N101 [PM Peak_Future]

1700 - 1800
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Hollywood Avenue													
9	T1	276	0.7	276	0.7	0.318	17.7	LOS B	7.3	51.5	0.53	0.46	22.3
8	R2	254	0.8	254	0.8	0.454	20.8	LOS B	6.6	46.2	0.52	0.79	21.7
Approach		530	0.8	530	0.8	0.454	19.2	LOS B	7.3	51.5	0.53	0.62	22.0
East: Oxford Street													
6	L2	326	0.3	326	0.3	0.319	12.0	LOS A	5.7	39.9	0.58	0.72	28.1
5	T1	58	70.7	58	70.7	0.498	22.2	LOS B	5.5	43.0	0.49	0.74	15.7
4	R2	279	0.4	279	0.4	0.498	14.4	LOS A	5.5	43.0	0.36	0.79	22.8
Approach		663	6.5	663	6.5	0.498	13.9	LOS A	5.7	43.0	0.48	0.75	24.5
North: Adelaide Street													
3	L2	259	0.4	259	0.4	0.269	14.9	LOS B	4.8	34.0	0.38	0.65	23.1
2	T1	230	1.3	230	1.3	0.923	39.5	LOS C	10.9	76.8	0.83	0.81	13.2
Approach		489	0.8	489	0.8	0.923	26.5	LOS B	10.9	76.8	0.59	0.72	17.0
West: Oxford Street													
12	L2	1	100.0	1	100.0	0.528	55.5	LOS D	3.5	44.9	0.99	0.77	8.9
11	T1	97	63.9	97	63.9	0.528	51.8	LOS D	3.5	44.9	0.97	0.73	10.9
Approach		98	64.3	98	64.3	0.528	51.9	LOS D	3.5	44.9	0.97	0.73	10.8
All Vehicles		1780	6.4	1780	6.4	0.923	21.0	LOS B	10.9	76.8	0.55	0.70	19.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	49.3	LOS E	0.1	0.1	0.95	0.95
P2	East Full Crossing	50	47.4	LOS E	0.1	0.1	0.93	0.93
P3	North Full Crossing	50	49.3	LOS E	0.1	0.1	0.95	0.95
P4	West Full Crossing	50	42.9	LOS E	0.1	0.1	0.88	0.88
All Pedestrians		200	47.2	LOS E			0.93	0.93

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

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Thursday, 15 February 2018 4:44:01 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Future\P2996.001M East Bondi Jct_Future_AG.sip7

PHASING SUMMARY

Site: 103 [Oxford Street/Adelaide Street/Hollywood Avenue_PM Peak Future]

Network: N101 [PM Peak_Future]

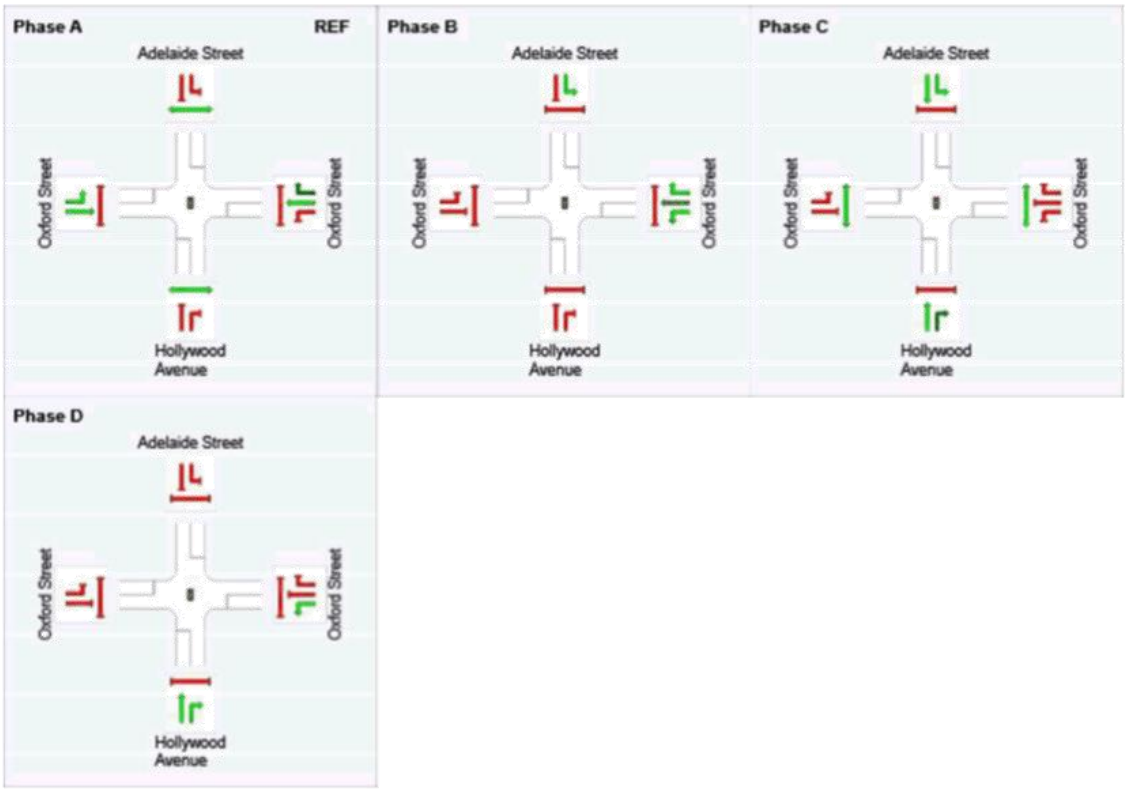
1700 - 1800
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (User-Given Cycle Time)

Phase Times determined by the program
Green Split Priority applies
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Phase Timing Results

Phase	A	B	C	D
Phase Change Time (sec)	0	17	55	81
Green Time (sec)	11	32	20	23
Phase Time (sec)	17	38	26	29
Phase Split	15%	35%	24%	26%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: BITZIOS CONSULTING | Processed: Thursday, 15 February 2018 4:44:01 PM
Project: P:\P2996 TRACT East Bondi Jct Streetscape Traffic\Technical Work\Models\Future\P2996.001M East Bondi Jct_Future_AG.sip7