

APPLICATION ON NOTIFICATION – CATEGORY 2

Applicant:	Scentre Management Ltd C/- Masterplan
Development Number:	100/E103/18
Nature of Development:	Alterations and additions to existing Westfield Marion Shopping Centre comprising additional retail floor space at ground level, entertainment and lifestyle precinct at levels 1 & 2, four (4) level mezzanine car park structure, modification to vehicular access points and removal of eight (8) regulated trees as well as associated landscaping, signage and way-finding treatments
Development Type:	Merit
Subject Land:	293-297 Diagonal Road OAKLANDS PARK
Development Plan:	Marion (City) Development Plan as amended 22 November 2018 (not consolidated)
Zone / Policy Area:	Regional Centre Zone – Precincts 9 (Northern Fringe Marion), 10 (Retail Core Marion) & 11 (Retail Support Marion)
Contact Officer:	Matthew Fielke
Phone Number:	(08) 7109 7048
Consultation Start Date:	18 December 2018
Consultation Close Date:	9 January 2019
<p>During the notification period, hard copies of the application documentation can be viewed at the Department of Planning, Transport and Infrastructure, Level 5, 50 Flinders St, Adelaide, during normal business hours. Application documentation may also be viewed during normal business hours at the local Council office (if identified on the public notice).</p>	

Written representations must be received by the close date (indicated above) and can either be posted, hand-delivered or emailed to the State Commission Assessment Panel.

Any representations received after the close date will not be considered.

Postal Address:

The Secretary
State Commission Assessment Panel
GPO Box 1815
ADELAIDE SA 5001

Street Address:

Development Division
Department of Planning, Transport and Infrastructure
Level 5, 50 Flinders Street
ADELAIDE

Email Address: scapreps@sa.gov.au

Fax Number: (08) 8303 0753

**South Australian
DEVELOPMENT ACT, 1993
REPRESENTATION ON APPLICATION – CATEGORY 2**

Applicant: Scentre Management Ltd C/- Masterplan
Development Number: 100/E103/18
Nature of Development: Alterations and additions to existing Westfield Marion Shopping Centre comprising additional retail floor space at ground level, entertainment and lifestyle precinct at levels 1 & 2, four (4) level mezzanine car park structure, modification to vehicular access points and removal of eight (8) regulated trees as well as associated landscaping, signage and way-finding treatments.
Development Type: Merit
Zone / Policy Area: Regional Centre Zone, Precincts 9 (Northern Fringe Marion), 10 (Retail Core Marion) & 11 (Retail Support Marion).
Subject Land: 293 – 297 Diagonal Road OAKLANDS PARK
Contact Officer: Matthew Fielke
Phone Number: (08) 7109 7048
Close Date: 9 January 2019

My Name: _____ My phone number: _____

Primary method(s) of contact: Email: _____
Postal Address: _____ Postcode: _____

You may be contacted via your nominated PRIMARY METHOD(s) OF CONTACT if you indicate below that you wish to be heard by the State Commission Assessment Panel in support of your submission.

- My interests are:**
(please tick one)
- owner of local property
 - occupier of local property
 - a representative of a company/other organisation affected by the proposal
 - a private citizen

The address of the property affected is: _____
_____ Postcode _____

- My interests are:**
(please tick one)
- I support the development
 - I support the development with some concerns
 - I oppose the development

The specific aspects of the application to which I make comment on are: _____

**South Australian
DEVELOPMENT ACT, 1993
REPRESENTATION ON APPLICATION – CATEGORY 2**

I: wish to be heard in support of my submission
(please tick one) do not wish to be heard in support of my submission
(Please tick one)

By: appearing personally
(please tick one) being represented by the following person
(Please tick one)

Signature: _____

Date: _____

20 November 2018

State Commission Assessment Panel
Level 5, 50 Flinders Street
ADELAIDE SA 5000

Attention: Ms Zoe Delmenico

Dear Ms Delmenico

**Re: Westfield Marion Planning Application
State Coordinator-General Call-in**

Please find enclosed herewith a development application prepared on behalf of Scentre Management Limited for Redevelopment of the Westfield Marion Shopping Centre at Sturt, Diagonal and Morphet Roads, Oaklands Park. **Enclosed** with the application is the following documentation:

- Completed Development Application Form;
- Electricity Declaration Form;
- Plans illustrating the proposed development;
- Planning Report prepared by Masterplan SA Pty Ltd;
- Certificates of Title;
- Traffic and Parking Report prepared by MFY Pty Ltd;
- Arborman Tree Solutions. Preliminary Tree Assessment, Site: Westfield Shopping Centre at Marion, ATS5170-WestMarionPTA;
- Stormwater Management Plan prepared by Wallbridge Gilbert Aztec; and
- Landscape Concept Report prepared by Outer Space.



Can you please advise on the required development application fees so that we can arrange for prompt payment from our client.

Please do not hesitate to contact the undersigned on 8193 5600 should you require any further information.

Yours sincerely

Greg Vincent
MasterPlan SA Pty Ltd

enc: Reports and plans as listed.
cc: City of Marion.

DEVELOPMENT APPLICATION FORM

COUNCIL: STATE PLANNING COMMISSION

APPLICANT: SCENTRE MANAGEMENT LIMITED

Postal Address: C/ MASTERPLAN
33 CARRINGTON STREET, ADELAIDE SA 5000

OWNER: PT LIMITED, RE1 LIMITED AND LENDLEASE REAL ESTATE INVESTMENTS LIMITED

Postal Address: GPO BOX 4004
SYDNEY NSW 2001

BUILDER: TBA

Postal Address: _____

Licence No: _____

CONTACT PERSON FOR FURTHER INFORMATION:

Name: GREG VINCENT - MASTERPLAN SA PTY LTD

Telephone: 81 93 5600

Email: GREGV@MASTERPLAN.COM.AU

Mobile: 04 13 832 603

EXISTING USE:

SHOPPING CENTRE

FOR OFFICE USE

Development No: _____

Previous Development No: _____

Assessment No: _____

<input type="checkbox"/> Complying	Application forwarded to DA Commission/Council on: _____ / ____ / ____ Decision: _____ Type: _____ Date: _____ / ____ / ____
<input type="checkbox"/> Non-complying	
<input type="checkbox"/> Notification Cat 2	
<input type="checkbox"/> Notification Cat 3	
<input type="checkbox"/> Referrals/Concurrence	
<input type="checkbox"/> DA Commission	

	Decision	Fees	Receipt No	Date
Planning:				
Building:				
Land Division:				
Additional:				
Dev Approval:				

DESCRIPTION OF PROPOSED DEVELOPMENT: WESTFIELD MARION REDEVELOPMENT

LOCATION OF PROPOSED DEVELOPMENT: Refer to separate annexure

House No: _____ Lot No: _____ Street: _____ Town/Suburb: _____

Section No (full/part): _____ Hundred: _____ Volume: _____ Folio: _____

Section No (full/part): _____ Hundred: _____ Volume: _____ Folio: _____

LAND DIVISION: n/a

Site Area (m²): _____ Reserve Area (m²): _____ No of Existing Allotments: _____

Number of Additional Allotments - (Excluding Road and Reserve): _____ Lease: YES: NO:

BUILDING RULES CLASSIFICATION SOUGHT:

If Class 5, 6, 7, 8 or 9 classification is sought, state the proposed number of employees: Female: _____ Male: _____

If Class 9a classification is sought, state the number of persons for whom accommodation is required: _____

If Class 9b classification is sought, state the proposed number of occupants of the various spaces at the premises: _____

DOES EITHER SCHEDULE 21 OR 22 OF THE DEVELOPMENT REGULATIONS 2008 APPLY? YES: NO:

HAS THE CONSTRUCTION INDUSTRY TRAINING FUND ACT 1993 LEVY BEEN PAID? YES: NO:

DEVELOPMENT COST (Do not include any fit-out costs): \$230,000,000.00

I acknowledge that copies of this application and supporting documentation may be provided to interested persons in accordance with the Development Regulations 2008.

SIGNATURE:  _____
A TAYLOR, DEVELOPMENT EXECUTIVE
FOR AND ON BEHALF OF SCENTRE MANAGEMENT LIMITED

Dated: 19 NOVEMBER 2018

DEVELOPMENT REGULATIONS 2008

Form of Declaration

(Schedule 5, Clause 2A)

To: State Planning Commission
From: Scentre Group Pty Ltd
Date of Application: November 2018

Location of Proposed Development: Refer to separate annexure

House Number: _____ Lot Number: _____
Street: Sturt, Diagonal and Morphett Roads Town/Suburb: Oaklands Park
Section No (full/part): _____ Hundred: _____
Volume: _____ Folio: _____

Nature of Proposed Development:

Westfield Marion Shopping Centre Redevelopment

I, Greg Vincent being a person acting on the behalf of the applicant for the development described above, declare that the proposed development will involve the construction of a building which would, if constructed in accordance with the plans submitted, not be contrary to the regulations prescribed for the purposes of Section 86 of the *Electricity Act 1996*. I make this declaration under Clause 2A(1) of Schedule 5 of the *Development Regulations 2008*.

20 November 2018



Date

Signed

Note 1

This declaration is only relevant to those development applications seeking authorisation for a form of development that involves the construction of a building (there is a definition of 'building' contained in Section 4(1) of the *Development Act 1993*), other than where the development is limited to:

- an internal alteration of a building; or
- an alteration to the walls of a building but not so as to alter the shape of the building.

Note 2

The requirements of Section 86 of the *Electricity Act 1996* do not apply in relation to:

- a fence that is less than 2.0 m in height; or
- a service line installed specifically to supply electricity to the building or structure by the operator of the transmission or distribution network from which the electricity is being supplied.

Note 3

Section 86 of the *Electricity Act 1996* refers to the erection of buildings in proximity to powerlines. The regulations under this Act prescribe minimum safe clearance distances that must be complied with.

Note 4

The majority of applications will not have any powerline issues, as normal residential setbacks often cause the building to comply with the prescribed powerline clearance distances. Buildings/renovations located far away from powerlines, for example towards the back of properties, will usually comply.

Particular care needs to be taken where high voltage powerlines exist; where the development:

- is on a major road;
- commercial/industrial in nature; or
- built to the property boundary.

Note 5

Information brochures 'Powerline Clearance Guide' and 'Building Safely Near Powerlines' have been prepared by the Technical Regulator to assist applicants and other interested persons. Copies of these brochures are available from Council and the Office of the Technical Regulator. The brochures and other relevant information can also be found at www.technicalregulator.sa.gov.au

Note 6

In cases where applicants have obtained a written approval from the Technical Regulator to build the development specified above in its current form within the prescribed clearance distances, the applicant is able to sign the form.

REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 6139 Folio 987

Parent Title(s) CT 5482/895
Creating Dealing(s) DDA 12130256
Title Issued 13/06/2014 **Edition** 19 **Edition Issued** 05/08/2018

Estate Type

SHARE TITLE OF THE FEE ONLY

Registered Proprietor

LEND LEASE REAL ESTATE INVESTMENTS LTD. (ACN: 063 427 896)
OF L 14 TOWER THREE INTERNATIONAL TOWERS SYDNEY EXCHANGE PLACE 300 BARANGAROO
AVENUE BARANGAROO NSW 2000
1 / 2 SHARE

Description of Land

ALLOTMENT 100 DEPOSITED PLAN 48045
IN THE AREA NAMED OAKLANDS PARK
HUNDRED OF NOARLUNGA

ALLOTMENTS 357, 358, 359, 361 AND 362 FILED PLAN 12080
IN THE AREA NAMED OAKLANDS PARK
HUNDRED OF NOARLUNGA

Easements

NIL

Schedule of Dealings

Dealing Number	Description
6746366	CAVEAT BY SOUTH AUSTRALIAN TOTALIZATOR AGENCY BOARD OVER PORTION (120A IN GP 14/1983)
7090265	CAVEAT BY GRANNY MAY'S MANAGEMENT PTY. LTD. OVER PORTION (130 IN GP 178/1984)
7200229	CAVEAT BY ROCKMANS STORES LTD. OVER PORTION (99 IN GP 178/1984)
8254870	CAVEAT BY GARY LAWRENCE DEVERSON AND PAULA CORAL DEVERSON OVER PORTION
8971510	LEASE TO WOOLWORTHS LTD. COMMENCING ON 13/11/1998 AND EXPIRING ON 13/11/2019 OF PORTION (DEPARTMENT STORE 5M IN GP 14/1983)
8977459	LEASE TO VILLAGE CINEMAS AUSTRALIA PTY. LTD. AND THE GREATER UNION ORGANISATION PTY. LTD. COMMENCING ON 13/11/1998 AND EXPIRING ON 13/11/2019 OF PORTION (CINEMA COMPLEX SHOP 3001 AND CINEMA COMPLEX PLANT ROOM 1 AND CINEMA COMPLEX PLANT ROOM 2 IN GP 518/1998) AS TO THE SHARES SPECIFIED THEREIN
8988647	LEASE TO TARGET AUSTRALIA PTY. LTD. COMMENCING ON 27/8/1997 AND EXPIRING ON 28/8/2021 OF PORTION (STORE 11 AND STORE 11 PLANT ROOM IN GP 57/1998)

10207928	LEASE TO WOOLWORTHS LTD. COMMENCING ON 1/1/2004 AND EXPIRING ON 31/12/2018 OF PORTION (SHOP 1A IN GP 84/2005)
10431967	PARTIAL SURRENDER OF LEASE 8977459
10511276	LEASE TO MYER LTD. COMMENCING ON 3/4/2008 AND EXPIRING ON 3/4/2023 OF PORTION (DEPARTMENT STORE 2 GROUND FLOOR AND DEPARTMENT STORE 2 FIRST FLOOR IN GP 14/1983)
11624049	LEASE TO TGI FRIDAYS ASIA PACIFIC PTY. LTD. COMMENCING ON 5/10/2011 AND EXPIRING ON 4/10/2031 OF PORTION (SHOP 2051A IN FP 55719)
11672218	LEASE TO OPORTO LEASING PTY. LTD. COMMENCING ON 27/6/2011 AND EXPIRING ON 26/6/2018 OF PORTION (SHOP FC4 IN FP 49315)
11729142	LEASE TO DAVID JONES LTD. COMMENCING ON 1/7/2010 AND EXPIRING ON 30/6/2035 OF PORTION (DEPARTMENT STORE NO. 1 GROUND FLOOR, DEPARTMENT STORE NO. 1 FIRST FLOOR IN GP 178/1984)
11829630	LEASE TO DICK SMITH ELECTRONICS PTY. LTD. COMMENCING ON 12/9/2010 AND EXPIRING ON 11/9/2020 OF PORTION (SHOP 9M IN FP 56905)
12084354	LEASE TO VODAFONE HUTCHISON AUSTRALIA PTY. LTD. COMMENCING ON 3/7/2013 AND EXPIRING ON 2/7/2018 OF PORTION (SHOP 2070A IN FP 58375)
12367865	LEASE TO COMMONWEALTH BANK OF AUSTRALIA (ACN: 123 123 124) COMMENCING ON 01/08/2014 AND EXPIRING ON 31/07/2019 OF PORTION (ATM 105 IN F250077)
12554637	LEASE TO COUNTRY ROAD CLOTHING PTY. LTD. (ACN: 005 419 447) COMMENCING ON 01/07/2014 AND EXPIRING ON 30/06/2016 AT 00:00 AM OF PORTION (SHOP 1100.1 IN F54524)
12761077	LEASE TO WITCHERY FASHIONS PTY. LTD. (ACN: 006 897 230) COMMENCING ON 12/04/2017 AND EXPIRING ON 11/04/2021 OF PORTION (SHOP 1052/1053 IN F252413)
12760971	LEASE TO MIMCO PTY. LTD. (ACN: 067 573 291) COMMENCING ON 12/04/2017 AND EXPIRING ON 11/04/2024 OF PORTION (SHOP 1056 IN F252413)
12760974	LEASE TO COMMUNITY CPS AUSTRALIA LTD. (ACN: 087 651 143) COMMENCING ON 01/07/2016 AND EXPIRING ON 30/06/2021 OF PORTION (SHOP 1069 IN F252413)
12821775	LEASE TO BAKERS DELIGHT HOLDINGS LTD. (ACN: 052 528 202) COMMENCING ON 15/12/2016 AND EXPIRING ON 14/12/2021 OF PORTION (SHOP 1146 IN F253036)
12887027	LEASE TO BOOST JUICE PTY. LTD. (ACN: 092 165 681) COMMENCING ON 02/04/2016 AND EXPIRING ON 01/04/2022 OF PORTION (KIOSK 211 IN F253364)
12887034	LEASE TO SALSAS PTY. LTD. (ACN: 129 061 543) COMMENCING ON 01/06/2017 AND EXPIRING ON 31/05/2023 OF PORTION (SHOP FC3 IN F253364)
12888393	LEASE TO MECCA BRANDS PTY. LTD. (ACN: 077 859 931) COMMENCING ON 20/10/2017 AND EXPIRING ON 19/10/2024 OF PORTION (SHOP 1034/5 IN F253239)

Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL

Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G14/1983
 PLAN FOR LEASE PURPOSES VIDE G178/1984
 PLAN FOR LEASE PURPOSES VIDE G198/1998
 PLAN FOR LEASE PURPOSES VIDE G203/1995

PLAN FOR LEASE PURPOSES VIDE G206/1994
PLAN FOR LEASE PURPOSES VIDE G2253/1976
PLAN FOR LEASE PURPOSES VIDE G233/2002
PLAN FOR LEASE PURPOSES VIDE G245/1994
PLAN FOR LEASE PURPOSES VIDE G273/1999
PLAN FOR LEASE PURPOSES VIDE G291/2000
PLAN FOR LEASE PURPOSES VIDE G30/1991
PLAN FOR LEASE PURPOSES VIDE G312/2005
PLAN FOR LEASE PURPOSES VIDE G342/1998
PLAN FOR LEASE PURPOSES VIDE G348/2000
PLAN FOR LEASE PURPOSES VIDE G358/1997
PLAN FOR LEASE PURPOSES VIDE G365/2000
PLAN FOR LEASE PURPOSES VIDE G37/1996
PLAN FOR LEASE PURPOSES VIDE G399/1999
PLAN FOR LEASE PURPOSES VIDE G470/1998
PLAN FOR LEASE PURPOSES VIDE G474/2000
PLAN FOR LEASE PURPOSES VIDE G483/1993
PLAN FOR LEASE PURPOSES VIDE G486/2003
PLAN FOR LEASE PURPOSES VIDE G518/1998
PLAN FOR LEASE PURPOSES VIDE G56/1998
PLAN FOR LEASE PURPOSES VIDE G57/1998
PLAN FOR LEASE PURPOSES VIDE G579/1989
PLAN FOR LEASE PURPOSES VIDE G60/2003
PLAN FOR LEASE PURPOSES VIDE G611/1994
PLAN FOR LEASE PURPOSES VIDE G686/1991
PLAN FOR LEASE PURPOSES VIDE G769/1970
PLAN FOR LEASE PURPOSES VIDE G786/2000
PLAN FOR LEASE PURPOSES VIDE G84/2005
PLAN FOR LEASE PURPOSES VIDE G97/1998
APPROVED FILED PLAN FOR LEASE PURPOSES FX250077
APPROVED FILED PLAN FOR LEASE PURPOSES FX250310
APPROVED FILED PLAN FOR LEASE PURPOSES FX251945
APPROVED FILED PLAN FOR LEASE PURPOSES FX252316
APPROVED FILED PLAN FOR LEASE PURPOSES FX252413
APPROVED FILED PLAN FOR LEASE PURPOSES FX253036
APPROVED FILED PLAN FOR LEASE PURPOSES FX253239
APPROVED FILED PLAN FOR LEASE PURPOSES FX253364
APPROVED FILED PLAN FOR LEASE PURPOSES FX253649
APPROVED FILED PLAN FOR LEASE PURPOSES FX49315
APPROVED FILED PLAN FOR LEASE PURPOSES FX49576
APPROVED FILED PLAN FOR LEASE PURPOSES FX51437
APPROVED FILED PLAN FOR LEASE PURPOSES FX51661
APPROVED FILED PLAN FOR LEASE PURPOSES FX52793
APPROVED FILED PLAN FOR LEASE PURPOSES FX53032
APPROVED FILED PLAN FOR LEASE PURPOSES FX54166
APPROVED FILED PLAN FOR LEASE PURPOSES FX54524
APPROVED FILED PLAN FOR LEASE PURPOSES FX54594
APPROVED FILED PLAN FOR LEASE PURPOSES FX54776
APPROVED FILED PLAN FOR LEASE PURPOSES FX54913
APPROVED FILED PLAN FOR LEASE PURPOSES FX55639
APPROVED FILED PLAN FOR LEASE PURPOSES FX55719
APPROVED FILED PLAN FOR LEASE PURPOSES FX56212
APPROVED FILED PLAN FOR LEASE PURPOSES FX56262
APPROVED FILED PLAN FOR LEASE PURPOSES FX56324
APPROVED FILED PLAN FOR LEASE PURPOSES FX56397
APPROVED FILED PLAN FOR LEASE PURPOSES FX56412
APPROVED FILED PLAN FOR LEASE PURPOSES FX56905
APPROVED FILED PLAN FOR LEASE PURPOSES FX58375
APPROVED FILED PLAN FOR LEASE PURPOSES FX59173
UNAPPROVED FX253239
APPROVED FX39548
NEW EDITION CREATED DUE TO EXPIRATION OF LEASE

Administrative Interests NIL

REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5438 Folio 968

Parent Title(s) CT 4315/458
Creating Dealing(s) CONVERTED TITLE
Title Issued 30/07/1997 **Edition** 6 **Edition Issued** 06/03/2013

Estate Type

SHARE TITLE OF THE FEE ONLY

Registered Proprietor

LEND LEASE REAL ESTATE INVESTMENTS LTD. (ACN: 063 427 896)
OF 30 THE BOND 30 HICKSON ROAD MILLERS POINT NSW 2000
1 / 2 SHARE

Description of Land

ALLOTMENT 360 FILED PLAN 12080
IN THE AREA NAMED OAKLANDS PARK
HUNDRED OF NOARLUNGA

Easements

NIL

Schedule of Dealings

Dealing Number	Description
11829630	LEASE TO DICK SMITH ELECTRONICS PTY. LTD. COMMENCING ON 12/9/2010 AND EXPIRING ON 11/9/2020 OF PORTION (SHOP 9M IN FP 56905)

Notations

Dealings Affecting Title NIL

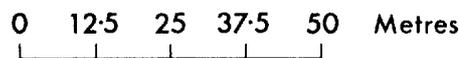
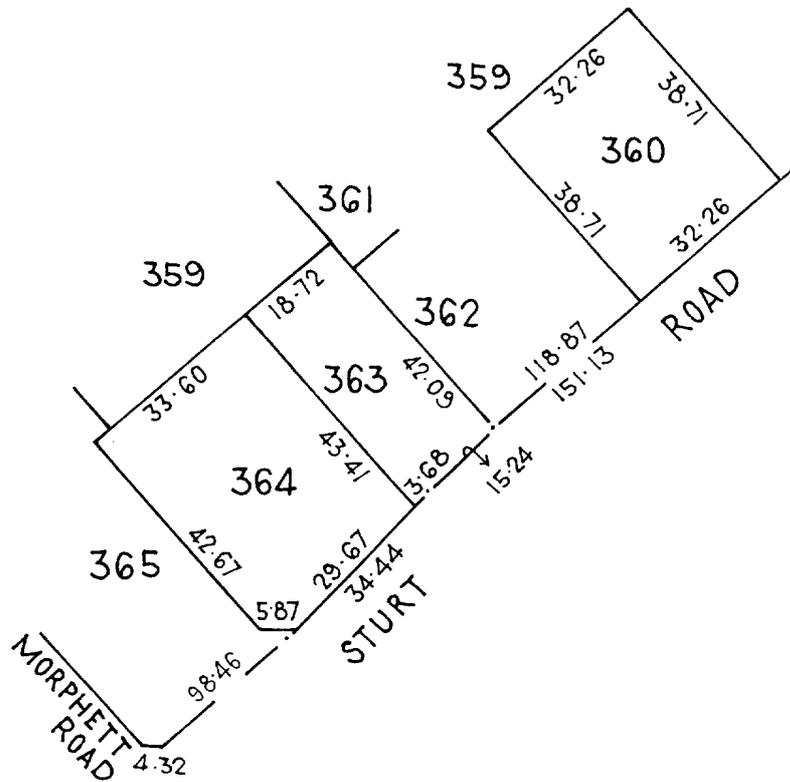
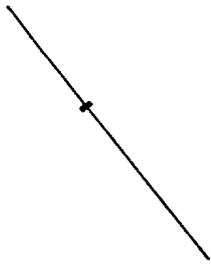
Priority Notices NIL

Notations on Plan NIL

Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G3299/1977
PLAN FOR LEASE PURPOSES VIDE G97/1998
APPROVED FILED PLAN FOR LEASE PURPOSES FX250077
APPROVED FILED PLAN FOR LEASE PURPOSES FX250310
APPROVED FILED PLAN FOR LEASE PURPOSES FX253364
APPROVED FILED PLAN FOR LEASE PURPOSES FX253649
APPROVED FILED PLAN FOR LEASE PURPOSES FX56905
APPROVED FILED PLAN FOR LEASE PURPOSES FX59173

Administrative Interests NIL



REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5907 Folio 301

Parent Title(s) CT 5438/971

Creating Dealing(s) SC 9712621

Title Issued 21/11/2003 **Edition** 4 **Edition Issued** 26/04/2005

Estate Type

SHARE TITLE OF THE FEE ONLY

Registered Proprietor

LEND LEASE REAL ESTATE INVESTMENTS LTD. (ACN: 063 427 896)
OF 30 THE BOND 30 HICKSON ROAD MILLERS POINT NSW 2000
1 / 2 SHARE

Description of Land

ALLOTMENT 363 FILED PLAN 12080
IN THE AREA NAMED OAKLANDS PARK
HUNDRED OF NOARLUNGA

Easements

NIL

Schedule of Dealings

NIL

Notations

Dealings Affecting Title NIL

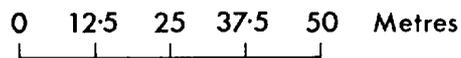
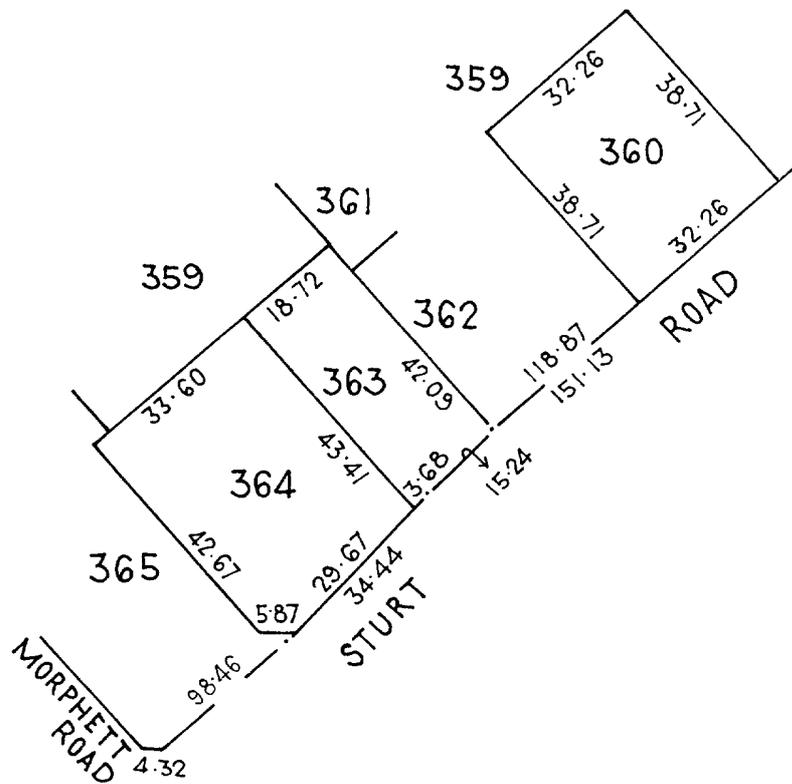
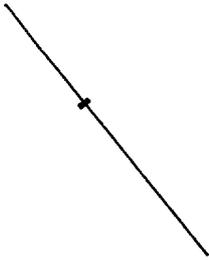
Priority Notices NIL

Notations on Plan NIL

Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G57/1998

Administrative Interests NIL



REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5907 Folio 300

Parent Title(s) CT 5438/966

Creating Dealing(s) SC 9712621

Title Issued 21/11/2003 **Edition** 4 **Edition Issued** 26/04/2005

Estate Type

SHARE TITLE OF THE FEE ONLY

Registered Proprietor

LEND LEASE REAL ESTATE INVESTMENTS LTD. (ACN: 063 427 896)
OF 30 THE BOND 30 HICKSON ROAD MILLERS POINT NSW 2000
1 / 2 SHARE

Description of Land

ALLOTMENT 364 FILED PLAN 12080
IN THE AREA NAMED OAKLANDS PARK
HUNDRED OF NOARLUNGA

Easements

NIL

Schedule of Dealings

NIL

Notations

Dealings Affecting Title NIL

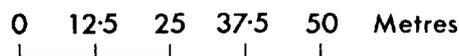
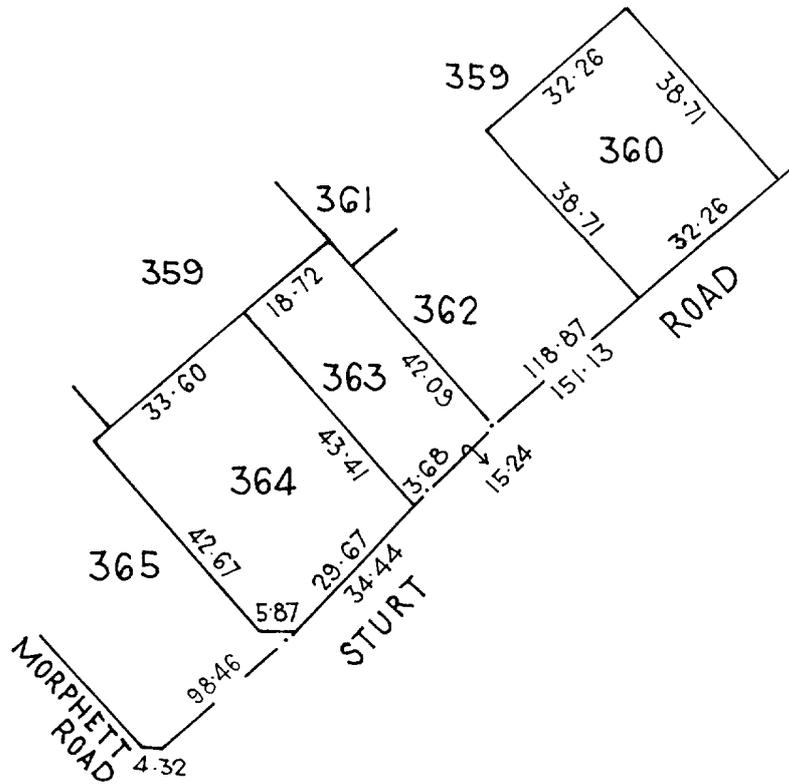
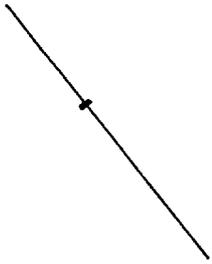
Priority Notices NIL

Notations on Plan NIL

Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G57/1998

Administrative Interests NIL



REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 6139 Folio 991

Parent Title(s) CT 5842/188

Creating Dealing(s) DDA 12130256

Title Issued 13/06/2014 **Edition** 3 **Edition Issued** 27/07/2018

Estate Type

SHARE TITLE OF THE FEE ONLY

Registered Proprietor

LEND LEASE REAL ESTATE INVESTMENTS LTD. (ACN: 063 427 896)
OF LEVEL 4/30 THE BOND 30 HICKSON ROAD MILLERS POINT NSW 2000
1 / 2 SHARE

Description of Land

ALLOTMENT 365 FILED PLAN 12080
IN THE AREA NAMED OAKLANDS PARK
HUNDRED OF NOARLUNGA

Easements

NIL

Schedule of Dealings

NIL

Notations

Dealings Affecting Title NIL

Priority Notices NIL

Notations on Plan NIL

Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G1733/1981
PLAN FOR LEASE PURPOSES VIDE G56/1998
PLAN FOR LEASE PURPOSES VIDE G57/1998
NEW EDITION CREATED DUE TO EXPIRATION OF LEASE

Administrative Interests NIL

REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5907 Folio 302

Parent Title(s) CT 5438/973

Creating Dealing(s) SC 9712621

Title Issued 21/11/2003 **Edition** 4 **Edition Issued** 26/04/2005

Estate Type

SHARE TITLE OF THE FEE ONLY

Registered Proprietor

LEND LEASE REAL ESTATE INVESTMENTS LTD. (ACN: 063 427 896)
OF 30 THE BOND 30 HICKSON ROAD MILLERS POINT NSW 2000
1 / 2 SHARE

Description of Land

ALLOTMENT 8 DEPOSITED PLAN 5548
IN THE AREA NAMED OAKLANDS PARK
HUNDRED OF NOARLUNGA

Easements

NIL

Schedule of Dealings

NIL

Notations

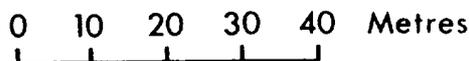
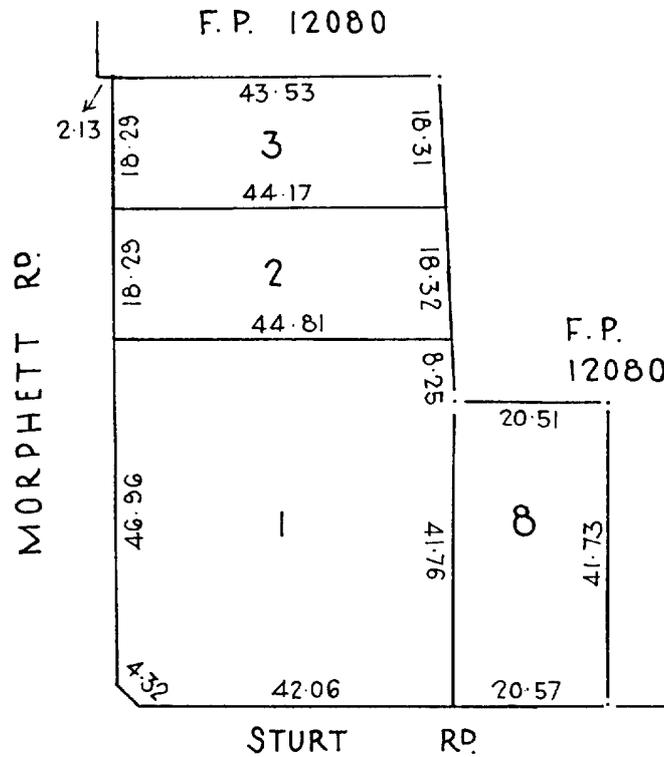
Dealings Affecting Title NIL

Priority Notices NIL

Notations on Plan NIL

Registrar-General's Notes NIL

Administrative Interests NIL



REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5905 Folio 308

Parent Title(s) CT 5438/975

Creating Dealing(s) SC 9674050

Title Issued 29/10/2003 **Edition** 5 **Edition Issued** 26/04/2005

Estate Type

SHARE TITLE OF THE FEE ONLY

Registered Proprietor

LEND LEASE REAL ESTATE INVESTMENTS LTD. (ACN: 063 427 896)
OF 30 THE BOND 30 HICKSON ROAD MILLERS POINT NSW 2000
1 / 2 SHARE

Description of Land

ALLOTMENT 1 DEPOSITED PLAN 5548
IN THE AREA NAMED OAKLANDS PARK
HUNDRED OF NOARLUNGA

Easements

NIL

Schedule of Dealings

NIL

Notations

Dealings Affecting Title NIL

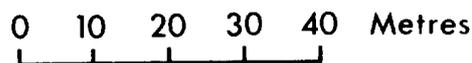
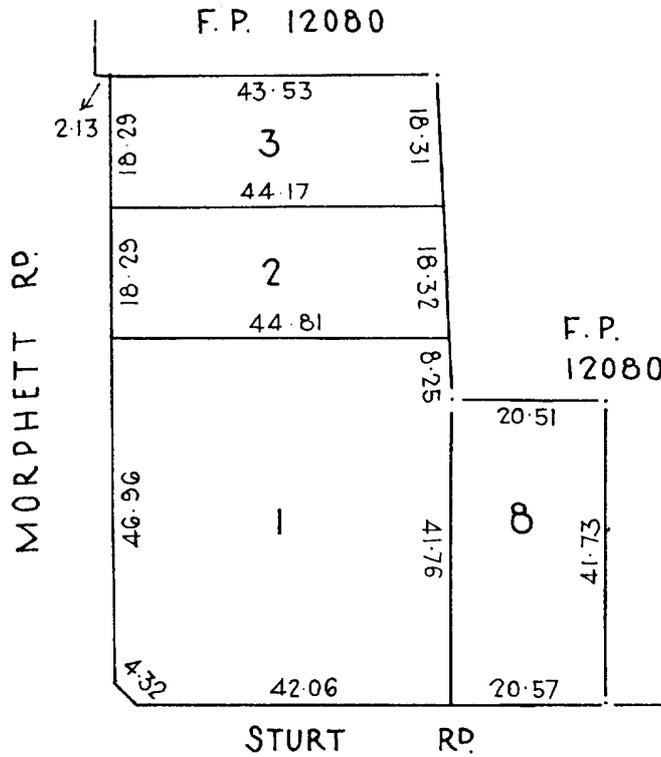
Priority Notices NIL

Notations on Plan NIL

Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G48/2002
PLAN FOR LEASE PURPOSES VIDE G52/1983

Administrative Interests NIL



REAL PROPERTY ACT, 1886



South Australia

The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5907 Folio 298

Parent Title(s) CT 5439/60

Creating Dealing(s) SC 9712621

Title Issued 21/11/2003

Edition 4

Edition Issued

26/04/2005

Estate Type

SHARE TITLE OF THE FEE ONLY

Registered Proprietor

LEND LEASE REAL ESTATE INVESTMENTS LTD. (ACN: 063 427 896)
OF 30 THE BOND 30 HICKSON ROAD MILLERS POINT NSW 2000
1 / 2 SHARE

Description of Land

ALLOTMENT 2 DEPOSITED PLAN 5548
IN THE AREA NAMED OAKLANDS PARK
HUNDRED OF NOARLUNGA

Easements

NIL

Schedule of Dealings

NIL

Notations

Dealings Affecting Title NIL

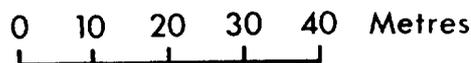
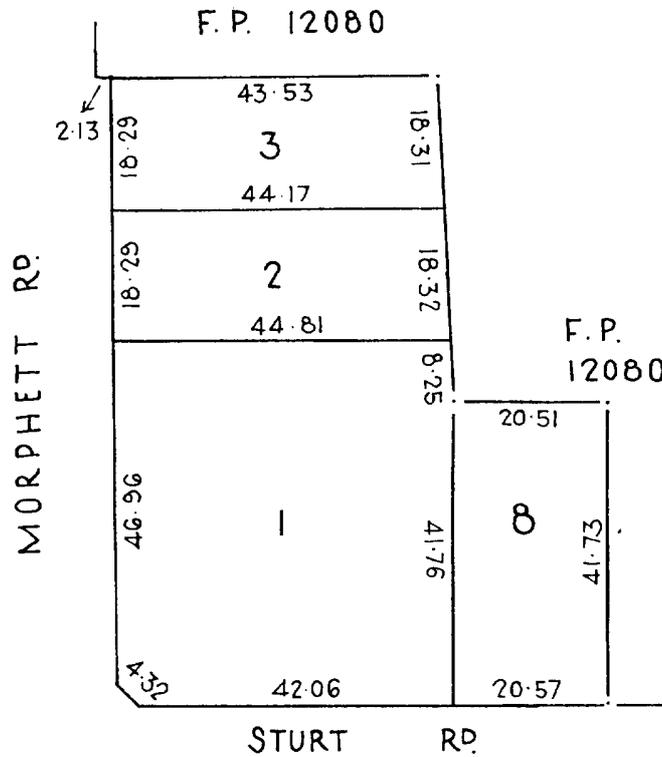
Priority Notices NIL

Notations on Plan NIL

Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G1700/1979

Administrative Interests NIL



REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5907 Folio 299

Parent Title(s) CT 5438/964

Creating Dealing(s) SC 9712621

Title Issued 21/11/2003 **Edition** 4 **Edition Issued** 26/04/2005

Estate Type

SHARE TITLE OF THE FEE ONLY

Registered Proprietor

LEND LEASE REAL ESTATE INVESTMENTS LTD. (ACN: 063 427 896)
OF 30 THE BOND 30 HICKSON ROAD MILLERS POINT NSW 2000
1 / 2 SHARE

Description of Land

ALLOTMENT 3 DEPOSITED PLAN 5548
IN THE AREA NAMED OAKLANDS PARK
HUNDRED OF NOARLUNGA

Easements

NIL

Schedule of Dealings

NIL

Notations

Dealings Affecting Title NIL

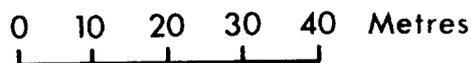
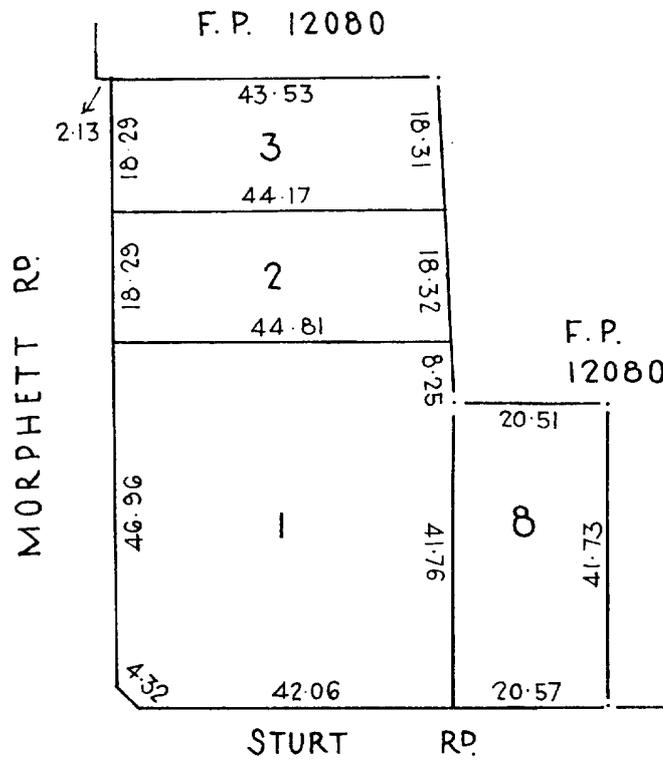
Priority Notices NIL

Notations on Plan NIL

Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G1700/1979

Administrative Interests NIL



REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5907 Folio 307

Parent Title(s) CT 5443/796

Creating Dealing(s) SC 9712621

Title Issued 21/11/2003 **Edition** 4 **Edition Issued** 26/04/2005

Estate Type

SHARE TITLE OF THE FEE ONLY

Registered Proprietor

LEND LEASE REAL ESTATE INVESTMENTS LTD. (ACN: 063 427 896)
OF 30 THE BOND 30 HICKSON ROAD MILLERS POINT NSW 2000
1 / 2 SHARE

Description of Land

ALLOTMENT 366 FILED PLAN 12080
IN THE AREA NAMED OAKLANDS PARK
HUNDRED OF NOARLUNGA

Easements

NIL

Schedule of Dealings

NIL

Notations

Dealings Affecting Title NIL

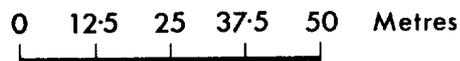
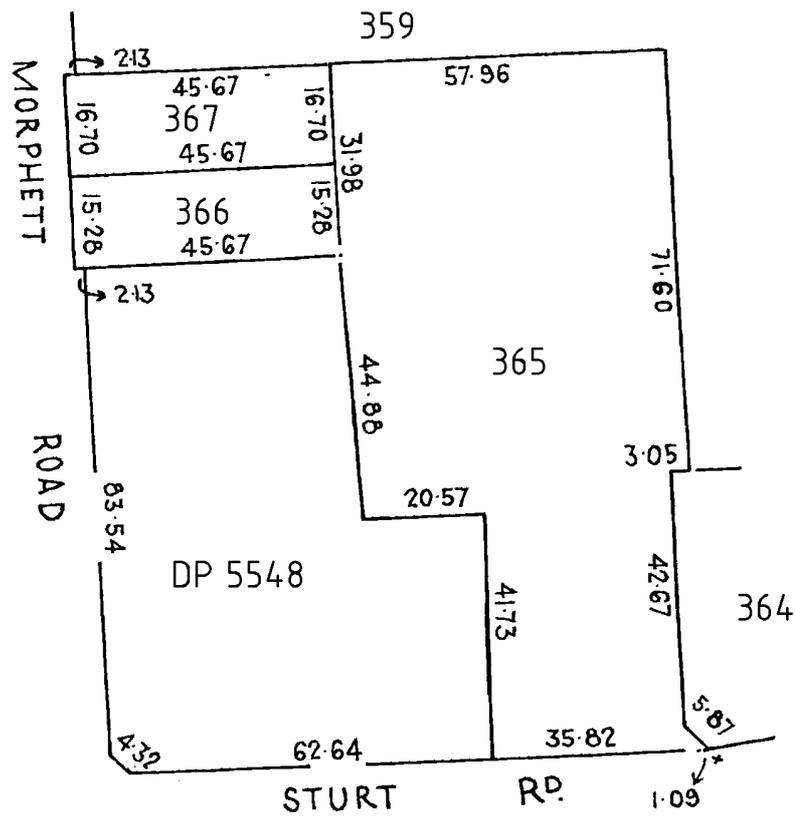
Priority Notices NIL

Notations on Plan NIL

Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G1733/1981

Administrative Interests NIL



REAL PROPERTY ACT, 1886



South Australia

The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5907 Folio 308

Parent Title(s) CT 5443/797

Creating Dealing(s) SC 9712621

Title Issued 21/11/2003 **Edition** 4 **Edition Issued** 26/04/2005

Estate Type

SHARE TITLE OF THE FEE ONLY

Registered Proprietor

LEND LEASE REAL ESTATE INVESTMENTS LTD. (ACN: 063 427 896)
OF 30 THE BOND 30 HICKSON ROAD MILLERS POINT NSW 2000
1 / 2 SHARE

Description of Land

ALLOTMENT 367 FILED PLAN 12080
IN THE AREA NAMED OAKLANDS PARK
HUNDRED OF NOARLUNGA

Easements

NIL

Schedule of Dealings

NIL

Notations

Dealings Affecting Title NIL

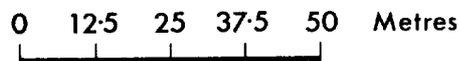
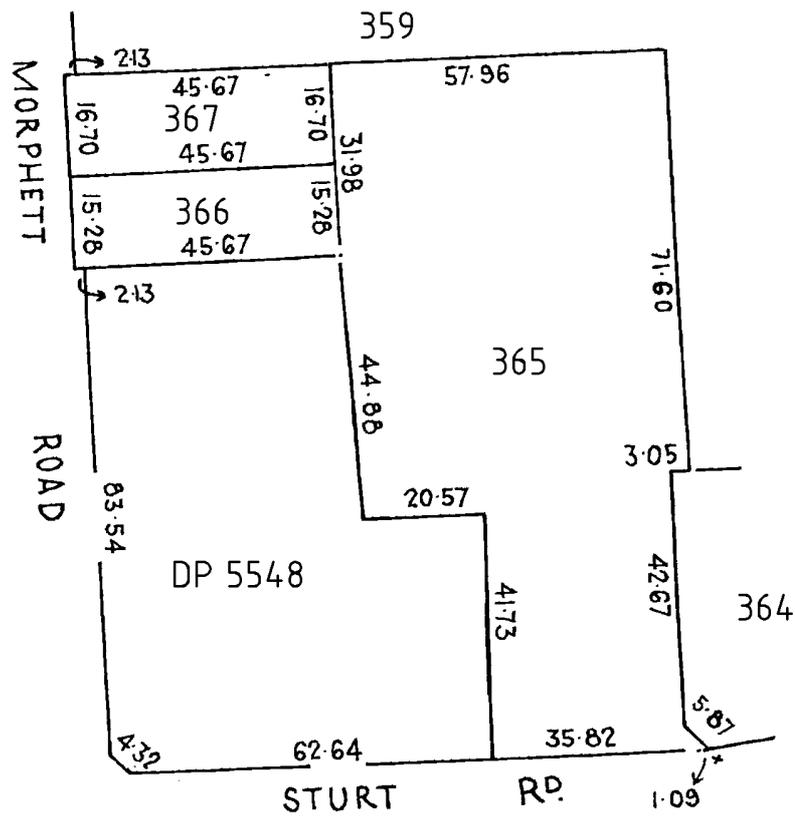
Priority Notices NIL

Notations on Plan NIL

Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G1733/1981
PLAN FOR LEASE PURPOSES VIDE G362/1977

Administrative Interests NIL



REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 6018 Folio 126

Parent Title(s) CT 5907/297
Creating Dealing(s) VE 10932197, VE 10932198, VE 10932199
Title Issued 11/09/2008 **Edition** 1 **Edition Issued** 11/09/2008

Estate Type

SHARE TITLE OF THE FEE ONLY

Registered Proprietor

LEND LEASE REAL ESTATE INVESTMENTS LTD. (ACN: 063 427 896)
OF 30 THE BOND 30 HICKSON ROAD MILLERS POINT NSW 2000
1 / 2 SHARE

Description of Land

ALLOTMENT 31 FILED PLAN 18727
IN THE AREA NAMED OAKLANDS PARK
HUNDRED OF NOARLUNGA

Easements

NIL

Schedule of Dealings

NIL

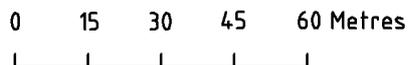
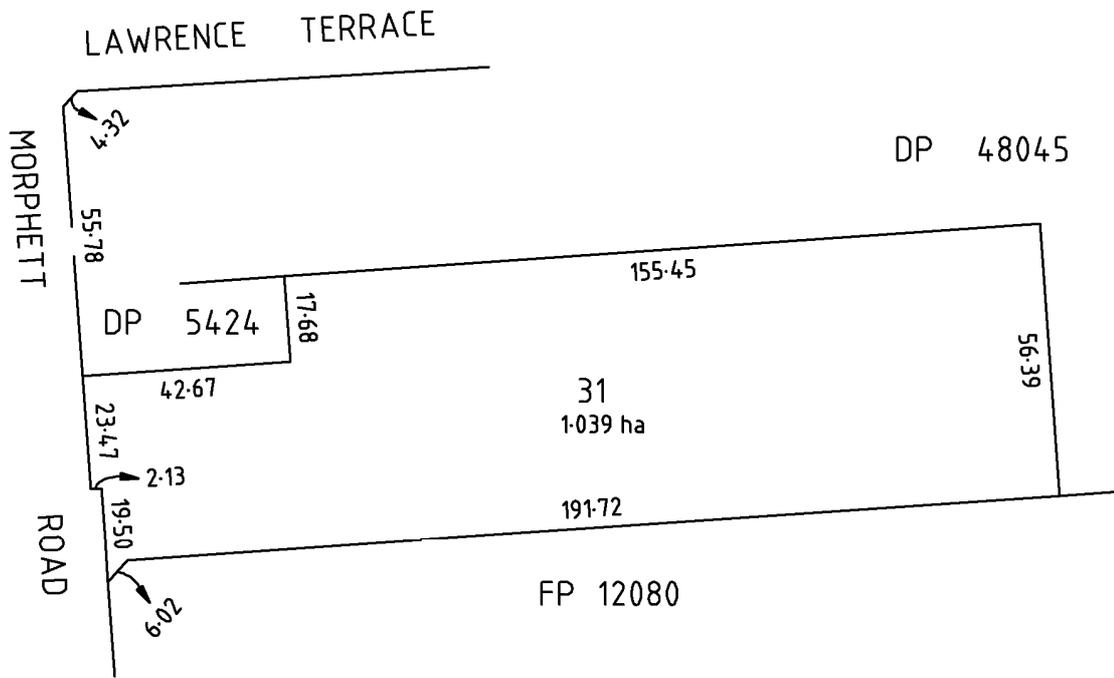
Notations

Dealings Affecting Title NIL
Priority Notices NIL
Notations on Plan NIL

Registrar-General's Notes

APPROVED FILED PLAN FOR LEASE PURPOSES FX251945

Administrative Interests NIL



REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5907 Folio 316

Parent Title(s) CT 5864/276

Creating Dealing(s) SC 9712621

Title Issued 21/11/2003 **Edition** 4 **Edition Issued** 26/04/2005

Estate Type

SHARE TITLE OF THE FEE ONLY

Registered Proprietor

LEND LEASE REAL ESTATE INVESTMENTS LTD. (ACN: 063 427 896)
OF 30 THE BOND 30 HICKSON ROAD MILLERS POINT NSW 2000
1 / 2 SHARE

Description of Land

ALLOTMENT 29 DEPOSITED PLAN 5424
IN THE AREA NAMED OAKLANDS PARK
HUNDRED OF NOARLUNGA

Easements

NIL

Schedule of Dealings

NIL

Notations

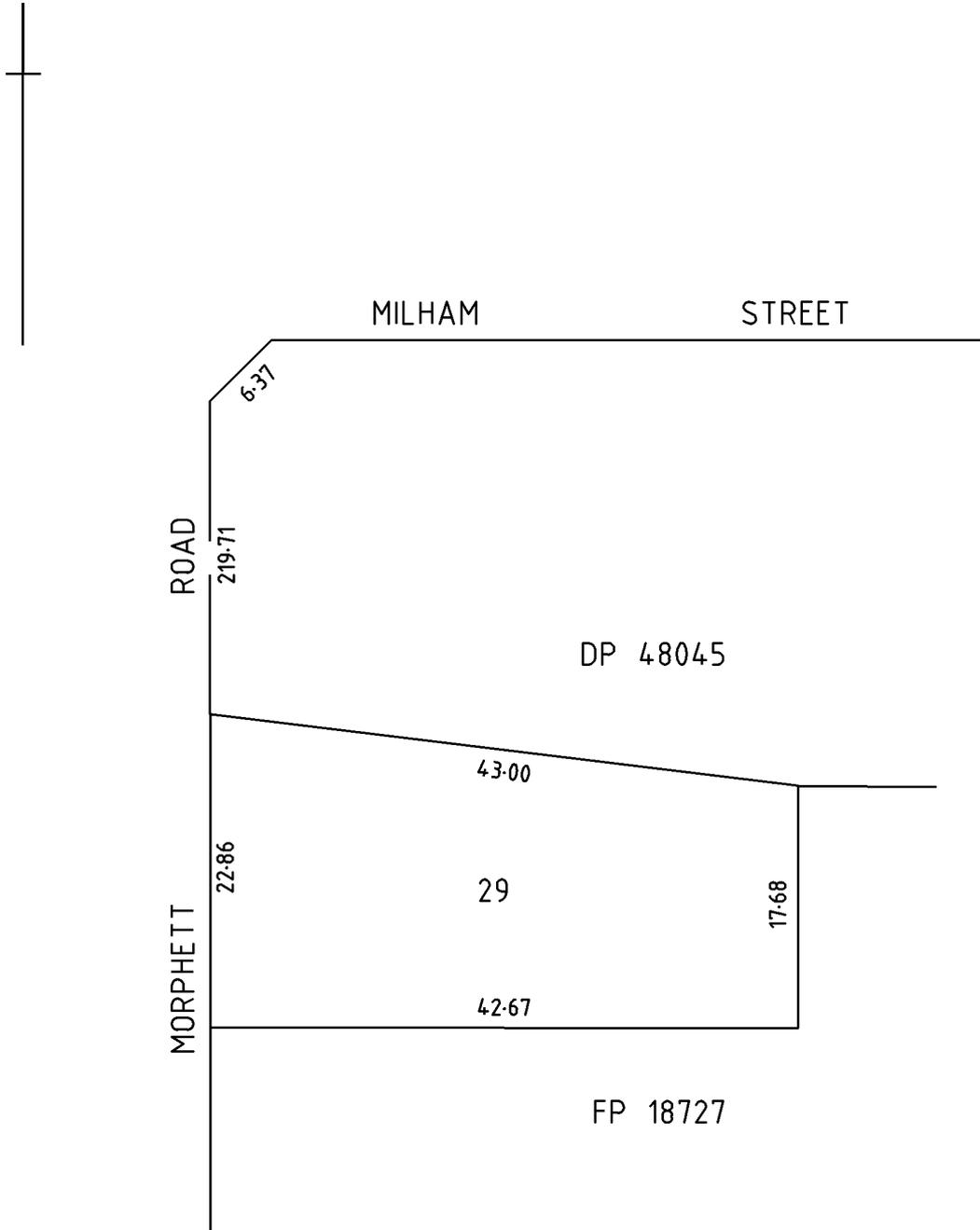
Dealings Affecting Title NIL

Priority Notices NIL

Notations on Plan NIL

Registrar-General's Notes NIL

Administrative Interests NIL



REAL PROPERTY ACT, 1886



South Australia

The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5907 Folio 313

Parent Title(s) CT 5482/897

Creating Dealing(s) SC 9712621

Title Issued 21/11/2003 **Edition** 4 **Edition Issued** 26/04/2005

Estate Type

SHARE TITLE OF THE FEE ONLY

Registered Proprietor

LEND LEASE REAL ESTATE INVESTMENTS LTD. (ACN: 063 427 896)
OF 30 THE BOND 30 HICKSON ROAD MILLERS POINT NSW 2000
1 / 2 SHARE

Description of Land

ALLOTMENT 101 DEPOSITED PLAN 48045
IN THE AREA NAMED OAKLANDS PARK
HUNDRED OF NOARLUNGA

Easements

NIL

Schedule of Dealings

NIL

Notations

Dealings Affecting Title NIL

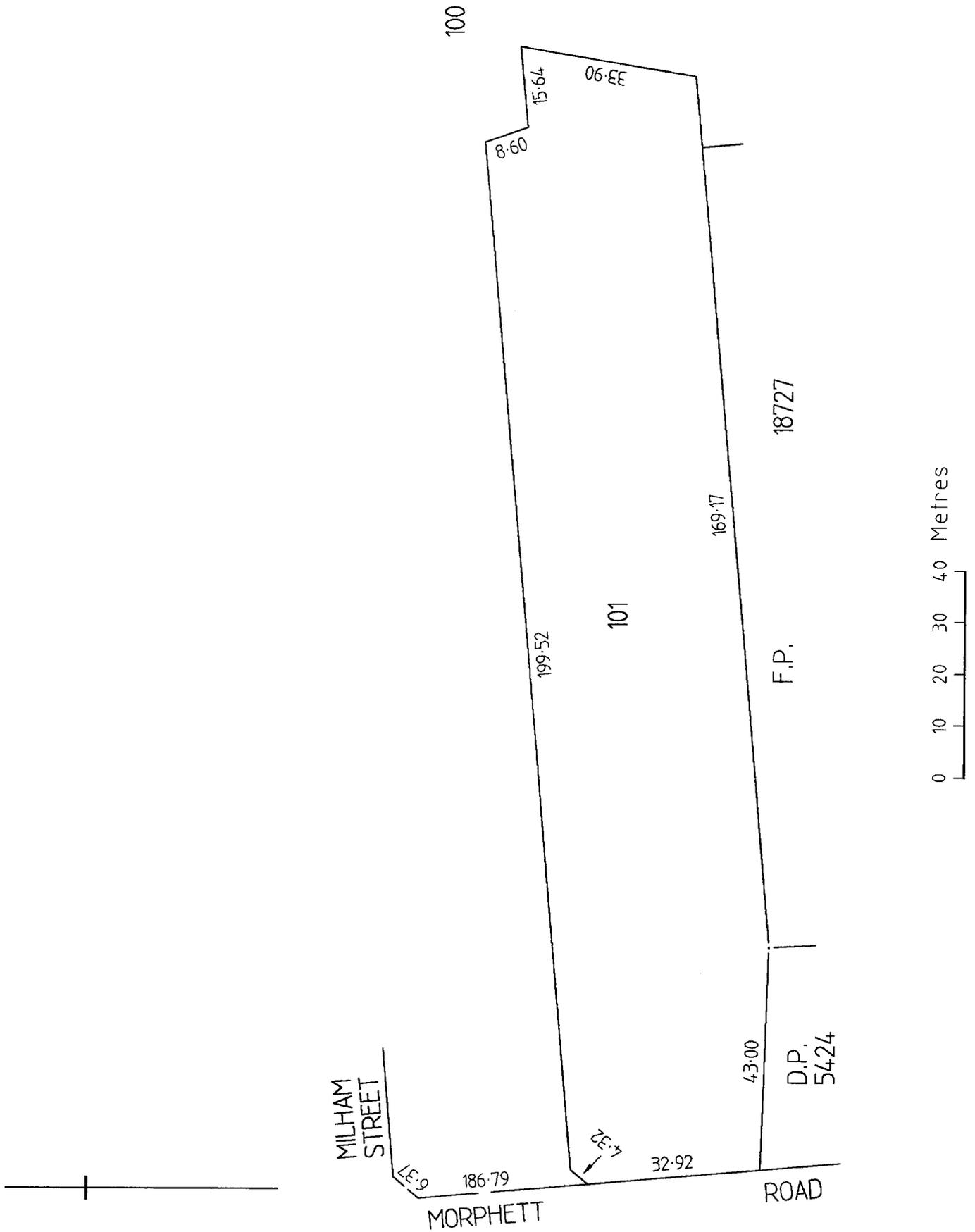
Priority Notices NIL

Notations on Plan NIL

Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G486/2003
PLAN FOR LEASE PURPOSES VIDE G84/2005
APPROVED FILED PLAN FOR LEASE PURPOSES FX49576

Administrative Interests NIL



REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 6089 Folio 59

Parent Title(s) CT 5848/470

Creating Dealing(s) AQ 11681072

Title Issued 09/01/2012 **Edition** 1 **Edition Issued** 09/01/2012

Estate Type

SHARE TITLE OF THE FEE ONLY

Registered Proprietor

LEND LEASE REAL ESTATE INVESTMENTS LTD. (ACN: 063 427 896)
OF 30 THE BOND 30 HICKSON ROAD MILLERS POINT NSW 2000
1 / 2 SHARE

Description of Land

ALLOTMENT 50 DEPOSITED PLAN 56981
IN THE AREA NAMED OAKLANDS PARK
HUNDRED OF NOARLUNGA

Easements

TOGETHER WITH RIGHT(S) OF WAY OVER THE LAND MARKED A (RTC 8702452)

Schedule of Dealings

NIL

Notations

Dealings Affecting Title NIL

Priority Notices NIL

Notations on Plan NIL

Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G486/2003
PLAN FOR LEASE PURPOSES VIDE G84/2005
APPROVED FILED PLAN FOR LEASE PURPOSES FX49576
UNAPPROVED D91290

Administrative Interests NIL

REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5907 Folio 314

Parent Title(s) CT 5482/900

Creating Dealing(s) SC 9712621

Title Issued 21/11/2003 **Edition** 4 **Edition Issued** 26/04/2005

Estate Type

SHARE TITLE OF THE FEE ONLY

Registered Proprietor

LEND LEASE REAL ESTATE INVESTMENTS LTD. (ACN: 063 427 896)
OF 30 THE BOND 30 HICKSON ROAD MILLERS POINT NSW 2000
1 / 2 SHARE

Description of Land

ALLOTMENT 371 FILED PLAN 12080
IN THE AREA NAMED OAKLANDS PARK
HUNDRED OF NOARLUNGA

Easements

NIL

Schedule of Dealings

Dealing Number	Description
11799238	CAVEAT BY DISTRIBUTION LESSOR CORPORATION OVER PORTION

Notations

Dealings Affecting Title NIL

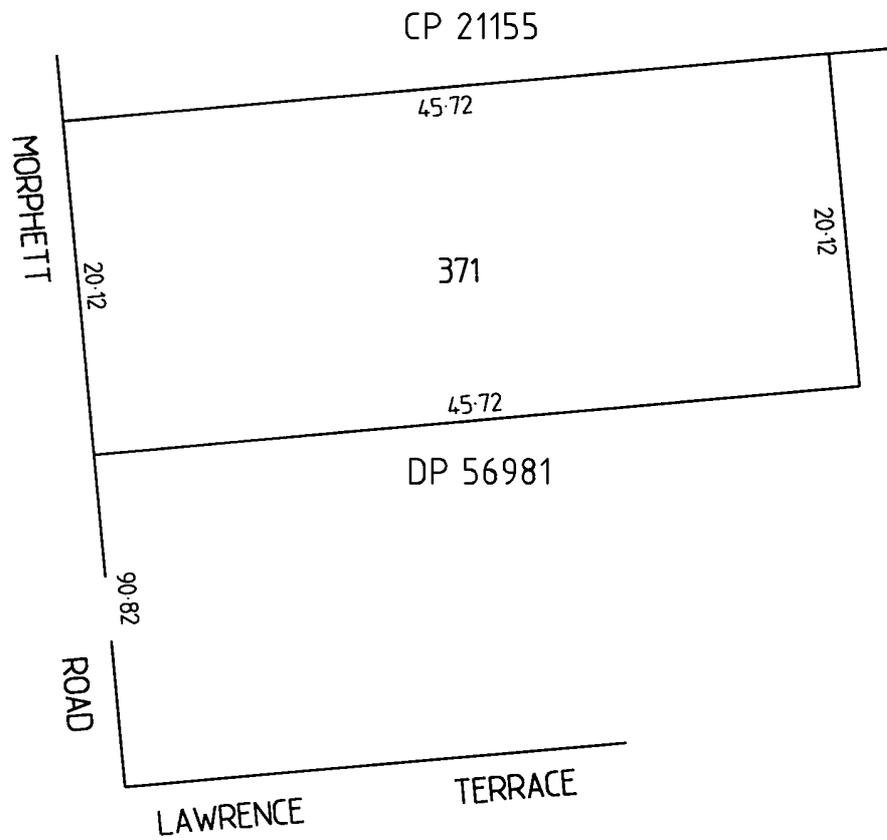
Priority Notices NIL

Notations on Plan NIL

Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G486/2003
PLAN FOR LEASE PURPOSES VIDE G84/2005
APPROVED FILED PLAN FOR LEASE PURPOSES FX49576
APPROVED FX55520

Administrative Interests NIL



REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5698 Folio 318

Parent Title(s) CT 5681/912

Creating Dealing(s) T 8746142

Title Issued 06/10/1999

Edition 4

Edition Issued

26/04/2005

Estate Type

SHARE TITLE OF THE FEE ONLY

Registered Proprietor

LEND LEASE REAL ESTATE INVESTMENTS LTD. (ACN: 063 427 896)
OF 30 THE BOND 30 HICKSON ROAD MILLERS POINT NSW 2000
1 / 2 SHARE

Description of Land

ALLOTMENT 61 DEPOSITED PLAN 52571
IN THE AREA NAMED OAKLANDS PARK
HUNDRED OF NOARLUNGA

Easements

NIL

Schedule of Dealings

NIL

Notations

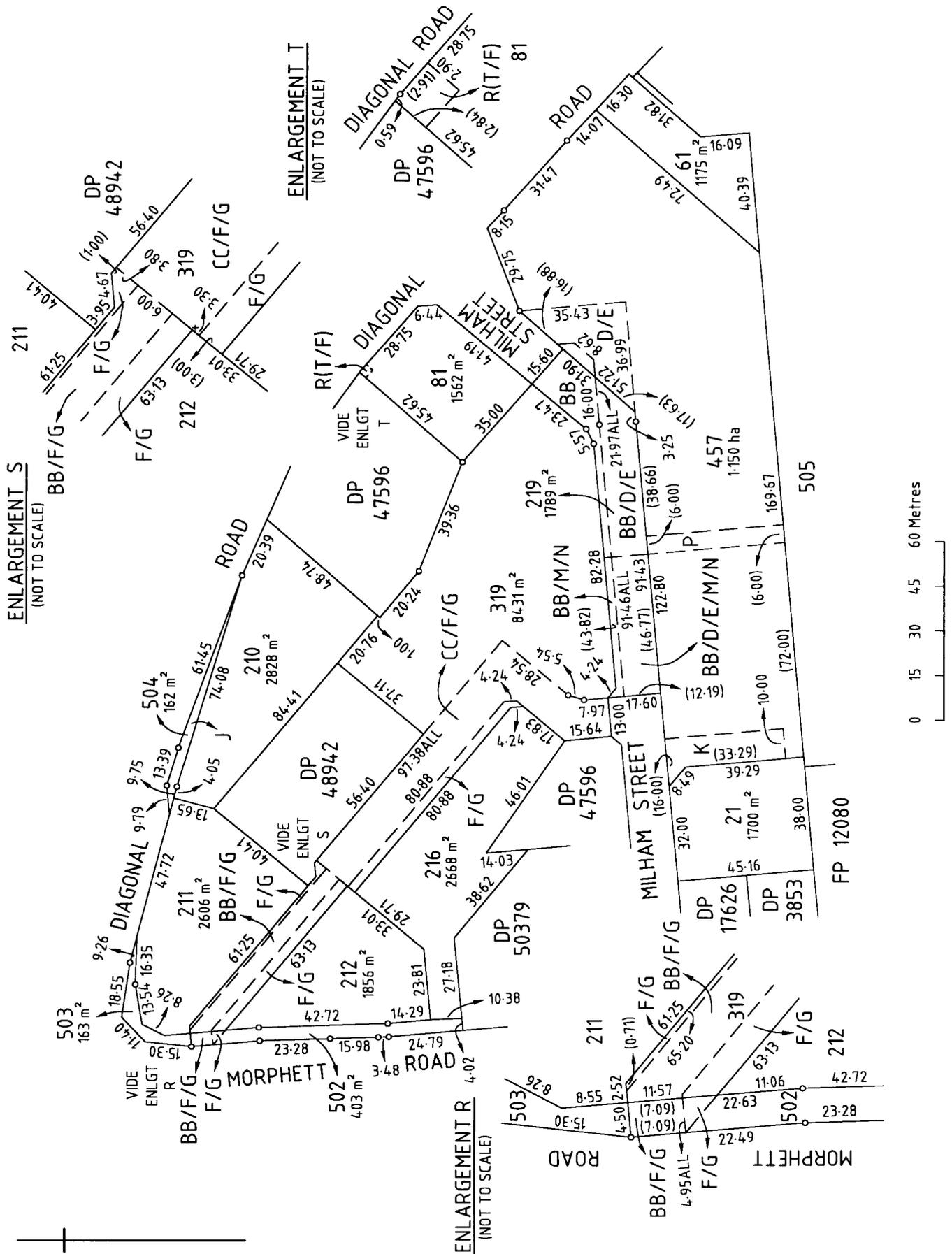
Dealings Affecting Title NIL

Priority Notices NIL

Notations on Plan NIL

Registrar-General's Notes NIL

Administrative Interests NIL



RECEIVED
10 December 2018
SCAP

PLANNING REPORT

Westfield Marion Redevelopment



Prepared by
MasterPlan SA Pty Ltd
ABN 30 007 755 277, ISO 9001:2015 Certified
33 Carrington Street, Adelaide SA 5000
Telephone: 8193 5600, masterplan.com.au

November 2017



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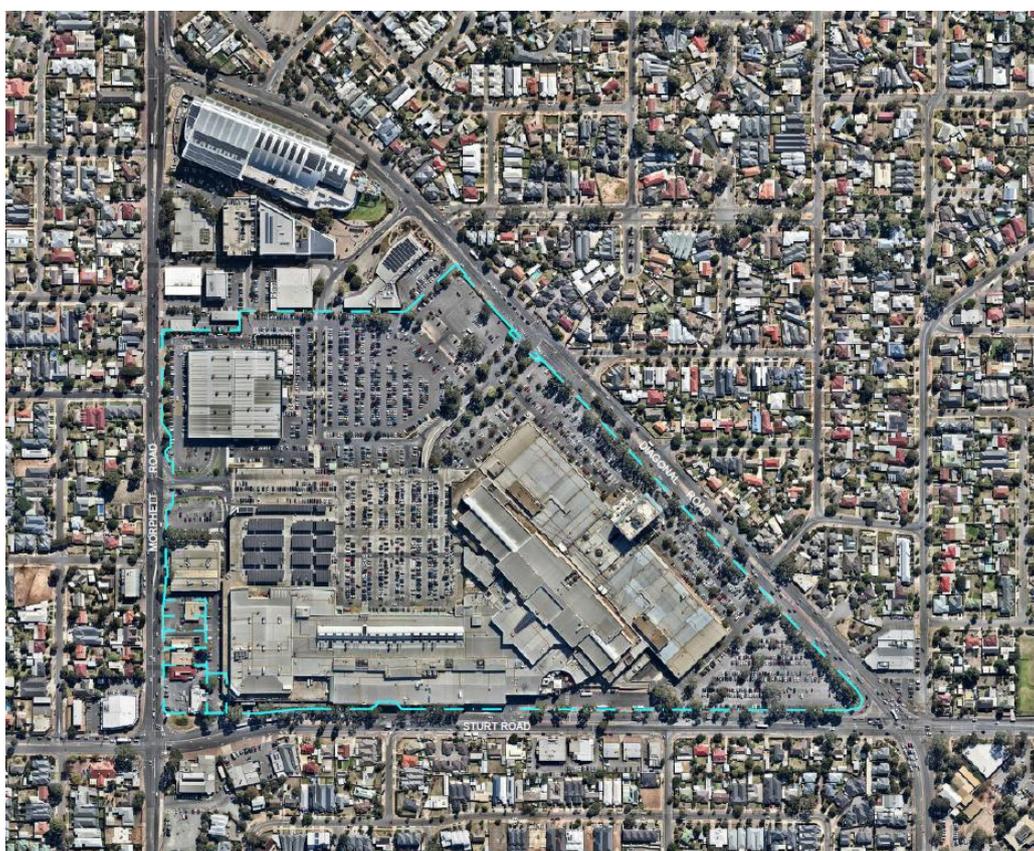
1.0 INTRODUCTION

MasterPlan SA Pty Ltd has been engaged by the Scenic Group Pty Ltd to provide town planning advice and prepare a planning report to accompany the development application for a major upgrade and expansion to Westfield Marion.

Having regard to the economic significance of this proposal the Acting State Coordinator-General, by letter dated 20 August 2018, has advised that pursuant to Regulation 20(1)(c) of Schedule 10 of the *Development Regulations 1988* (the "Regulations") the application is one that should be assessed by the State Planning Commission.

Westfield Marion (the 'Centre') was originally constructed in 1968 and has been progressively developed over several decades to meet the growing demand for regional scale facilities with the expansion of the southern region of Adelaide, and in response to evolving retail trends throughout Australia.

The Centre is the largest landholder and land use in the Marion Regional Centre, one of several regional activity centres outside the Adelaide CBD.



Existing Shopping Centre, 2018

This report provides a brief overview of the historical development and current extent of the Centre, a description of the proposed expansion and redevelopment, and a detailed assessment of the proposal against the relevant provisions of the Development Plan.



2.0 BACKGROUND

Westfield Marion (the 'Centre'), originally constructed in 1968, has been progressively developed over several decades as the demand for regional scale facilities has grown with the expansion of the southern region of Adelaide, and in response to evolving retail trends throughout Australia.

Plans to undertake a major expansion of the Centre have been active since 2007. In January 2007 an application (100/48/2007) was lodged and subsequently approved for a major expansion of the Centre and incorporated a secondary mall system at both first and second levels creating an additional 18,275 square metres leasable floor space, and a new multideck car park adjacent Diagonal Road.

A variation (100/2387/2010) to that approval was granted in 2011 incorporating a reconfiguration of the original plans, a new free standing "bowland", new free-standing car wash adjacent Diagonal Road, and the staging of the project.

In 2012 a further variation (100/1297/2012) was proposed and subsequently approved increasing the extent of new leasable floor space to 19,213 square metres, reconfiguration of internal floor space, and consequential amendments to the car park layout and relocation of the Diagonal Road car park access ramps.

In 2014 the consent was varied again (100/1536/2014) and subsequently approved to amend Stage 1 of the 2012 approval comprising changes to the outdoor dining precinct, fresh food precinct and amendments to tenancies and car parking. That approval also extended the operative date of the consent for a period of five years from the date of Development Plan Consent, being 10 December 2014, lapsing on 10 December 2019.

In 2015, Development Application (100/417/2015) sought to further vary the development authorisation and subsequently approved a four staged development: Stage 1A: Fresh Food Precinct and to undertake modifications to the loading facility for the proposed mini-major tenancy in the new Fresh Food Precinct and amendment to the refuse storage area; Stage 1B: Dining Precinct, Duplicate Mall (Level 1 - eastern end), Freestanding Tenancy, Pedestrian Boulevard and Car Parking; Stage 1C: Relocation of Tenancy, Completion of Duplicate Mall (Level 1) and Car Parking; Stage 2: Level 2 Duplicate Mall and Car Parking.

An application for controlled parking structures (DA 100/1687/11) has also been approved and remains active.

To date only Stage 1A of the 2015 approval has been completed - Fresh Food Precinct and to undertake modifications to the loading facility for the proposed mini-major tenancy in the Fresh Food Precinct and amendment to the refuse storage area.



Changes in ownership of the Centre, revised retail projections, economic circumstances and fundamental changes in customer needs have resulted in a comprehensive review of the previously approved scheme that has led to the approach now embodied within this application. The extent of expansion has been reduced to a second parallel mall with associated shops at Level 1 only, a new multi deck car park, an aspirational expansion of the lifestyle precinct on Level 2 and several other improvements.

Given the extent of change from the previously approved scheme, it was considered appropriate to lodge a fresh application rather than seek further variations to existing approvals.

3.0 DESCRIPTION OF PROPOSAL

It is proposed to expand the Centre through the development of a second parallel mall on Level 1, expansion of the existing lifestyle precinct on Level 2 and consequential alterations to car parking, vehicle access, vehicle and pedestrian circulation and service vehicle access and loading/unloading arrangements. A secure ticketless parking system will also be established. Details of the main components of the proposal are as follows:

- additional gross leasable area of 16,896 square metres from the existing 135,302 square metres to 152,198 square metres (inclusive of cinema, leisure and storage areas) - comprising second parallel mall linked to the existing mall on Level 1, and new major, mini-major and specialty shops around the re-configured Level 1 plan with a second mall connecting north/south to link the new parallel and existing malls, along with a new Lifestyle and Dining Precinct on Levels 2 and 3. The floor area expansion will generally occupy the undercover car park area to the immediate north of the existing centre building;
- Level 2 Lifestyle Precinct – new outdoor *Lifestyle Precinct* comprising a landscaped pedestrian plaza with outdoor seating, landscaped planters and water features, lightweight shade and shelter structures integrated with a number of cafés/restaurants, fitness and leisure offers. To be located across Levels 2 and 3 on the existing car park deck adjoining the current north-western Level 2 entrance to the upper mall and connectivity to the existing Level 3 entertainment precinct whilst connecting conveniently to the Centre's car park;
- new four level car park situated on the northern side of the new retail area and east of the Bunnings building, integrated into the existing deck car park;
- vehicle access to the new car park will be from the existing ramp from Morphett Road (re-configured to meet new circulation arrangements, and a new ramp system from the existing Diagonal Road access (also re-configured));
- re-configuration of the existing western most vehicle access point to Sturt Road to introduce an exit movement for commercial vehicles servicing the Woolworths and Aldi loading facility;



- new internal travelator and lift connections between the car park and Levels 1, 2 and 3;
- installation of a ticketless controlled parking scheme offering three hours free car parking, and associated minor modification to existing access points to accommodate access controls for the improved ticketless parking experience;
- upgrade of the north-south pedestrian link from the Centre to Marion's Cultural Centre and Oaklands Crossing (the Northern Fringe Precinct, Marion Domain) in association with the reconfigured access and car parking including enhanced pedestrian amenity and safety, a new pedestrian boulevard and amenity; and
- landscaping treatments to complement the new built form, site layout and enhance the visual and customer amenity of the Centre.

A folio of plans prepared by the Scentre Group and dated 20 November 2018 comprise the plans of the proposed re-development and are the plans referred to herein.

DRAWING NO.	DRAWING TITLE	REVISION
01.5000	PRELIMINARIES	
01.5001	Drawing List	A
01.5050	EXISTING CONDITIONS	
01.5051	Site Aerial Photo	A
01.5100	GENERAL ARRANGEMENT: EXISTING	
01.5101	Existing Level 1 Plan	A
01.5102	Existing Level 1M Plan	A
01.5103	Existing Level 2 Plan	A
01.5104	Existing Level 3 Plan	A
01.5105	Existing Roof Plan	A
01.5150	GENERAL ARRANGEMENT: DEMOLITION	
01.5151	Demolition GA Level 1 Plan	A
01.5152	Demolition GA Level 2 Plan	A
01.5200	GENERAL ARRANGEMENT: PROPOSED	
01.5201	Proposed GA Level 1 Plan	A
01.5202	Proposed GA Level 1M & 1Ma Plan	A
01.5203	Proposed GA Level 1Mb Plan	A
01.5204	Proposed GA Level 2 Plan	A
01.5205	Proposed GA Level 3 Plan	A



DRAWING NO.	DRAWING TITLE	REVISION
01.5206	Proposed GA Roof Plan	A
01.5300	GENERAL ARRANGEMENT: SECTIONS	
01.5301	Proposed Section A-A, B-B	A
01.5400	GENERAL ARRANGEMENT: ELEVATIONS	
01.5401	Proposed North Elevation	A
01.5402	Proposed Diagonal Road & East Elevation	A
01.5403	Proposed South & West Elevation	A
01.5500	PERSPECTIVES	
01.5501	Perspective 01	A
01.5502	Perspective 02	A
01.5900	MATERIALS AND FINISHES SCHEDULE	
01.5901	Materials and Finishes Schedule	A

The following technical and supporting reports are submitted in conjunction with the application and are referenced in this planning report:

- Traffic and Parking Report prepared by MFY Pty Ltd;
- Arborman Tree Solutions. Preliminary Tree Assessment, Site: Westfield Shopping Centre at Marion, ATS5170-WestMarionPTA;
- Stormwater Management Plan prepared by Wallbridge Gilbert Aztec, 17 August 2018; and
- Landscape Concept Report prepared by Outer Space, September 2018.

The following sections describe in more detail the key features of the proposal.

3.1 Floor Area Schedule

It is proposed to add an additional 16,896 square metres to the shopping centre increasing the existing leasable area from 135,302 square metres to 152,198 square metres (inclusive of cinema, leisure and storage areas).



The following table summarises the breakdown of existing and proposed lettable floor area.

GROSS LETTABLE AREA BY TYPE								
	Existing	Demolish		Proposed		Incremental		Total on Completion
	M ²	Nos.	M ²	Nos.	M ²	Nos.	M ²	M ²
Specialty Shops		14	1,918	63	8,922	49	7004	
Restaurant		1	349	10	3,154	9	2,805	
Kiosk		0	0	6	160	6	160	
Mini-major		3	3,576	6	14,760	3	11,184	
Major		1	7,948	1	3,328	0	-4620	
SUBTOTAL	124,272	19	13,791	86	30,324	67	16,533	140,805
Cinema		1	11,030	1	7,661	0	-3,369	
Leisure		0	0	1	3,369	1	3,369	
Storage		0	0	3	363	3	363	
TOTAL	135,302	20	24,821	91	41,717	71	16,896	152,198

3.2 Access and Car Parking

The proposal retains the existing major vehicle access points to the site and no new access points are proposed. A number of the existing accessways will be modified to accommodate the new traffic flow and circulation patterns required to be established (described in more detail in the MFY report) and the ticketless access control parking system as outlined in further detail below.

In general terms the proposal includes the construction of a new multi deck car parking structure that replaces existing car parking areas that will be lost due to the expanded floor area, in particular the area currently below the existing deck car park.

A change in the number of car parking spaces on the site will occur as a result of the site alterations from the existing provision of 5,250 spaces to 4,956 spaces, resulting in a net decrease of 294 spaces.



3.3 Description of the Ticketless Access Control Parking System

The proposed development includes the installation of a ticketless access control car parking system and seeks approval to:

- install automated car parking control structures to facilitate the management and control of car parking arrangements on the site; and
- undertake alterations to the Centre car park and access points to accommodate the automated car parking control structures.

The automated car parking control structures will take the form of cameras and a pay on exit facility. Pay machines will also be provided throughout the car parks to enable payment prior to exit.

The minor amendments to the car parking layout together with the proposed location of the exit boom gates are detailed in the report and illustrated on the plans submitted with the application prepared by MFY.

The parking control structures do not change the existing provision of free on-site car parking provided for the legitimate users of the associated land uses, but do introduce an alternate regime of payment for users who out-stay the reasonable timeframe for parking imposed under the Private Parking Areas Act.

3.2.1 Automated Parking Control Structures

The parking control structures to be installed include the following equipment and facilities:

- exit boom gates capable of accommodating 600 cycles per hour with detachable arms with a break feature in the event of emergencies and interruption detection to avoid vehicle damage;
- bollards will be installed to protect the car parking structures from damage;
- pay-on-foot ticket validators and pay stations will be conveniently located at the entrances and exits of the Centre together with additional locations within the car park; and
- car park control will be located within the existing shopping centre and integrated with the existing security office.

All equipment will be linked via an intercom system to a master intercom station. This will allow patrons having any difficulties to contact staff at the car park office. Each piece of equipment will have CCTV vision which can be operated by remote control. The system's intelligence allows the majority of issues to be controlled from the car park control office. If it is unable to be resolved, car park staff will be in radio contact with the staff deployed throughout the car park to provide immediate resolution.



3.2.2 Management Arrangements

The automated parking structures do not result in a change in use in that the parking remains for the benefit of the users of the Centre. Users that exceed the three hour free parking time limit will be charged a standard rate as opposed to the current management practice where users who breach the existing time limits are issued an expiration notice under the Private Parking Areas Act.

Patrons will have the ability to pay any required charge at a 'pay-on-foot' facility or at the gate 'Column Gate Control Unit' by credit card.

Most car park users do not exceed the three hour free parking period which, based on empirical data collected from the automated parking systems implemented at other Westfield centres with two hour free parking controls account for approximately 87.65 percent of the vehicles utilising the centre car parking. The length of parking duration recorded was approximately 70 minutes or just over one hour.

A shared parking arrangement has been in place for a nested car parking area for the Aquatic Centre on large event occasions, and the new ticketless system can facilitate these arrangements as necessary.

Staff car parking for Centre staff will be controlled through the issue of staff parking permits through Centre Management. Specified non-premium areas will be allocated within the existing parking area for use by staff.

The existing bus interchange is separately accessible from Sturt Road and will not be subject to the installation of automated access control structures.

Delivery vehicle access will enter and egress in the same fashion as above or otherwise egress by intercom, if needed.

3.4 Landscaping

A landscaping concept has been prepared by Outer Space and is submitted with the application. The concept embodies four key design principles relating to Connectivity, Greeting Space, Lifestyle and Dining, and Green Edges.

The report illustrates the application of these principles to the main areas of the site – the main vehicle and public entry points, the car park and building, pedestrian paths, northern boulevard and the Lifestyle Precinct.

The principles and illustrations in the report will guide the development of a detailed landscape plan for approval by the planning authority prior to construction of the development.



In addition to the impact on the existing landscaping generally, the redevelopment will require the removal of eight regulated trees. Whilst removal of any trees is undesired, the planning and design process has specifically sought to minimise this impact, and the new landscape strategy is developed to provide an improved overall landscape and pedestrian environment than existing.

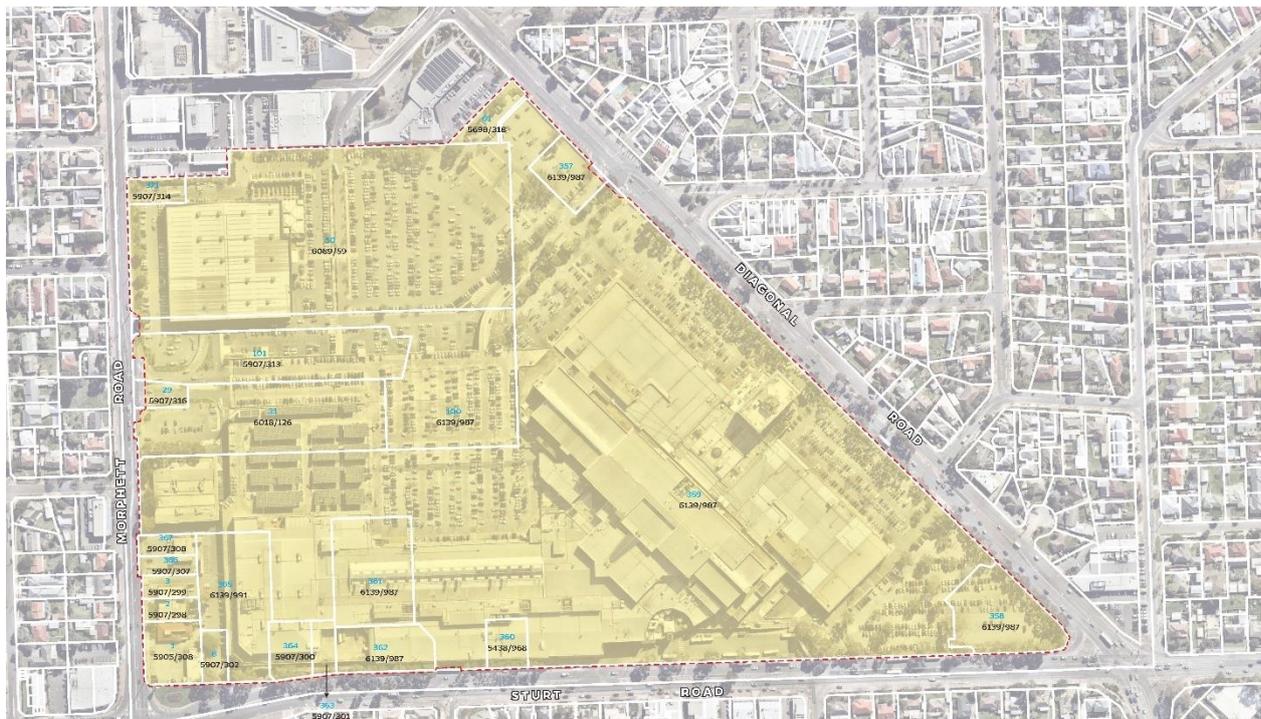
An arborist is proposed to be engaged to advise on design detail where the retained trees may be impacted by the development and a final Tree Protection Plan will be prepared in accordance with the relevant Australian Standard AS4970-2009.

4.0 SUBJECT LAND AND LOCALITY

4.1 Subject Land

Westfield Marion is located approximately 13 kilometres south west of the Adelaide CBD and is contained on a large triangular site that has frontage to three main arterial roads - Diagonal, Sturt and Morphett Roads.

The site has a total area of approximately 23 hectares and the land comprises some 22 separate titles as shown below. Copies of all titles are contained in **Appendix 1**.



Marion Shopping Centre – Land Parcels



The subject land comprises the main shopping centre building and associated car parking and manoeuvring, a number of individual shop buildings fronting Morphett and Sturt Roads with independent and/or integrated access and car parking.

The main shopping centre building comprises approximately 135,302 square metres of gross leasable floor area which includes:

- two full line department stores (David Jones and Myer);
- three supermarkets (Coles, Aldi and Woolworths);
- four discount department stores (Big W, Target, Kmart and Harris Scarfe);
- 14 mini-major stores (including Cotton On Mega, Best and Less, Rebel Sport and JB HiFi);
- specialty shops and services;
- offices;
- fast food court;
- fresh food precinct;
- cafes and restaurants;
- bowling centre;
- two licensed entertainment venues (Shenanigans' Irish Pub and the New York Bar and Grill); and
- a 27 screen cinema complex and games centre.

The stand-alone premises outside of the main Centre include a Bunnings Store, a Dan Murphy's retail liquor outlet, a Super Cheap Auto store, KFC, Pizza Hut, motor vehicle registration office, and a Supercheap Auto store.

The Marion bus interchange is located at the centre of the site's frontage to Sturt Road and has connections to Adelaide city centre, Flinders University, Hallett Cove and Port Adelaide.

There are a total of eight access points from the surrounding arterial roads to the shopping centre, three of which are controlled by traffic lights.



4.2 The Locality

Immediately adjoining the subject land to the north of the shopping centre and comprising the remainder of this part of the Regional Centre Zone is the area known as the "Marion Domain" (the Domain). The Domain is designed to be the civic and cultural focal point of the Marion Regional Centre. The Domain contains several significant buildings including the Marion Cultural Centre, the State Aquatic Centre, a number of health, social services, consulting room and administrative service facilities and an associated multi-deck car park.

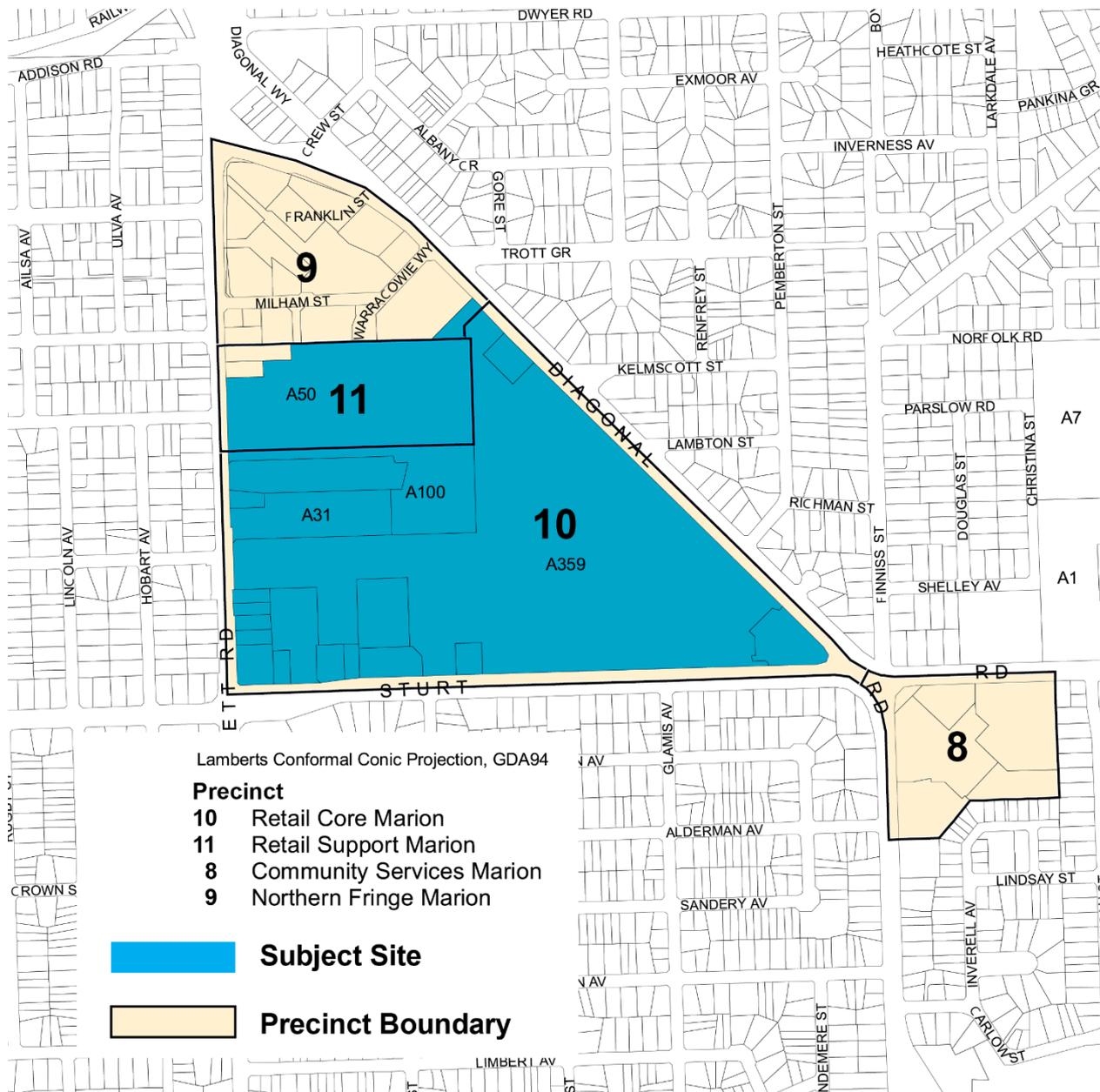
Surrounding the Regional Centre Zone on the opposite side of Morphett, Diagonal and Sturt Roads is a mixture of predominantly residential area, interspersed with commercial, office, retail and community service facilities. These include:

- a small strip of shops and two bank branches and a two storey medical centre opposite the bus interchange on Sturt Road;
- Salvation Army centre at the intersection of Sturt and Morphett Roads (south eastern corner);
- a small cluster of consulting rooms and a childcare centre opposite the Bunnings Hardware store on the western side of Morphett Road;
- several commercial properties and a dwelling converted for use as consulting rooms on the eastern side of Diagonal Road; and
- the Marion City Council Chambers and a range of other community administration and public health services diagonally opposite the shopping centre site at the intersection of Diagonal and Sturt Roads.

5.0 DEVELOPMENT PLAN PROVISIONS

5.1 Relevant Policies

Westfield Marion is located within the Regional Centre Zone of the Marion (City) Development Plan, consolidated 20 February 2018, and predominantly within Precincts 10 and 11 of the Zone. The Development Plan provisions for the aforementioned zone and precincts are directly relevant to the assessment of the application.



It is noted one land parcel (Lot 61) at the northern most part of the Centre adjoining Diagonal Road is situated in Precinct 9. This could be regarded an anomaly as the precinct boundary does not follow the current cadastral boundary. Precinct 9 – Northern Fringe Marion – is described in the Desired Character for the Zone as being for “further community and other related development”. As there is no change in use in this area and effectively no development being undertaken that would otherwise require planning consent, nor are there any policies in the zone provisions that would impact on the continuation of the existing use of the land, the proposal requires no further consideration in respect to the Precinct 9 provisions.



In addition to the zone provisions, the Council's Development Plan contains a number of general Council-wide provisions that will be relevant to the assessment of the application, in particular:

- Advertisements;
- Centres and Retail Development;
- Crime Prevention;
- Design and Appearance;
- Interface between Land Uses;
- Landscaping, Fences and Walls;
- Natural Resources;
- Regulated Trees;
- Transportation and Access; and
- Strategic Transport Routes Overlay.

Section 6 of this report provides our assessment of the application against the relevant provisions of the Development Plan.

5.2 Procedural Matters

5.2.1 Relevant Authority

As noted previously the State Planning Commission is the relevant Authority in relation to the application pursuant to a determination of the A/State Coordinator-General. The Commission's powers to determine development applications are delegated pursuant to Section 30(1) of the *Planning Development and Infrastructure Act 2016* to the State Commission Assessment Panel.

5.2.2 Form of Assessment

The proposal is not listed in the Regional Centre Zone provisions as either complying or non-complying development, and accordingly is a kind of development that must be determined on its merits against the relevant provisions of the Development Plan.



5.2.3 Public Notification

The proposal fits within the prescription of Category 2 for the purposes of public notification as set out under paragraph 19 of Schedule 9 of the Regulations, in that while all forms of development in the Regional Centre Zone would ordinarily be Category 1, the land is located adjacent to land in a different zone. Category 2 notification requires owners or occupiers of adjoining land to be given written notice of the application, and the right to lodge a written representation within the prescribed time of 10 business days. Persons who lodge representations may be invited to attend a hearing by the relevant authority (at its discretion) before making its decision. A Category 2 representor has no right of appeal against the decision of the relevant authority. The applicant may exercise their right to appeal if aggrieved by the decision of the relevant Authority.

5.2.4 Referrals

The application will be required to be referred to the Commissioner of Highways for “direction” pursuant to item 3 of Schedule 8 of the Regulations as it affects access to an arterial road.

The application also requires referral to State Commission Assessment Panel (SCAP) for “direction” pursuant to item 13 of Schedule 8 of the Regulations - being development within a Regional Centre where the gross lettable area of the development exceeds 10,000 square metres. It is noted the SCAP is the relevant Authority in this instance.

As the SCAP has been appointed the Relevant Authority by the State Coordinator-General, the application will also be required to be referred to the City of Marion Council, which will have six weeks to make any submissions to the Commission.

6.0 ASSESSMENT AGAINST THE RELEVANT PROVISIONS OF THE DEVELOPMENT PLAN

6.1 Land Use

Westfield Marion is the principle retail component of the Marion Regional Centre Zone as delineated on Map Mar/7 of the Marion (City) Development Plan and is situated specifically within Precincts 10 and 11 of the Zone.

The policies for the Regional Centre Zone seek the provision of a wide range of shopping, convenience and service facilities aimed at a regional level catchment. The following Objectives, Desired Character provisions, and Principles of Development Control (PDCs) for the zone set out the land use policies for development in the zone:



REGIONAL CENTRE ZONE - OBJECTIVES

- 1 **A centre representing the primary focus for business and commercial services for the region, outside the central business district of Adelaide, providing a full range of shopping, administrative, cultural, community, entertainment, education, religious and recreational facilities, and public and private office development.**
- 5 **Development that contributes to the desired character of the zone**

Desired Character (extracts)

The State Government's Planning Strategy for Metropolitan Adelaide envisages the Marion Regional Centre as the major regional centre serving the inner southern suburbs of metropolitan Adelaide.

To meet this objective, the existing regional centre must expand and diversify the activities within it to provide a central focus for a range of facilities that can be conveniently accessed by the surrounding population....

To accommodate new facilities, the existing regional centre must be allowed to intensify within the already developed areas and expand to incorporate new areas. The designated area for expansion of the regional centre is to the north of the existing major shopping centre encompassing all of the land within the triangle bounded by Morphett, Diagonal and Sturt Roads.

Within this area it is envisaged major expansion of the existing shopping complex will occur, complemented by a mix of bulky good outlets, smaller and lower order retail establishments, offices, community and leisure facilities. To ensure opportunities are available for a range of commercial and non-commercial developments, expansion of core retail facilities, is to be allowed within and generally limited to Precinct 10 Retail Core Marion

REGIONAL CENTRE ZONE - PRINCIPLES OF DEVELOPMENT CONTROL

- 1 **The following forms of development are envisaged in the zone:**

• affordable housing • bank • child care centre • civic centre • community health centre • consulting room • department store • dwelling in conjunction with non-residential development • educational establishment • emergency services facility • entertainment facility • hospital • hotel • indoor games centre • library • motel • motor repair station • office • place of worship • playing field • pre-school • residential flat building in conjunction with non-residential development • restaurant • shop • supermarket • swimming pool.

The zone provisions specifically envisage the continued expansion and diversification of facilities within the zone to ensure it continues to meet the needs of the surrounding population. This proposal directly meets this objective in that it provides for the expansion and further diversification of shopping facilities and related services in the centre zone to meet the needs of its growing catchment and in response to projected future demand.

It is proposed to expand the lettable floor area of the Centre through the development of a second linking mall parallel to and to the north of the existing west-east mall to enable the development of additional lettable floor space. The expansion is proposed in the area designated for expansion in the Desired Character statement above *"to the north of the existing major shopping centre"* and *"generally limited to Precinct 10 Retail Core Marion"*.



Precinct 10 Retail Core Marion

- 22 The precinct should contain an extensive range and diversity of regional centre facilities related to its function as the core retail area for the region.**
- 23 Major expansion of the existing shopping centre complex should occur primarily in a northerly direction to facilitate integration of the existing complex in respect to function, access, car parking, built-form and landscaping with other development (existing or proposed) in Precinct 9 Northern Fringe Marion and Precinct 11 Retail Support Marion to the north.**

Precinct 11 Retail Support Marion

- 24 The following forms of development are envisaged in the precinct:**

• bulky goods outlet • concession stalls and open air markets developed along main pedestrian and/or vehicle linkages • offices • recreation and entertainment activities • restaurants • small-scale specialty shops • taverns.

- 25 Concession stalls and open air markets should only occur on weekends and public holidays.**

The new mall and shopping centre floor space will primarily occupy the area under the existing car parking deck on the northern side of the existing building, situated entirely within Precinct 10 where expansion of the existing Centre is intended to facilitate integration of the new with the existing.

The existing deck parking will remain and integrate with a new multi-level car park to be constructed over the open car parking area immediately adjacent to the north of the new building and east of the Bunnings building in Precinct 11. Precinct 11 is a secondary retail precinct supporting the core precinct with a range of complementary and other facilities.

The Precinct is currently fully developed and contains a bulky goods store (Bunnings) and at-grade car parking. This proposal does not change the established uses of this area but intensifies the car parking component through the development of a multi-level car parking structure over a substantial portion of the existing car park.

The proposal will increase the current lettable floor area by 16,896 square metres from 135,302 square metres to 152,198 square metres. Many of the "envisaged" uses for the zone are accommodated within the existing Centre, and the expanded Centre will incrementally provide opportunity for additional facilities including:

- 52 specialty shops;
- 20 restaurants/café/fresh food tenancies;
- three additional Mini-Major stores;
- eight kiosks; and
- additional leisure and entertainment facilities.



A breakdown of the existing and proposed lettable floor area by primary use type is set out in Section 3.1 above.

The expansion will provide for a wider and more diversified offering of retail, dining, entertainment, leisure and service activities that will enhance and expand the range of uses desired by the policies for the zone.

A particular feature of the proposal is the new Lifestyle Precinct on Levels 2 and 3 which will introduce a new outdoor dining and leisure experience to complement and enhance the existing experiences in the Centre.

In summary, the proposal represents an orderly and economic use of land and expansion of the existing Centre and meets the guiding principles of the Zone and Precincts in respect to desired land use and the form of development.

6.2 Form and Character of Development

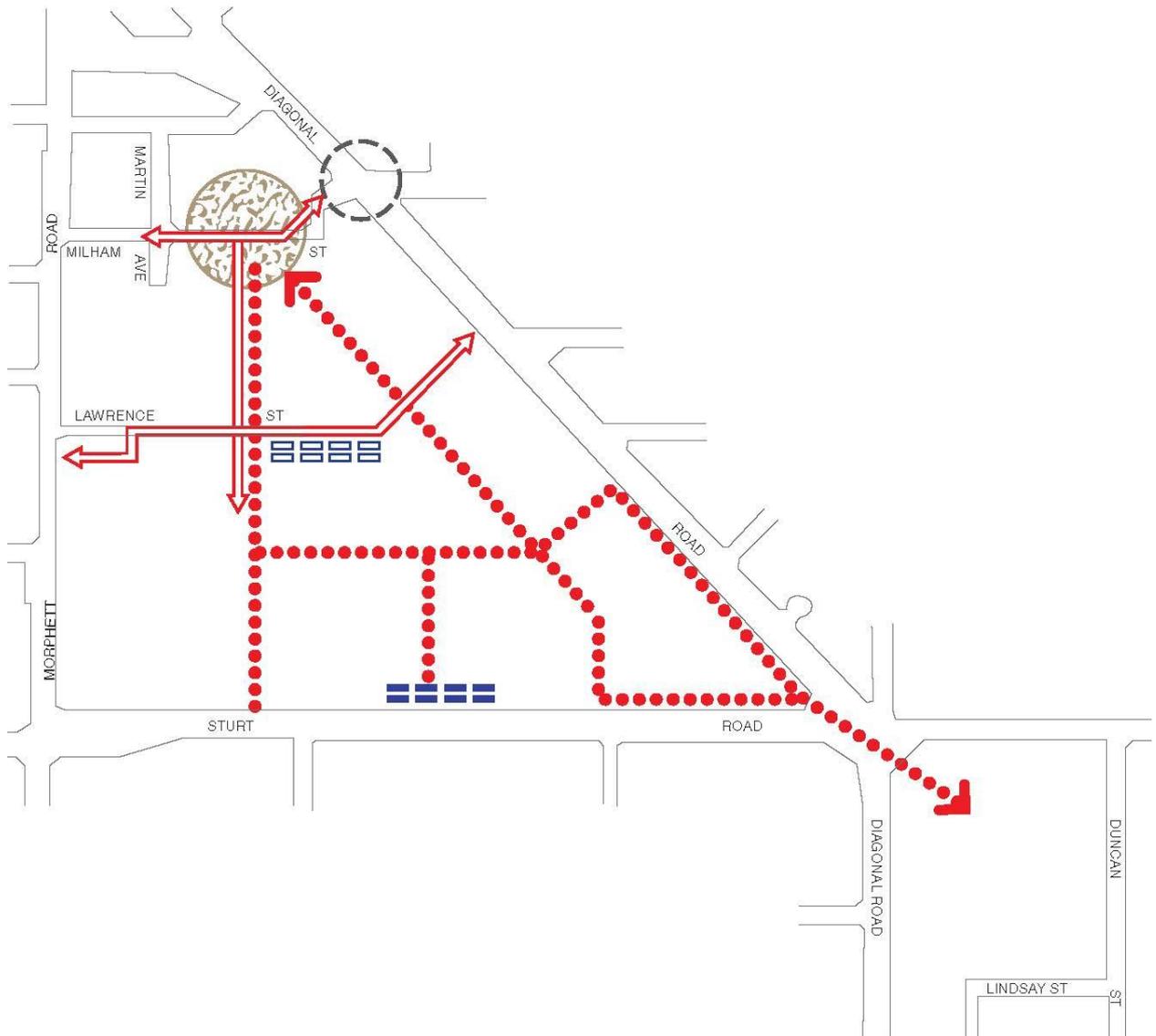
The following Principles of Development Control are relevant to the form and character of development in the Regional Centre Zone:

Regional Centre Zone - Principles

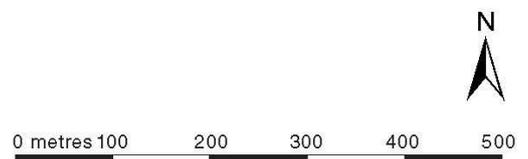
- 4 Development should not be undertaken unless it is consistent with the desired character for the zone.**
- 6 Facilities within the centre should be sited and designed with a view to promoting after-hours use to reinforce the centre as the focus of social activity in the region.**
- 10 Development outside of Precinct 10 Retail Core Marion should comprise new regional centre facilities that complement but do not duplicate that precinct's function as the focus for major retailing activities.**
- 11 Development should be carried out in accordance with Concept Plan Map Mar/5 - Marion Regional Centre.**

The shopping centre, being one component of the Regional Centre Zone, provides a range of activities and land uses that promote after hours use, including recreation and leisure facilities, entertainment, restaurants and licensed premises as envisaged by Principle 4. This proposal further expands these activities, particularly with the introduction of the new outdoor Lifestyle Precinct on Levels 2 and 3. This outdoor area will link into the covered mall at the upper level entry from the northern deck car park, providing after-hours activity and access complementary to the cinemas and other entertainment facilities.

The Concept Plan Map Mar/5 indicates the location of major public open space, major pedestrian accessways, bus transfer station site (including an alternative site), major vehicles accessways, and traffic control measures.



-  Major Public Open Space
-  Major Pedestrian Accessway
-  Bus Transfer Station Site
-  Alternative Bus Transfer Station Site
-  Major Vehicle Accessway
-  Traffic Control Measure



MARION

Concept Plan Map Mar/5

REGIONAL CENTRE



In terms of land use and form of development, the proposal meets the concepts depicted in Concept Plan Map Mar/5 in that it retains the location of the existing bus transfer station, facilitates the primary access routes, and does not impact on the major open space. Later sections of the assessment will consider the pedestrian and vehicle access arrangements including linkages to the adjoining arterial roads and pedestrian access within the Centre, and linkages to external features including the major open space as shown on the Concept Plan.

6.3 Building Heights and Setbacks

The following Principles of Development Control refer to the height and setback of development in the Regional Centre Zone:

- 13 **Within Precinct 10 Retail Core Marion, the height and setback of buildings should satisfy the following parameters:**

Road	Height of building (metres)	Minimum setback from road boundary (metres)
Diagonal Road	up to 11	20
Diagonal Road	over 11	30
Morphett Road	up to 8	8
Morphett Road	between 8 and 11	20
Sturt Road	up to 11	Nil provided the building addresses Sturt Road and are designed to present an attractive frontage
Sturt Road	over 11	8

- 14 **Outside of Precinct 10 Retail Core Marion, the height and setback of buildings should achieve a transition from the largest and tallest buildings located well within the zone boundaries and satisfy the following parameters:**

Road	Maximum building height (metres)	Setback from road boundary (metres)
Diagonal, Morphett and Sturt Roads	N/a	No building should be located within 8 metres of the road boundary
Diagonal, Morphett and Sturt Roads	8	8 to 20
Diagonal, Morphett and Sturt Roads	11	20 to 30
Diagonal, Morphett and Sturt Roads	23	more than 30



The effect of the above provisions is to provide a gradation in the height of buildings from the tallest in the central part of the zone to the lowest on the peripheries adjoining the surrounding arterial roads by setting maximum height limits at certain setback distances.

Precinct 10

In the Retail Core Precinct 10 the principles do not set a maximum height limit for development outside of the prescribed setback distances to Diagonal or Sturt Roads other than requiring development “over 11 m” high to be setback more than 30 and 8.0 metres respectively.

For development from Morphett Road the principles require a maximum height limit of 8.0 metres between a distance of 8.0 to 20 metres from the road frontage, and a maximum height of 11 metres beyond the 20 metre setback. It is not clear where the maximum height limit of 20 metres from Morphett Road would end as you move towards the centre of the zone and where the Sturt and Diagonal Road height limit provisions would apply.

In regard to the proposed development within the Retail Core Precinct 10 there are no new building elements within the prescribed setback distances from Diagonal and Sturt Roads. Alterations to the car park ramps serving the deck car park adjoining Sturt Road are internal to the existing structure.

Precinct 11

Principle 14 indicates the maximum building height for development that is setback more than 30 metres from Diagonal, Morphett and Sturt Roads is 23 metres. The proposed new structures (multi-level car park and centre additions) are both setback more than 30 metres from the roads and are less than 23 metres high.

In summary therefore, the proposal meets the prescriptive criteria for building heights in the zone and precincts.

6.4 Appearance and Design

The following Council-wide PDCs refer to the appearance and design of development in centre zones.

6.4.1 Centre design

Council-wide PDCs - Centres and Retail Development

1 Development within centres should:

- (a) integrate facilities within the zone**
- (b) allow for the multiple use of facilities and the sharing of utility spaces**
- (c) allow for the staging of development within the centre**



- (d) **be integrated with public and community transport**
- (e) **should not include service trade premises except where located on the periphery of the centre.**

3 Development within centres should provide:

- (a) **public spaces such as malls, plazas and courtyards**
- (b) **street furniture, including lighting, signs, litter bins, seats and bollards, that is sited and designed to complement the desired character**
- (c) **unobtrusive facilities for the storage and removal of waste materials**
- (d) **public facilities including toilets, infant changing facilities for parents, telephones and community information boards**
- (e) **access for public and community transport and sheltered waiting areas for passengers**
- (f) **lighting for pedestrian paths, buildings and associated areas**
- (g) **a single landscaping theme**
- (h) **safe and secure bicycle parking.**

4 A single architectural theme should be established within centres through:

- (a) **constructing additions or other buildings in a style complementary to the existing shopping complex**
- (b) **renovating the existing shopping complex to complement new additions and other buildings within the centre**

The Centre redevelopment will enhance the current visitor amenity and experience already established. In addition to new and additional retail and other tenancy opportunities, the proposal incorporates a significant new outdoor leisure precinct on Levels 2 and 3, which provides an additional and alternative shopping/dining/leisure experience for visitors. Many of the visitor amenities referred to in Principle 3 will be carried into the new extensions, with seating placed conveniently within the malls and outdoor pedestrian linkages, litter bins, concierge stations, automatic teller machines, toilets and amenities, lifts and escalators, and disabled access to all areas.

The Regional Centre Zone comprises a range of buildings and activities in addition to the principal shopping centre, and has not adopted a single theme or architectural style. However, Westfield Marion, which has evolved over several decades, has established a homogenous, compatible and integrated architectural appearance between the older and newer parts of the Centre, and the surrounding built form.



In respect of the new additions now proposed, the built form has been designed and sited to integrate seamlessly with the existing built form of the Centre both functionally and in appearance. Being expanded predominantly to the north of the existing building, any view of the new development is either masked by view by the existing Centre building from the south and east or framed within the bulk of the current buildings when viewed from the north and west.



Image 1: Indicative view of approach to the Centre from Diagonal Road looking south-west

The general section of the Development Plan discusses the desire for high quality designs, which increase the attractiveness of the locality in terms of built form and the pedestrian environment. The design of the proposed 'link-mall' responds directly to the provisions of this section in terms of its design, siting and materials used.

The proposed building facades will incorporate a range of high quality materials as shown on the accompanying plans (refer plans numbered 01.5401 - 5403) including a combination of textured and patterned pre-cast concrete in a range of colours, patterned metal screens, a mix of metal, brick and pre-cast concrete facades, steel framing and clear glazing. The car park structure will incorporate planting along the external edges to create a green wall effect.

In summary it is considered the proposal responds to and substantially meets the qualitative provisions for the design and appearance of development in the centre zone.



Image 2: Indicative view North-south pedestrian link looking south from the Domain towards the Centre

6.4.2 *Compatibility with adjoining development*

Council-wide PDCs - Centres and Retail Development

- 2 Development within centres should be designed to be compatible with adjoining areas. This should be promoted through landscaping, screen walls, centre orientation, location of access ways, buffer strips and transitional use areas.**

The Regional Centre Zone is adjoined on all sides by land zoned for residential purposes. The areas adjoining Sturt and Diagonal Roads are situated within the Medium Density Policy Area 16, and along Morphett Road, the Regeneration Policy Area 12. Both policy areas are similar in that they seek a range of new dwelling types at higher densities than the older original dwelling stock. The Regeneration Policy Area in particular seeks a substantial upgrade in the quality of dwellings and the public environment generally.

Re-development as envisaged has been on-going in the surrounding area and is expected to continue well into the future with many opportunities remaining, particularly along the main road frontages. This intensification of the area will amongst other things support changes in the population profile and increase the population of the area overall.

The presence of the Regional Centre, and Westfield Marion, are primary catalysts for the nature of the surrounding residential zoning and the re-development already underway. The Centre has evolved respectfully within the locality minimising any direct impact on the peace, convenience and amenity of the adjacent community, and the proposed development herein will ensure this continues into the future.



The proposal will not introduce or locate any new features or land uses that will change or detrimentally impact on the current amenity of the surrounding residential areas. The proposal for licensed outdoor dining associated with café/restaurant premises in the new Lifestyle Precinct is central to the site and remote from any sensitive land uses.

As noted above, the Centre will also present a respectful, high quality architectural appearance and design that complements the surrounding area.

In summary it is considered the proposed development will not hinder or prevent the attainment of the policies for development in the adjoining zones surrounding the Centre and remains compatible in form and appearance with its locality.

6.4.3 Stormwater

The following Principles of Development Control best represent the range of matters relevant to the capture, treatment and potential re-use of stormwater in development:

Council-wide PDCs – Water Sensitive Design

- 8 Water discharged from a development site should:**
- (a) be of a physical, chemical and biological condition equivalent to or better than its pre-developed state**
 - (b) not exceed the rate of discharge from the site as it existed in pre-development conditions.**
- 9 Development should include stormwater management systems to protect it from damage during a minimum of a 1-in-100 year average return interval flood.**
- 10 Development should have adequate provision to control any stormwater over-flow runoff from the site and should be sited and designed to improve the quality of stormwater and minimise pollutant transfer to receiving waters.**
- 11 Development should include stormwater management systems to mitigate peak flows and manage the rate and duration of stormwater discharges from the site to ensure the carrying capacities of downstream systems are not overloaded.**
- 12 Development should include stormwater management systems to minimise the discharge of sediment, suspended solids, organic matter, nutrients, bacteria, litter and other contaminants to the stormwater system**
- 14 Stormwater management systems should:**
- (a) maximise the potential for stormwater harvesting and reuse, either on-site or as close as practicable to the source**
 - (b) utilise, but not be limited to, one or more of the following harvesting methods:**
 - (i) the collection of roof water in tanks**
 - (ii) the discharge to open space, landscaping or garden areas, including strips adjacent to car parks**



(iii) **the incorporation of detention and retention facilities**

(iv) **aquifer recharge.**

15 Where it is not practicable to detain or dispose of stormwater on site, only clean stormwater runoff should enter the public stormwater drainage system.

Wallbridge Gilbert Aztec (WGA) has prepared a preliminary Stormwater Management Plan (SMP) for the proposal which is submitted with the application. The report conceptually outlines the stormwater management design for the development and details the stormwater management methodology. Final detailed design will be undertaken for the building rules approval stage of the project.

The key findings and recommendations of the preliminary SMP are summarised as follows:

- some portions of the site are subject to up to 200 millimetres depth of flooding during a 1 in 100 year storm event, but does not include any building areas and can be managed in the design;
- the northern multi-deck car park stormwater will be directed to the existing stormwater system on the eastern side of the Bunnings building. The western multi-deck car park stormwater will be directed to the drainage network heading towards Morphett Road;
- whilst the impervious area will not change from the existing situation, detention storage is required to reduce post-development flow rates to pre-development flow rates. Underground storage is therefore proposed of 15 m³ and 10 m³ respectively prior to connection to the existing network. Final location and design will occur at detail design stage in consultation with Council;
- detention storage is not required for the existing undercover car parking area as the flow conditions remain unchanged;
- detailed design will be required for the altered car park and access roads (kerbing, flow paths and pits);
- building design will need to maintain existing underground connections; and
- as the overall pollutant load from the existing site will not change, new measures to address water quality are not considered applicable.

The proposal will make provision for the channelling of stormwater to landscape strips adjoining the car park and access roads wherever possible, and these details will form part of the detailed design and reflected in the final SMP and incorporated within the detailed landscape plan.



Sustainability

It is noted retention tanks are proposed to be installed as part of the development. It is proposed these tanks would be utilised for grey water re-use within the Centre. It is envisaged the tanks would be in the order of 50,000 litres. The exact location and size are yet to be determined, however will be incorporated with the final detailed design.

The proposal will also make provision for the collection and storage of a quantity of roof water for re-use within the Centre. Storage of up to 50,000 litres is proposed for toilet flushing. The exact location and design of the retention tanks will be determined at detailed design.

Subject to detailed design, the stormwater treatment proposed for the site will satisfactorily meet the water sensitive design provisions of the Development Plan.

6.5 Transportation and Access

The following Council-wide provisions of the Development Plan are most relevant to the design and provision of access, parking and movement within the Regional Centre Zone specifically, and centre zones generally:

Regional Centre Zone

Desired Character - Access and Movement (excerpt)

The regional centre should develop an integrated, safe and convenient movement system for vehicles, pedestrians and cyclists with as little reliance as possible on the use of the surrounding arterial roads for intra-centre movement of vehicles.

This should be achieved through the co-ordination and integration of access and parking areas for individual developments to contribute to and gradually build up an integrated circulation system.

Main vehicle access points from the surrounding arterial roads should be limited, and main entrance points may become signalised in the future.

Development should provide, and the design of buildings and open spaces should promote, pedestrian linkages that form an integrated network for safe and convenient movement within and between the policy areas in the zone, and in particular to form links between the civic centre, the main shopping complex, the major public open space and towards the Oaklands Railway Station.

The council will promote and encourage access and facilities for cyclists to and within the regional centre in accordance with the City of Marion Local Area Bike Plan

Specialist traffic planning advice has been provided by MFY throughout the course of preparing the proposal and detail in regard to the design and provision of access, manoeuvring and car parking is contained within that report which is submitted in conjunction with this application.



Given that access to the subject land is obtained from arterial roads, the proposal has been developed in close consultation with the Department of Planning Transport and Infrastructure – Transport Services Division (DPTI). The following assessment of the proposed traffic and parking arrangements against the provisions of the Development Plan relies on the information in and conclusions of the traffic and parking report.

6.5.1 Access and Circulation

Further specific Council-wide provisions in relation to vehicular access to, and circulation within, centre zones include:

Council-wide PDCs - Transportation and Access

- 23 Development should be provided with safe and convenient access which:**
- (a) avoids unreasonable interference with the flow of traffic on adjoining roads**
 - (b) provides appropriate separation distances from existing roads or level crossings**
 - (c) accommodates the type and volume of traffic likely to be generated by the development or land use and minimises induced traffic through over-provision**
 - (d) is sited and designed to minimise any adverse impacts on the occupants of and visitors to neighbouring properties.**
- 25 The number of vehicle access points onto arterial roads shown on Overlay Maps - Transport should be minimised and, where possible, access points should be:**
- (a) limited to local roads (including rear lane access)**
 - (b) shared between developments.**
- 26 Development with access from roads with existing or projected traffic volumes exceeding 6000 vehicles per day should be sited to avoid the need for vehicles to reverse onto or from the road.**
- 32 Development should be sited and designed to provide convenient access for people with a disability.**

The provisions for the Zone and the Council-wide policies seek the safe and convenient provision of access and facilities for motorists, pedestrians, cyclists and public transport services.

The proposed expansion of the shopping centre will primarily utilise the existing access points to the surrounding arterial roads and no new access points will be created. Modification to existing access points and the access paths directly leading into the Centre car parks will be required to support the new internal access and parking arrangements and to accommodate the new ticketless parking control system (refer further detail below).

The MFY report has undertaken an assessment of the proposed design in accordance with the projected traffic volumes and flow. The report concludes the percentage increase in traffic volumes at any one location will be less than 10% which will have a negligible impact on the adjoining road network.



The car parking and vehicle movement design ensures convenient access through the Centre and maintains the major west-east and north-south vehicle accessways desired in the Concept Plan Map Mar/5, and ensures motorists do not need to rely on the surrounding public roads to access all parts of the Centre and other facilities in the Zone.

The design also provides safe and convenient access for service vehicles and service loading areas that minimise potential conflict with customer vehicles wherever possible. All new service areas will provide for drivers to enter and exit in a forward direction and will be consistent with relevant Australian Standards.

In summary, the proposal reasonably meets the access and movement requirements of the Development Plan as follows:

- no new access points are created;
- the existing major access points are to be upgraded to maintain safe and convenient access to the adjoining arterial roads to the satisfaction of DPTI;
- the proposal will result in significant modifications to the existing car park and internal roadways to improve circulation throughout the site ensuring access to facilities and services elsewhere within the Regional Centre Zone are maintained;
- maintains an integrated, safe and convenient movement system for vehicles, pedestrians and cyclists with as little reliance as possible on the use of the surrounding arterial roads for intra-centre movement of vehicles; and
- improved separation of service and patron vehicles to enhance convenience and improve safety of movement within the Centre.

6.5.2 Car Parking

The following additional provisions to those already listed are relevant to the provision and design of car parking for development in centre zones:

Council-wide PDCs - Vehicle Parking

- 34 Development should provide off-street vehicle parking and specifically marked accessible car parking places to meet anticipated demand in accordance with Table Mar/2 - Off-street Vehicle Parking Requirements.**
- 35 Development should be consistent with Australian Standard AS: 2890 - Parking facilities.**
- 36 Vehicle parking areas should be sited and designed to:**
- (a) facilitate safe and convenient pedestrian linkages to the development and areas of significant activity or interest in the vicinity of the development**



- (b) **include safe pedestrian and bicycle linkages that complement the overall pedestrian and cycling network**
 - (c) **not inhibit safe and convenient traffic circulation**
 - (d) **result in minimal conflict between customer and service vehicles**
 - (e) **avoid the necessity to use public roads when moving from one part of a parking area to another**
 - (f) **minimise the number of vehicle access points onto public roads**
 - (g) **avoid the need for vehicles to reverse onto public roads**
 - (h) **where practical, provide the opportunity for shared use of car parking and integration of car parking areas with adjoining development to reduce the total extent of vehicle parking areas and the requirement for access points**
 - (i) **not dominate the character and appearance of a site when viewed from public roads and spaces**
 - (j) **provide landscaping that will shade and enhance the appearance of the vehicle parking areas**
 - (k) **include infrastructure such as underground cabling and connections to power infrastructure that will enable the recharging of electric vehicles.**
- 37 **Where vehicle parking areas are not obviously visible or navigated, signs indicating the location and availability of vehicle parking spaces associated with businesses should be displayed at locations readily visible to users.**
- 38 **Vehicle parking areas that are likely to be used during non-daylight hours should provide floodlit entry and exit points and site lighting directed and shaded in a manner that will not cause nuisance to adjacent properties or users of the parking area.**
- 39 **Vehicle parking areas should be sealed or paved to minimise dust and mud nuisance.**
- 40 **To assist with stormwater detention and reduce heat loads in summer, outdoor vehicle parking areas should include landscaping.**
- 41 **Vehicle parking areas should be line-marked to delineate parking bays, movement aisles and direction of traffic flow.**

A number of minor internal design changes are proposed to the car parking areas on the subject land to accommodate the new ticketless access control system.

A major change to the on-site parking arrangements occurs as a result of locating the Centre expansion under the existing deck car park, necessitating the construction of the proposed four level car park on the at-grade parking area to the east of Bunnings. This structure will integrate with the upper deck of the existing Level 2 car park and provide pedestrian access into the Centre and connectivity to the surrounding pedestrian paths.



The dimensions, aisle widths, sight lines, and swept paths relevant to the design of the car park ramps, parking spaces, manoeuvring areas, aisles and the roundabout are detailed in the MFY report and meet with the relevant Australian Standards.

Table Mar/2A provides the applicable car parking rates for development in the Regional Centre Zone (being a designated area in the table).

Table Mar/2A - Off Street Vehicle Parking Requirements for Designated Areas (summarised)

Location of development	Desired minimum number of vehicle parking spaces	Maximum number of vehicle parking spaces
All Designated Areas	3 spaces per 100 square metres of gross leasable floor area	6 spaces per 100 square metres of gross leasable floor area

The proposed new total leasable floor area of 152,198 m² generates a minimum car parking requirement of 4,566 spaces in accordance with Table Mar/2A.

The proposal makes provision for a total of 4,956 car parking spaces, which equates to a ratio of 3.26 spaces per 100 square metres. If the cinema floor area were excluded due to its differing peak demand, the car parking ratio would be 3.52 spaces per 100 square metres. These ratios fall within the minimum and maximum requirements of the Development Plan and accordingly comply with the relevant standards.

There are currently some 5,250 car parking spaces on the site and hence this proposal reduces that number marginally. The current parking provision reflects parking standards that were in force over a decade ago and which have subsequently been updated to reflect changed trading patterns and customer behaviour.

The car parking areas, both open and undercover, will continue to be line-marked, lit, and sign-posted in accordance with both Australian standards and Scentre Management Limited practices.

Provision will be made for disability compliant car parks as required under the Building Code of Australia and designed having reference to AS/NZS2890.6.

6.5.3 Ticketless Access Control Parking System

A ticketless access control car parking system is proposed as part of this application for the site. Details of the system are contained in the MFY traffic and parking report and summarised in Section 3.2 above.

It is noted that approval has previously been granted for the installation of a ticketed car parking control system (DA 100/1687/11).

The ticketless system now proposed is considered much superior to the currently approved ticketed system as the capacity for vehicles passing through is greatly increased, along with improved customer



experience. The exit lanes will still have boom gates, however the automatic recognition of many vehicles and the subsequent raising of the boom gate means that the efficiency of the exit is significantly increased.

The following comments refer to an assessment of the ticketless parking controls as set out in the MFY report against the relevant provisions of the Development Plan.

Impact on the Continued Use of the Land

The proposed parking structures do not result in a change of use of the land. The car parking remains for the benefit of the users of the shopping centre and associated uses on the subject land. The car parking is therefore ancillary and subordinate to the primary use of the land as a shopping centre comprising a mix of retail, entertainment, recreational and community uses.

The car parking control structures simply provide for the improved management of the existing car park and provide better customer functionality through more efficient use of the existing car parking spaces.

Visual Impact of Structures

The proposed structures result in little if any visual impact within the context of the existing shopping centre. The structures are setback from the street alignment and present no greater impact than the existing parking control signage advising users of the car park that the car park is controlled with a maximum three hour time limit under the Private Parking Areas Act.

Safety to Public and Free Flow of Traffic on Adjacent Road Network

MFY has provided a detailed assessment of the alterations to the existing access points and the implementation of the parking control structures in the form of barriers (boom gates).

The proposed barriers have been designed and located to ensure that sufficient on-site queuing is provided to avoid any impact on the safety to public and free flow of traffic on the adjacent road network.

To ascertain this, MFY undertook a detailed queuing analysis based on surveyed traffic count data at the peak usage times for the Centre and have based the design for the queue lengths on the accepted engineering practice of accommodating the 98 percentile queue as detailed in Table 1 and 2 of their report.

Accordingly, the proposed installation of the car parking barriers will maintain and enhance the free flow of traffic on the adjacent road network and therefore satisfy Council-wide Transportation and Access PDC 22:



- 22 Development should be provided with safe and convenient access which:**
- (a) avoids unreasonable interference with the flow of traffic on adjoining roads**
 - (c) accommodates the type and volume of traffic likely to be generated by the development or land use and minimises induced traffic through over-provision**
 - (d) is sited and designed to minimise any adverse impacts on the occupants of and visitors to neighbouring properties.**

Shared Car Parking Arrangements

Council-wide Transportation and Access PDC 36 seeks to provide opportunities to minimise the overall extent of car parking through opportunities for shared parking provision.

- 36 Vehicle parking areas should be sited and designed to:**
- (h) where practical, provide the opportunity for shared use of car parking and integration of car parking areas with adjoining development to reduce the total extent of vehicle parking areas and the requirement for access points**

The existing Centre development and approved expansion specifically provides for the shared use of car parking between uses and adjacent development more so than any other development within the Regional Centre or on adjacent land. Specifically, all tenancies within the Centre proper together with the peripheral tenancies fronting Morphett Road all benefit from the shared parking provided within the subject land.

The existing Cultural Centre car parking areas share access across the Westfield land, which remains unaffected by the controlled parking system. The proposal retains the ability to facilitate shared car parking arrangements with the adjacent State Aquatic Centre on special large event days, which further integrates and allows for the provision and management of shared car parking where differing peak demands exist.

Accordingly, the proposed development continues to satisfy Council-wide Principle of Development Control 36.

Impact on the Pedestrian and Vehicle Network

The design of the car parking layout, internal car parking aisles, access points to the surrounding road network and designated pedestrian movement network within the centre will not be detrimentally impacted by the installation of the parking controls. The pedestrian network within and at the periphery of the site is maintained.

The vehicle network within the site maintains access to all uses within the controlled area. There is unlikely to be a requirement for vehicles once they have passed through the barriers to exit and re-enter the site in order to find a vacant car parking space as most of the car parking areas are internally connected.



Impact on Parking in Adjacent Residential Areas

Car parking spaces are proposed that exceed the minimum requirements of the Development Plan (see previous discussion) which should minimise any unreasonable or excessive 'spill over' into the adjoining residential street network by motorists not able to benefit from the free parking limitations and who choose to avoid any payment.

Empirical evidence¹ collated from Westfield's existing experience with barrier controlled parking, identifies that 87.65 percent of all customers at Westfield Shopping Centres where barrier controlled parking has been implemented spend less than two hours at the Centre.

The additional measures proposed to provide permits for, and dedicated on-site parking for staff also serve to minimise the likelihood of parking in the adjacent street network.

We also note that the adjoining streets are designated 'no stopping' adjacent the shopping centre and anyone choosing to park in a residential area would therefore experience a long walk to the Centre.

The existing conditions for use of the car park include a three hour time limit, which if exceeded could result in an infringement notice. The installation of the now proposed ticketless access control system will not change the existing time limit and therefore should not change the current parking behaviour of patrons to the Centre.

There is no evidence of increased on-street parking pressures at other shopping centre locations (Norwood or North Adelaide) where ticketing equipment has been installed to limit extended stay parkers. These systems are based on a two hour unpaid period and are well used by patrons of the particular shopping centres.

Accordingly, the proposed development of the installation of automated barrier controlled parking mechanisms should not result in any increase in on-street parking and will not detrimentally affect the adjacent street network.

6.5.3 Public Transport

The following Desired Character provisions of the Regional Centre Zone are relevant to the provision of public transport facilities in the Regional Centre Zone:

¹ Data Source: Empirical Data collected from the audited automated parking systems implemented at other Westfield Centres.



Regional Centre Zone

Desired Character - Access and Movement (excerpt)

The existing bus interchange, located immediately adjacent to the shopping centre, provides an essential facility and service by enabling public transport users convenient access to the shopping centre without having to cross major traffic flows or walk through large car parking areas. In the future, as substantial development occurs in Precinct 9 Northern Fringe Marion and Precinct 11 Retail Support Marion, the interchange should move further north towards the centre of the zone to one of the two locations shown on Concept Plan Map Mar/5 - Marion Regional Centre as the main public transport destination. Either potential location would be immediately adjacent and directly accessible to the existing shopping centre and thereby provide the greatest convenience in the longer term to the largest number of centre users, and to others who are likely to access public transport such as users of the cinemas, entertainment facilities, library and educational facilities.

The proposed extensions do not impact on or generate any requirement to re-locate the existing bus interchange. It is noted that the option to re-locate the interchange has not been taken for over a decade and the northern part of the Zone is now fully developed. Any possible relocation is now considered unlikely, but if required would need to be designed to fit within the Centre design prevailing at the time.

It is noted an existing community bus services currently operates and will be retained with service located adjacent the north western entrance where a customer lounge has previously been established. The smaller buses associated with the community bus service enable the Centre to accommodate and maintain a community bus service focus central to the site while retaining the existing operation of the largest destination for public transport services outside of the City of Adelaide in an interchange off Sturt Road. The Public Transport Interchange adjacent Sturt Road continues to operate effectively and provides convenient access to the Regional Centre Services.

6.5.4 Pedestrian Movement

The following zone and Council-wide provisions of the Development Plan are most relevant to access and movement paths for pedestrians with the Centre and Zone:

Regional Centre Zone

Desired Character - Access and Movement (excerpt)

Development should provide, and the design of buildings and open spaces should promote, pedestrian linkages that form an integrated network for safe and convenient movement within and between the policy areas in the zone, and in particular to form links between the civic centre, the main shopping complex, the major public open space and towards the Oaklands Railway Station.

The council will promote and encourage access and facilities for cyclists to and within the regional centre in accordance with the City of Marion Local Area Bike Plan

PDCs

12 The major public open space shown conceptually on Concept Plan Map Mar/5 - Marion Regional Centre should be developed to a high standard of design and amenity to create a major focus within the regional centre and designed to accommodate:

- (a) a mixture of outdoor leisure, community and entertainment activities



- (b) **formal and informal spaces**
- (c) **paved areas in the nature of a square or piazza**
- (d) **variety of landscape/planting treatments with a cohesive thematic tree planting and edge treatment**
- (e) **pedestrian shelters and structures such as gazebos, rotundas, pavilions, pergolas and colonnades**
- (f) **clearly defined safe and attractive pedestrian paths providing access to its facilities**

Council-wide: Centres and Retail Development (excerpt)

3 Development within centres should provide:

- (a) **public spaces such as malls, plazas and courtyards**
- (b) **street furniture, including lighting, signs, litter bins, seats and bollards, that is sited and designed to complement the desired character.**

The above policies, and the Concept Plan Map Mar/5, desire a north south link between the existing Centre and the adjacent community facilities within the norther precincts of the zone (the Domain). The proposal maintains and reinforces this link as follows:

- a high-quality courtyard and urban design response adjacent 'the Northern Boulevard' that leads directly to the Level 1 major entry in the north western corner of the existing Centre;
- as the pedestrian link progresses south towards the Centre entrance, it is framed by a colonnade formed by the structural grid of the upper level car park deck which includes voids to allow natural light enhancing the amenity of the pedestrian link;
- where the pedestrian link crosses car park aisles and the major east west link between Morphett and Diagonal Roads, pedestrian crossings are proposed to be established to provide well defined and safe places to cross the vehicular routes;
- the urban design approach and landscaping provides for a themed pedestrian avenue incorporating high quality design to define and accentuate the pedestrian link; and
- directional and interpretation signage will be incorporated within the pedestrian link.

The Desired Character states that development *"should provide, and the design of buildings and open spaces should promote, pedestrian linkages that form an integrated network for safe and convenient movement within and between the policy areas in the zone, and in particular to form links between the civic centre, the main shopping complex, the major public open space, and towards the Oakland's railway station."*



Pedestrian access is maintained in the re-designed car park and access layout in accordance with Concept Plan Map Mar/5. In particular the proposal strengthens the definition of the north south pedestrian link between the Centre and the Domain and will provide a number of vibrant opportunities for community amenity including landscaping and seating. These details are proposed to form part of the overall detailed landscape design for the site.

6.6 Landscaping

6.6.1 Landscaping

The following Council-wide provisions are relevant to the provision of landscaping within the Regional Centre Zone:

Council-wide Principles: Landscaping, Fences and Walls

- 1 Development should incorporate open space and landscaping in order to:**
 - (a) complement built form and reduce the visual impact of larger buildings (eg taller and broader plantings against taller and bulkier building components)**
 - (b) enhance the appearance of road frontages**
 - (c) screen service yards, loading areas and outdoor storage areas**
 - (d) minimise maintenance and watering requirements**
 - (e) enhance and define outdoor spaces, including car parking areas**
 - (f) provide shade and shelter**
 - (g) assist in climate control within buildings**
 - (h) maintain privacy**
 - (i) maximise stormwater re-use**
 - (j) complement existing native vegetation**
 - (k) contribute to the viability of ecosystems and species**
 - (l) promote water and biodiversity conservation.**
- 2 Landscaping should:**
 - (a) include the planting of locally indigenous species where appropriate**
 - (b) be oriented towards the street frontage**
 - (c) result in the appropriate clearance from powerlines and other infrastructure being maintained.**

The expansion of the centre is primarily to the north of the site, and includes the expansion of elevated parking areas in the centre of the site and extending west towards Morphett Street. As such the expansion will not affect the established landscaping around the perimeter of the zone within the control of the Centre. There will be alterations to landscaping strips that define the access and parking areas, and eight regulated trees within the existing car park area will be impacted (refer below).



The Landscape concept prepared by Outer Space Landscape Architects illustrates conceptually the proposal for landscaping within the car park. It is envisaged a more detailed landscape plan will be developed in consultation with Council prior to construction having regard to the relevant policies above and the specific requirements of the site.

6.6.2 *Regulated Trees*

Regulated Trees

OBJECTIVES

- 1 The conservation of regulated trees that provide important aesthetic and/or environmental benefit.**
- 2 Development in balance with preserving regulated trees that demonstrate one or more of the following attributes:**
 - (a) significantly contributes to the character or visual amenity of the locality**
 - (b) indigenous to the locality**
 - (c) a rare or endangered species**
 - (d) an important habitat for native fauna.**

PRINCIPLES OF DEVELOPMENT CONTROL

- 1 Development should have minimum adverse effects on regulated trees.**
- 2 A regulated tree should not be removed or damaged other than where it can be demonstrated that one or more of the following apply:**
 - (a) the tree is diseased and its life expectancy is short**
 - (b) the tree represents a material risk to public or private safety**
 - (c) the tree is causing damage to a building**
 - (d) development that is reasonable and expected would not otherwise be possible**
 - (e) the work is required for the removal of dead wood, treatment of disease, or is in the general interests of the health of the tree.**

A Preliminary Tree Assessment of the site has been undertaken by arboriculture specialists Arborman Tree Solutions Pty Ltd, and is submitted with the application. The assessment identified 13 trees meeting the definition of a Regulated tree are likely to be impacted by the development. The Arborman report undertook a tree retention rating for each as follows (tree identifiers are as set out in the Arborman report):

- One tree (E 12) is a species exempt from protection under the Development Act and may be removed without any approval;
- One tree (R 2) achieved a low retention rating;
- One tree (R 8) achieved a high retention rating; and
- Ten trees (R 1, 3-7 and 9-13) including the exempt tree, achieved a moderate retention rating. The report advises these trees should be retained, but may be approved for removal if they are restricting an otherwise reasonable and expected development and alternative design solutions are not available.



Apart from the exempt tree, all other regulated trees would require development approval to be removed.

Particular effort was made in the design of the site to avoid impact on the Regulated trees, however traffic and engineering design constraints limited the extent to which all trees could be retained. The following trees can be retained in the redevelopment: R 1, 2, 8, 12 and 13, although tree 12 is not a Regulated under the Act and may therefore be removed without any approval.

Approval is therefore required for the removal of eight trees being R 3-7 and 9-11. Whilst removal of regulated trees should be avoided where possible, the Development Plan recognises that in some instances there is a need to balance development with preserving regulated trees, noting that removal may be acceptable in certain situations. Having regard to the criteria in Objective 2, it is noted:

- All trees contribute to a degree to the character and visual amenity of the area, however they are relatively isolated specimens, and represent only a small proportion of the total trees on the site;
- Only one tree is indigenous (River Red Gum, tree R1) and will be retained;
- None of the trees are endangered; and
- None of the trees would be highly valued for habitat as they are isolated and in an extremely modified built environment.

The Tree Assessment Report further recommends that an arborist be engaged to advise on design detail where the retained trees may be impacted by the development – to be detailed in a Tree Protection Plan in accordance with the relevant Australian Standard AS4970-2009.

On this basis and having regard to Principle 2 (d) above, and noting the advice in the Arborist report, as the proposed development is both reasonable and expected to occur in the zone, the requirement to remove eight regulated trees from the site when balanced against the expectations set out in the Desired Character and policies for the zone, is considered reasonable having regard to the scale of the development and site, the number of other trees retained on the site, and the opportunity to further enhance the site with new plantings in conjunction with this proposal.

In summary it is considered the proposal will not be to the detriment of the character or appearance of the locality. It is noted that any loss of trees on the site will be compensated for in the new landscape plan for the site. The location and species of new trees, shrubs and plants will be identified in the detailed landscape plan for the site referred to above.

6.7 Advertising

The relocation of the major tenants' signs and any new signage will be the subject of a future separate development application.



7.0 CONCLUSION

In conclusion, having regard to the nature of the site, the character of the locality and the relevant provisions of the Development Plan, the proposed development is an appropriate form of development in the Regional Centre Zone. In particular:

- The Desired Character for the Regional Centre Zone promotes expansion of the Centre. In land use terms the existing shopping centre and the proposed redevelopment fulfils Objective 1, the Desired Character, and Principle 1 for the Zone.
- Objective 1 for the Zone envisages the provision of a full range of business, commerce, government, entertainment, public transport and community facilities within the Regional Centre Zone and Principle 1 lists land uses envisaged in the Zone. The proposed development expands the area of retail floor space in accordance with these policies;
- the intensification and expansion of the shopping centre to the north is clearly contemplated and encouraged;
- the proposed new retail floor space will occur within Precinct 10 as sought by the Regional Centre Zone policies;
- the main access points to the surrounding arterial road network are maintained and improved to accommodate the projected increase in vehicle access and the new ticketless access control parking system and will be adequately accommodated by the existing signalised access points to Diagonal, Morphett and Sturt Roads; to maintain safe and convenient access to the site;
- vehicle movement within the Centre considerably improves the separation of commercial and public vehicle movements improving safety and convenience;
- the proposal provides a high level of accessibility for vehicles and pedestrians through and within the Centre to adjoining facilities and land uses, roads and the public transport interchange achieves the key access and linkages envisaged in the Development Plan;
- safe and convenient car parking is provided consistent with the provision delivered at similar facilities and in excess of the minimum rate specified in the Development Plan;
- the ticketless access control system will immensely improve the turnover and efficiency of car parking;
- the current high-level accessibility of the Centre by private and public transport is maintained;



- the location, design and appearance of the extensions will consolidate the Centre within the site and minimise impact or intrusion on the surrounding locality and enhance the appearance of the Centre as viewed from the surrounding public realm;
- stormwater will be adequately controlled, reused or disposed to the adjacent council network; and
- the impact on existing Regulated trees on the site has been minimised in balance with the desire of the Development Plan provisions to expand the shopping centre. New landscaping will be incorporated to complement and enhance existing established landscaping around the Centre and zone.

Greg Vincent
Masterplan SA Pty Ltd

20 November 2018

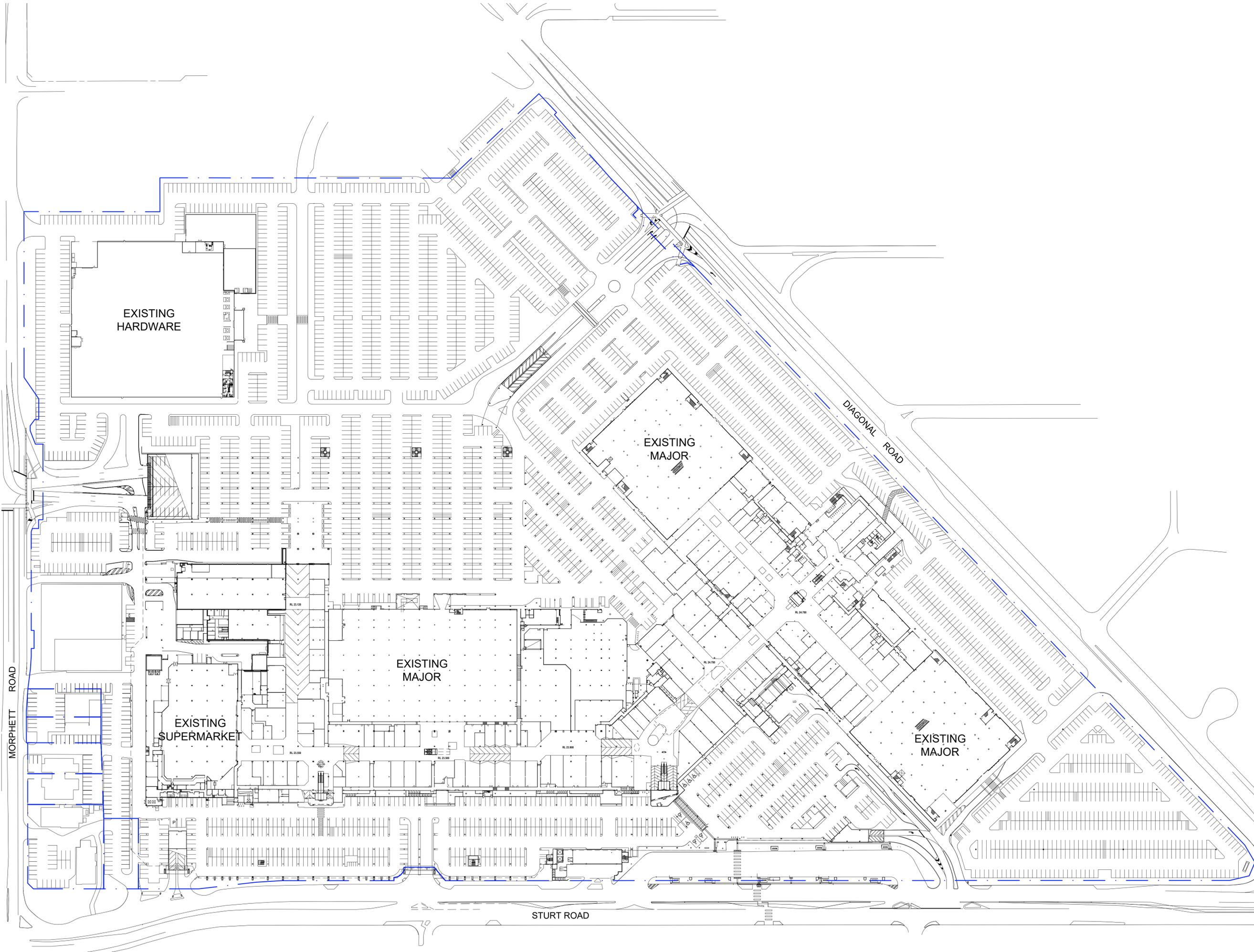


MARION
DEVELOPMENT APPLICATION

20 November 2018

SCENTRE GROUP

Owner and Operator of *Westfield* in Australia and New Zealand



EXISTING
HARDWARE

EXISTING
SUPERMARKET

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Title
**EXISTING
LEVEL 1 PLAN**

Centre
MARION

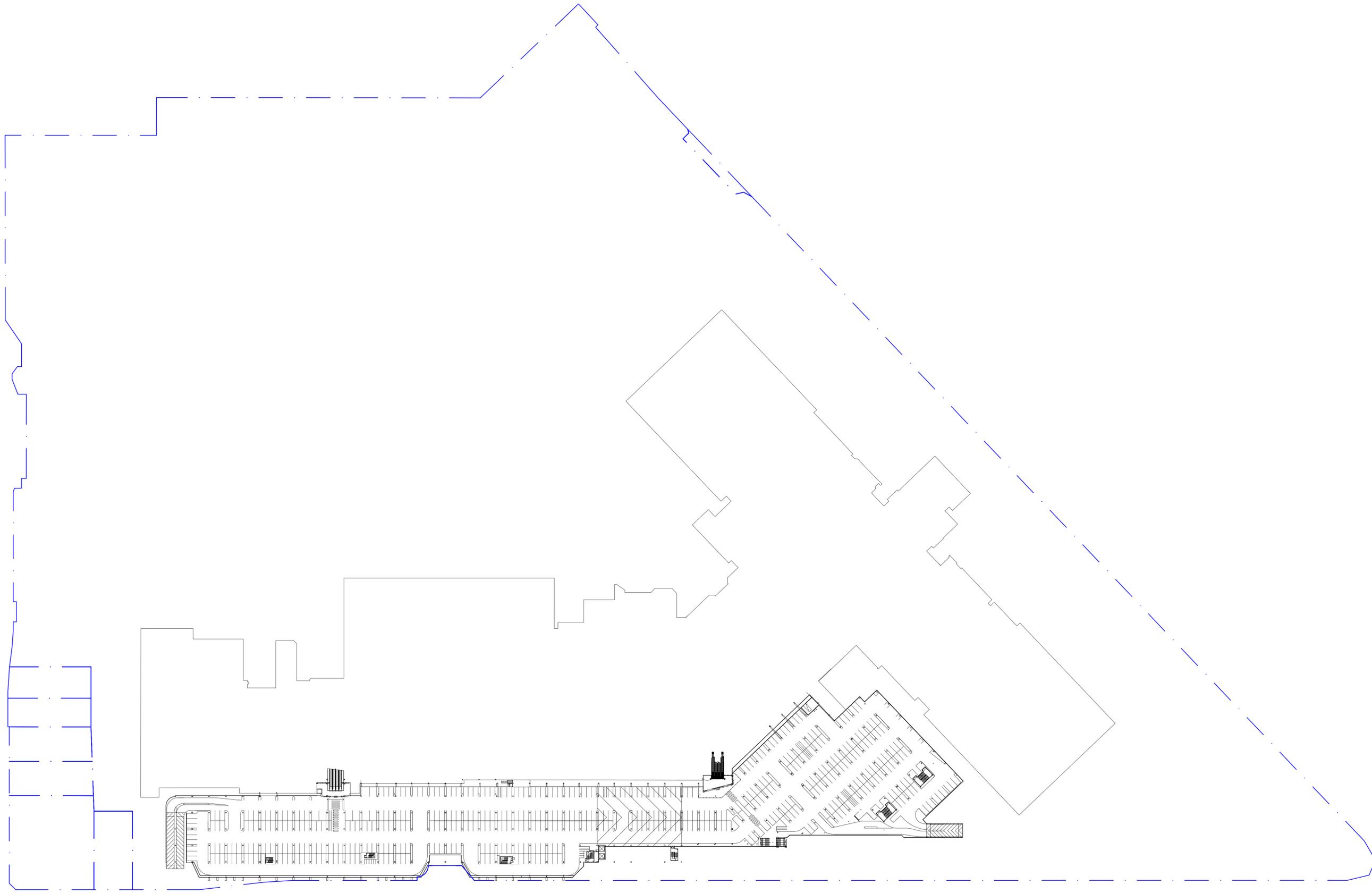
**DEVELOPMENT
APPLICATION
FOR SUBMISSION**

Project No. 5524	Drawing No. 01.5101	Revision A
Drawing Scale 1:1000 @A1	Issue Date 13/11/2018	

MORPHEH ROAD

DIAGONAL ROAD

STURT ROAD



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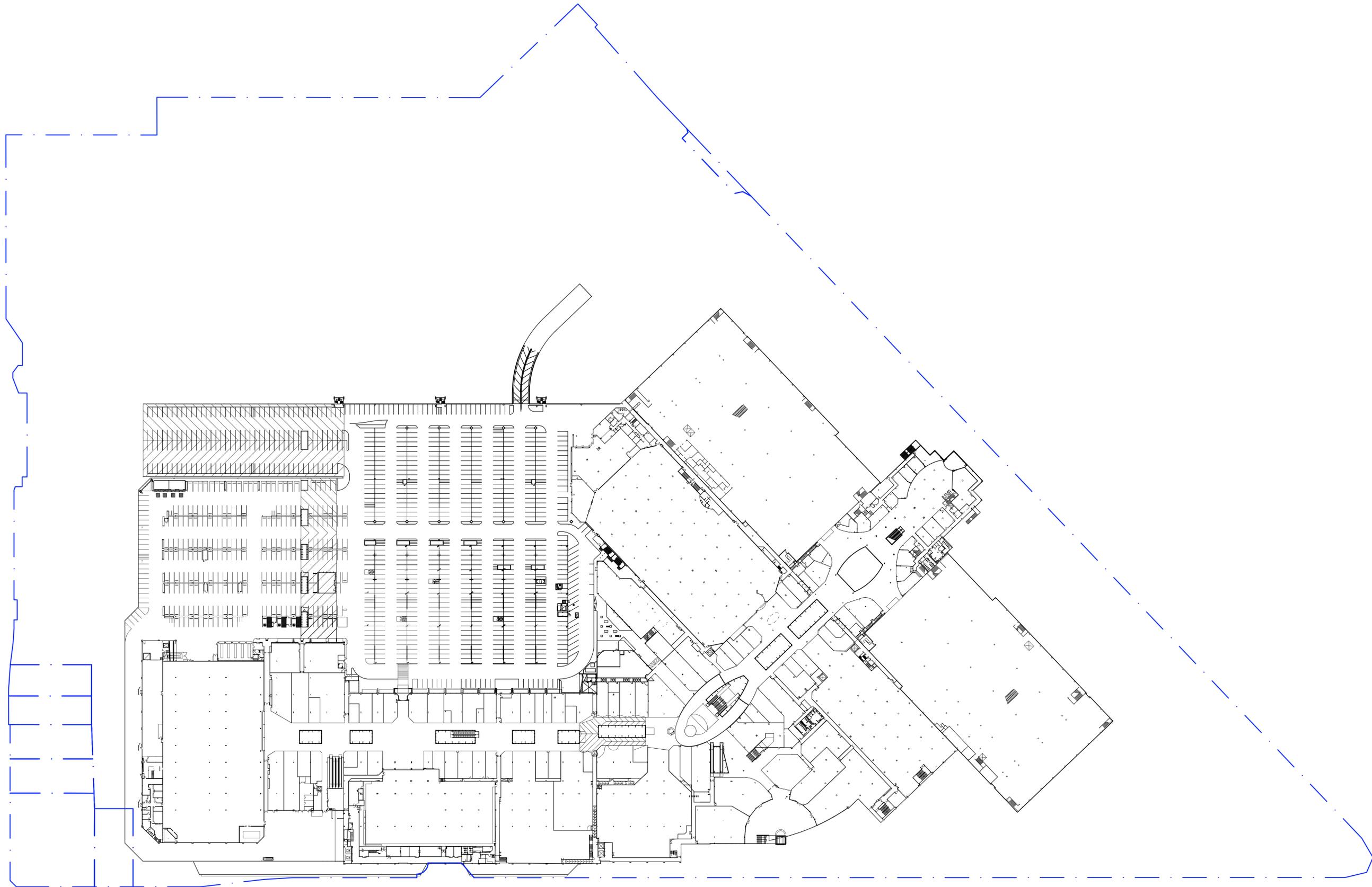
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Title
**EXISTING
LEVEL 1M PLAN**

Centre
MARION

**DEVELOPMENT
APPLICATION
FOR SUBMISSION**

Project No.	Drawing No.	Revision
5524		
Drawing Scale 1:1000 @A1	01.5102	A
Plot Date 13/11/2018		



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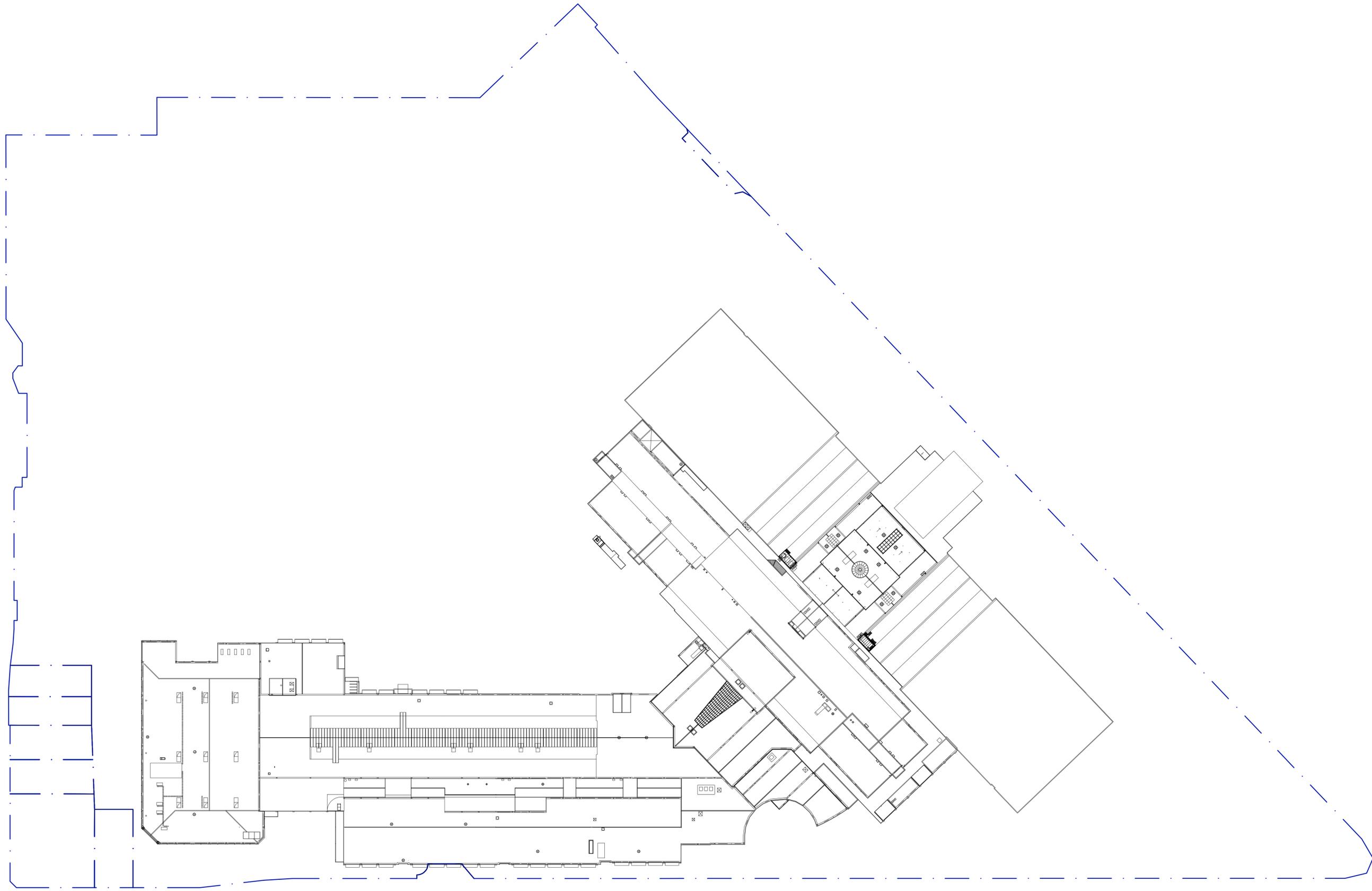
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 GPO Box 4204 Sydney NSW 2001
 ACN 600 267 215

Title
EXISTING LEVEL 2 PLAN

Centre
MARION

DEVELOPMENT APPLICATION FOR SUBMISSION

Project No.	Drawing No.	Revision
5524		
Drawing Scale	01.5103	A
Plot Date	13/11/2018	



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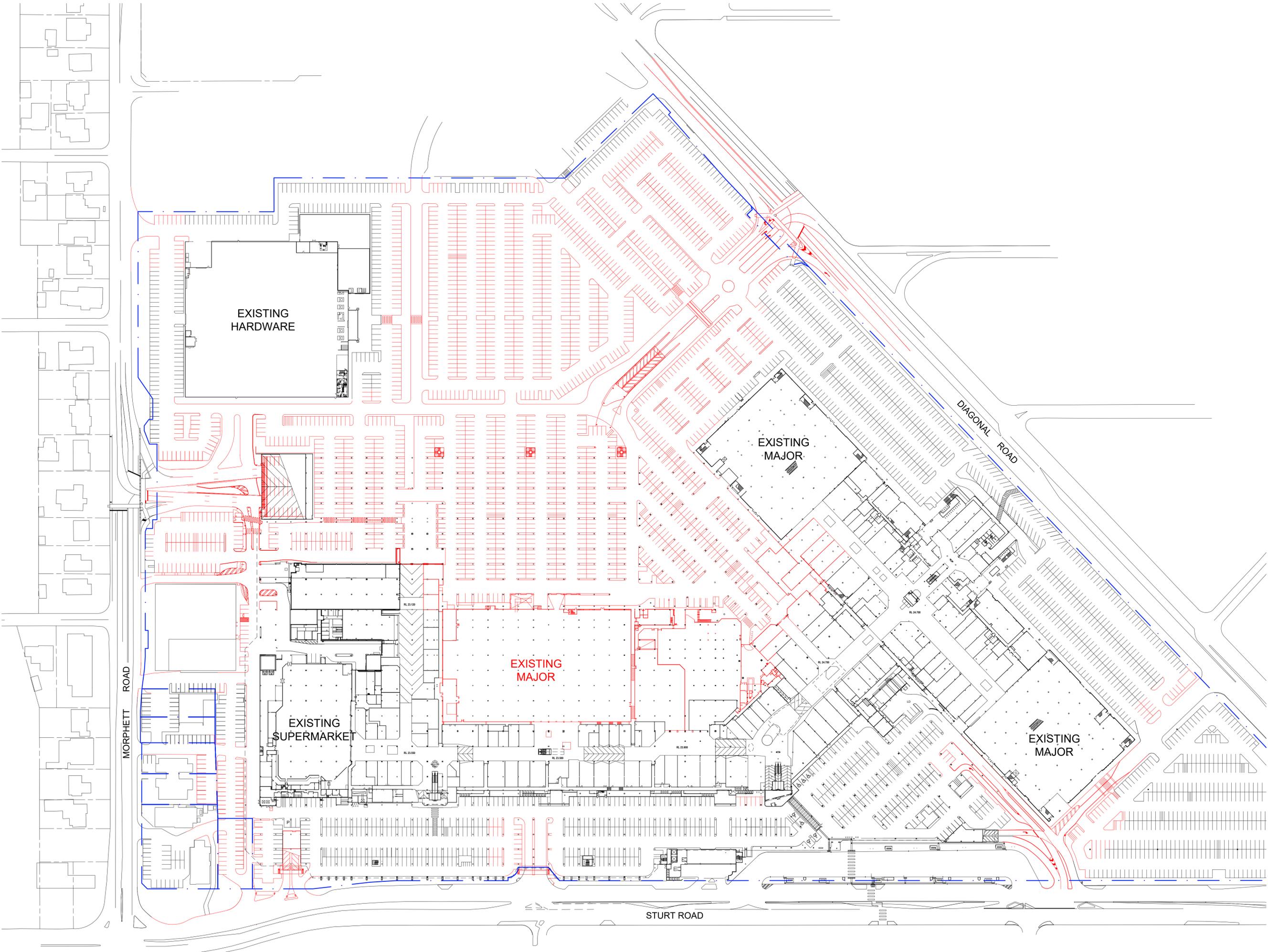
Title
EXISTING ROOF PLAN

Centre
MARION

DEVELOPMENT APPLICATION FOR SUBMISSION

Project No.	Drawing No.	Revision
5524		
Drawing Scale	01.5105	A
Plot Date	13/11/2018	

LEGEND
 DEMOLITION:
 — DEMOLITION SCOPE



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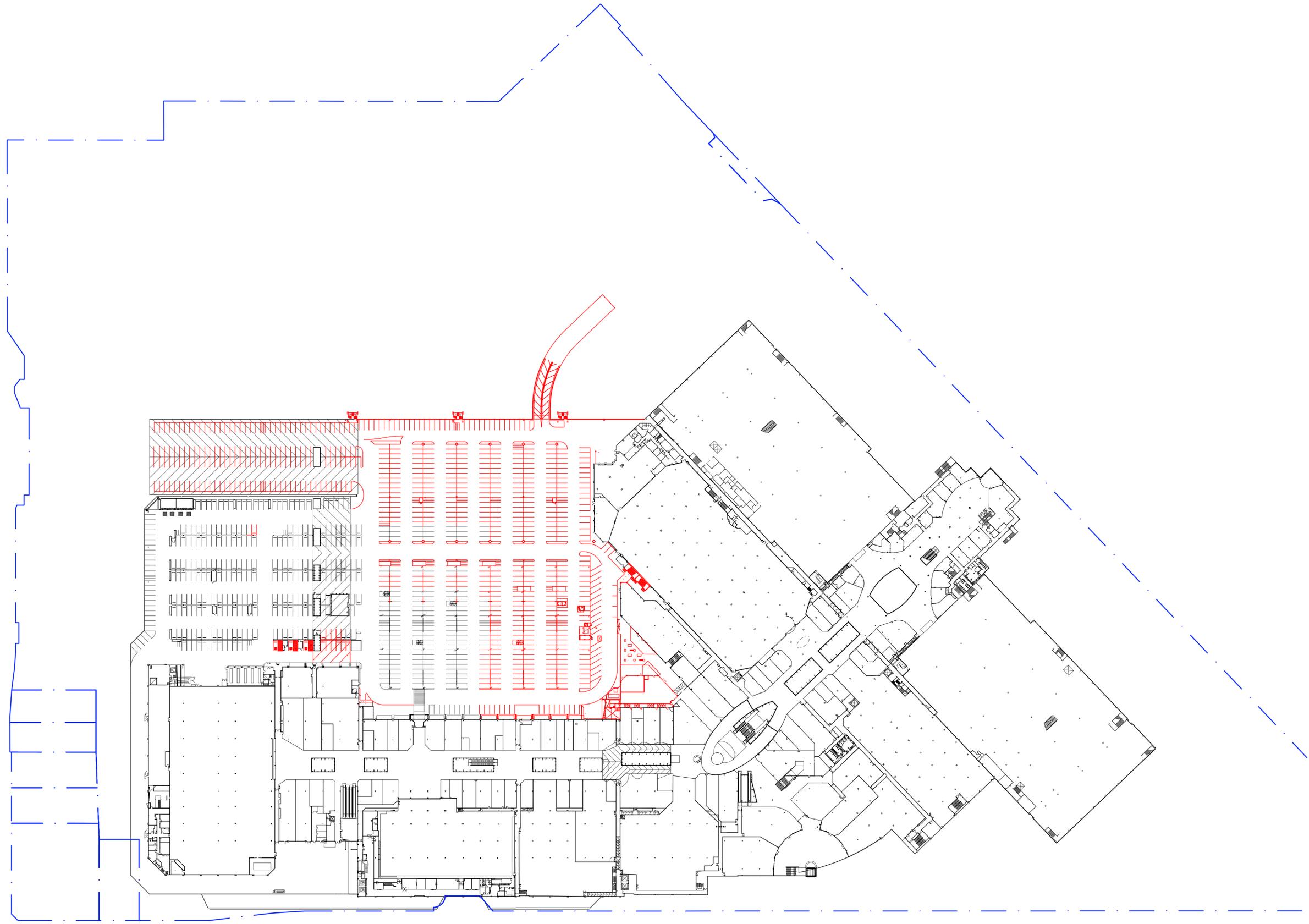
Title
**DEMOLITION GA
 LEVEL 1 PLAN**

Centre
MARION

DEVELOPMENT APPLICATION
 FOR SUBMISSION

Project No. 5524	Drawing No. 5524	Revision A
Drawing Scale 1:1000 @A1	01.5151	
Plot Date 13/11/2018		

LEGEND
 DEMOLITION:
 — DEMOLITION SCOPE



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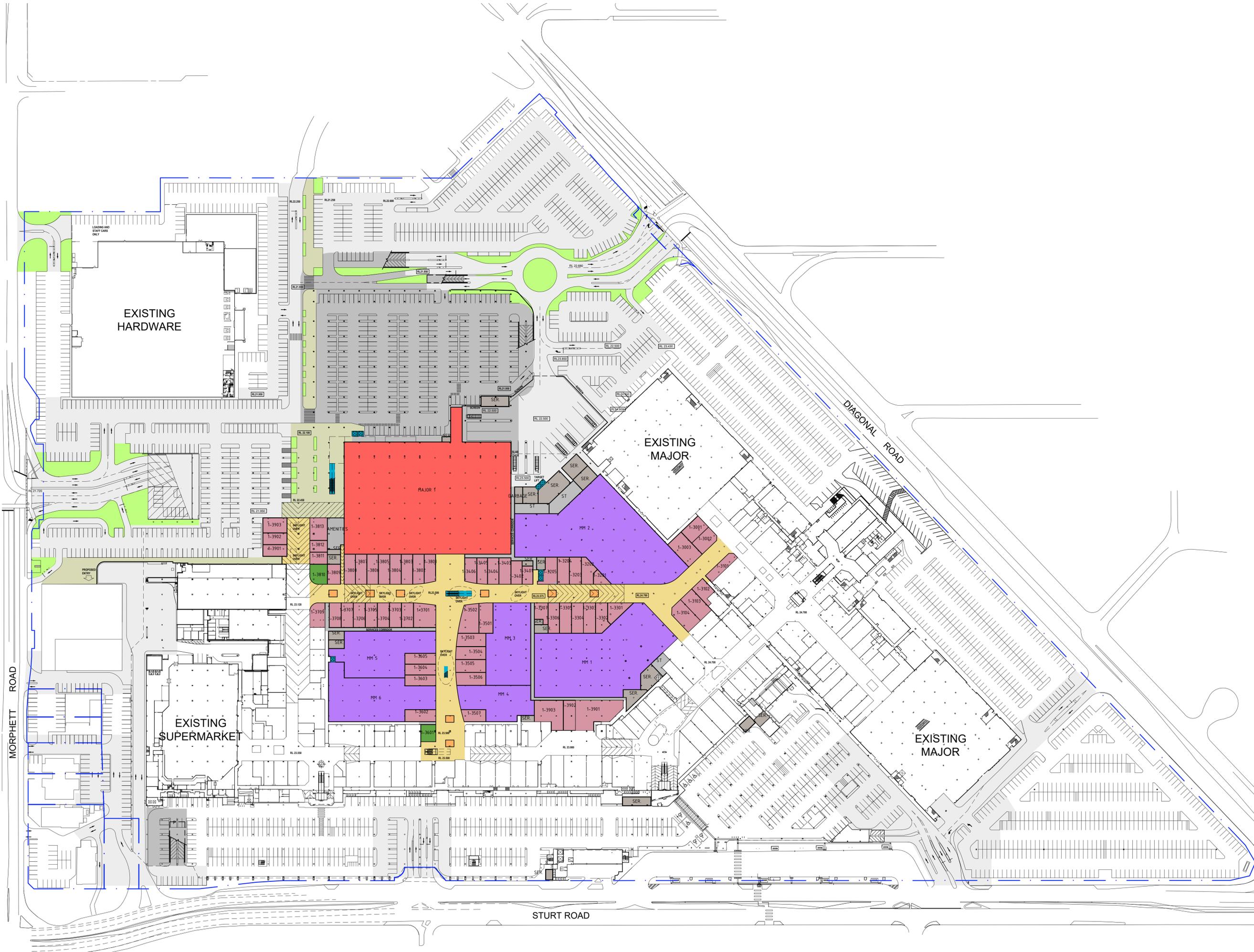
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 Phone (02) 8558 7000 Fax (02) 9026 8500
 GPO Box 4204 Sydney NSW 2001
 ACN 000 267 215

Title
**DEMOLITION GA
 LEVEL 2 PLAN**

Centre
MARION

**DEVELOPMENT
 APPLICATION
 FOR SUBMISSION**

Project No.	Drawing No.	Revision
5524		
Drawing Scale	01.5152	A
Plot Date	13/11/2018	



LEGEND

PROPOSED:

- PROPOSED MAJOR
- PROPOSED MINI-MAJOR
- PROPOSED SPECIALTY
- PROPOSED RETAIL KIOSK / LSA
- PROPOSED CINEMA
- PROPOSED MALL
- PROPOSED FOOD KIOSK
- PROPOSED FOOD
- PROPOSED VERTICAL TRANSPORT
- PROPOSED AMENITIES
- PROPOSED SERVICE / STORAGE
- PROPOSED CAR PARK / LOADING
- PROPOSED HARD LANDSCAPING
- PROPOSED SOFT LANDSCAPING
- PROPOSED WATER FEATURE
- PROPOSED SKYLIGHT / GLASS CANOPY

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 AON 600 387 265

Title
PROPOSED GA LEVEL 1 PLAN

Centre
MARION

DEVELOPMENT APPLICATION FOR SUBMISSION

Project No. 5524 Drawing No. 01.5201 Revision A
 Drawing Scale 1:1000 @A1
 Plot Date 19/11/2018

MORPHETT ROAD

STURT ROAD

DIAGONAL ROAD

EXISTING HARDWARE

EXISTING MAJOR

EXISTING SUPERMARKET

EXISTING MAJOR

MAJOR 1

MM 2

MM 5

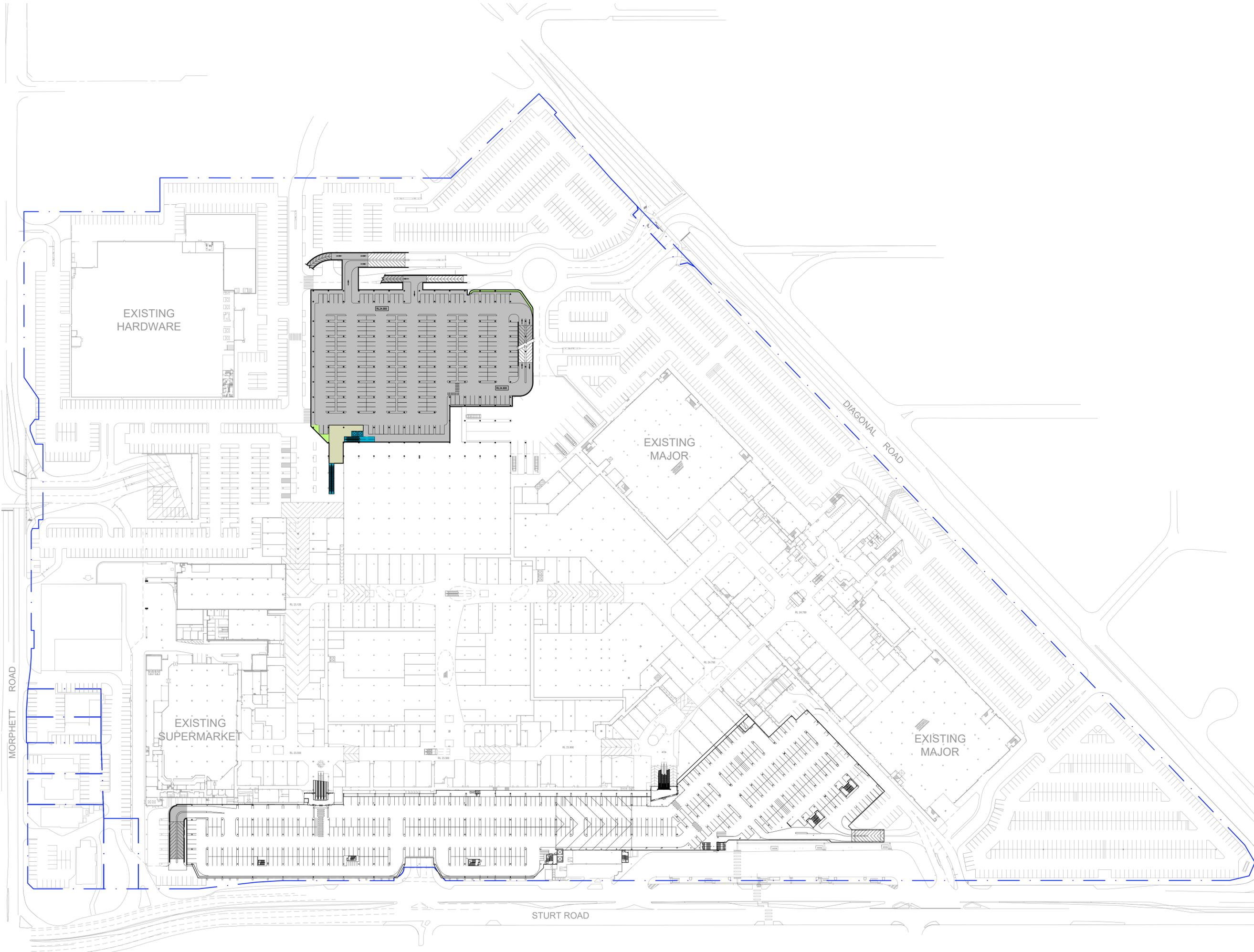
MM 3

MM 1

MM 6

MM 4

MM 1



LEGEND

PROPOSED:

- PROPOSED MAJOR
- PROPOSED MINI-MAJOR
- PROPOSED SPECIALTY
- PROPOSED RETAIL KIOSK / LSA
- PROPOSED CINEMA
- PROPOSED MALL
- PROPOSED FOOD KIOSK
- PROPOSED FOOD
- PROPOSED VERTICAL TRANSPORT
- PROPOSED AMENITIES
- PROPOSED SERVICE / STORAGE
- PROPOSED CAR PARK / LOADING
- PROPOSED HARD LANDSCAPING
- PROPOSED SOFT LANDSCAPING
- PROPOSED WATER FEATURE
- PROPOSED SKYLIGHT / GLASS CANOPY

N



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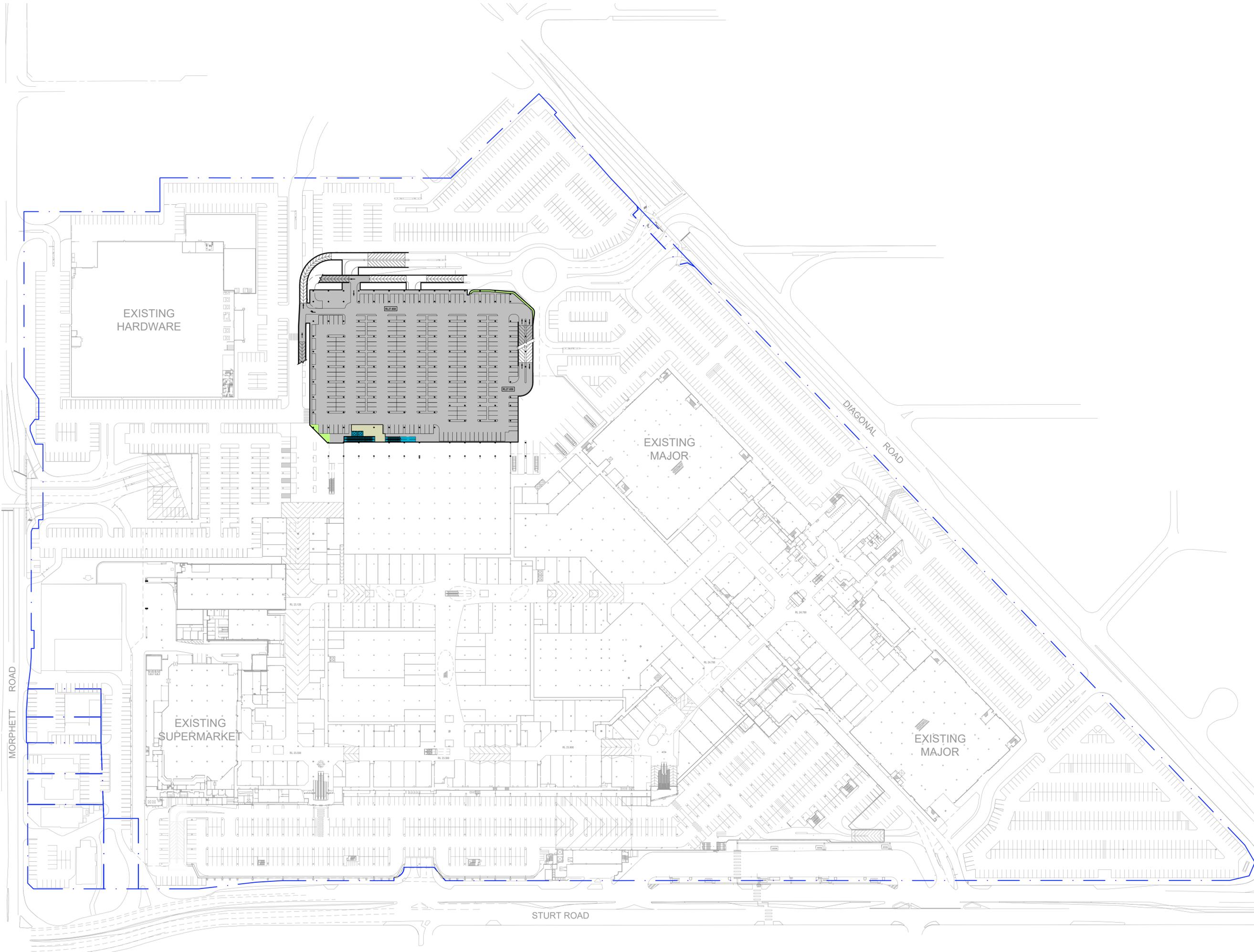
Title
**PROPOSED GA
LEVEL 1M & 1Ma PLAN**

Centre
MARION

**DEVELOPMENT
APPLICATION
FOR SUBMISSION**

Project No. 5524	Drawing No.	Revision
Drawing Scale 1:1000 @A1	01.5202	A
Plot Date 13/11/2018		

1: P:\MARION_18\EXTENSIVE CONCEPTS\WALTERS\JAMES_FINALS\PLAN_01.5202.PLA LHM_P\01.5202.PLA



LEGEND

PROPOSED:

- PROPOSED MAJOR
- PROPOSED MINI-MAJOR
- PROPOSED SPECIALTY
- PROPOSED RETAIL KIOSK / LSA
- PROPOSED CINEMA
- PROPOSED MALL
- PROPOSED FOOD KIOSK
- PROPOSED FOOD
- PROPOSED VERTICAL TRANSPORT
- PROPOSED AMENITIES
- PROPOSED SERVICE / STORAGE
- PROPOSED CAR PARK / LOADING
- PROPOSED HARD LANDSCAPING
- PROPOSED SOFT LANDSCAPING
- PROPOSED WATER FEATURE
- PROPOSED SKYLIGHT / GLASS CANOPY

N



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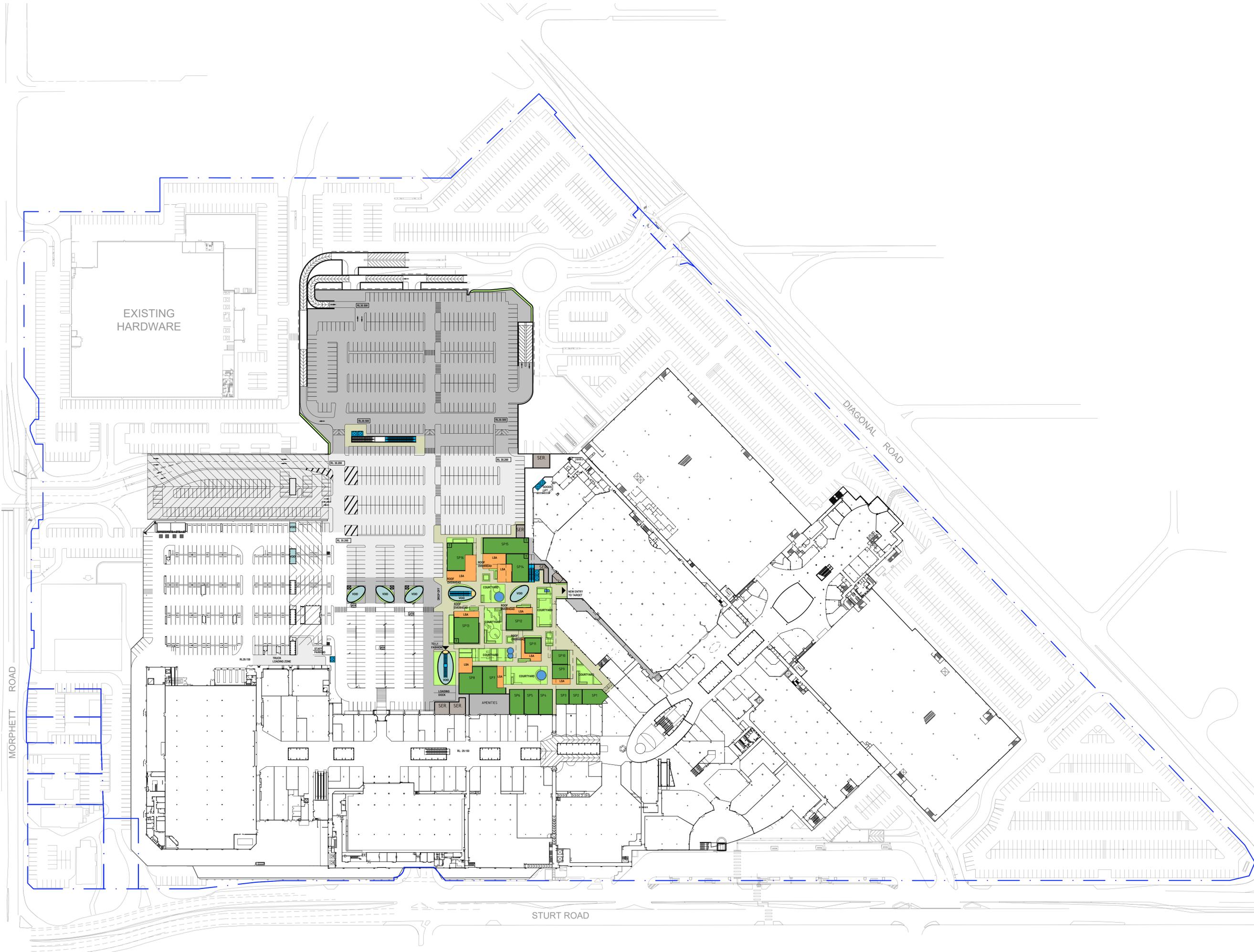
Title
**PROPOSED GA
LEVEL 1M^b PLAN**

Centre
MARION

**DEVELOPMENT
APPLICATION
FOR SUBMISSION**

Project No. 5524	Drawing No.	Revision
Drawing Scale 1:1000 @A1	01.5203	A
Plot Date 13/11/2018		

T:\MARION\EXTEND\CONCEPTS\WALTERS\JAMES_PARRIS\PLAN_STORED_PFLY_LIN_PALLIUM_CAD_ACTIVITY\101801.DWG



LEGEND

PROPOSED:

- PROPOSED MAJOR
- PROPOSED MINI-MAJOR
- PROPOSED SPECIALTY
- PROPOSED RETAIL KIOSK / LSA
- PROPOSED CINEMA
- PROPOSED MALL
- PROPOSED FOOD KIOSK
- PROPOSED FOOD
- PROPOSED VERTICAL TRANSPORT
- PROPOSED AMENITIES
- PROPOSED SERVICE / STORAGE
- PROPOSED CAR PARK / LOADING
- PROPOSED HARD LANDSCAPING
- PROPOSED SOFT LANDSCAPING
- PROPOSED WATER FEATURE
- PROPOSED SKYLIGHT / GLASS CANOPY

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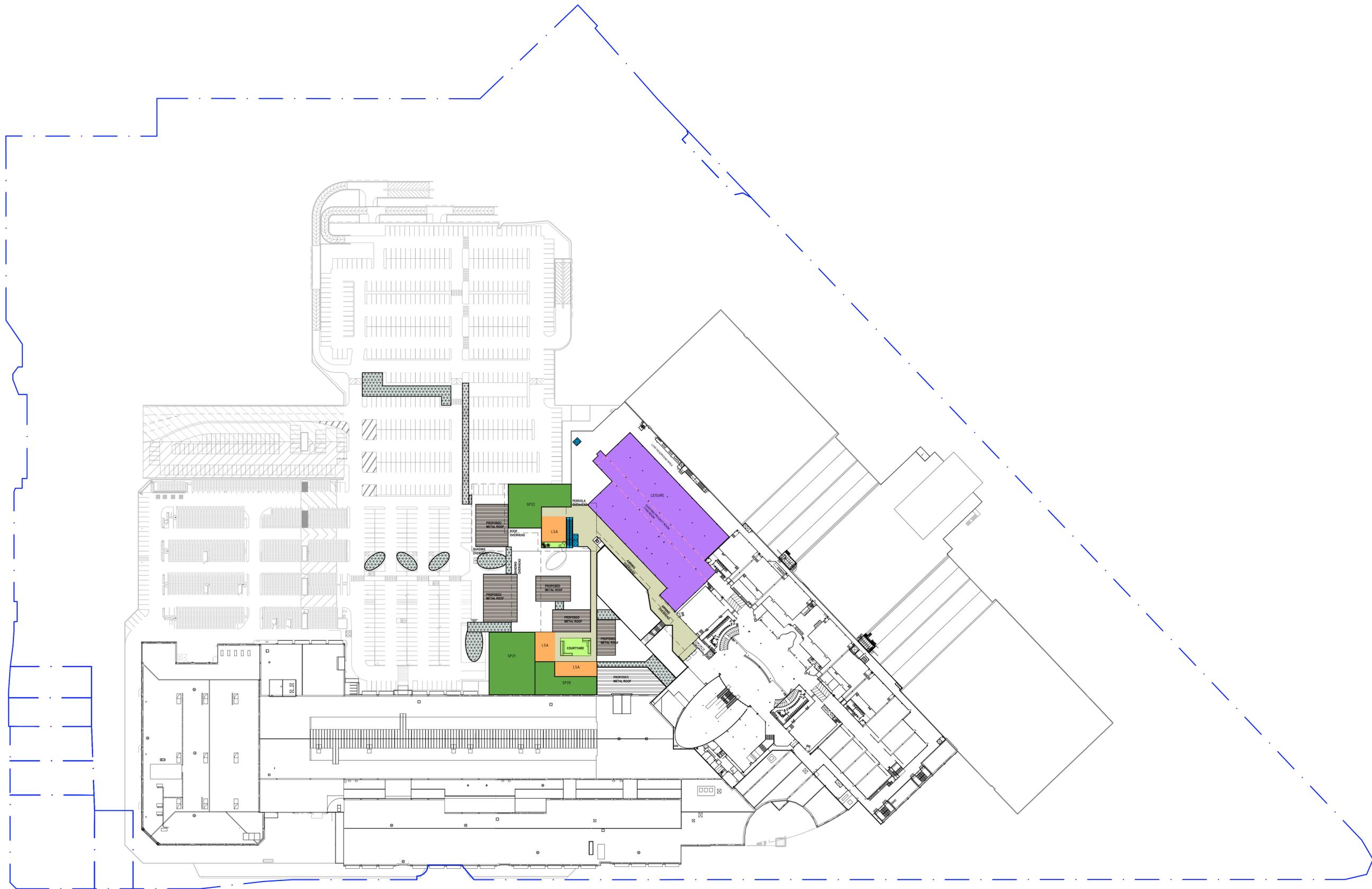
Title
**PROPOSED GA
LEVEL 2 PLAN**

Centre
MARION

**DEVELOPMENT
APPLICATION
FOR SUBMISSION**

Project No. 5524	Drawing No.	Revision
Drawing Scale 1:1000 @A1	01.5204	A
Plot Date 13/11/2018		

T:\WORKING\EXTENSION\CONCEPT\PLAN\GA_LEVEL_2\MARION_GA_LEVEL_2_PLAN\SCENITE\GA_LEVEL_2_PLAN.dwg



LEGEND

PROPOSED:

- PROPOSED MAJOR
- PROPOSED MINI-MAJOR
- PROPOSED SPECIALTY
- PROPOSED RETAIL KIOSK / LSA
- PROPOSED CINEMA
- PROPOSED MALL
- PROPOSED FOOD KIOSK
- PROPOSED FOOD
- PROPOSED VERTICAL TRANSPORT
- PROPOSED AMENITIES
- PROPOSED SERVICE / STORAGE
- PROPOSED CAR PARK / LOADING
- PROPOSED HARD LANDSCAPING
- PROPOSED SOFT LANDSCAPING
- PROPOSED WATER FEATURE
- PROPOSED SKYLIGHT / GLASS CANOPY

N



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Title

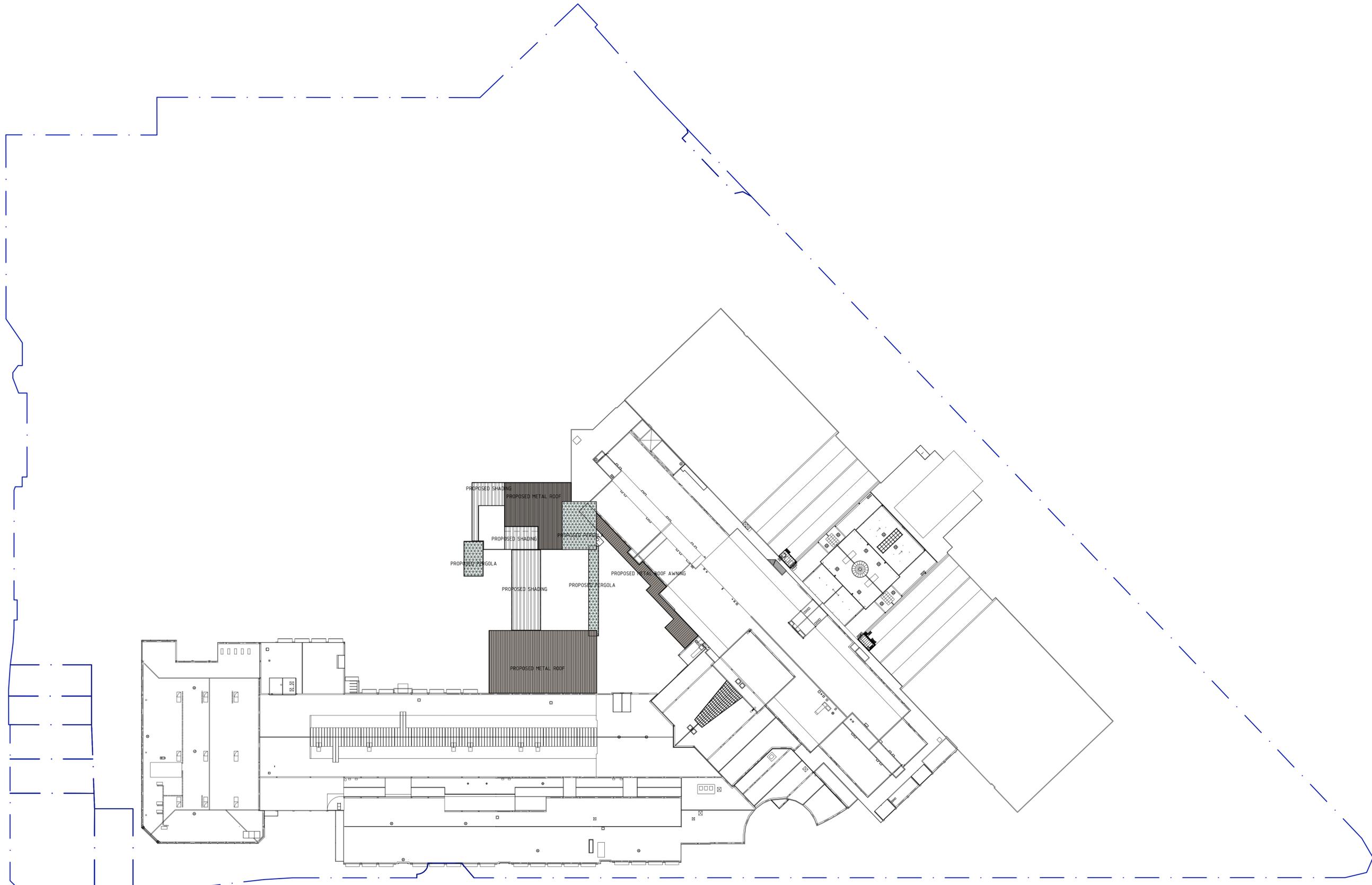
**PROPOSED GA
LEVEL 3 PLAN**

Centre

MARION

**DEVELOPMENT
APPLICATION
FOR SUBMISSION**

Project No. 5524	Drawing No.	Revision
Drawing Scale 1:1000 @A1	01.5205	A
Plot Date 13/11/2018		



LEGEND

PROPOSED:

- PROPOSED MAJOR
- PROPOSED MINI-MAJOR
- PROPOSED SPECIALTY
- PROPOSED RETAIL KIOSK / LSA
- PROPOSED CINEMA
- PROPOSED MALL
- PROPOSED FOOD KIOSK
- PROPOSED FOOD
- PROPOSED VERTICAL TRANSPORT
- PROPOSED AMENITIES
- PROPOSED SERVICE / STORAGE
- PROPOSED CAR PARK / LOADING
- PROPOSED HARD LANDSCAPING
- PROPOSED SOFT LANDSCAPING
- PROPOSED WATER FEATURE
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N



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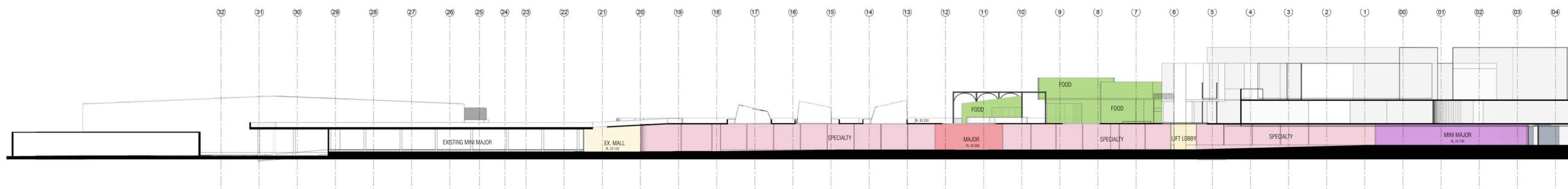
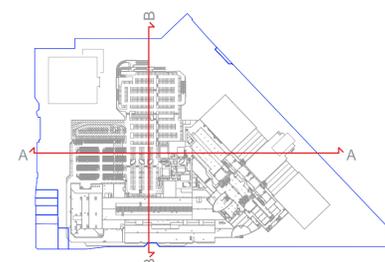
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Title
**PROPOSED GA
ROOF PLAN**

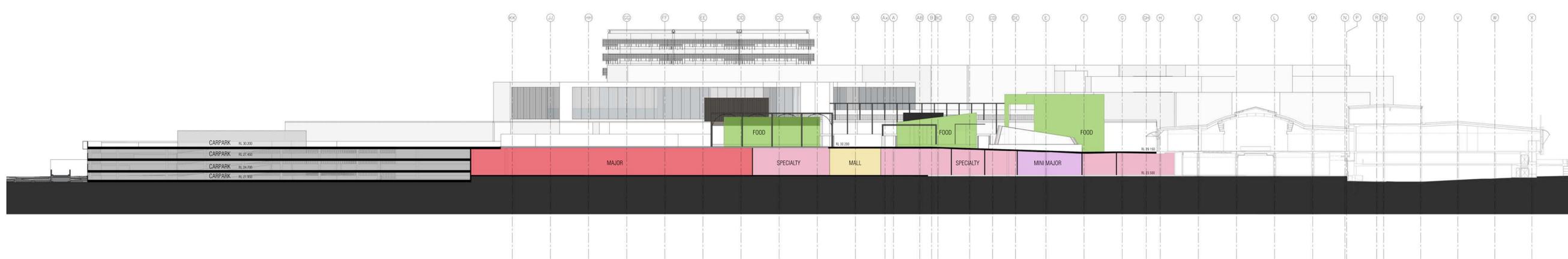
Centre
MARION

**DEVELOPMENT
APPLICATION
FOR SUBMISSION**

Project No. 5524	Drawing No. 01.5206	Revision A
Drawing Scale 1:1000 @A1	Plot Date 13/11/2018	



PROPOSED SECTION A-A LOOKING NORTH
1 : 500



PROPOSED SECTION B-B LOOKING EAST
1 : 500

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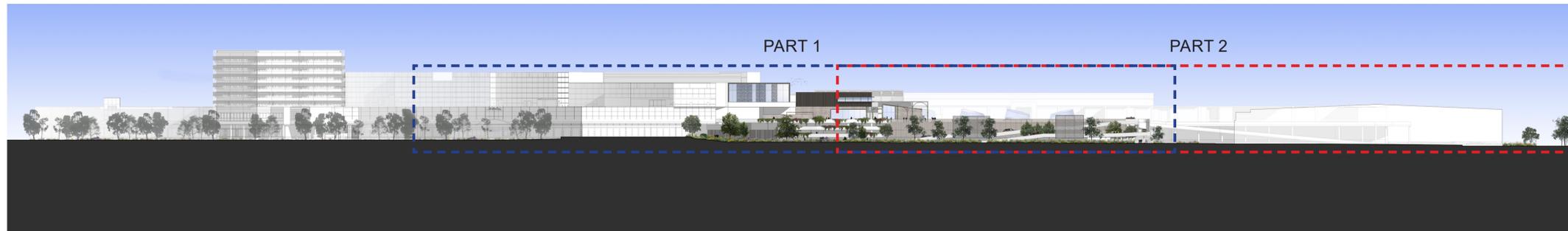
PROPOSED SECTION A-A,B-B

MARION

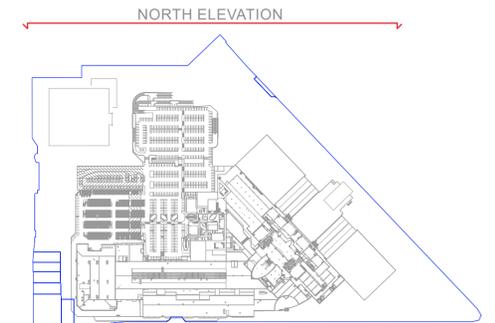
DEVELOPMENT APPLICATION FOR SUBMISSION

Project Number: 5524
 Sheet: B Sheet 001
 100% @ A1
 Date: 2018-11-13
01.5301 A

\\PDESIGN\hdm\MARION\5524 EXTENSION\CONCEPTED MASTERPLANNING... PARALLEL MALL SCHEM 3 (FUT LIA MAJOR WORKING PRESENTATION)\ACTIVE\A1.01.5300 SECTIONS.rvt



PROPOSED NORTH ELEVATION
1 : 1000



PROPOSED NORTH ELEVATION - PART 1
1 : 500

L3 CINEMA	- RL 36.200
PARAPET	- RL 31.600
L2 CARPARK	- RL 30.500
L1MB CARPARK	- RL 27.650
L1MA CARPARK	- RL 24.800
L1 CARPARK	- RL 21.950



PROPOSED NORTH ELEVATION - PART 2
1 : 500

L3 CINEMA	- RL 36.200
PARAPET	- RL 31.600
L2 CARPARK	- RL 30.500
L1MB CARPARK	- RL 27.650
L1MA CARPARK	- RL 24.800
L1 CARPARK	- RL 21.950

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PROPOSED NORTH ELEVATIONS

Client

MARION

DEVELOPMENT APPLICATION FOR SUBMISSION

Project Number 5524 Drawing No. 100% @ A1
 Date 2018-11-14
 01.5401 A



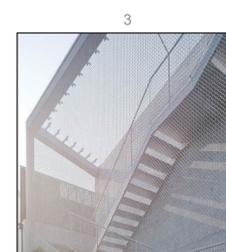
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FEATURE PATTERNED METAL SCREEN



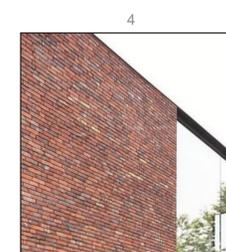
2A
PLANTING TO SLAB EDGE



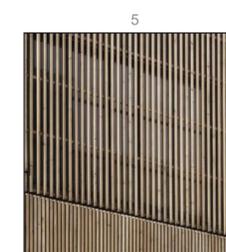
2B
CONCRETE SLAB EDGE



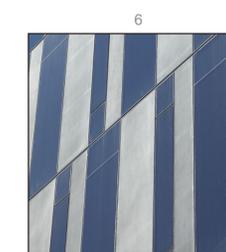
3
ARCHITECTURAL METAL MESH FACADE



4
BRICK FACADE



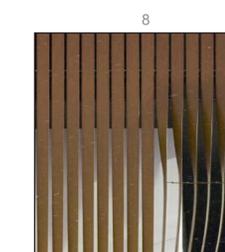
5
TIMBERSCREEN



6
GLAZING WITH PANELS

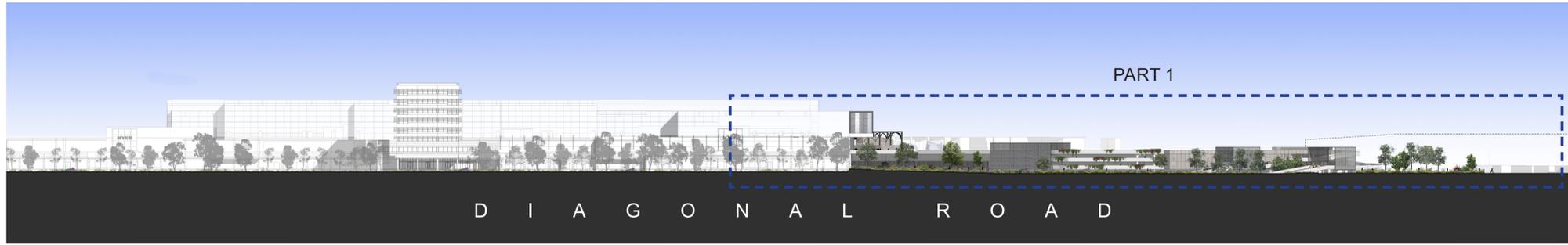


7
STEEL FRAMING

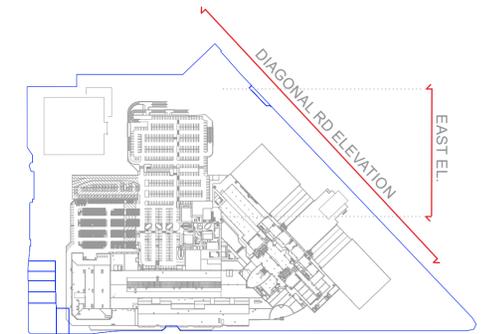


8
VERTICAL ALUMINIUM SCREEN

T:\MARION\EXTENSION\CONCEPTS\MASTERPLANNING... PARALLEL MALL SCHEMES (FUT LIA MARION WORKING PRESENTATION\ACTIVE\BMS1540) ELEVATIONS.rvt



PROPOSED DIAGONAL ROAD ELEVATION
1 : 1000



PROPOSED DIAGONAL ROAD ELEVATION - PART 1
1 : 500



PROPOSED EAST ELEVATION (NORTHERN CARPARK)
1 : 500

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PROPOSED DIAGONAL ROAD & EAST ELEVATIONS

Client

MARION

DEVELOPMENT APPLICATION FOR SUBMISSION

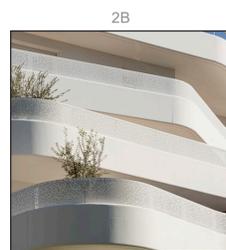
Project Number Drawing No. Revision
 5524
 Scale @ Sheet Size
 100% @ A1
 Plot Date
 2018-11-14
 01.5402 A



1
FEATURE PATTERNED METAL SCREEN



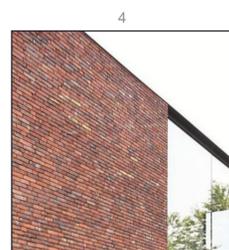
2A
PLANTING TO SLAB EDGE



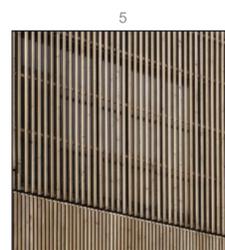
2B
CONCRETE SLAB EDGE



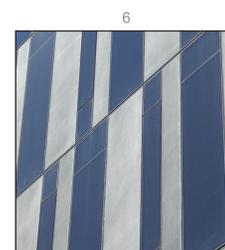
3
ARCHITECTURAL METAL MESH FACADE



4
BRICK FACADE



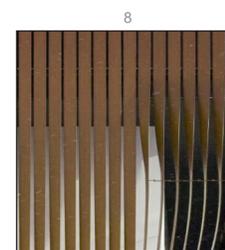
5
TIMBERSCREEN



6
GLAZING WITH PANELS



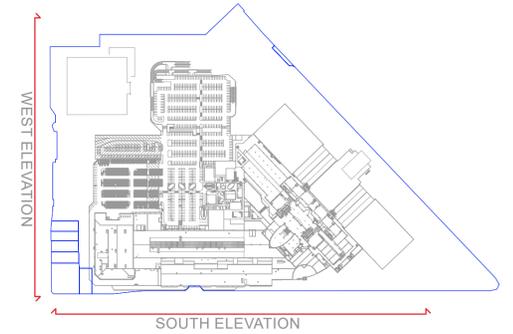
7
STEEL FRAMING



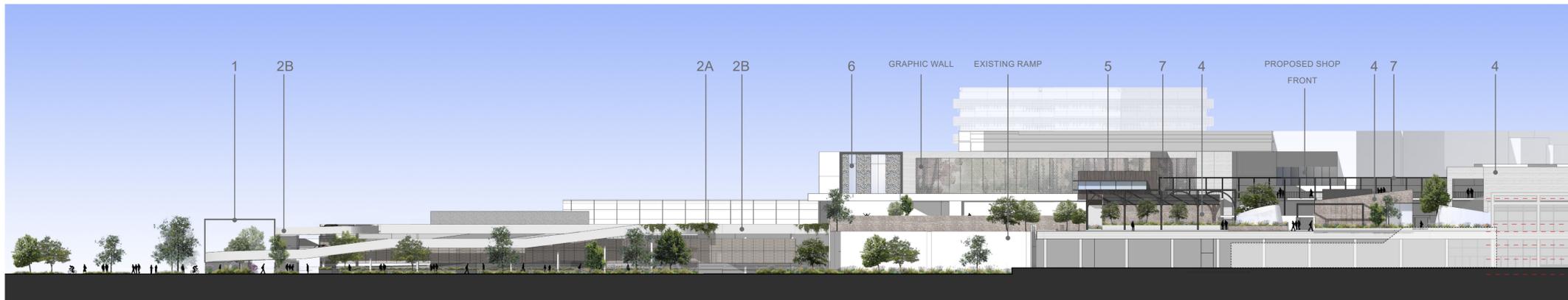
8
VERTICAL ALUMINIUM SCREEN



PROPOSED SOUTH ELEVATION
1 : 1000



PROPOSED WEST ELEVATION
1 : 1000



PROPOSED WEST ELEVATION - PART 1
1 : 500

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PROPOSED SOUTH/
WEST ELEVATIONS

Client

MARION

DEVELOPMENT
APPLICATION
FOR SUBMISSION

Project Number Drawing No. Revision

5524

Scale @ Sheet Size

100% @ A1

2018-11-14

01.5403 A

TIMBERSCREEN EXTENSION01 CONCEPTS MASTERPLANNING... PARALLEL MALL SCHEMES (FUT LIA MARION WORKING PRESENTATIONS) (ACTIVE) (M&S) (ELEVATIONS) (REV)



1
FEATURE PATTERNED
METAL SCREEN



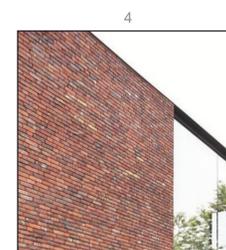
2A
PLANTING TO SLAB EDGE



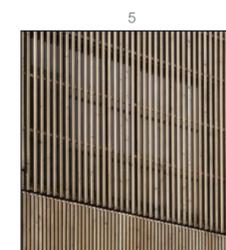
2B
CONCRETE SLAB EDGE



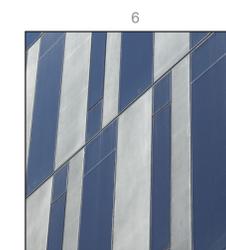
3
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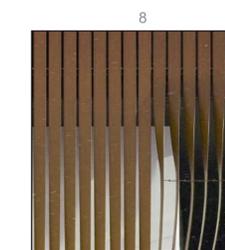
5
TIMBERSCREEN



6
GLAZING WITH PANELS



7
STEEL FRAMING



8
VERTICAL ALUMINIUM
SCREEN



PERSPECTIVE 01 - DIAGONAL ROAD ENTRY

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**PERSPECTIVE 01
DIAGONAL ROAD
ENTRY**

MARION

**DEVELOPMENT
APPLICATION
FOR SUBMISSION**

Project Number	Drawing No.	Revision
5524		
Scale @ Sheet Size	100% @ A1	01.5501
Print Date	2018-11-14	A



PERSPECTIVE 02 - NORTHERN ENTRY

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PERSPECTIVE 02
 NORTHERN ENTRY

MARION

DEVELOPMENT
 APPLICATION
 FOR SUBMISSION

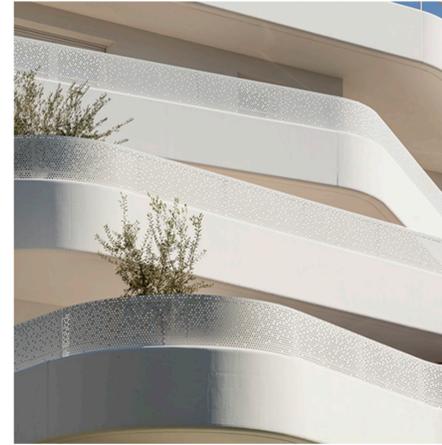
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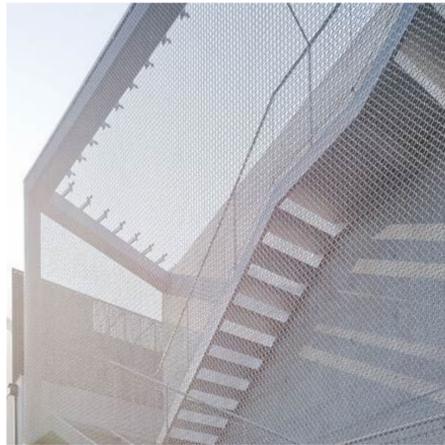
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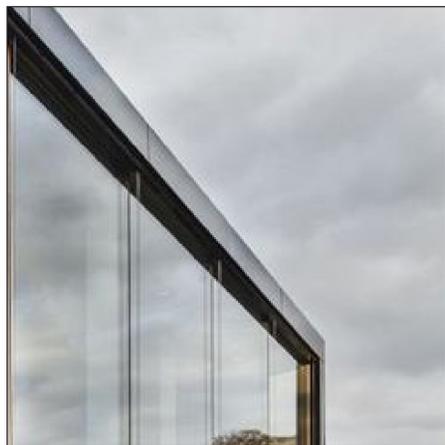
ARCHITECTURAL METAL MESH FACADE



BRICK FACADE



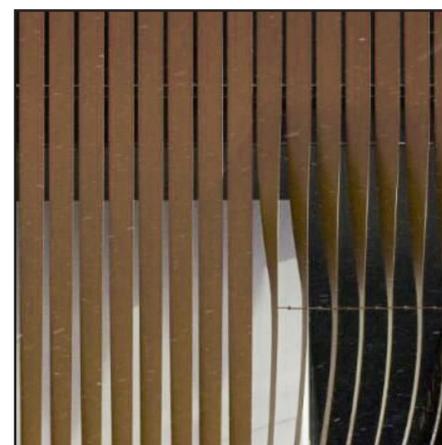
TIMBER SCREEN



GLAZING WITH PANELS



STEEL FRAMING



VERTICAL ALUMINIUM SCREEN

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MATERIALS AND FINISHES SCHEDULE

MARION

DEVELOPMENT APPLICATION FOR SUBMISSION

Project Number	Drawing No.	Revision
5524		
Scale @ Sheet Size	100% @ A1	
Print Date	2018-11-14	

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10 December 2018
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WESTFIELD MARION REDEVELOPMENT

297 DIAGONAL ROAD, OAKLANDS PARK

TRAFFIC REPORT

December 2018

17-0275

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Rev A	10 December 2018	Amended GLA	MLM

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1.0 INTRODUCTION

This report relates to a proposal for an expansion to Westfield Marion. The proposal, which will include expansion of retail floor area and construction of a decked parking area on the site, will also include installation of a ticketless access control system.

The subject site has been the subject of a number of development approvals in recent years. Of particular note is the approval for a 19,213 m² expansion of the retail facilities (DA 100/1297/2012), a variation to permit the approval to be constructed in stages (DA 100/417/2015) and the installation of an access control system for the site (DA 100/1607/11).

The subject proposal seeks to deliver 16,896 m² of additional floor area and provide improved loading facilities for the site. Specifically, where possible, commercial and domestic vehicles will be separated within the site, albeit existing infrastructure will preclude this in some locations.

Modification to the car park access ramps are also proposed to provide for the expansion.

This report provides an assessment of the car park design and delivery access requirements, as well as modifications necessary to incorporate the ticketless access control system. In addition to this design assessment, a review of the traffic capacity requirements of the access has been completed for the proposal.

Stage 1A of DA 100/417/2015 has been constructed. Subsequent stages of this approval included infrastructure improvements to the Diagonal Road signalised access. These works have not been effected as they related to staging that has not to date been implemented. Accordingly, the requirements to incorporate these works into the subject development proposal have been reviewed as part of this assessment.

These investigations are documented in this report which relates to Scentre Group Design and Construction Suite of Drawings D5524 – SGD – 015000 to 015900.

2.0 EXISTING SITUATION

The subject site is Westfield Marion, which has an existing leasable floor area of approximately 135,320 m² (inclusive of the cinema). The site, which is triangular in shape and is located within the Marion Regional centre, has frontages to Diagonal Road, Morphett Road and Sturt Road. Figure 1 identifies the subject site.



Figure 1: Subject Site

Sturt Road is an arterial road which has an annual average daily traffic (AADT) volume in the order of 19,800 vehicles per day (vpd). It is primarily a four-lane divided carriageway but expands on the approach to intersections to provide for turning lanes. The road has a speed limit of 60 km/h.

Sturt Road has bicycle lanes provided in each direction which are operational at all times. Indented parking is available on the southern side of the road. Sturt Road forms a signalised intersection with Morphett Road at the western end of the subject site and with Diagonal Road at the eastern end of the subject site.

Morphett Road is an arterial road which has an AADT volume in the order of 23,300 vpd. It is primarily a four-lane divided carriageway. Adjacent the site, the road expands on approaches to signalised intersections to provide for turning lanes. The road has a posted speed limit of 60 km/h.

Morphett Road has bicycle lanes provided in each direction which are operational at all times. Morphett Road forms a signalised T-intersection with Diagonal Road, north of the subject site.

Diagonal Road is an arterial road which has an AADT in the order of 29,000 vpd. It is primarily a four-lane divided carriageway, although, the road expands on approaches to signalised intersections to provide for turning lanes. The road has a posted speed limit of 60 km/h.

Diagonal Road has bicycle lanes provided in each direction which are operational at all times. Indented parking is available on the western side of the road.

Bus routes are located on Sturt Road, Morphett Road and Diagonal Road, with most routes terminating at the major bus interchange located on the subject land. Figure 2 illustrates existing bus routes immediately adjacent the site.

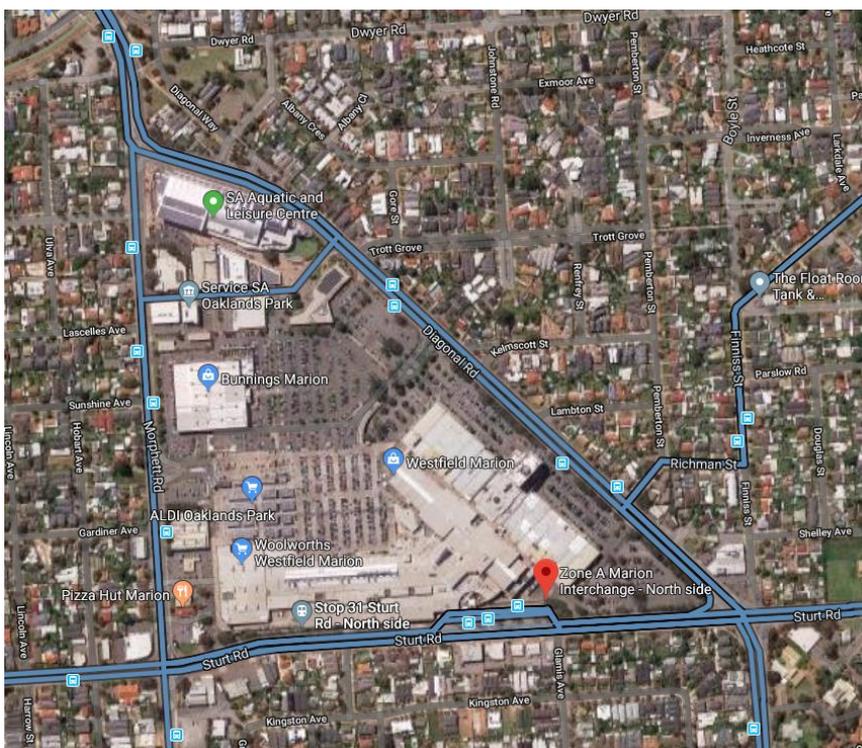


Figure 2: Existing bus routes (source: Google Maps).

The above figure illustrates that there are many opportunities to access the site via public transport.

Access to the subject site is located at a number of locations on each road frontage. Primary access to the shopping centre is achieved via a signalised access on Morphett Road, Diagonal Road and Sturt Road. These signalised access points cater for approximately 80% of the traffic entering and exiting the site. The balance of access is achieved via the various unsignalised access points. Figure 3 illustrates the existing access arrangement for the site.

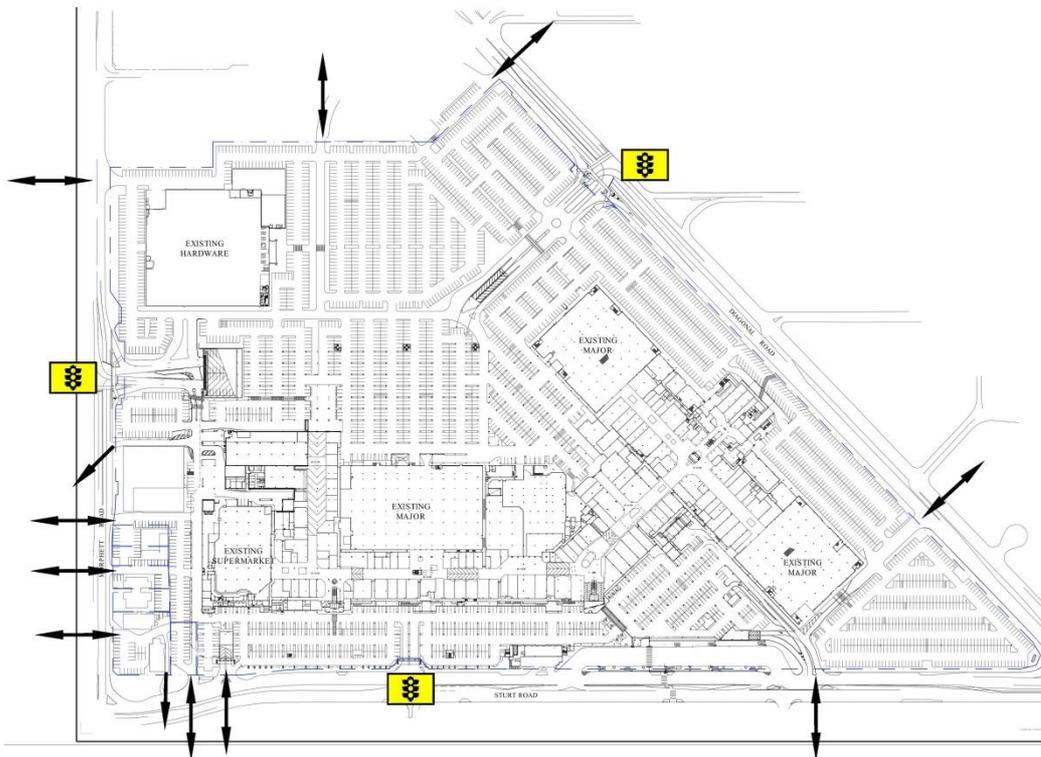


Figure 3: Existing access arrangements at the site.

Parking for the site is currently provided in two deck parking areas, namely:

- a deck car park on the southern side of the site, adjacent Sturt Road; and
- a deck car park on the northern side of the site.

In addition, an at-grade car park on the northern portion of the land provides additional parking for the site.

The land to the north of the site includes a medical centre, the state aquatics centre and Marion Cultural Centre. Access to the shopping centre is available via a road constructed on land owned by the City of Marion which extends to Warracowie Way.

2.1 TRAFFIC VOLUMES

Traffic count data were obtained from the Department of Planning, Transport and Infrastructure (DPTI) for the signalised access points on Morphett Road and Diagonal Road. These data are illustrated in Figures 4 and 5.

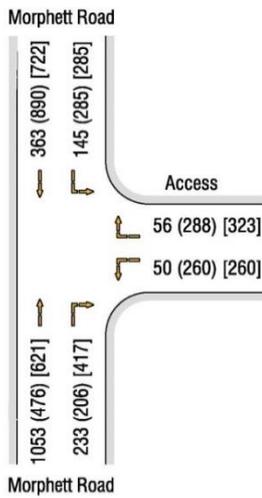


Figure 4: Peak hour turning movements at Morphet Road access

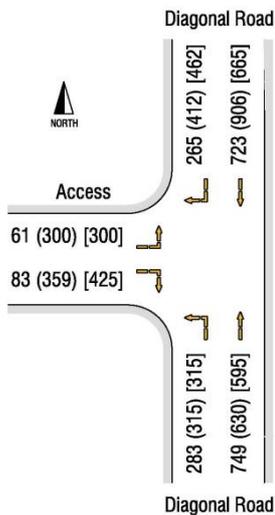


Figure 5: Peak hour turning movements at Diagonal Road access

The above data were compared with the data used for the previous assessments at the intersections. The volume in peak periods accessing the site via the signals was comparable with the 2007 volumes and identified that the entry and exit movements were comparable with present day volumes. Accordingly, there has been negligible change to the traffic movements to and from the shopping centre since the 2007 assessment.

On this basis, the turning count data at other access points used in the previous assessment have been maintained for this review. These data are illustrated in Figure 6 (noting that the signalised intersection data obtained in 2018 have been adopted for the primary access points),

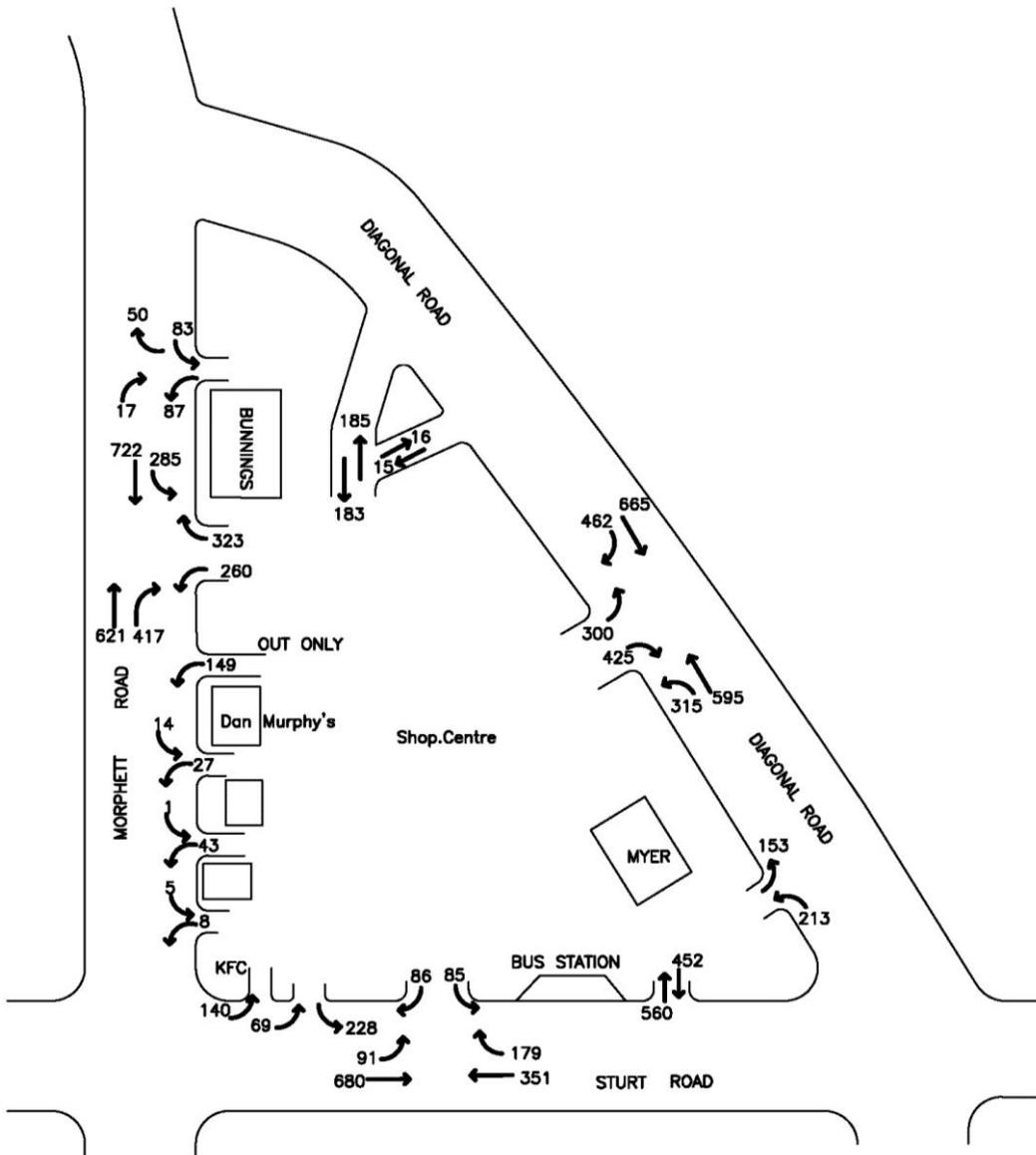


Figure 6: Peak hour turning volumes at Westfield Marion access points.

3.0 PREVIOUS APPROVALS

The previous application for the expansion of the shopping centre has included a number of iterations, including:

- an approval in 2008 for an increased floor area of 18,152 m²;
- variations to that approval in 2011 and 2012; and
- approval for a staged development proposal for 19,213 m² additional floor area in 2015.

Stage 1 of the 2015 approval which included the Aldi supermarket and the Fresh Food Precinct was constructed in 2016 and resulted in approximately 3,100 m² of the floor area being constructed.

The earlier applications had included additional parking spaces at a rate of five spaces per 100 m². This was in order to satisfy the (then) rate identified in Councils Development Plan but did not reflect either the existing provision on the site or an identified existing demand.

Typically, loading was maintained in its existing configuration for the site, except where the proposed modifications necessitated an amendment to the access for commercial vehicles.

Access to the site was maintained as per the existing arrangements for the previous proposal, with the exception of an infrastructure upgrade to include an additional right turn lane entering the site at the Diagonal Road signalised intersection. A subsequent Development Application, however, resulted in approval for an access control system, including boom gates, to be implemented at all access points.

In addition to the above approvals, an agreement is in place that provides for an opportunity to segregate an area in the car park for use by Aquatic Centre patrons during major events. At present, when execute, this area is controlled manually and can vary in space depending on the event.

4.0 PROPOSAL

The current proposal for a 16,896 m² expansion of Westfield Marion has also incorporated the more recent design philosophy of Scentre Group to not only improve and modernise the offering at the centre, but to also address present day design expectations, including:

- Safety in design criteria. This includes as a primary focus the separation of commercial and domestic vehicles in the site where possible. At present trucks enter and exit the sites at a number of locations and are required to drive along car park aisles and in areas of high pedestrian movements. While it is not possible to separate all truck movements from the car park due to the location of existing loading facilities and on-site infrastructure and lease constraints, the design has focused on concentrating most deliveries within separated loading areas with access via major access and circulation aisles where possible;
- Provision of a ticketless access control system at all access points. Such a system is being introduced at all Westfield sites across Australia and provides for improved parking efficiencies and turnover while minimising traffic impact at the entry points;
- Modifications to the existing parking to include a four level deck parking area in the northern car park area, adjacent Diagonal Road. This car park expansion will incorporate four levels of parking, with the upper level linking to the existing level two deck car park;
- modifications to the existing ramp which services the upper deck car park from Morphett Road. This modification will include separating the access aisles from parking on this ramp;
- Modifications to the existing substandard roundabout adjacent the Diagonal Road access to provide additional separation to the traffic signals and to achieve a compliant functional roundabout design;
- Modifications to the Morphett Road signals to incorporate a high angle left turn lane at the entry in lieu of the existing continuous lane;
- Introduction of an additional right turn lane for drivers entering the site at the Diagonal Road signalised access to increase capacity at this intersection;
- Modifications to the Woolworths loading access to provide for a turning area for drivers to enter and exit the site via Sturt Road; and
- Creation of a separated loading facility at ground level on the north-eastern side of the centre to maximise the separation to customer traffic.

4.1 ACCESS

Access points to the shopping centre will remain in the current locations. Modifications to the access points will be included to accommodate the proposed ticketless access control equipment. Figure 7 illustrates the site with access points numbered.

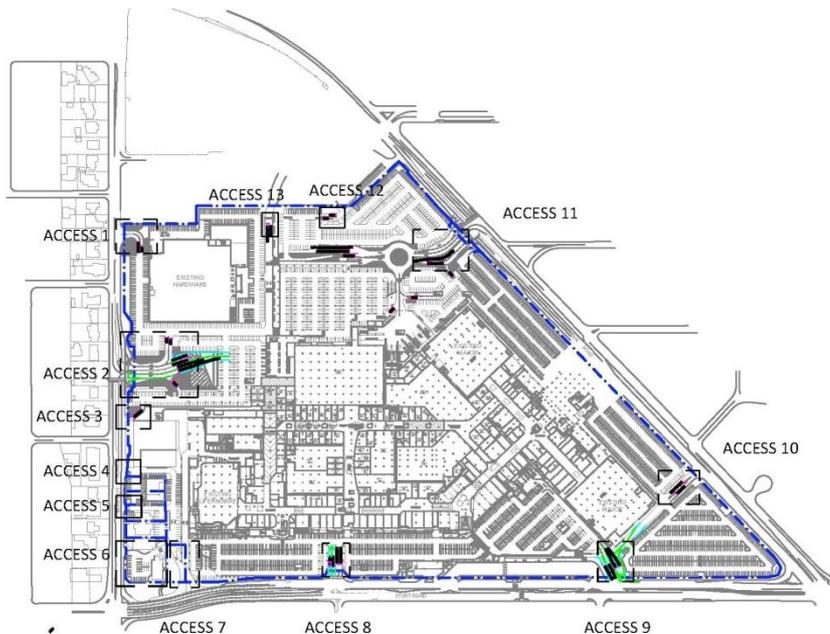


Figure 7: Numbered access points.

Access 1 will be designed to cater for entry and exit movements in a single lane. The design of the access will accommodate the entry and exit movements for the delivery vehicle servicing the Bunnings store. Figure 8 illustrates the proposed treatment for access 1.

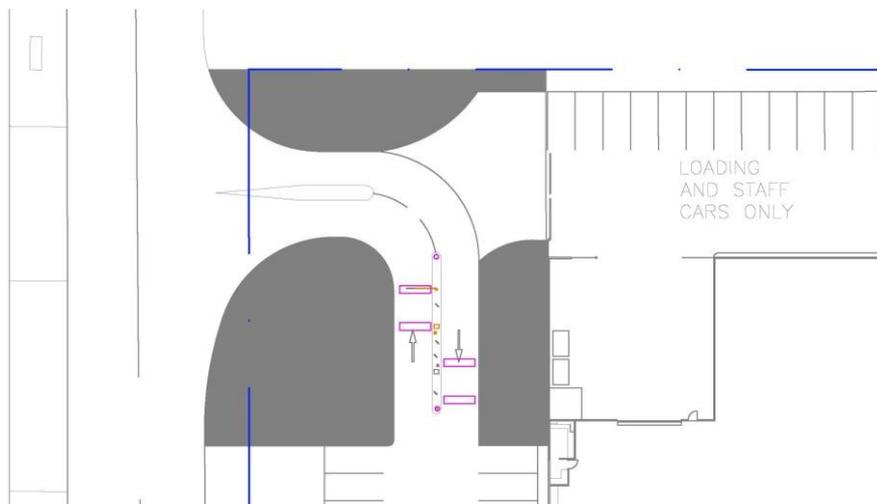


Figure 8: Access 1 proposed treatment.

Access 2 is the signalised Morphett Road intersection. There will be a number of modifications to this access, including:

- creation of a high angle left turn lane in lieu of the existing continuous lane. This will provide for improved safety and a decrease in weaving movements on the entry;
- separation of entry and exit lanes on the ramp from a parking area to provide for unimpeded access on the ramp; and
- installation of a ticketless access control equipment.

Figure 9 illustrates the amended intersection and access design, including the equipment.

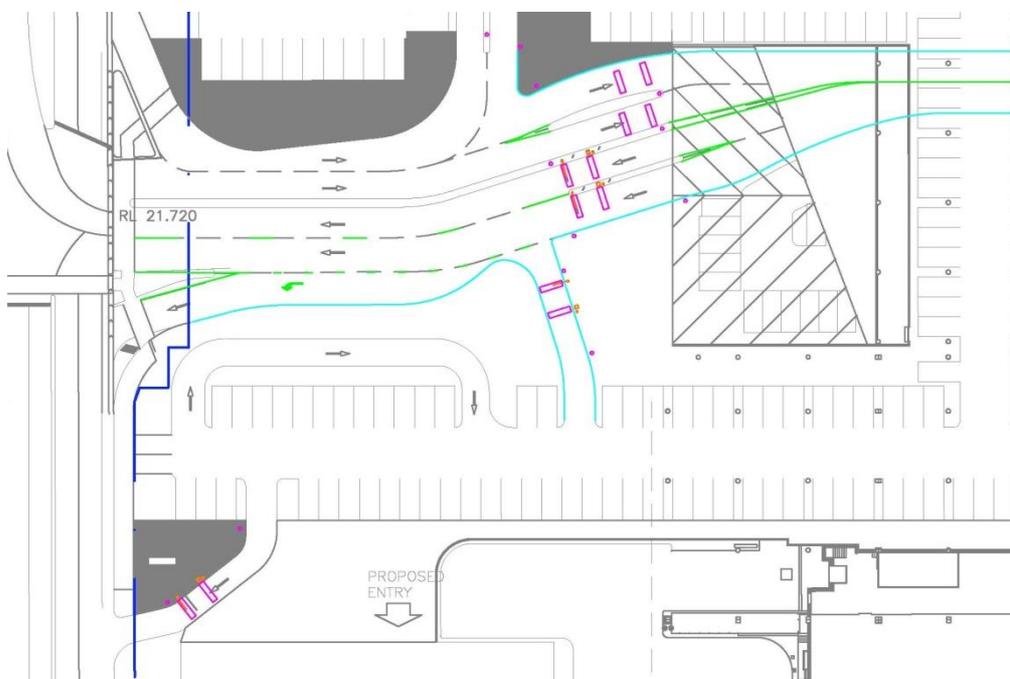


Figure 9: Amended intersection and access design.

Access 3 will be retained as an egress only but will be modified on approach to Morphett Road to service the parking area rather than the loading. The angle of the approach will be no less than 70° in accordance with Austroads design criteria. Figure 10 illustrates the proposed egress design, including equipment.

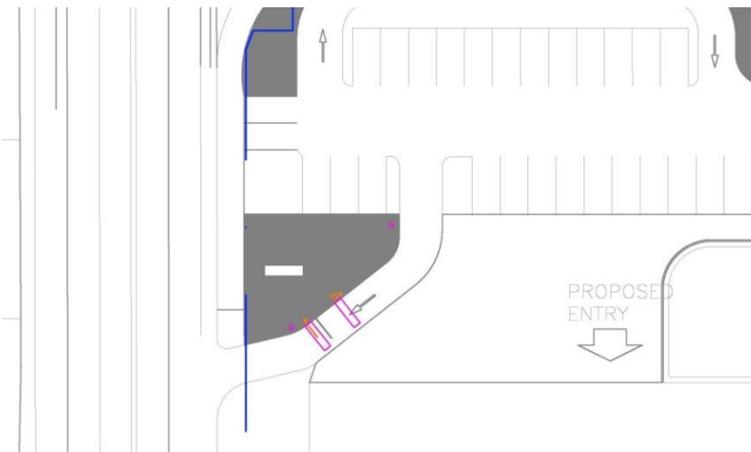


Figure 10: Proposed egress design including equipment.

Access points 4, 5 and 6 will be retained in their current configuration and will continue to service the pad sites. Internal closures between the parking areas servicing the pad sites and the balance of the centre will be effected so that drivers cannot use these crossovers to avoid the controlled access points. Figure 11 illustrates how this area will be separated from the primary parking areas.



Figure 11: Internal car park segregation.

The above treatment will mean that these access points will only be used by drivers accessing the pad sites (albeit it is anticipated that this would be the current situation).

Access 7 currently provides entry for commercial vehicles to the Woolworths and Aldi loading facility and the car park fronting Sturt Road. It is treated with a left turn deceleration lane which also provides channelization for the adjacent entry to the

Sturt Road car park ramp. It is proposed to modify Entry 7 to permit exit movements for commercial vehicles, as illustrated in Figure 12.



Figure 12: Proposed modification to access 7 to permit exit movements.

The modifications illustrated above can be achieved by closing the adjacent access. This will have minimal impact on the operation of the traffic flow within the car park as the ramp within the Sturt Road deck car park can be connected at the internal aisle, as illustrated in Figure 13.



Figure 13: Connection of ramp to internal aisle creating minimal impact on traffic flow.

The above treatment will result in more traffic being diverted to access 8 but this intersection is currently well below capacity and there will be minimal impact as a result of this change in access configuration.

Access 9 will be widened and modified to cater for two entry and two exit lanes, as illustrated in Figure 14.



Figure 14: Widened Sturt Road Access.

Access 10 provides for left-in/left-out movements to/from the site and will be treated with single entry and exit gates, as illustrated in Figure 15.

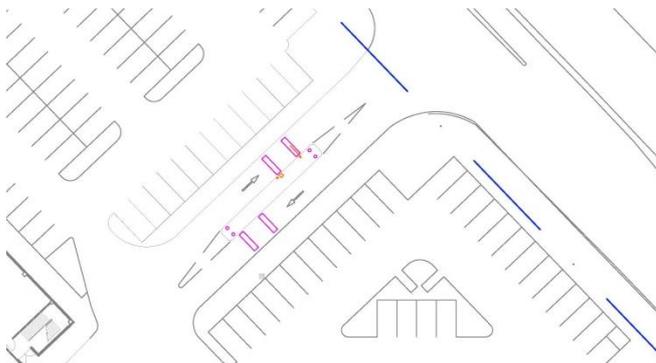


Figure 15: Left-in/left-out movements with single entry and exit gates at access 10

Access 11 is the signalised Diagonal Road intersection. Modifications to this intersection to facilitate the access control equipment will include:

- relocation and modification of the roundabout;
- introduction of an additional right turn lane to the site;
- creation of a high angle left turn lane to the site; and

- installation of access control equipment in a number of lanes.

Figure 16 illustrates the proposed intersection modifications and the location of the access equipment.

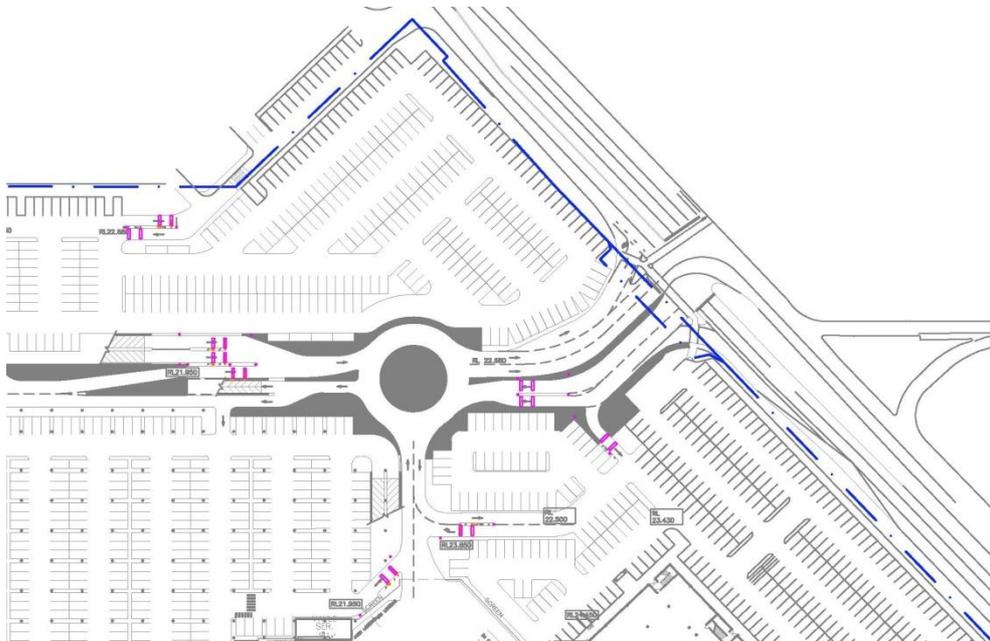


Figure 16: Proposed modifications at intersection including location of access equipment.

It can be seen on the above figure that the equipment will be provided on the approaches to the roundabout. This is deliberate to allow for the roundabout to operate with a single circulating lane and simplify the merging of traffic lanes.

Access to the Marion Cultural Centre will remain outside the access control system. Accordingly, equipment will be placed to cater for access west of the Cultural Centre car park as illustrated in Figure 17.

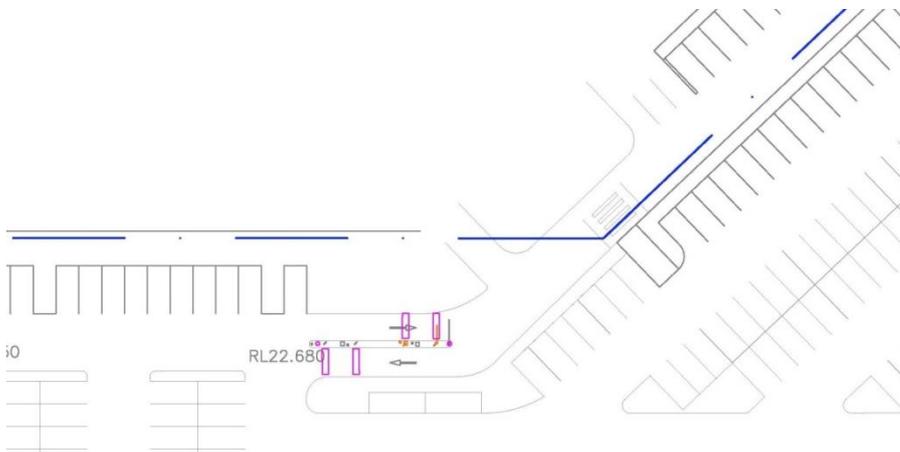


Figure 17: Placement of equipment west of Cultural Centre Car Park.

The above access will be used by staff.

Access 13 will be controlled with a single entry and exit gate, as illustrated in Figure 18.

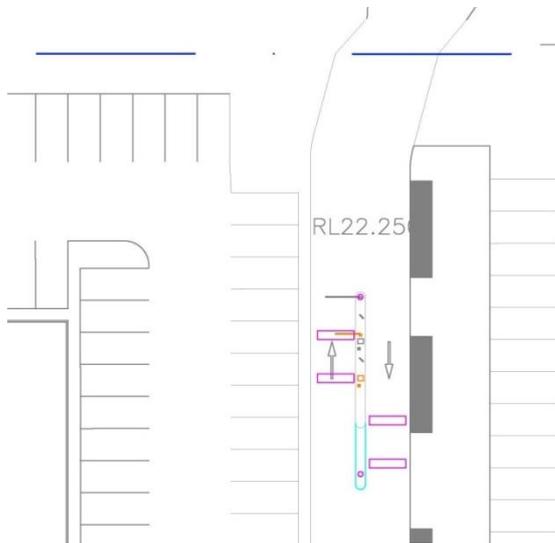


Figure 18: Single entry and exit gate at Access 13

Additional internal access gates will be installed to separate specific areas for staff parking, including:

- the new parking area on the Morphett Road ramp; and
- at the access to the northern at-grade parking area.

The separating of the northern at-grade parking area will also provide an opportunity for this section of the car park to be used for the overflow of the Aquatic Centre during major events.

Figure 19 illustrates these proposed internal gates.

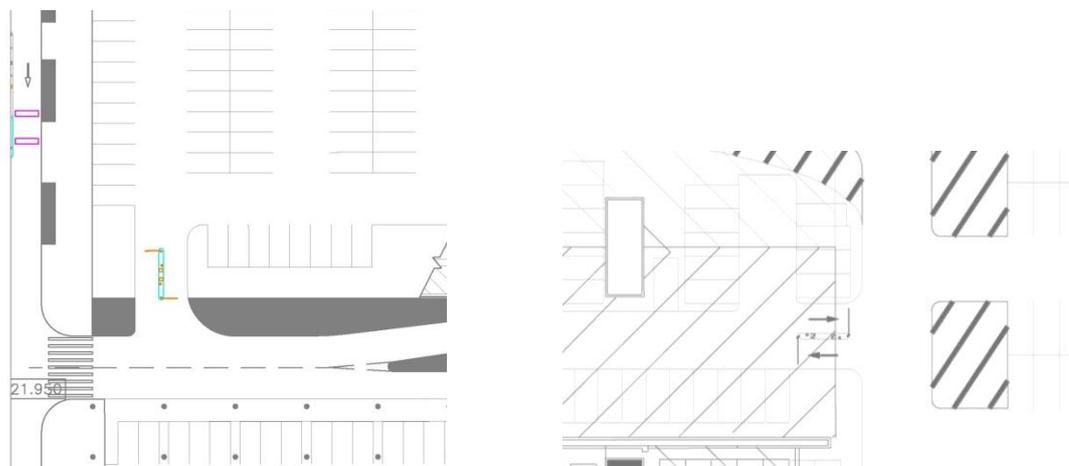


Figure 19: Internal Access Control for staff parking areas

4.2 CAR PARK DESIGN

The proposal will include the following modifications to the car park:

- creation of a multi-level car park on the north-eastern corner of the site; and
- modifications to the parking on the Morphett Road ramp to separate an access aisle and a staff parking area.

The multi-level car park will include four levels. The upper level will connect to the existing level 2 parking area. The existing ramp which provides access to/from the upper level via the Diagonal Road signalised access will be decommissioned. A new ramp system will be constructed in the northern side of the proposed deck car parking areas to provide access for the proposed multi-level car park, with speed ramps proposed from each level to enable efficient egress of vehicles. In addition, an internal ramp system is proposed to connect the parking levels.

The proposed ramps will comply with the requirements of Australian/New Zealand Standard, *Parking Facilities Part 1: Off-street car parking (AS/NZS 2890.1:2004)*, in regards to grading, width and radii criteria where the ramps will be circular.

In addition, construction has been given to the sightline criteria where ramps are proposed to intersect. In these locations, the ramps will be of adequate width to satisfy sightline criteria, as illustrated in Figure 20.

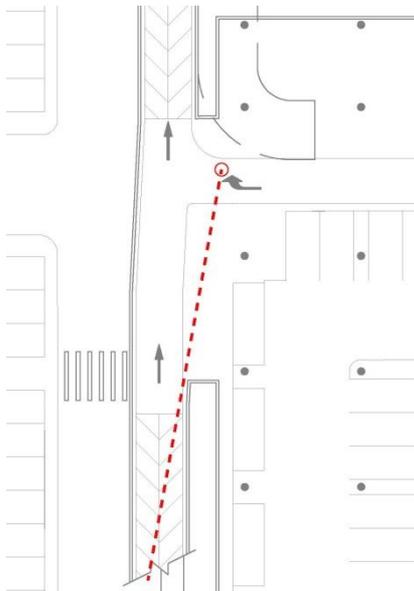


Figure 20: Ramp width to satisfy sightline criteria.

The design of the merge points at the roundabout to and from the ramps have been based on the lateral shift requirements identified in Austroads and reviewed using Autoturn swept path assessments. Figure 21 illustrates the swept paths of vehicles merging on the approach to the roundabout.

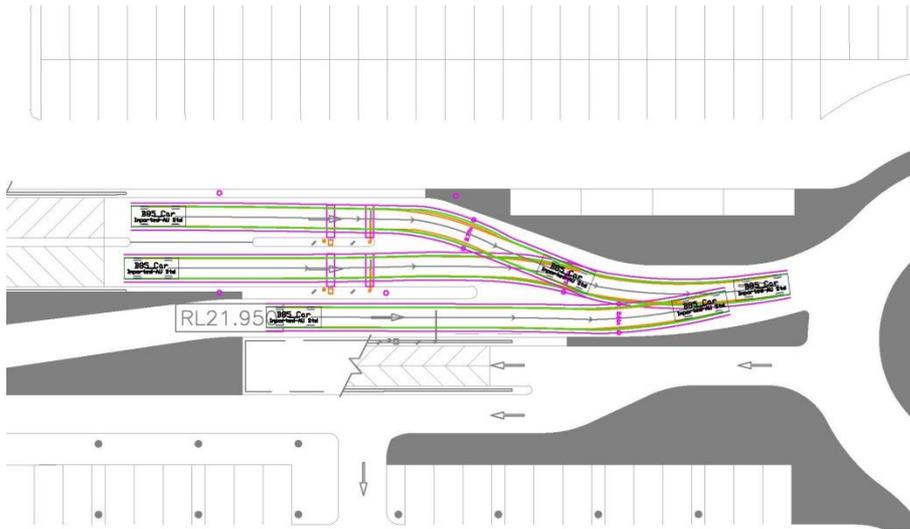


Figure 21: Swept Path of vehicles merging at the base of the ramp.

The ramp design at the Morphett Road signalised access will also have a lateral shift requirement. The design of this has also been based on Austroads design criteria. Figure 22 illustrates swept paths using the realigned ramp at this access.

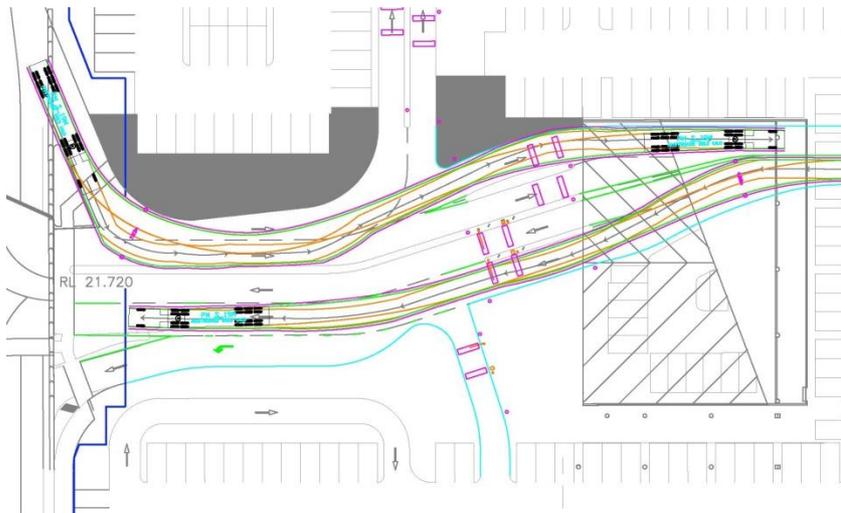


Figure 22: Swept path of vehicles accessing the realigned ramp.

The proposed parking areas will comply with the requirements of the Australian/New Zealand Standard, *Parking facilities Part 1: Off-street car parking* (AS/NZS 2890.1:2004) in that:

- regular parking spaces will have a width of 2.6 m and a length of 5.4 m;
- parallel parking space will have a width of 2.1 m and a length of 6.4 m;
- the aisle width will be 6.6 m, with the exception of the designated staff area when it will be 5.8 m wide;
- blind aisles will have an extension of 1 m;
- there will be a clearance of 300 mm to any vertical obstruction;

- column locations within the parking area will be clear of the design envelope identified in Figure 5.2 of the above Standard; and
- a vertical clearance of 2.3 m will be available for domestic vehicles and 4.5 m for commercial vehicles.

4.3 ROUNDABOUT

The design of the roundabout will be consistent with the requirements of Austroads “*Guide to Road Design – Part 4B: Roundabouts*”. The device will comply with the “*Manual of Legal Responsibilities and Technical Requirements for Traffic Control Devices, Part 2 – Code of Technical Requirements*” (the Code) and will cater for the turning criteria of delivery vehicles with a mountable section, as illustrated in Figure 23.



Figure 23: Delivery vehicles turning at the roundabout

4.4 LOADING

Where possible, loading areas will be rationalised and separated from the domestic traffic. Figure 24 illustrates primary existing and proposed loading areas on the site.

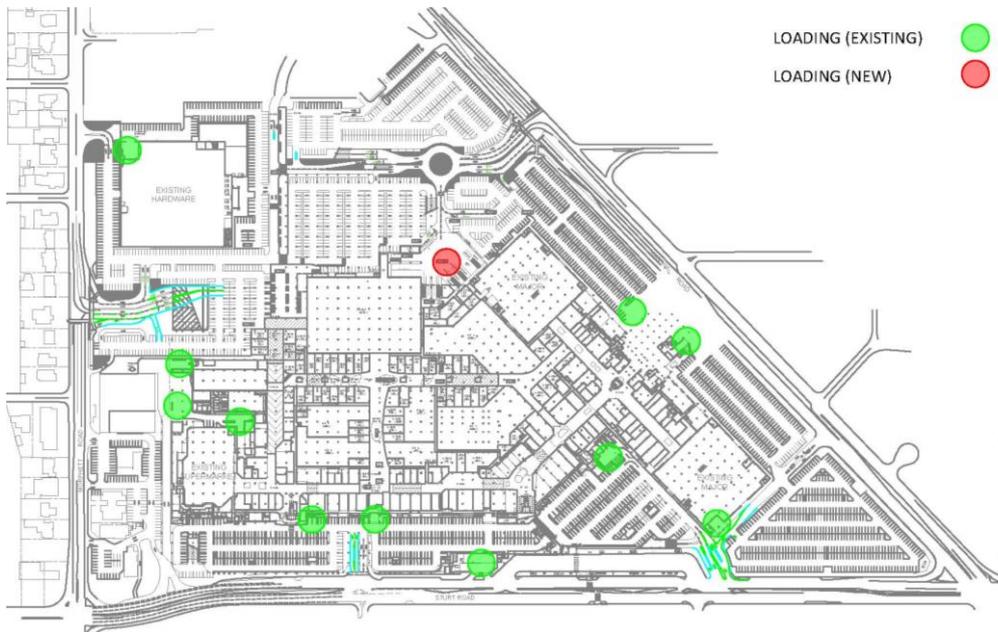


Figure 24: primary existing and proposed loading areas

Loading for the upper level of the site will be accessed via Morphett Road. The car park and ramp design will accommodate the turning movements of a 19 m semi-trailer, as illustrated in Figure 25.

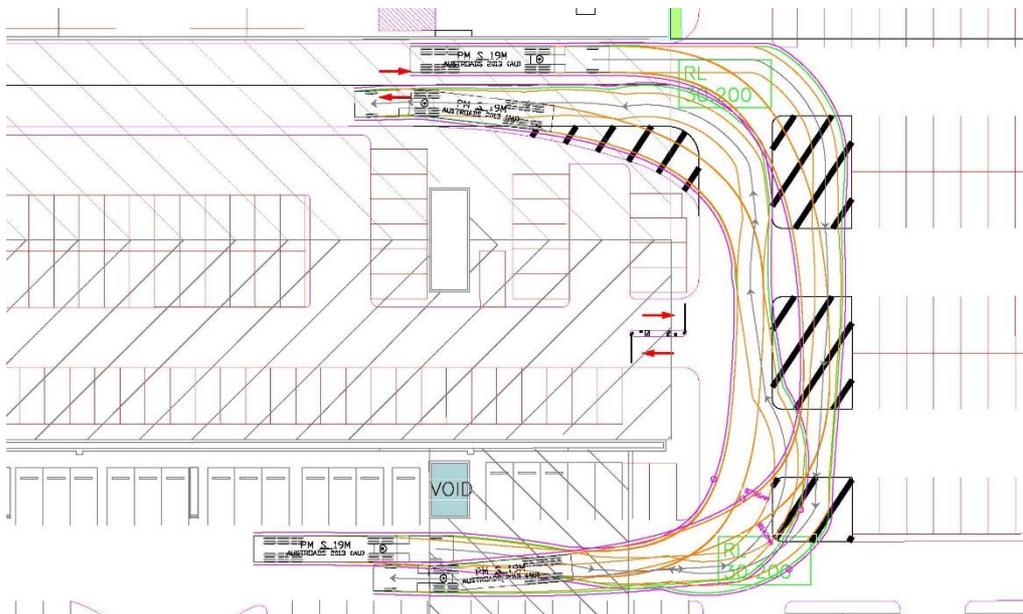


Figure 25: Turning movements of a semi-trailer accessing level 2.

There will be no modifications to the upper level loading docks and these will operate as per the existing situation, albeit an additional loading area will be created for small delivery vehicles, as illustrated in Figure 26.

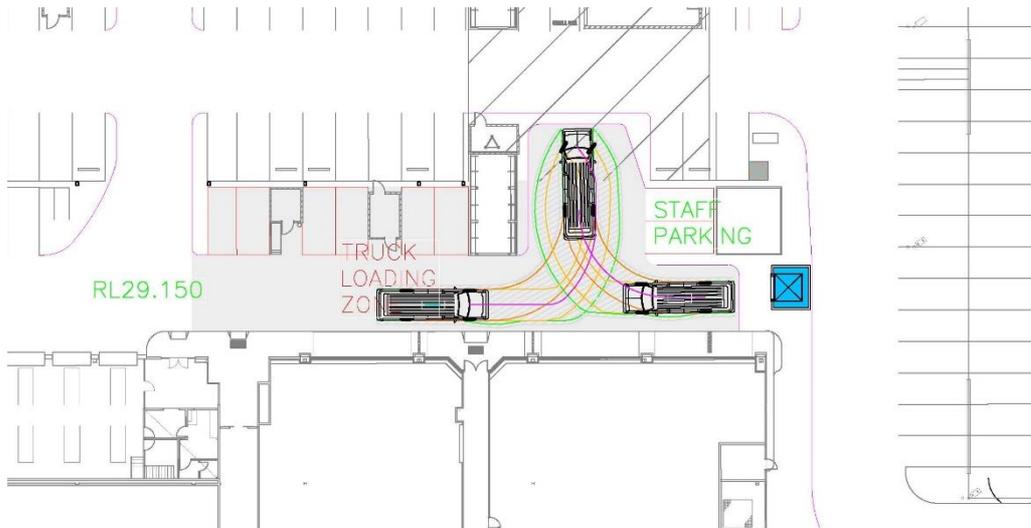


Figure 26: Proposed new specialty loading area

The above loading area will improve the existing arrangement where vehicles service specialty areas within the traffic aisle.

The Bunnings loading arrangements will be retained in their existing location. Trucks will access the site via Morphett Road, as illustrated in Figure 27.

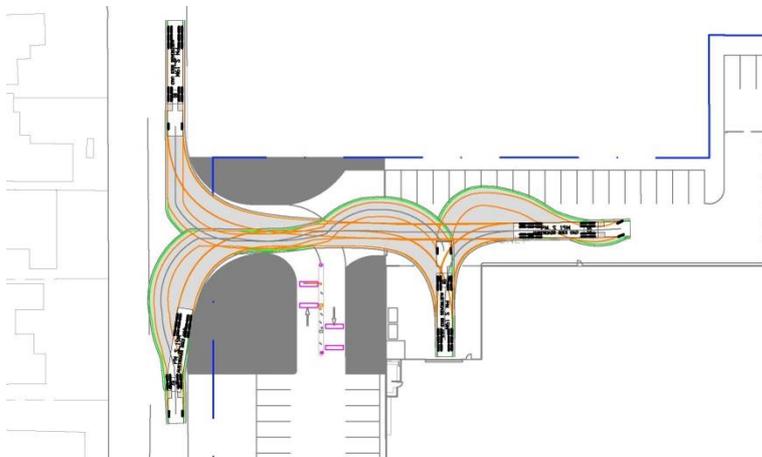


Figure 27: Trucks accessing Bunnings via Morphett Road.

A major new loading facility will be provided at ground level which will service a number of major tenancies. This area will be able to accommodate three semi-trailers and five additional trucks. Each space will be individually accessible and all vehicles will enter and exit the loading area in a forward direction. Figure 28 illustrates turning movements of trucks within this loading area.



Figure 29: Swept path of turning semi-trailer turning to exit site.

The above figure demonstrates that commercial vehicles will be able to turn to enter and exit the site in a forward direction.

The existing operation of the major loading facility will be maintained. The design of the access control equipment will accommodate this existing egress movement, as illustrated in Figure 30



Figure 30: Access control equipment accommodating the existing egress movements

4.5 PEDESTRIAN ACCESS

Strong consideration has been given to the pedestrian connectivity in the redevelopment of the proposed expansion. The north-south link between the northern development and the centre has been enhanced by the introduction of a plaza area and improved connectivity to Morphet Road.

A route to encourage pedestrians to the parking access at the upper level is also proposed. These routes will be supplemented with pedestrian crossing treatments at the aisles. These crossings will comply with the requirements of the Code.

Figure 31 illustrates the major pedestrian linkages through the site.

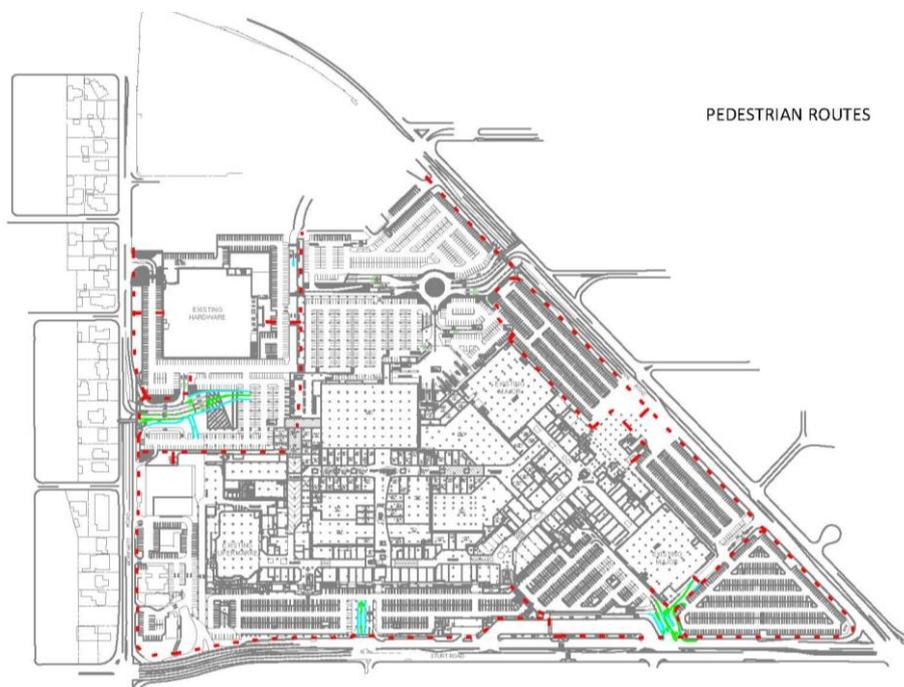


Figure 31: Proposed pedestrian linkages

5.0 PARKING PROVISION

The subject site is located within the Regional Centre Zone. Council's Development Plan provides the following criteria in respect to parking provision in this zone.

The following are Designated Areas:

Designated Area	Conditions
Regional Activity Zone	None
Suburban Activity Node Zone	
Mixed Use Zone	
District Centre Zone	Any part of the development site is located in accordance with at least one of the following:
Local Centre Zone	
Neighbourhood Centre Zone	(a) within 200 metres of any section of road reserve along which a bus service operates as a high frequency public transit service ⁽²⁾
Regional Centre Zone	(b) within 400 metres of a bus interchange ⁽¹⁾ that is part of a high frequency public transit service ⁽²⁾ (c) within 400 metres of an O-Bahn interchange ⁽¹⁾ (d) within 400 metres of a passenger rail station ⁽¹⁾ that is part of a high frequency public transit service ⁽²⁾ (e) within 400 metres of a passenger tram station ⁽¹⁾ (f) within 400 metres of the Adelaide Parklands.

⁽¹⁾ Measured from an area that contains any platform(s), shelter(s) or stop(s) where people congregate for the purpose waiting to board a bus, tram or train, but does not include areas used for the parking of vehicles

⁽²⁾ A high frequency public transit service is a route serviced every 15 minutes between 7.30 am and 6.30 pm Monday to Friday and every 30 minutes at night, Saturday, Sunday and public holidays until 10.00 pm.

Based on the above definition, the subject site is within a designated area, given the location of the bus interchange on-site. Accordingly, the following applies to the subject development in respect to parking provision as described in the Development Plan.

Location of development	Desired minimum number of vehicle parking spaces	Maximum number of vehicle parking spaces
All Designated Areas (unless otherwise stated)	3 spaces per 100 square metres of gross leasable floor area	6 spaces per 100 square metres of gross leasable floor area

The proposed development will provide for parking at a rate of 3.26 spaces per 100 m² which fits within the specified range for a development in a designated area. If the floor area associated with the cinemas was to be removed from the calculation (given that parking for the cinemas does not peak when retail parking peaks), the rate would be 3.52 spaces per 100 m².

6.0 TRAFFIC ASSESSMENT

A detailed traffic assessment was previously completed for the approved development (and variations) to illustrate that the traffic associated with the (then) proposal could be accommodated on the road network. An infrastructure upgrade requirement at the Diagonal Road signalised access point was identified in this assessment.

Initially, forecast volumes utilising generation rates identified in the RMS *“Guide to Traffic Generating Developments”* were considered. However, a review of this generation was completed in 2007 to test the actual generation rate of the facility. A copy of this previous review is included in Appendix A.

The outcome of the review, which was based on actual volume data, identified a peak hour traffic generation rate of 3.2 trips per 100 m² on a Saturday.

A check of this generation rate has been completed using the recent SCATS data at the primary signalised access points and the assumptions used in the 2001 review, namely:

- the peak hour at each access coincided;
- 20% of traffic associated with the centre used non-signalised access points (and is therefore additional to the counts); and
- all traffic was generated by the retail area (and not the cinemas).

The check identified that the Saturday peak hour generation rate is 3.0 trips per 100 m² floor area, which is slightly lower than the previous assessment.

Notwithstanding this, the 2007 generation rate of 3.2 trips per 100 m² has been adopted to assess the potential impact of the proposed expansion. On this basis, the proposed development will generate approximately 525 trips during the peak hour.

The generation rate during the afternoon peak hour was identified as being 3.0 trips per 100 m², which would result in a forecast volume of 490 trips.

6.1 DISTRIBUTION

The subject site is unique in that it is triangular in shape with signalised access from each road, catering for drivers approaching from all directions. The distribution of traffic, therefore, relates to the origin and destination of drivers and there are a number of options for travel routes to and from the site.

Figure 32 illustrates the anticipated traffic distribution for the additional trips to and from the site.

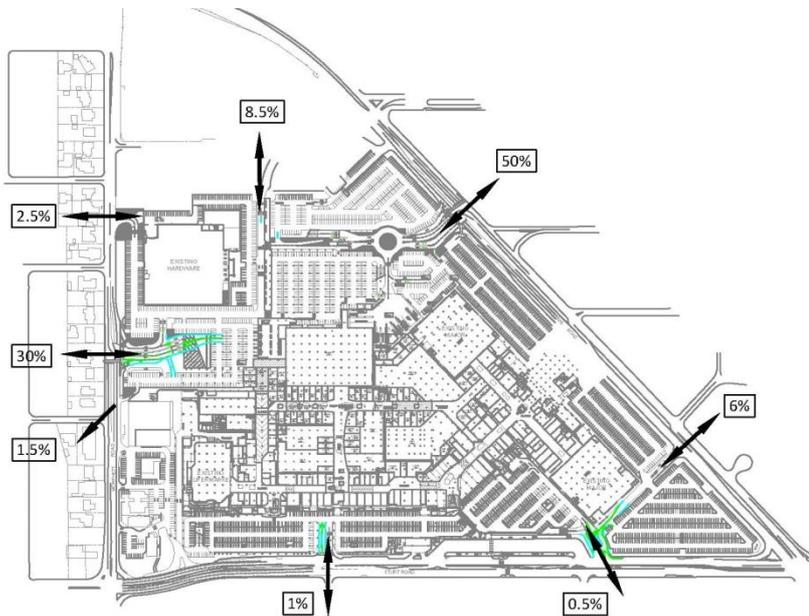


Figure 32: anticipated traffic distribution for the additional tripsto and from the site.

Adopting the above distribution and assuming that 80% of traffic will use the Morphet Road and Diagonal Road signalised access points, forecast traffic volumes at the access points have been completed. Figure 33 illustrates the forecast traffic volumes at the signalised access points.

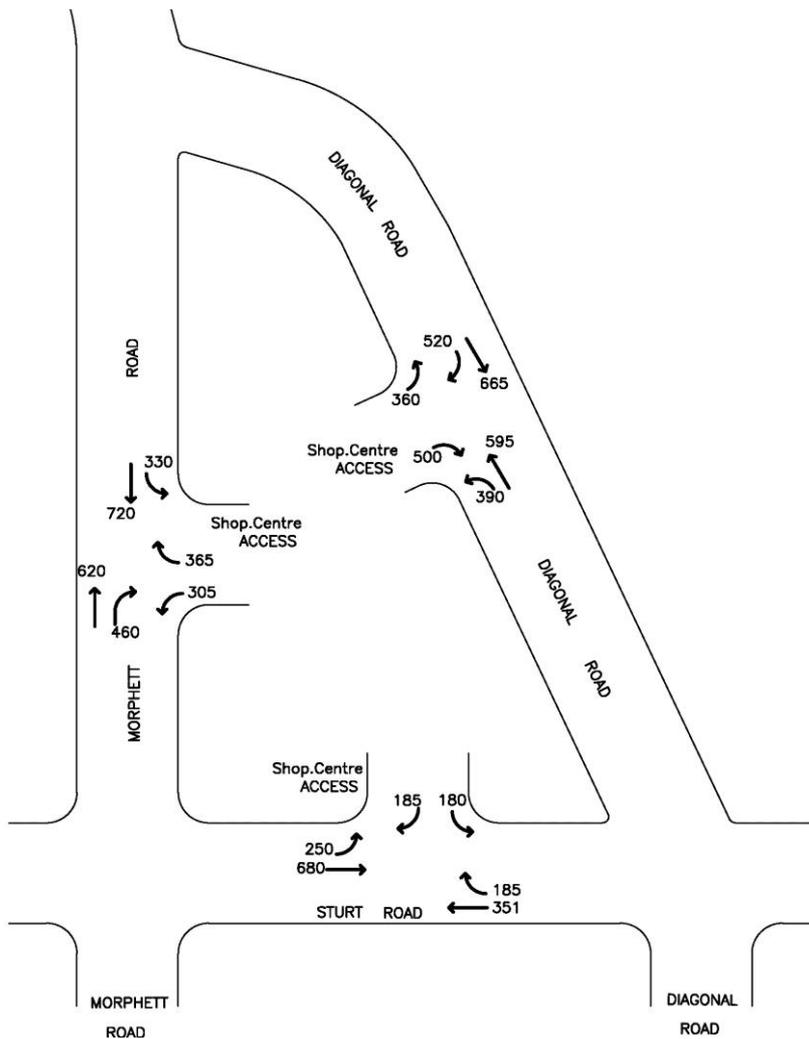


Figure 33: forecast traffic volumes at the Morphett Road, Sturt Road and Diagonal Road signalised access points.

6.2 SIGNALISED ACCESS ANALYSIS

MFY has been liaising with DPTI in regards to the development of the SIDRA models of the Base Case (existing volumes) and the Development (existing plus development volumes) scenarios for the subject intersections. The SIDRA Modelling Report, attached in Appendix B, details the traffic analysis undertaken. The SIDRA output of the assessment is included in Appendix C.

This section, therefore, summarises the results of the modelling and the impact on the road network.

6.2.1 MORPHETT ROAD

The results identify that the intersection will operate within capacity and the approaches will continue to operate at the same level of service as the existing situation. In regards to queuing:

- the 95th percentile right-turn queue on Morphett Road will be contained within the available storage; and
- at the exit, a 95th percentile queue of six vehicles will be observed in the median side lane and eight vehicles will be observed in the kerbside lane.

The analysis also confirms that the additional volumes will have minimal impact on Morphett Road.

6.2.2 DIAGONAL ROAD

The results identify that the intersection will operate within capacity and the intersection will operate at Level of Service B due to the additional right turn lane. In regards to queueing:

- the 95th percentile queue of six vehicles in the Diagonal Road turning lanes will be contained within the proposed storage; and
- at the exit, a 95th percentile queue of 11 vehicles will be observed in the right turn lanes.

The analysis also identifies that there will be minimal impact on the operation of Diagonal Road, at the access, as a result of the proposed development.

6.3 BROADER TRAFFIC NETWORK

The proposed development will have a forecast additional volume of 540 trips during the Saturday peak hour. An assessment has been undertaken assuming 550 trips, of which, approximately 225 will be entering and 225 exiting the site.

Adopting the distribution previously identified, this will result in the following:

- 140 additional vehicles accessing via Diagonal Road from the north;
- 170 additional vehicles accessing via Diagonal Road from the south;
- 105 additional trips accessing via Morphett Road from the north;
- 105 additional trips accessing Morphett Road from the south;
- 15 additional trips accessing Sturt Road from the east; and
- 15 additional trips accessing Sturt Road from the west.

Table 1 summarises the percentage change in traffic volumes on the road network associated with the proposal.

Table 1: Percentage Change in Traffic Volumes on the Road Network

Road	Approach	Existing volume	Additional Volume	Per cent Increase
Diagonal Road	North	2,142	140	6.5%
	South	2,553	170	7.5%
Morphett Road	North	1,913	105	5.5%
	South	1,933	105	5.4%
Sturt Road	East	2,200	15	0.05%
	West	2,200	15	0.05%

It can be seen from the above table that there will be a percentage increase in traffic volumes of less than 10% at any one location which will have a negligible impact on the road network. Importantly, the increase will be within the daily fluctuation of $\pm 5\%$ on the road network.

7.0 ACCESS CONTROL ASSESSMENT

A previous assessment for access control equipment was completed for the site. However, this proposal (which was approved) related to a boom gate control system, which has a lower traffic volume capacity and also included a control mechanism at each access. A copy of the earlier assessment is included in Appendix D.

The current design does not require that the access points to the pad sites on the corner of Morphett Road and Sturt Road be controlled due to internal design changes.

The access control equipment, now proposed, will be a ticketless system which includes the following features:

- kerbing, linemarking and cameras to record number plates on entry;
- kerbing, boom gates, payment machine and cameras on exit. The vehicle exiting is recognised by number plate and either the boom gate will lift automatically if the vehicle exits within the grace period or an amount to pay will display for payment by credit card; and
- payment machines prior to exit will also be available. In addition, an automatic payment system whereby drivers elect to have an account from which payments for parking are deducted will be available. This option is achieved by recording of vehicle number plates and is will patronised interstate.

Figure 34 illustrates a detailed layout of a typical entry and exit.



Figure 34: Entry and exit equipment layout

The capacity of ticketless systems is much greater than traditional boom gate controlled facilities. Even though the exit lanes will still have boom gates, the automatic recognition of many vehicles and the subsequent raising of the boom gate

means that the efficiency of the exit is significantly increased. As a result, the theoretical capacity of an entry lane will be 900 vehicles per hour (vph) and an exit lane will be 600 vph.

In order to ensure that adequate queuing area is available and that queues do not extend on the road, there are a number of factors that need to be considered, namely:

- the queues at the signalised access points to ensure that the control mechanisms at the exit do not inhibit the operation of the signal;
- that adequate lanes are provided to cater for the peak hour movements at the entry; and
- that no internal constraint will inhibit entering flow of traffic such that it would impact the queues.

Figure 35 illustrates the forecast traffic volumes at the minor access points where access control equipment will be installed following completion of the proposed expansion.

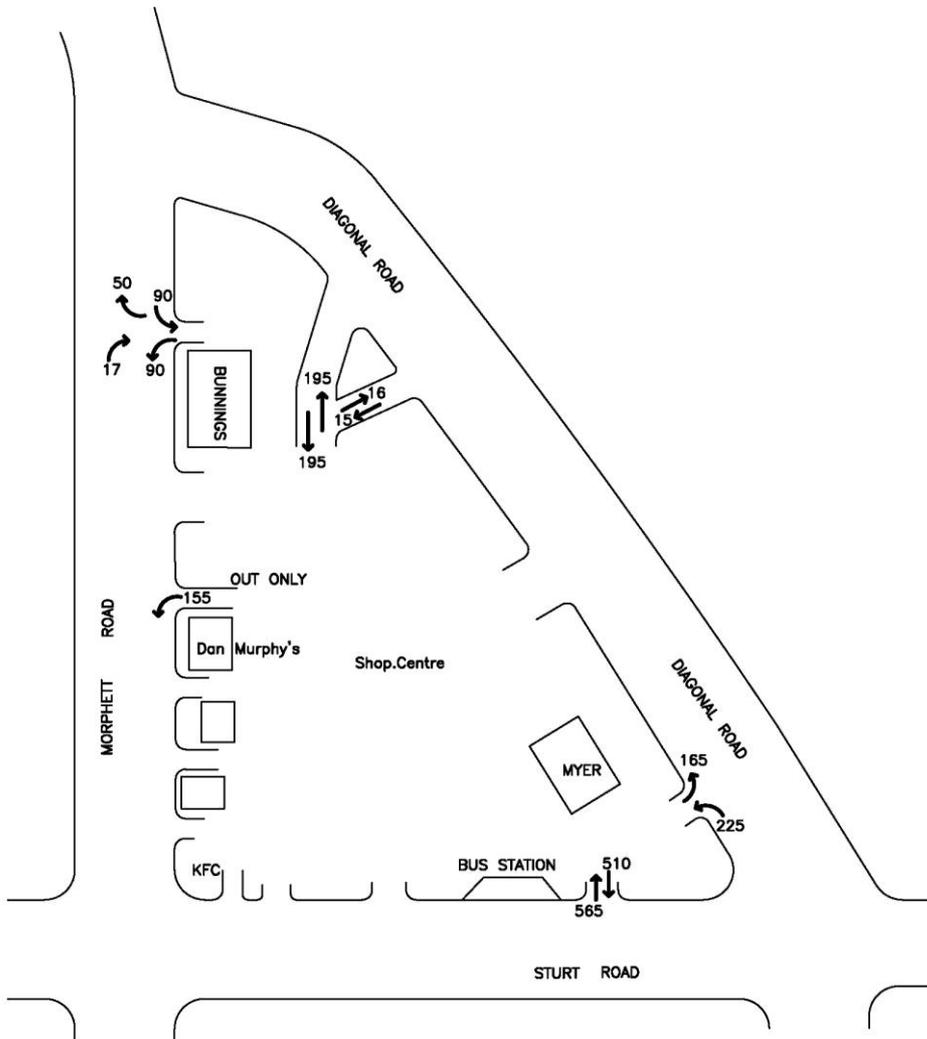


Figure 35: Forecast traffic volumes at minor access points

Utilising standard queueing theory as detailed in Austroads “Guide to Road Design – Part 2: Design Considerations”, the estimated queue length at a 98th percentile confidence level can be determined. Table 2 details the anticipated queue at each unsignalled access point, which is to be controlled.

Table 2: Anticipated Queue at Each Controlled Unsignalled Access Point

Access Point	No. Entry Lanes	Peak Forecast Volume (vph)	98 th percentile queue in each lane (veh)	No. Exit lanes	Peak Forecast Volume (vph)	98 th Percentile Queue (veh)
1	1	110	1	1	140	2
3				1	155	2
9	2	565	3	2	510	4
10	1	225	2	1	165	3
12	1	50	1	1	50	1
13	1	195	2	1	195	3

Figures 36 to 41 illustrate the 98th percentile queues at each of the access points, as they relate to the proposed equipment location.

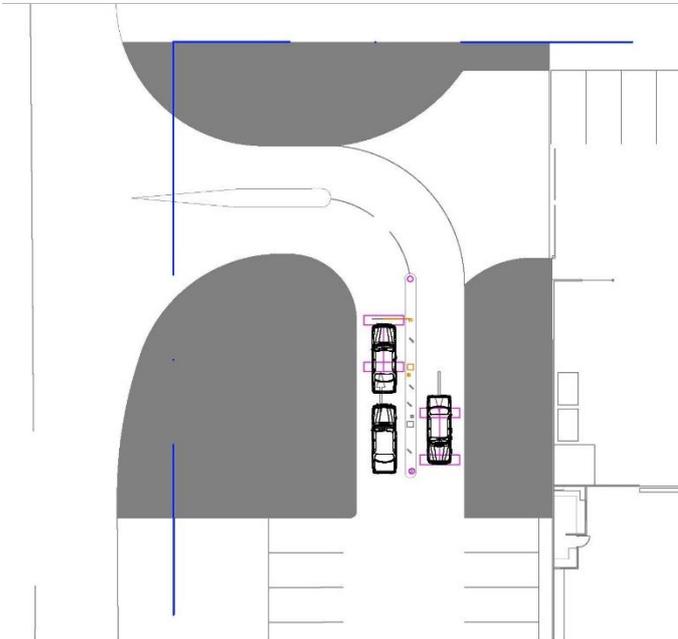


Figure 36: Forecast 98th Percentile Queues at Access 1

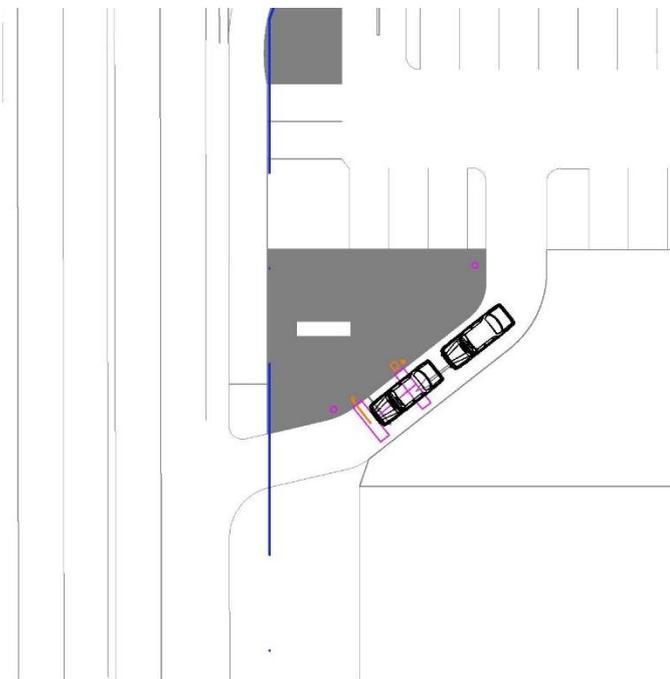


Figure 37: Forecast 98th Percentile Queue at Access 3



Figure 38: Forecast 98th Percentile Queues at Access 9

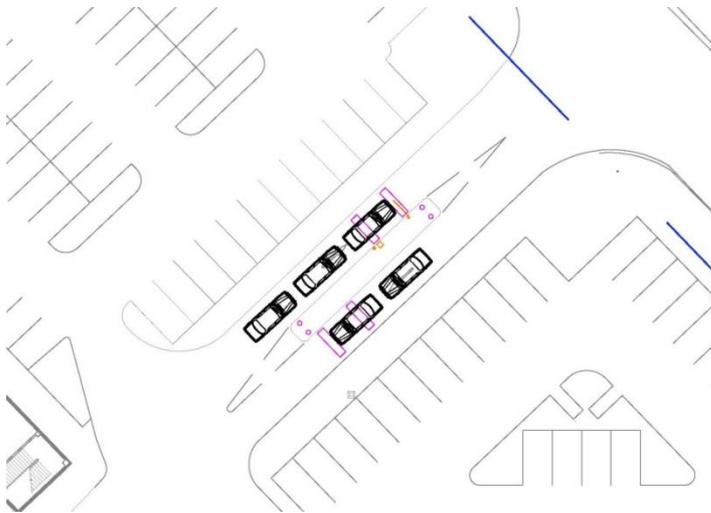


Figure 39: Forecast 98th Queues at Access 10

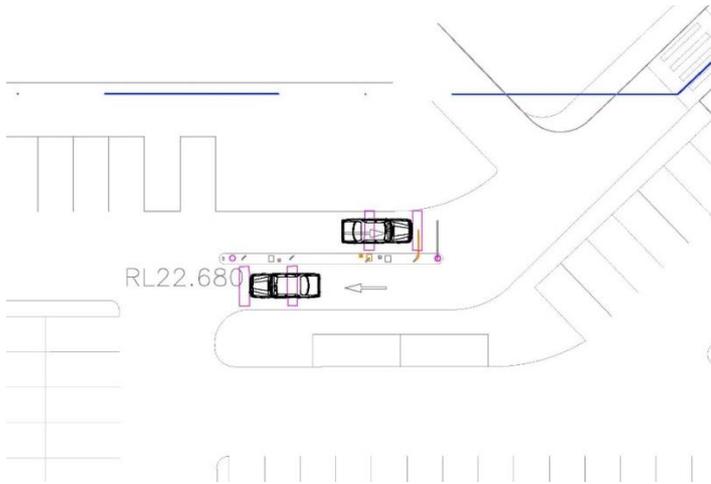


Figure 40: Forecast 98th Percentile Queues at Access 12

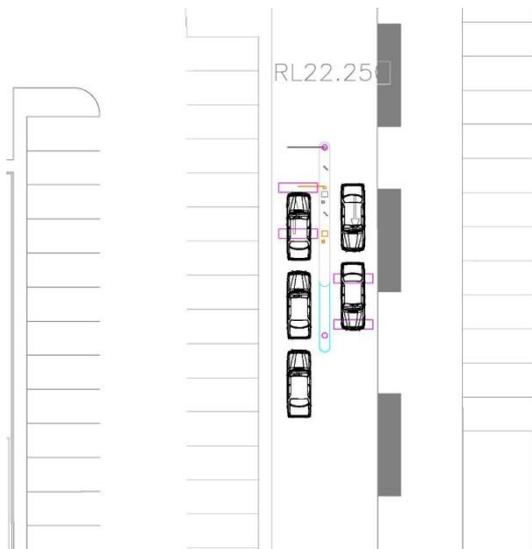


Figure 41: Forecast 98th Percentile Queues at Access 13

You can see from the above figures that the queues will all be accommodated on-site and will not impact on the free flow of traffic either entering or exiting the site.

7.1 MORPHETT ROAD SIGNAL

The SIDRA analysis documented in Section 6.2.1 illustrated that there will be a queue of 60 m in the right turn egress lanes during peak traffic periods. The analysis also identifies a peak queue in the right turn lane of 68 m at this time.

Figure 42 illustrates that such queueing can be accommodated within the site, between the signals and the equipment.



Figure 42: Queuing of entering and exiting traffic at the Morphett Road signal accommodated within the site.

Traffic entering the site will be distributed between four entry gates, while traffic exiting will be distributed to three exit gates. Figure 43 illustrates the forecast volumes at these gates.

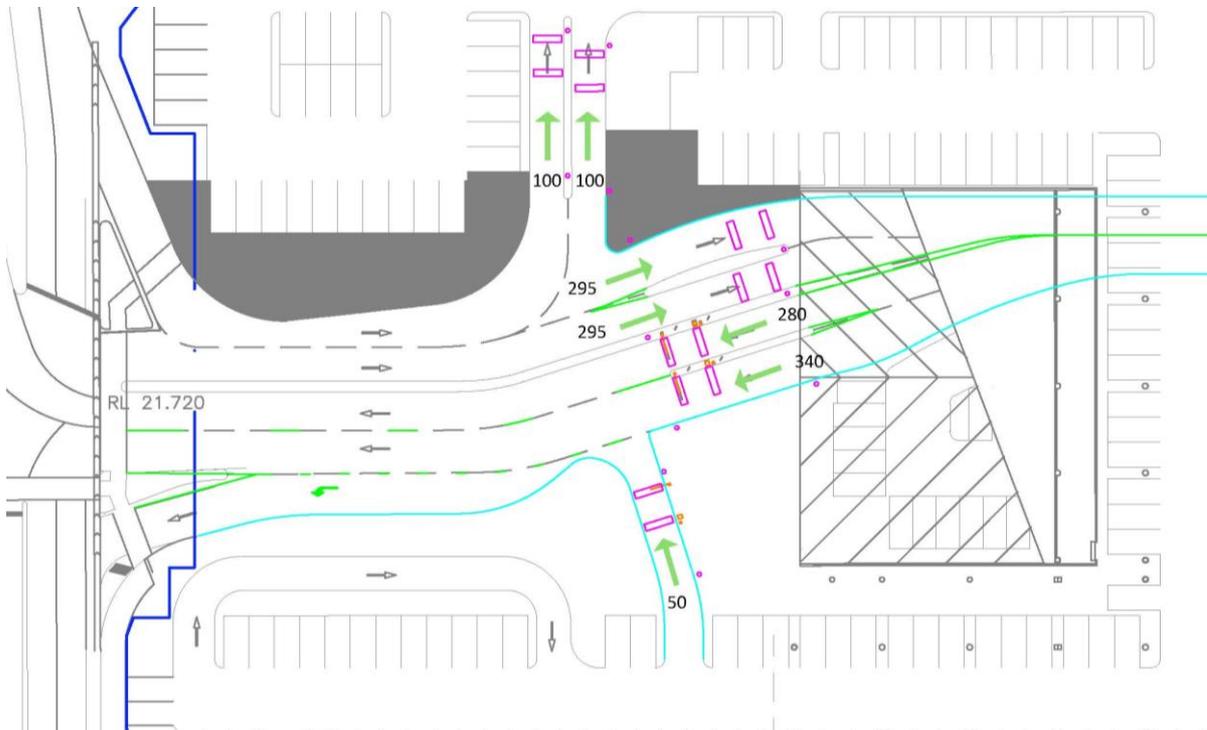


Figure 43: Forecast traffic volume with entry and exit lanes.

A queueing analysis of the forecast entry and exit queues in each lane is identified in Table 3.

Table 3: Queuing analysis for entry and exit movements at the Morphett Road signalised access.

Lane	Peak Forecast Volume (vph)	98 th Percentile Queue (veh)
Entry 1	100	1
Entry 2	100	1
Entry 3	295	3
Entry 4	295	3
Exit 1	280	5
Exit 2	340	8
Exit 3	50	1

Figure 44 illustrates the forecast queuing at the entry and exit gates.



Figure 44: Forecast traffic queues at entry and exit gates

It can be seen on the above figure that the proposed access control system will readily accommodate the anticipated queues and will not impact on the operation of the signals or the traffic flow.

7.2 DIAGONAL ROAD ACCESS

SIDRA analysis in section 6.2.2 identifies the following:

- a forecast 98th percentile queue of 64 m in the right turn exit lanes at peak periods; and
- a forecast peak queue of 36 m in the right turn lanes entering the site.

Figure 45 illustrates that the forecast queues can be accommodated on-site between the proposed access equipment and the signal.



Figure 45: Forecast queues accommodated between the proposed access equipment and the signal

Traffic entering the site will be distributed between three entry gates, while traffic exiting will be distributed to five exit gates. Figure 46 illustrates the forecast traffic volumes exiting the site via the Diagonal Road signal at each proposed entry and exit gate.



Figure 46: Forecast traffic volumes within entry and exit lanes.

Based on the above volumes, a queueing analysis has been completed for each lane, as documented in Table 4

Table 4: Queueing analysis for entry and exit movements at the Diagonal Road signalised access

Lane	Peak Forecast Volume (vph)	98 th Percentile Queue (veh)
Entry 1	245	3
Entry 2	245	3
Entry 3	30	1
Exit 1	355	7
Exit 2	300	5
Exit 3	100	2
Exit 4	50	1
Exit 5	50	1

Figure 47 illustrates the forecast queues at the entry and exit gates adjacent the Diagonal Road signal.



Figure 47: Forecast queues at the entry and exit gates adjacent the Diagonal Road signal.

The above figure confirms that the queues will be accommodated at each location, and will not compromise the traffic flow or operation of the signal.

7.3 STURT ROAD SIGNAL

The Sturt Road signal will be required to accommodate traffic which will transfer from the existing access to be closed. SIDRA analysis of the forecast volumes is included in Appendix E and shows that;

- there will be an exit queue of six vehicles in each lane during peak hour periods; and
- there will be a right turn entry queue of six vehicles during peak hour periods.

Figure 48 illustrates that these queues can be accommodated within the site without compromising the operation of the signal or extending onto the road.



Figure 48: Forecast queues accommodated between the proposed access equipment and the signal

The 98th percentile forecast queue at the proposed access control equipment will be four vehicles at the entry and six vehicles at the exit which will be accommodated within the site, as illustrated in Figure 49.

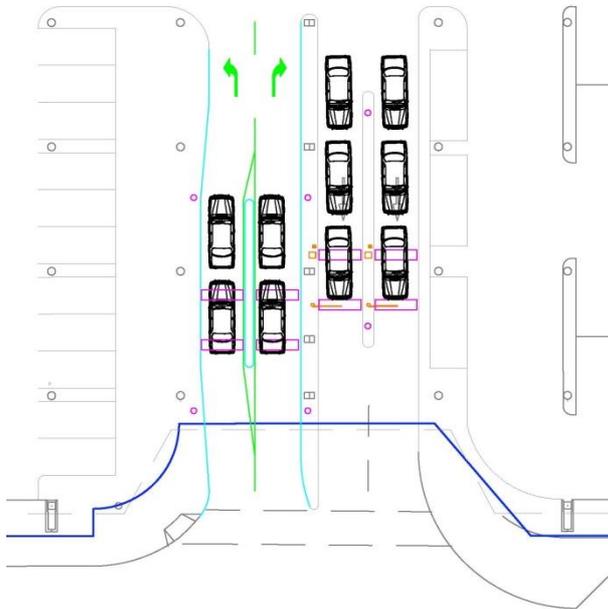


Figure 49: Forecast queues at proposed access control equipment within entry and exit lanes

7.4 ROUNDABOUT

In order to check that the proposed roundabout will satisfactorily cater for the forecast traffic volumes and will not create excessive queues, a SIDRA analysis was undertaken using peak forecast volumes. The results of this analysis are included in Appendix F.

Figure 50 illustrates the forecast queues at each roundabout approach, as calculated in the SIDRA model.



Figure 50: Forecast queues at the roundabout

The above figure confirms that queues at the roundabout will be readily accommodated within the lanes approaching the roundabout.



Of relevance is that the volume on the northbound approach to the roundabout will be low, as will turning movements at the roundabout and, therefore, east and westbound movements will only be required to give-way at the roundabout infrequently.

8.0 SUMMARY

The proposed expansion of Westfield Marion has adopted an alternative design methodology to introduce safety in design features to the project. This change in philosophy will enhance to the operation of the centre where improved safety and customer experience begins at the start of their journey. The need to upgrade existing facilities to be in line with this philosophy results in developing options which are functional and achievable within existing site constraints and budgets but are important to provide for a design solution in keeping with best safety and design practice for current day standards.

The subject proposal, which will separate commercial vehicle movements with domestic traffic for most delivery movements, will provide for improved safety within the car park. In particular, potential conflict between large vehicles and pedestrians will significantly be reduced and key pedestrian linkages will be created to give pedestrians priority to the centre.

Access control equipment will be installed. This is consistent with the policy of Scentre Group where such equipment is being implemented at all centres to improve turnover of efficiency of the use of spaces. The equipment will be a ticketless system and detailed analysis has identified that queueing will be accommodated on-site and will not compromise the safe operation of access points or the flow of traffic around the site.

Additional traffic control is proposed on the site to improve traffic safety. Of particular note is that the existing substandard roundabout will be removed and a new device, compliant with the relevant Standards, will be constructed in a location which will cater for the queueing requirements of vehicles, turning of commercial vehicles and compliant sightlines. Car parking areas will satisfy the design requirements of relevant Australian Standards.

Detailed traffic analysis has been completed at the Diagonal Road and Morphett Road signalised access points and show that the forecast traffic volumes will be adequately accommodated with minimal impact at these locations or on the broader network.



APPENDIX A

2007 TRAFFIC ASSESSMENT

MM:as/06-0224

20 April 2007

Mr George Morias
Transport Services Division
Department for Transport, Energy and Infrastructure
PO Box 1
WALKERVILLE SA 5081

Dear George,

**WESTFIELD MARION
PROPOSED EXTENSION ACCESS REVIEW
(DA 100/0048/2007)**

I refer to the proposed development by Westfield Ltd to expand the existing shopping centre at Marion and our recent meeting regarding this matter.

The proposed expansion of the shopping centre will include 18,275 m² additional retail floor area. The existing centre has a gross retail lettable area of 121,192 m² plus 11,030 m² cinemas.

A traffic and parking report prepared in relation to this application assessed traffic volumes based on the NSW RTA Guidelines "A Guide to Traffic Generating Developments". This assessment has since been reviewed, as detailed below.

Traffic counts were undertaken at the signalised access points to the site and at the adjacent signalised intersections on Thursday, 9 October 2006 (4:00 pm to 6:30 pm), Friday, 20 October 2006 (7:30 am to 9:30 am) and Saturday, 17 March 2007 (10:00 am to 2:00 pm). The results of these turning counts are illustrated in Figures 1 and 2 and show the peak hour volumes recorded during these counts.

In order to calculate the existing peak generation rate for the centre, the following has been assumed:

- the peak hour at each access coincided;
- 20% of traffic associated with the centre used non-signalised access points (and is therefore additional to the counts); and



**Murray F. Young
& Associates**

Director
Melissa Mellen

Consultant
Murray Young

Associates
**Chris Harcourt
Jayne Lovell**

Engineer
Ben Wilson

Transportation, Management
& Feasibility Consultants

- all traffic was generated by the retail area (and not the cinemas).

The forecast traffic generation rates will therefore be conservative, given the following factors:

- the actual peak for the entire centre will be less than the combined peaks at each access;
- the volume of traffic using the non-signalised access points is anticipated to be less than 20%; and
- there will be traffic associated with cinema patrons.

Based on the above, the existing centre generates a peak hour traffic distribution of approximately 3.0 trips per 100 m² on a Thursday evening and 3.2 trips per 100 m² on a Saturday. Traffic volumes during the morning peak equates to approximately 1.0 trip per 100 m².

Figures 3 and 4 illustrate the forecast Thursday pm peak and Saturday peak volumes following the proposed development. Given that the proposal will increase parking on the northern side and that the parking parallel to Sturt Road is fully occupied during peak periods, it has been assumed that all additional traffic will be distributed between the Diagonal Road and Morphett Road signalised access points and will then redistribute to the adjacent road network. In reality, there will be some additional traffic using the non-signalised access points, but this approach will result in a conservative assessment.

SIDRA analysis has been undertaken for the afternoon and Saturday peak hours for the following situation:

- existing traffic volumes at the Diagonal Road access. This identifies an existing queuing issue for the right turn into the centre;
- forecast traffic volumes at the Diagonal Road access with an additional right turn lane into the site (as discussed at our recent meeting). The results show that the additional right turn lane will resolve the existing queuing issue, even with the additional volumes associated with the development;
- existing traffic volumes at the Morphett Road access which identifies that this access operates with a relatively low degree of saturation; and
- forecast volumes at the Morphett Road access which will only have a minimal impact on the degree of saturation at the intersection. The queue length will extend for drivers turning right into the site but will still be accommodated within the existing storage lane.

The increase in volumes during the am peak will be low and will have a reduced impact on the road network. Such modelling for these intersections, therefore, has not been included.

Details of the SIDRA results are included in Appendix A.

In regard to the external road network, the forecast volumes will result in the following:

- approximately 300 additional trips on Diagonal Road during the Thursday afternoon peak period (compared with the existing volume of approximately 2300 vph on this street). This additional traffic will distribute north and south of the access and will result in approximately 130 vph additional traffic on each section of road. This would be equivalent to an increase of approximately 6.5% on Diagonal Road;
- approximately 350 additional vehicles (or 175 in each direction) on Diagonal Road during the Saturday peak hour. This would equate to an estimated 9% increase in traffic volume;
- approximately 245 additional trips (115 on the northern leg and 130 on the southern leg) during a Thursday evening peak hour. This will equate to an increase of approximately 7% on Morphett Road; and
- an increase of 235 vehicles on Morphett Road (125 on the southern leg and 110 on the northern leg) during the Saturday peak hour. This equates to an estimated 8% increase in traffic on this road.

Hence, the forecast traffic increase on the adjacent road network will be less than 10% during the peak hour periods related to the shopping centre.

Given the relatively low increase in volume on the road network, the impact on the operation of the intersections as a direct result of the shopping centre expansion should not be significant. Notwithstanding this, SIDRA models will be prepared using the additional signal data received by the Department for Transport, Energy and Infrastructure (DTEI) and forwarded to your office for use in the network modelling.

In summary, subject to the reconfiguration of the Diagonal Road access point to include an additional right turn into the site, appropriate access will be provided for the proposed expansion. Enclosed is a copy of the concept plan of the access which has also been included on the amended DA plans.

The additional SIDRA analysis for the adjacent signals for use in DTEI's network modelling will be forwarded shortly, but should not directly impact on the assessment

of the operation of the signal at the access points for the proposed expansion. We will liaise with you in regard to this matter.

Please do not hesitate to contact the undersigned with any queries.

Yours sincerely,
MURRAY F YOUNG & ASSOCIATES

A handwritten signature in black ink, appearing to read 'Melissa Mellen', is written over a thin horizontal line.

MELISSA MELLEN
Director

*Encl. Appendix A – SIDRA analysis
Figures 1 and 2 Turning counts
Figures 3 and 4 Forecast peak traffic volumes
Concept Plan*

Appendix A

APPENDIX A
SIDRA ANALYSIS

Appendix A

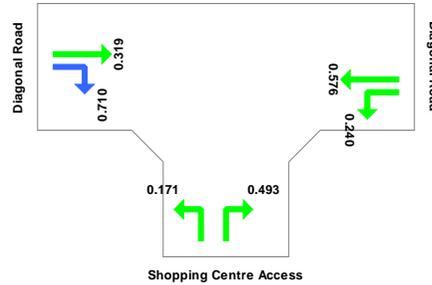
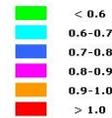
INTERSECTION GEOMETRY



DEGREE OF SATURATION

Intersection Type
Signalised - Fixed time

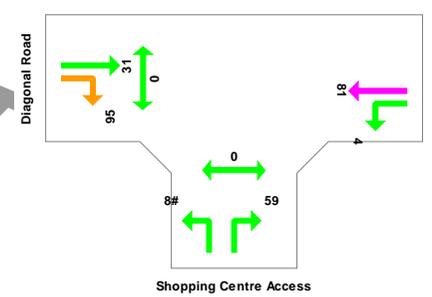
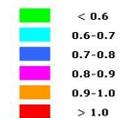
Color code based on Degree of Saturation



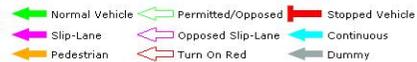
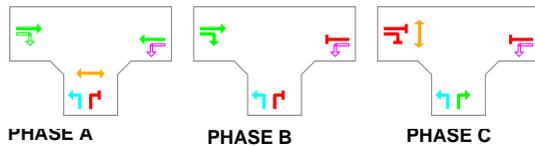
QUEUES

Intersection Type
Signalised - Fixed time

Color code based on Queue Storage Ratio



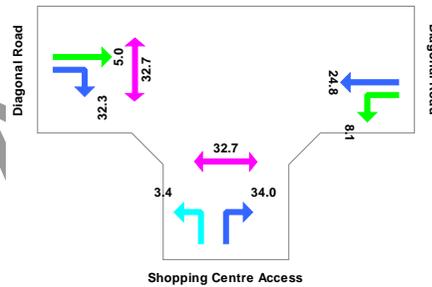
PHASING



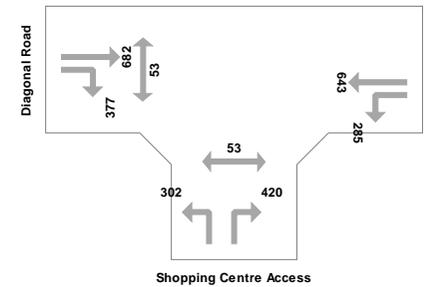
DELAY & LEVEL OF SERVICE

Intersection Type
Signalised - Fixed time

Color code based on Level of Service



FLOWS



JOB NUMBER: 06-0224

PROJECT NAME: WESTFIELD MARION

INTERSECTION: DIAGONAL ROAD/SHOPPING CENTRE ACCESS

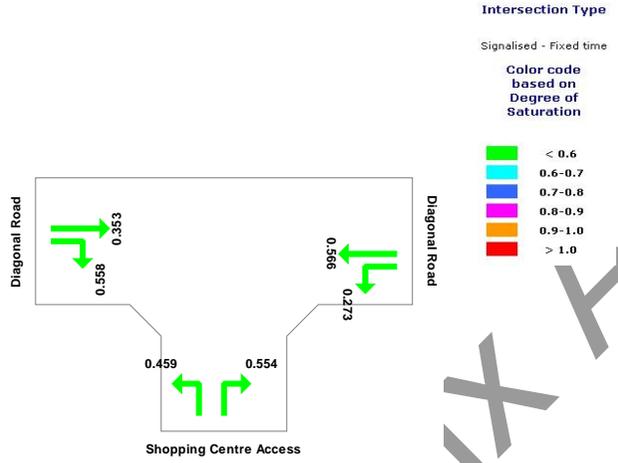
SCENARIO: PM PEAK (THURSDAY)
EXISTING INTERSECTION LAYOUT



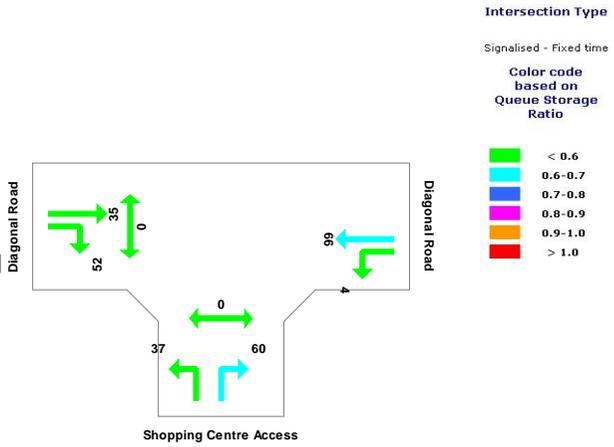
INTERSECTION GEOMETRY



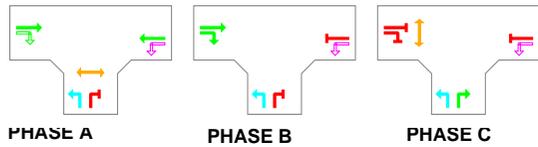
DEGREE OF SATURATION



QUEUES

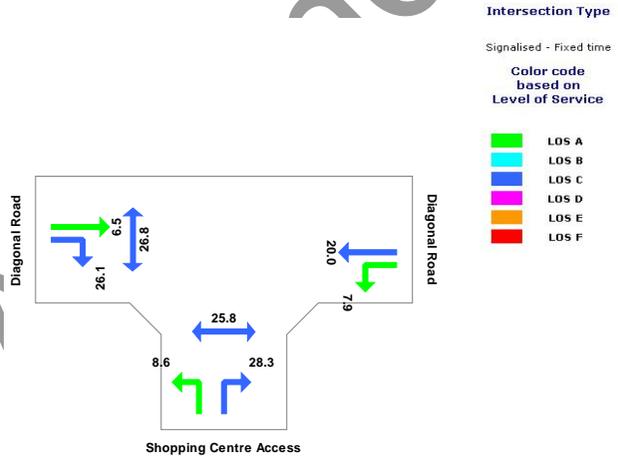


PHASING

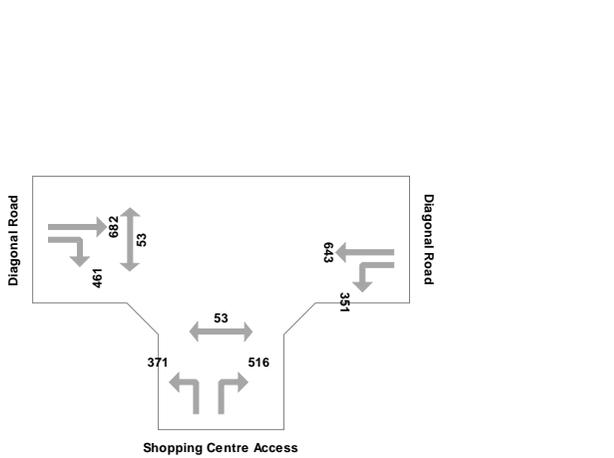


- Normal Vehicle
- Permitted/Opposed
- Stopped Vehicle
- Slip-Lane
- Opposed Slip-Lane
- Continuous
- Pedestrian
- Turn On Red
- Dummy

DELAY & LEVEL OF SERVICE



FLOWS



JOB NUMBER: 06-0224
PROJECT NAME: WESTFIELD MARION

INTERSECTION: DIAGONAL ROAD/SHOPPING CENTRE ACCESS
SCENARIO: PM PEAK (THURSDAY)
PROPOSED INTERSECTION LAYOUT



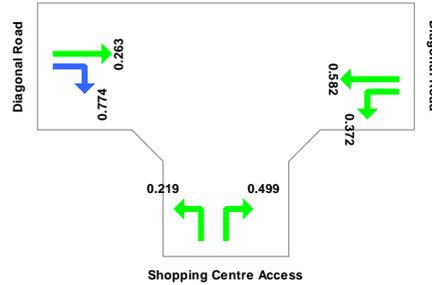
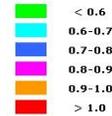
INTERSECTION GEOMETRY



DEGREE OF SATURATION

Intersection Type
Signalised - Fixed time

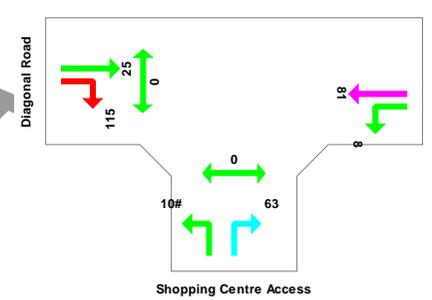
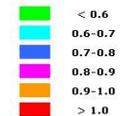
Color code based on Degree of Saturation



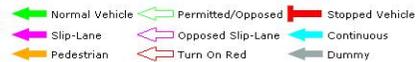
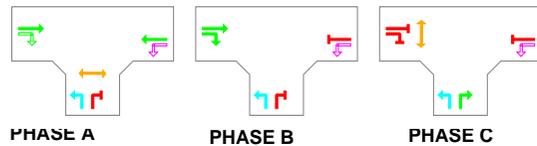
QUEUES

Intersection Type
Signalised - Fixed time

Color code based on Queue Storage Ratio



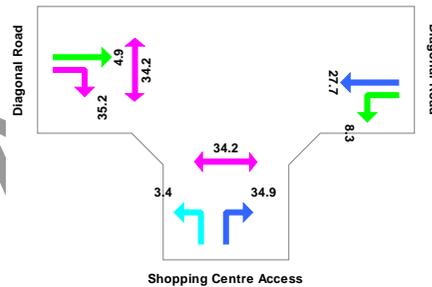
PHASING



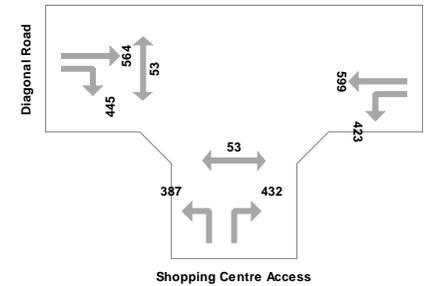
DELAY & LEVEL OF SERVICE

Intersection Type
Signalised - Fixed time

Color code based on Level of Service



FLOWS



JOB NUMBER: 06-0224

PROJECT NAME: WESTFIELD MARION

INTERSECTION: DIAGONAL ROAD/SHOPPING CENTRE ACCESS

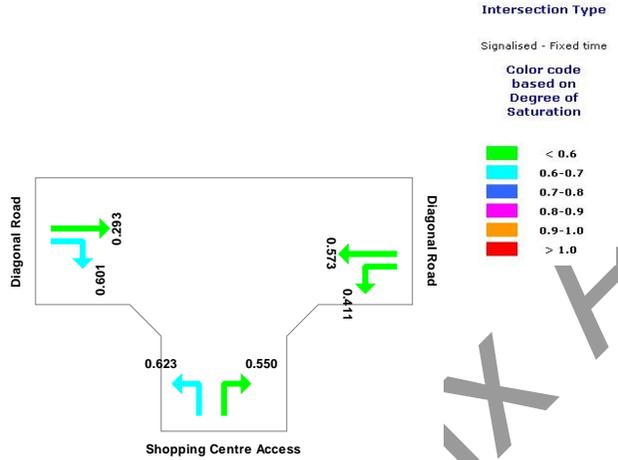
SCENARIO: SATURDAY PEAK
EXISTING INTERSECTION LAYOUT



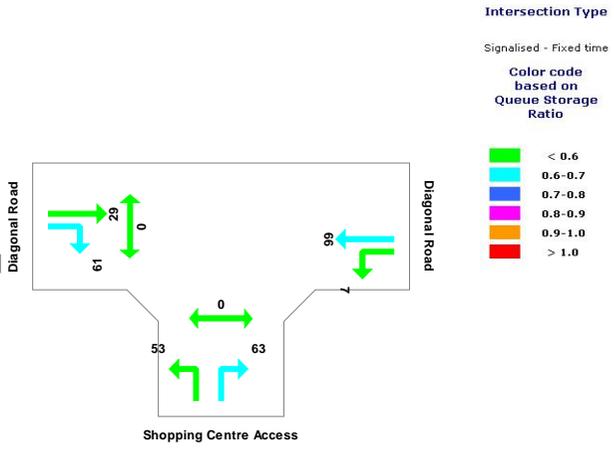
INTERSECTION GEOMETRY



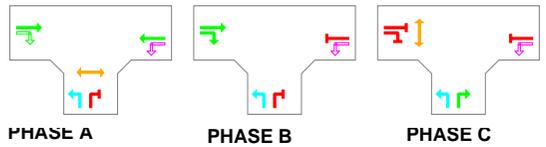
DEGREE OF SATURATION



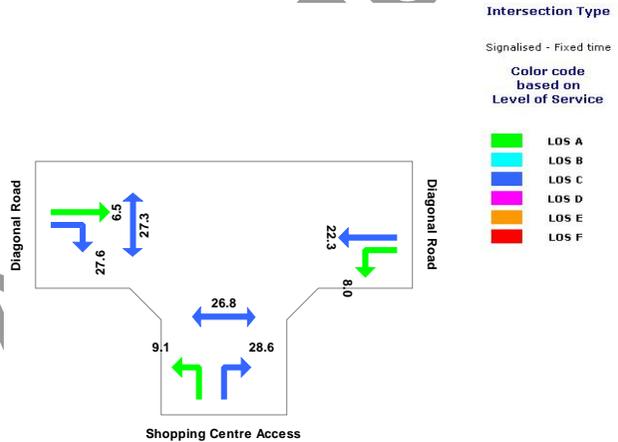
QUEUES



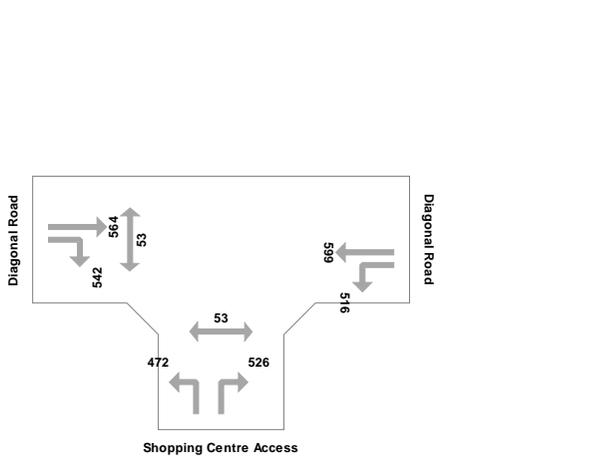
PHASING



DELAY & LEVEL OF SERVICE



FLOWS

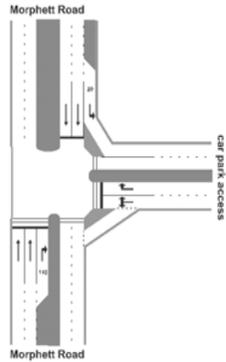


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PROJECT NAME:	WESTFIELD MARION

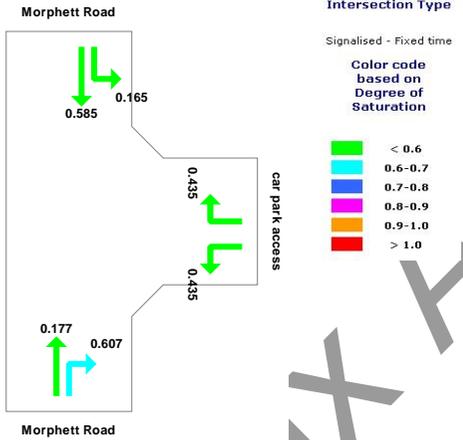
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SCENARIO:	SATURDAY PEAK PROPOSED INTERSECTION LAYOUT



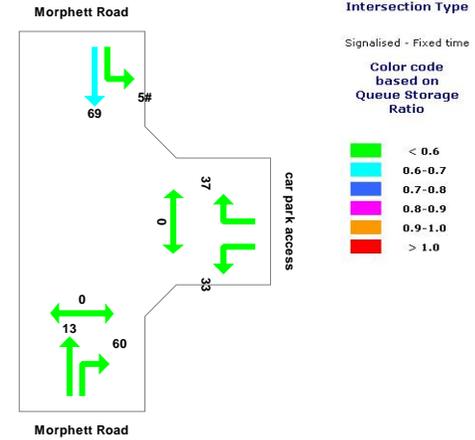
INTERSECTION GEOMETRY



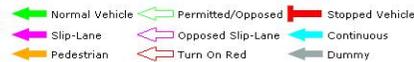
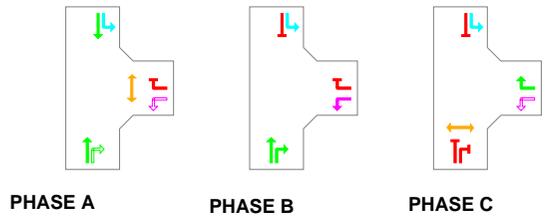
DEGREE OF SATURATION



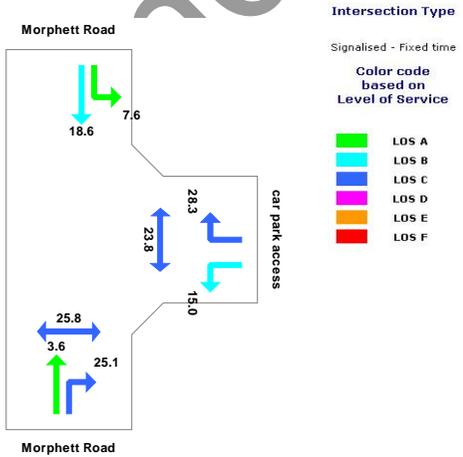
QUEUES



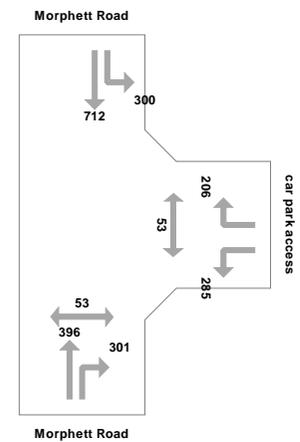
PHASING



DELAY & LEVEL OF SERVICE



FLOWS

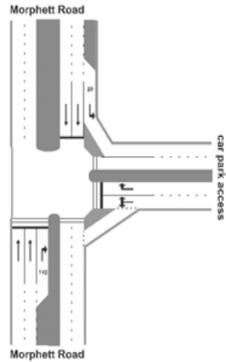


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PROJECT NAME:	WESTFIELD MARION

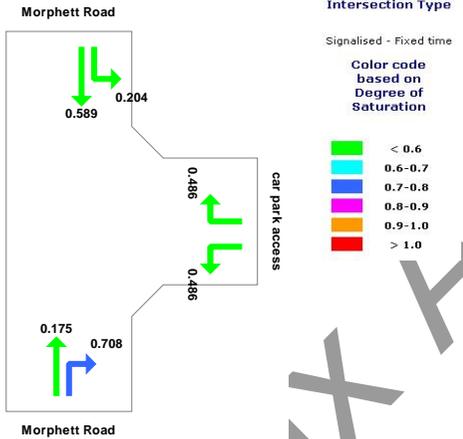
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SCENARIO:	PM PEAK (THURSDAY) EXISTING VOLUMES



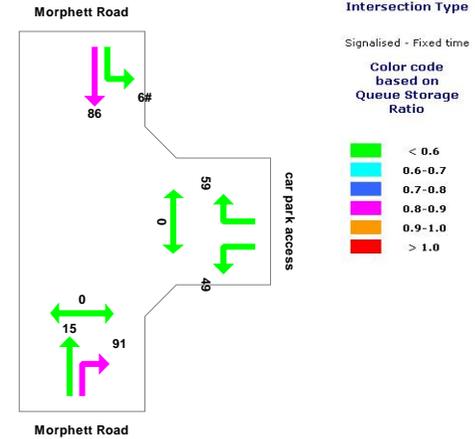
INTERSECTION GEOMETRY



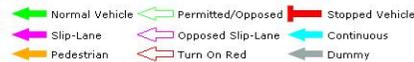
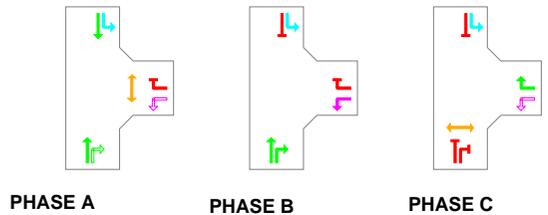
DEGREE OF SATURATION



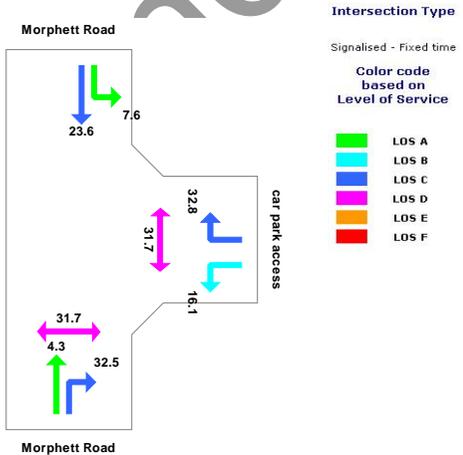
QUEUES



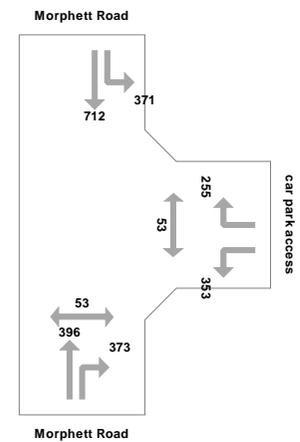
PHASING



DELAY & LEVEL OF SERVICE



FLOWS

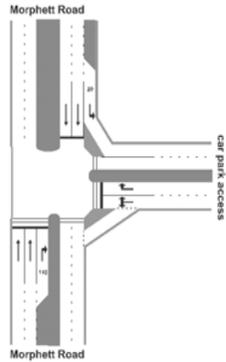


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PROJECT NAME:	WESTFIELD MARION

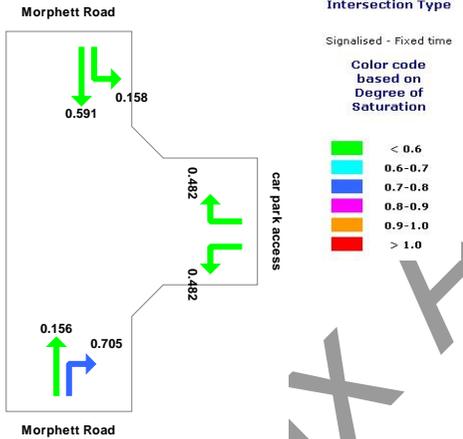
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SCENARIO:	PM PEAK (THURSDAY) FORECAST VOLUMES



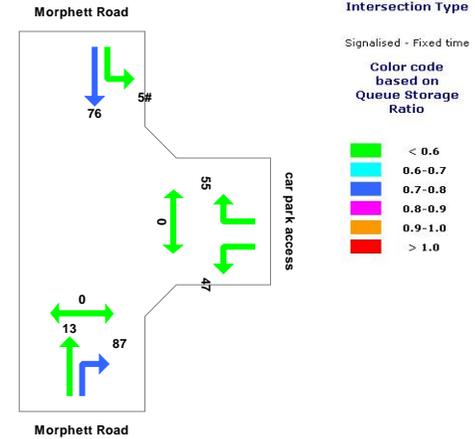
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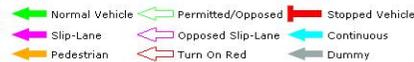
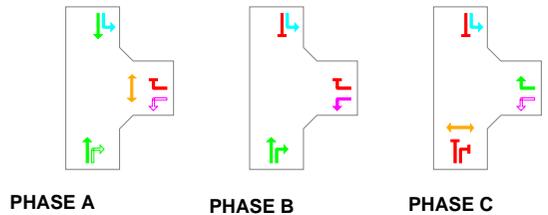
DEGREE OF SATURATION



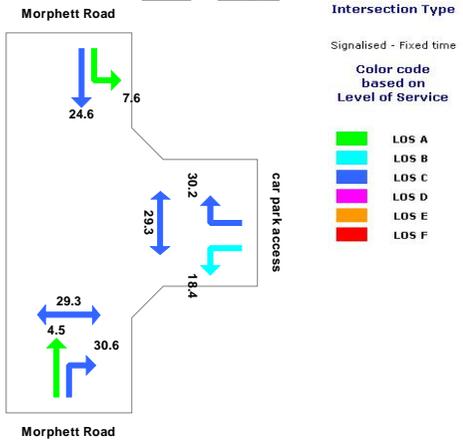
QUEUES



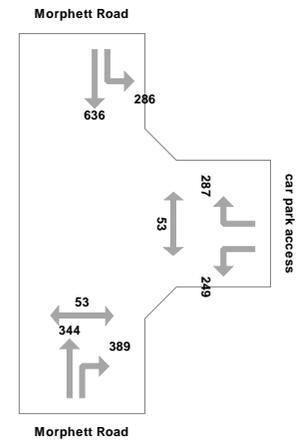
PHASING



DELAY & LEVEL OF SERVICE



FLOWS

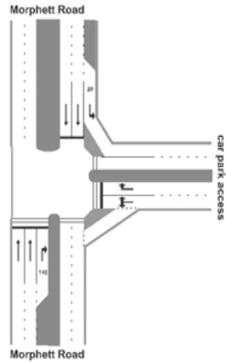


JOB NUMBER:	06-0224
PROJECT NAME:	WESTFIELD MARION

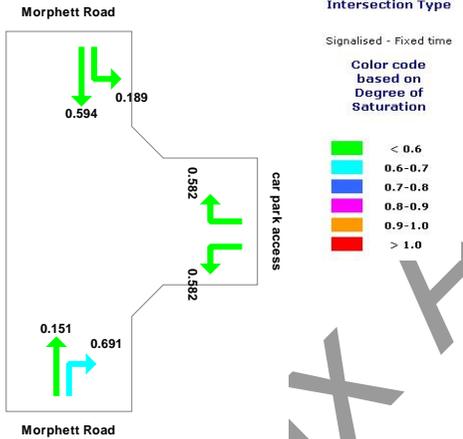
INTERSECTION:	MORPHETT ROAD/SHOPPING CENTRE ACCESS
SCENARIO:	SATURDAY PEAK EXISTING VOLUMES



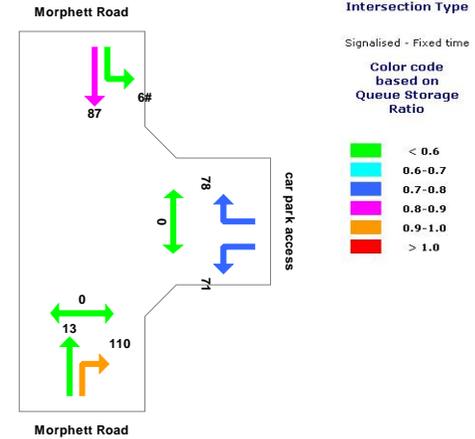
INTERSECTION GEOMETRY



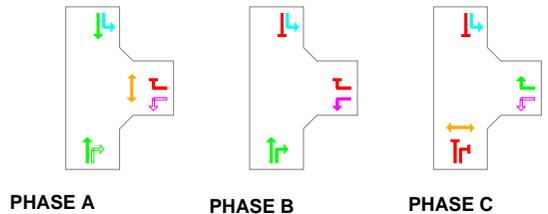
DEGREE OF SATURATION



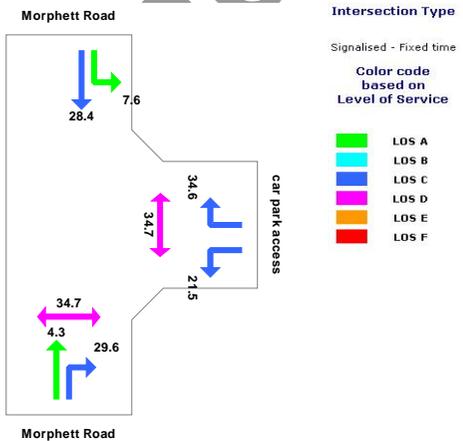
QUEUES



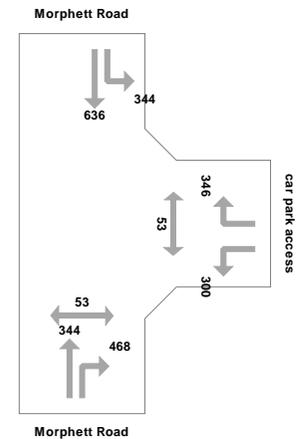
PHASING



DELAY & LEVEL OF SERVICE



FLOWS



- Normal Vehicle
- Permitted/Opposed
- Stopped Vehicle
- Slip-Lane
- Opposed Slip-Lane
- Continuous
- Pedestrian
- Turn On Red
- Dummy

JOB NUMBER: 06-0224

PROJECT NAME: WESTFIELD MARION

INTERSECTION: MORPHETT ROAD/SHOPPING CENTRE ACCESS

SCENARIO: SATURDAY PEAK
FORECAST VOLUMES



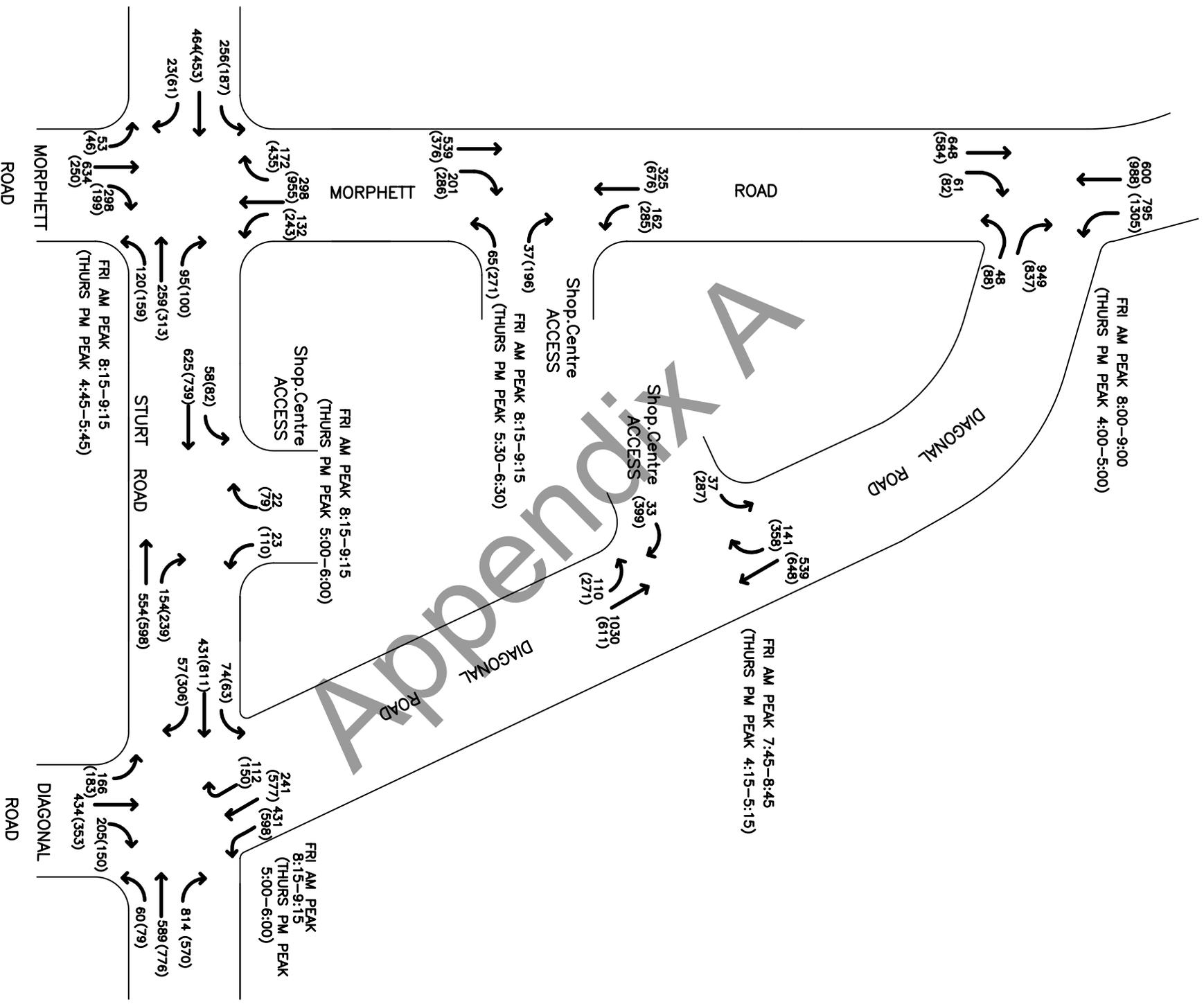


FIGURE 1. PEAK HOUR TURNING COUNTS

WESTFIELD MARION SC –AM FRIDAY 20/10/06 (PM THURSDAY 19/10/06)

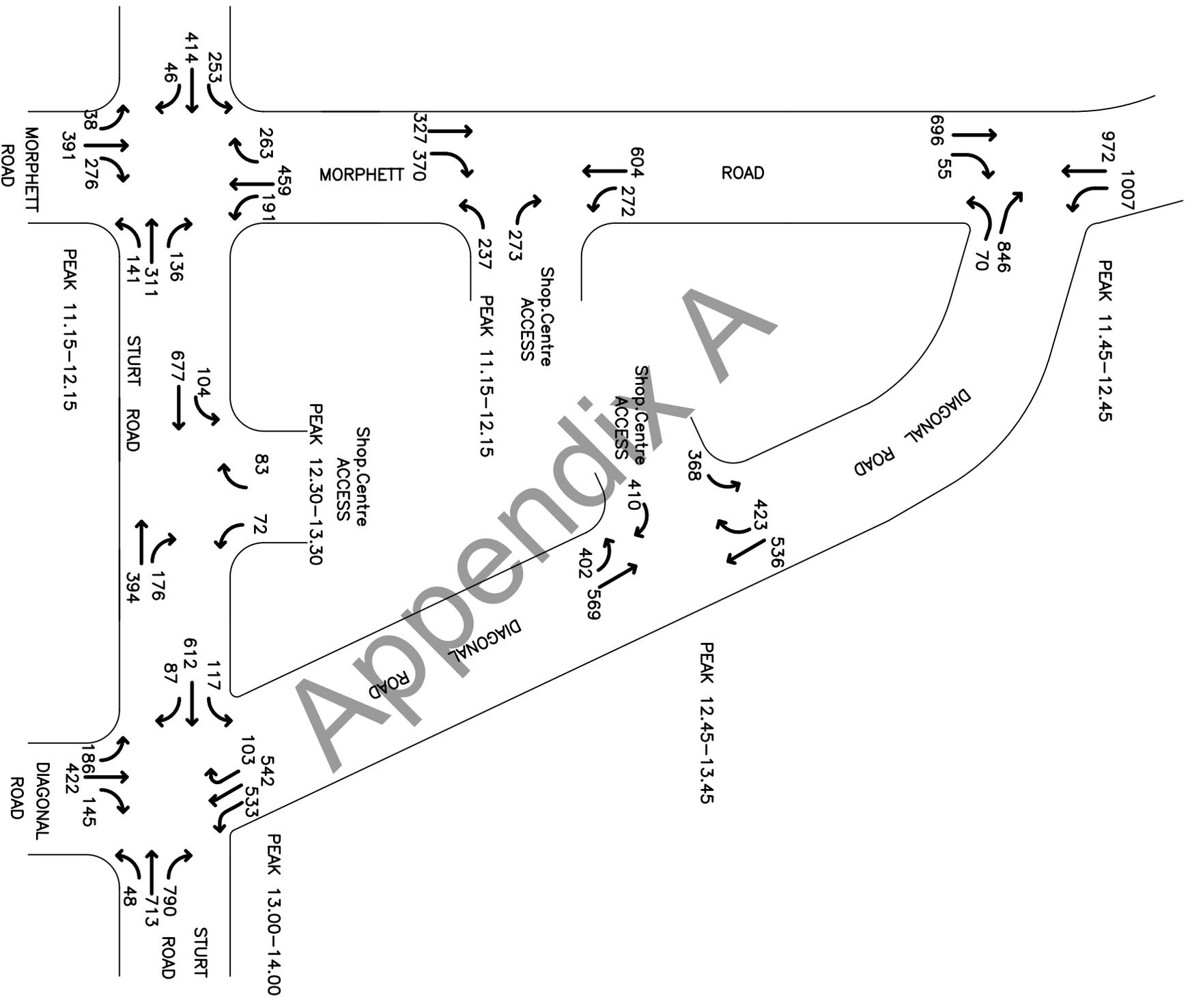


FIGURE 2. PEAK HOUR TURNING COUNTS
WESTFIELD MARION-SATURDAY 17/03/07

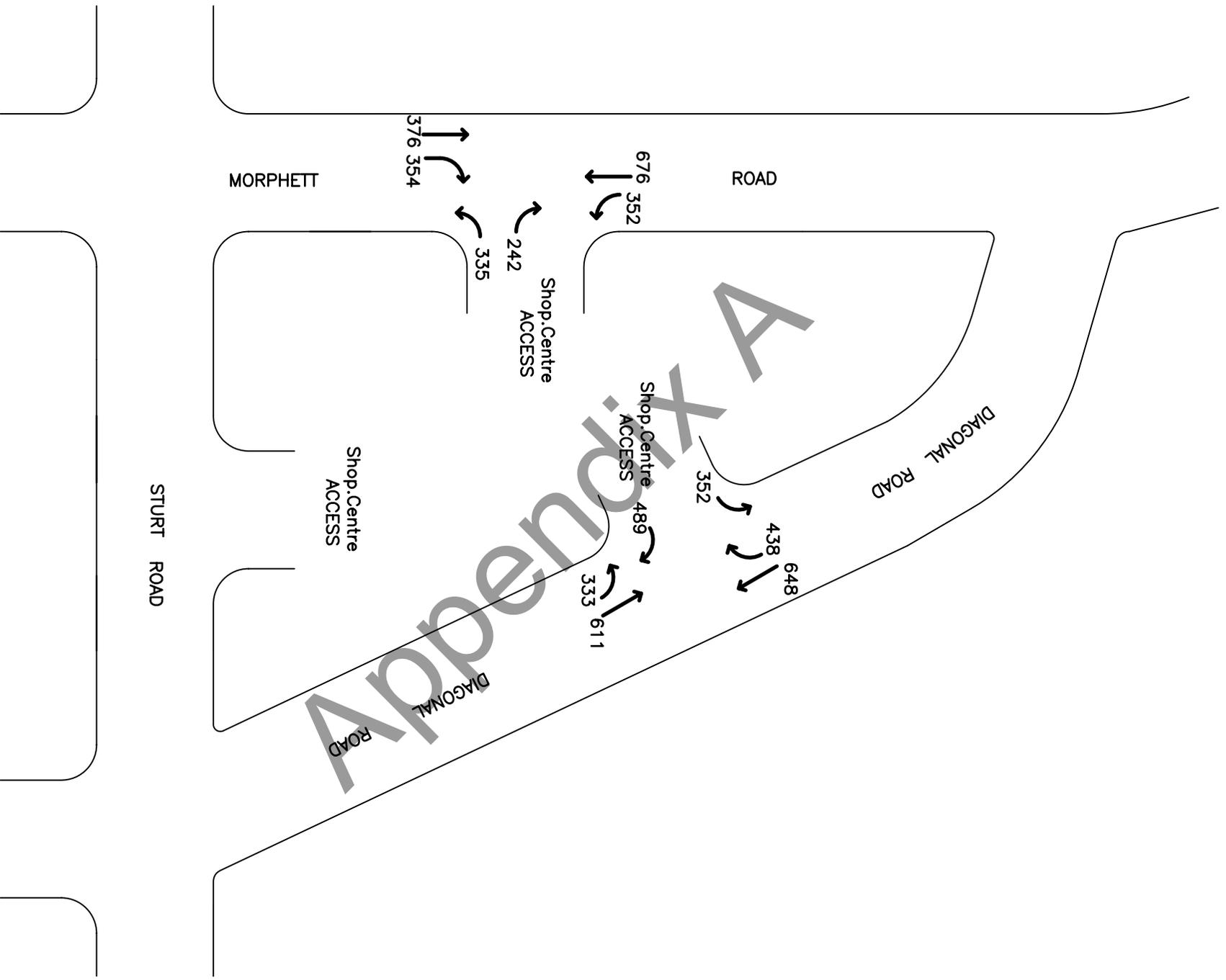


FIGURE 3. FORECAST TRAFFIC VOLUMES THURSDAY PM PEAK HOUR
DIAGONAL ROAD/MORPHETT ROAD ACCESS

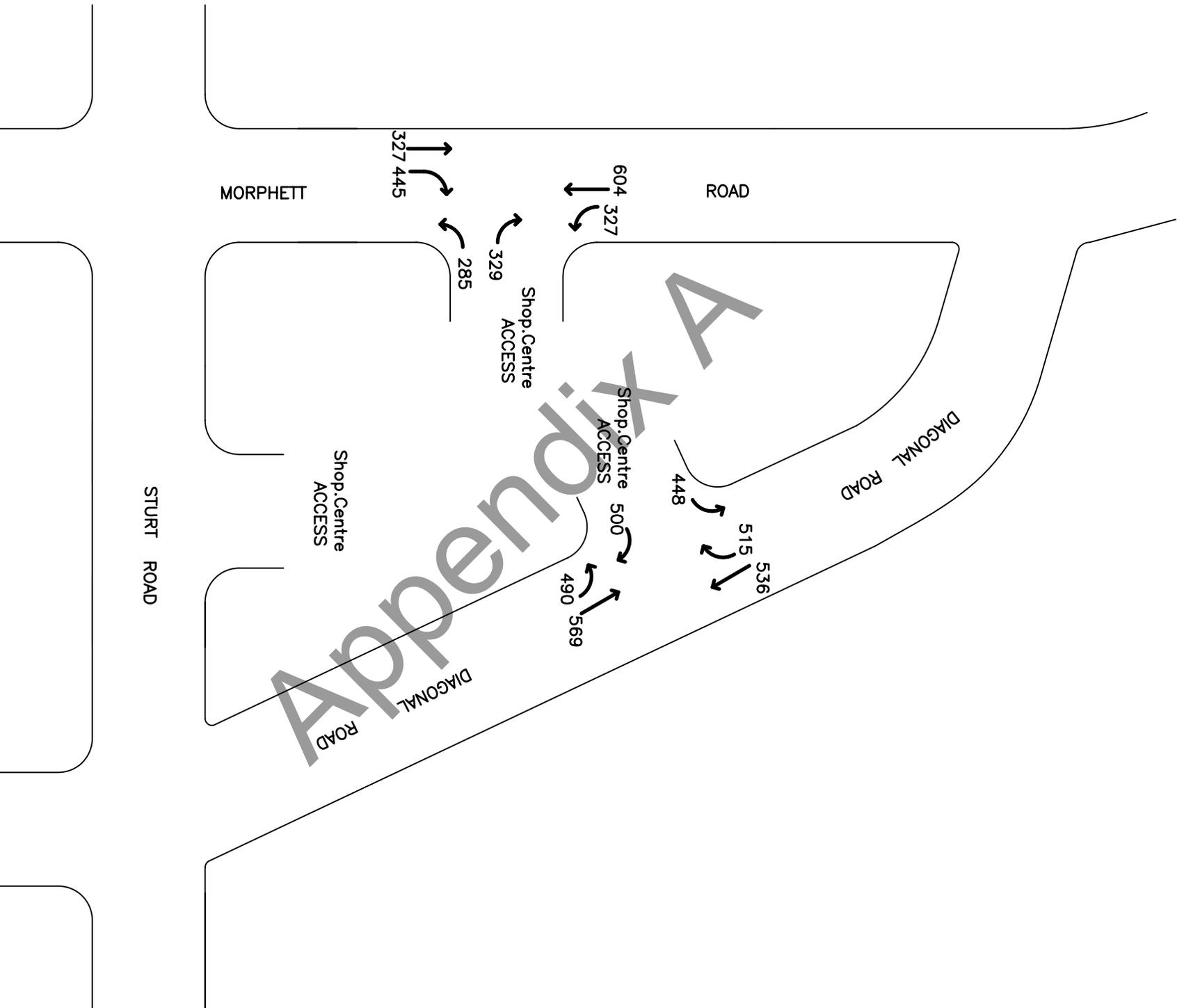
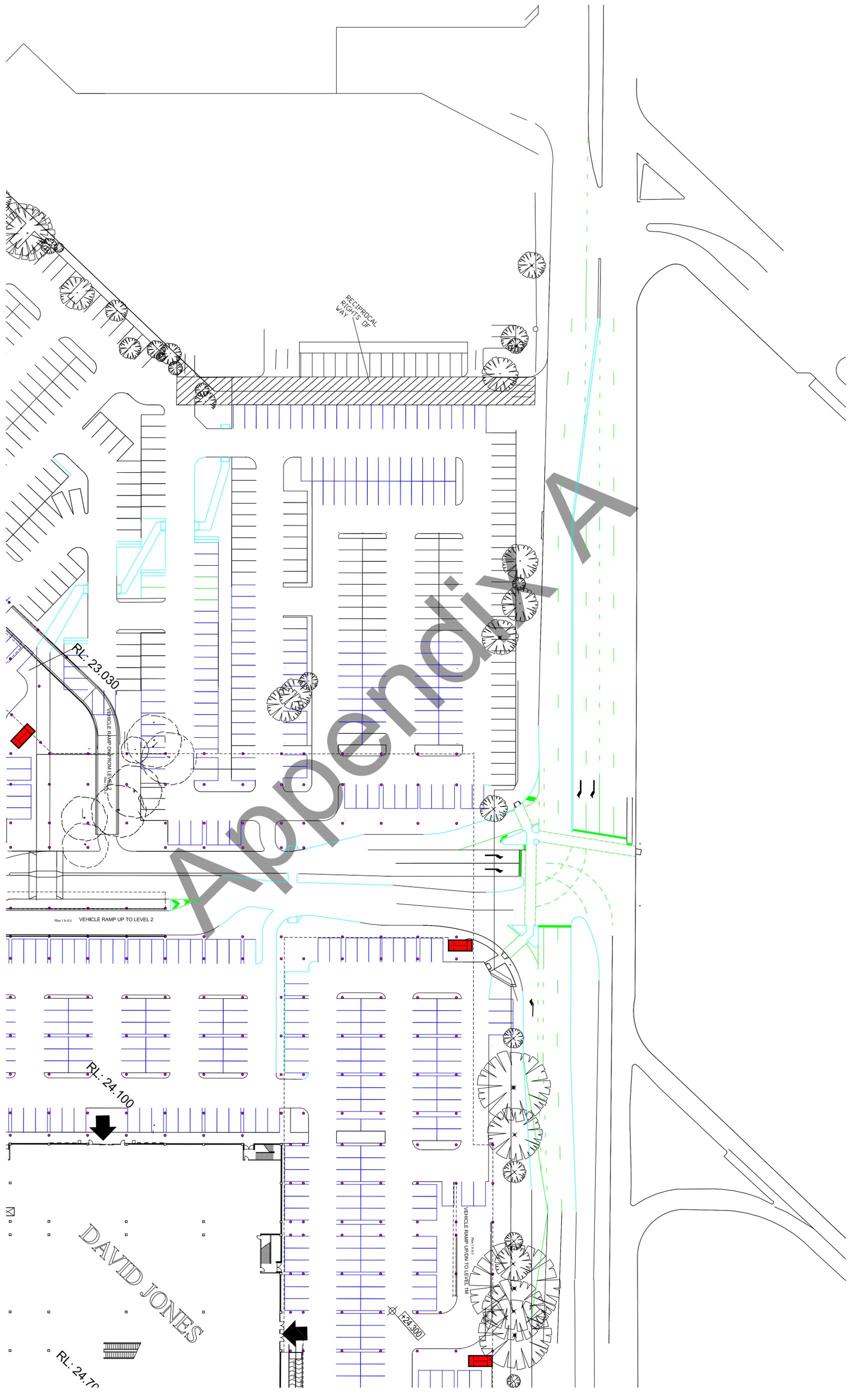


FIGURE 4. FORECAST TRAFFIC VOLUMES SATURDAY PEAK HOUR
DIAGONAL ROAD/MORPHETT ROAD ACCESS



PROPOSED DIAGONAL ROAD
 TRAFFIC CONTROL LAYOUT
 AT WESTFIELD SIGNALISED ACCESS ROAD
 Date 19/04/07 Scale 1:400



DAVID JONES



APPENDIX B

SIDRA MODELLING REPORT

17-0275 WESTFIELD MARION REDEVELOPMENT TRAFFIC ASSESSMENT – SIDRA MODELLING

1 BACKGROUND

The subject site, illustrated in Figure 1, is Westfield Marion Shopping Centre.



Figure 1: Subject Site

There is an existing approval (DA100/1297/2012) for the redevelopment of the subject site to increase the leasable floor area by 19,213 m². A traffic impact assessment for this DA was undertaken by MFY. The assessment included a calculation of the existing traffic generation rate for the site. A copy of this previous correspondence is attached and identified the following ratios:

- 3.0 trips per 100 m² retail area on a Thursday; and
- 3.2 trips per 100 m² retail area on a Saturday.

A review of the existing generation rate based on the 2018 SCATS data identified a slightly lower rate but, for the purpose of this assessment the rates above have been adopted.

To accommodate the additional traffic generated by the expansion previously approved, an upgrade to the Diagonal Road signalised access to incorporate two right-turn entry lanes on Diagonal Road was proposed. The traffic analysis identified that this intersection will operate within capacity and the queues on Diagonal Road will be within the available storage with this modification.

SIDRA analysis of the Morphett Road access was also undertaken and identified that the right turn entry queue on Morphett Road will be 110 m. Such a queue would have been accommodated within the available storage in 2007 (110 m).

The right-turn facility at the Morphett Road access has since been modified to a length of 70 m to provide extra capacity to the right turn lane on the northbound approach of the Morphett Road/Sturt Road intersection, resulting in the exiting queue extending outside the storage.

2 PROPOSAL

It is proposed to increase the gross leasable floor area of the Westfield Marion shopping centre by 16,981 m².

The current application now considers safety in design aspects on the site and incorporates separated loading areas where possible. It will also incorporate a ticketless access control system and is proposed to supersede existing approvals.

The additional traffic generated by the subject development will be distributed to the existing access points. As observed from previous surveys of the site, the significant portion of the traffic will access the site via the two signalised access points on Morphett Road and Diagonal Road.

3 MODEL SCOPE

The traffic analysis will include the SIDRA modelling of the signalised access points on Morphett Road and Diagonal Road. To ascertain the existing situation at the subject intersections, the following traffic data were obtained from DPTI:

- SCATS data for the week beginning 30 October 2018; and
- the latest manual turning counts at the intersections.

Figure 2 identifies the existing turning volumes at the intersections. The manual turning counts were used to determine the volumes for movements which are not recorded by SCATS (i.e. high-entry angle left turn movements).

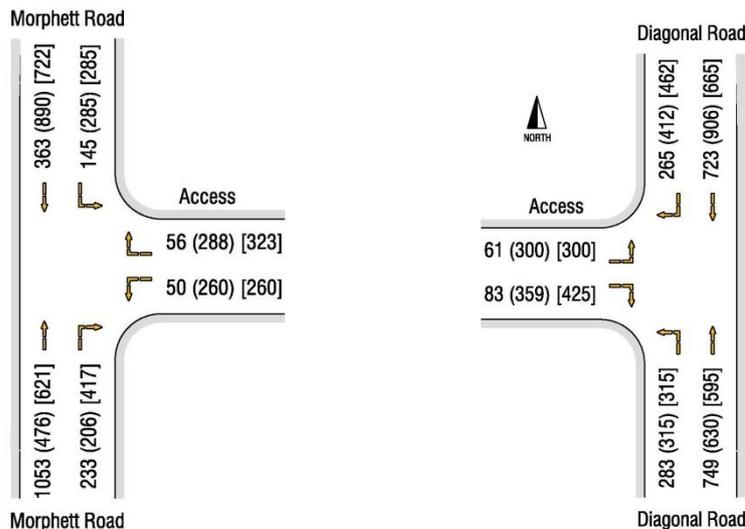


Figure 2: Existing turning volumes am(pm)[sat]

The critical issue in relation to the operation of the signalised intersections related to the turning movements to/from the site particularly as they reduce green times for the arterial roads. In reviewing the volumes on the road network, it is identified that traffic volumes observed entering and exiting the development is highest during the weekend development peak hour.

Of note is that the traffic generated by the development will be substantially higher during the weekend peak hour than the am and pm peak hours. Given that the green time associated with the turning movements is the critical factor in relation to the signal operation, it is identified that, in this instance, the weekend development peak hour represents the peak scenario. The modelling therefore seeks to address the traffic impact of the proposed development during the weekend development peak hour.

4 BASE CASE MODELS

The base case models have been developed using the volumes identified in Figure 1. The manual turning counts was used to gauge the proportion of heavy vehicles for each movement.

A review of the SCATS data identified that the volumes fluctuated by less than 2% during each 15-minute period of the peak hour. On this basis, a peak flow period of 60 minutes was adopted for the assessment.

4.1 MORPHETT ROAD

4.1.1 Geometric Layout

The layout of the model is based on the existing layout of the signalised intersection, as illustrated in Figure 3.

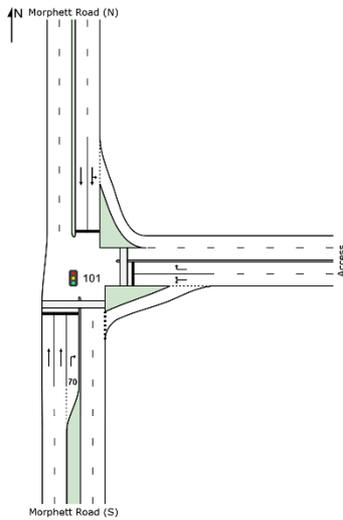


Figure 3: Geometric Layout

4.1.2 Phasing

The model has adopted the phasing operation as identified in the SCATS Summary Sheet provided with the SCATS data as identified in Figure 4 and Table 1.

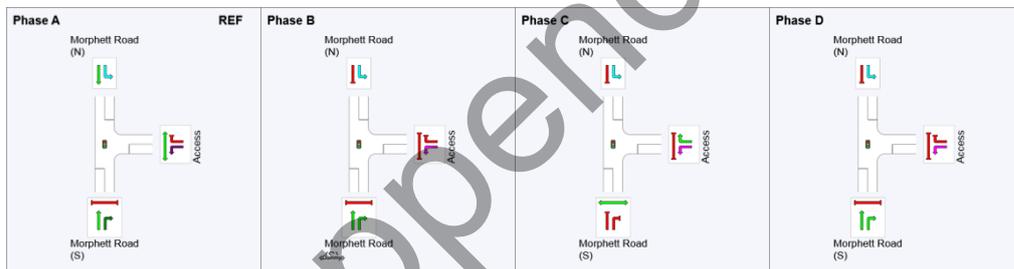


Figure 4: Phasing sequence

Table 1: Green Split

Phase	Phase Time (s)	Phase Split (%)
A	33	41
B	18	23
C	19	24
D	10	13

4.1.3 Calibration

SCATS summary sheet identifies that the SCATS Maximum Flow (MF) observed on the turning lanes at the intersection is significantly lower than that of the through lanes. This is particularly due to the length of the lanes and the phase times allocated to the respective movements.

DPTI recommended the application of 1700 tcu/h for the right-turn lane on Morphett Road and 1500 tcu/h for the turning lanes on the access road. Calibration of the two

sites in parallel identified that these rates should be in the order of 1800 tcu/h for the right turn lane on Morphett Road and 1600 tcu/h for the right-turn lanes on the access roads. As such, the models have been developed on the calibrated parameters.

In addition to the above, the calibration exercise identified, that more than two vehicles were able to perform the right turn from Morphett Road during amber (yellow-time) on multiple occasions. Accordingly, an 'End Departures' of 2.5 vehicles has been adopted for the subject intersection.

4.1.4 Results

Table 2 summarises the results for each approach at the intersection.

Table 2: SIDRA results summary for Morphett Road

Approach	Movements	Weekend peak hour		
		DOS	95 th Percentile Queue (m)	LOS
Morphett Road (N)	Left	0.68	124	C
	Through	0.68	124	
Access	Left	0.77	70	C
	Right	0.77	70	
Morphett Road (S)	Through	0.23	30	B
	Right	0.75	73	

The results identify that the intersection operates within capacity. However, the right turn queue into the subject site extends beyond the existing storage.

4.1.5 Validation

An on-site observation of the subject intersection was undertaken to validate the base case model. The site observations identified the following:

- a 95th percentile queue of 73 m was recorded for the right-turn queue into the site;
- a 95th percentile queue of 56 m was recorded for the right-turn queue from the site;
- through queue on the northern approach was generally between 100 m – 130 m but did extend past the Bunnings access (approximately 150 m) on occasions; and
- through queue on the southern approach was negligible.

Accordingly, the base case SIDRA model has been validated by the site observations particularly on the basis of the right turn queue lengths, albeit the model is over estimating the queue on the access road.

4.2 DIAGONAL ROAD

4.2.1 Geometric Layout

The layout of the model, illustrated in Figure 5, is based on the existing layout of the signalised intersection.

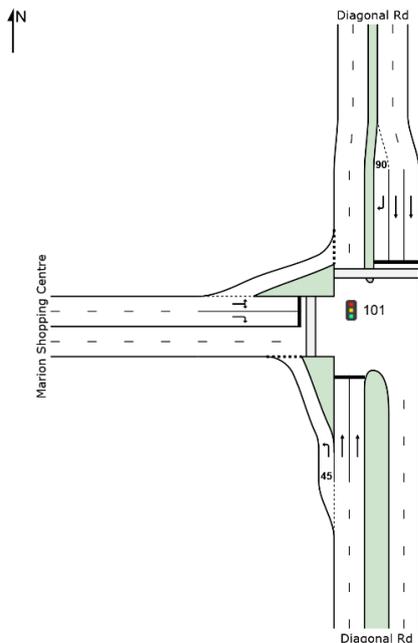


Figure 5: Geometric Layout

4.2.2 Phasing

The model has adopted the phasing operation as identified in the SCATS Summary Sheet provided with the SCATS data as identified in Figure 4 and Table 3.

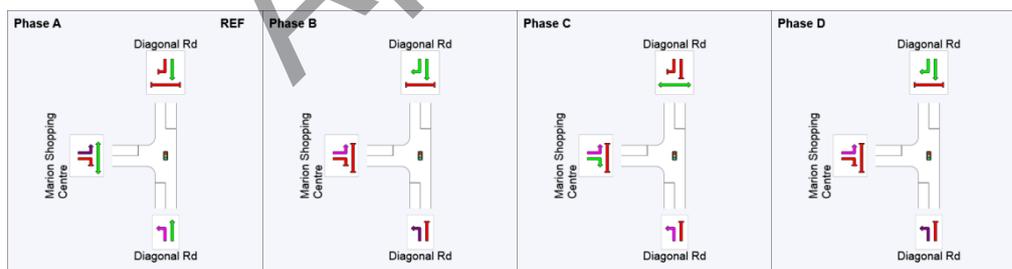


Figure 4: Signal Phasing

Table 3: Green Split

Phase	Phase Time (s)	Phase Split (%)
A	33	33
B	27	27
C	25	25
D	15	15

4.2.3 Calibration

As identified in Section 2.2.4, the calibrated Basic Saturation Flow rates of 1800 tcu/h for right turn lane on Diagonal Road and 1600 tcu/h for the right turn lanes on the access roads have been adopted for the intersection.

4.2.4 Results

Table 4 summarises the results for each approach at the intersection.

Table 4: Summary of SIDRA results

Approach	Movements	Saturday		
		DOS	95 th Percentile Queue (m)	LOS
Diagonal Road (N)	Through	0.25	42	C
	Right	0.87	125	
Access	Left	0.27	85	B
	Right	0.59	85	
Diagonal Road (S)	Left	0.82	39	C
	Through	0.82	94	

The results identify that the intersection operates within capacity. However, the right turn queue into the subject site extends beyond the existing storage.

4.2.5 Validation

The model has been validated based on site observations which identified that the right-turn queue from the development extends beyond the existing storage.

5 TRAFFIC GENERATION

A traffic generation rate of 3.2 trips per 100 m² has been adopted for development peak hour as per previous assessments of the development. Accordingly, the proposed addition of 16,981 m² of GLFA will generate approximately 550 trips in the Saturday peak hour.

5.1 TRAFFIC DISTRIBUTION

In assessing the accessibility of the parking areas from each access point, it is identified that:

- 60% of the traffic will access the site via Diagonal Road;
- 40% of the traffic will access the site via Sturt Road; and
- 80% of the traffic will access the site via the signalised access points and the remaining traffic will be distributed to the unsignalised access points.

The following assumptions are made in regards to the distribution at each intersection:

- there will be an equal in/out split during the development peak hour; and
- distribution of the additional traffic at each access point will be as per the existing situation.

On this basis, Figure 6 illustrates the additional traffic movements at each intersection.

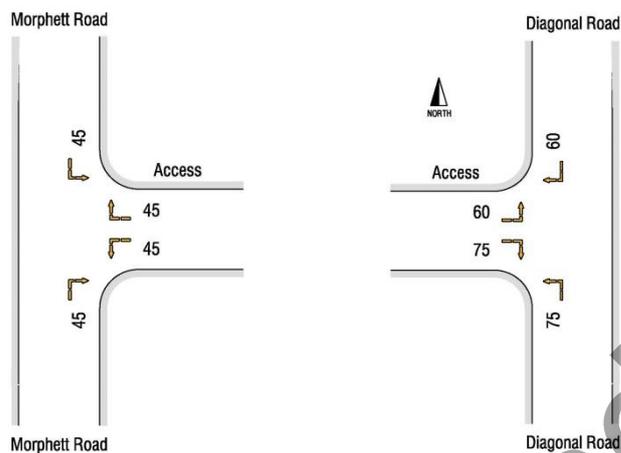


Figure 6: Additional traffic volume at each intersection

Figure 7 illustrates the total weekend peak hour traffic at the subject intersections.

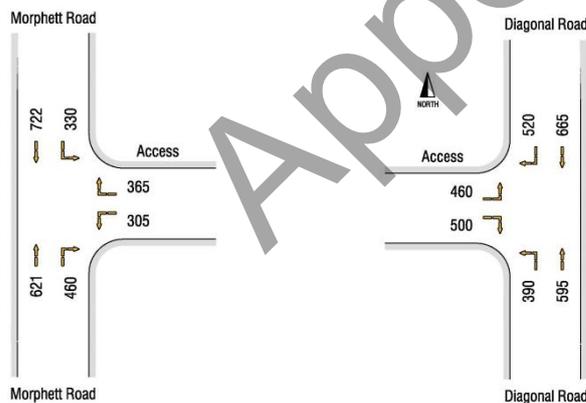


Figure 7: Total traffic volume at each intersection

6 DEVELOPMENT MODELS

The development models are developed on the total weekend peak hour traffic volumes identified in Figure 6. The models have retained the Calibration settings applied in the Base Case models.

6.1 MORPHETT ROAD

6.1.1 Geometric Layout

The left turn from Morphett Road to the site will be converted to a high angle entry in lieu of the existing continuous lane. Figure 8 illustrates the proposed geometric layout.

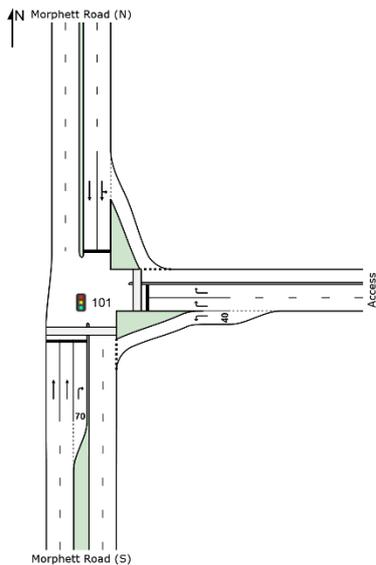


Figure 8: Proposed geometric layout

6.1.2 Phasing

The existing signal phasing will be retained with minor changes to the average phase times. The phase times are identified in Table 5.

Table 5: Green Split

Phase	Phase Time (s)		Phase Split (%)	
	Base Case	Dev Model	Base Case	Dev Model
A	33	33	41	41
B	18	7	23	9
C	19	19	24	24
D	10	21	13	26

It is not proposed to provide the access road with any additional phase time. As such, the phase times will be comparable with the existing situation.

6.1.3 Results

Table 6 summarises the results of the Development model and compares it with the Base Case model.

Table 6: Summary of SIDRA results for the development peak hour

Approach	Movements	DOS		95 th Percentile Queue (m)		LOS	
		Base Case	Dev Model	Base Case	Dev Model	Base Case	Dev Model
Morphett Road (N)	Left	0.68	0.72	106	84	C	B
	Through	0.68	0.72	126	117		
Access	Left	0.77	0.29	70	32	C	C
	Right	0.77	0.64	70	49		
Morphett Road (S)	Through	0.23	0.24	30	30	B	B
	Right	0.75	0.77	73	67		

The results identify that the intersection will operate within capacity and the approaches will continue to operate at the same level of service as the existing situation.

The 95th percentile right-turn queue on Morphett Road will be contained within the available storage. Further, the queues on the through lanes on Morphett Road will be as per existing. Negligible impact on the intersection and the arterial road.

6.2 DIAGONAL ROAD

6.2.1 Geometric Layout

The layout of the intersection will be modified as part of the proposed development. This layout will be in accordance with the existing approval for the site. Figure 9 illustrates the proposed geometric layout.

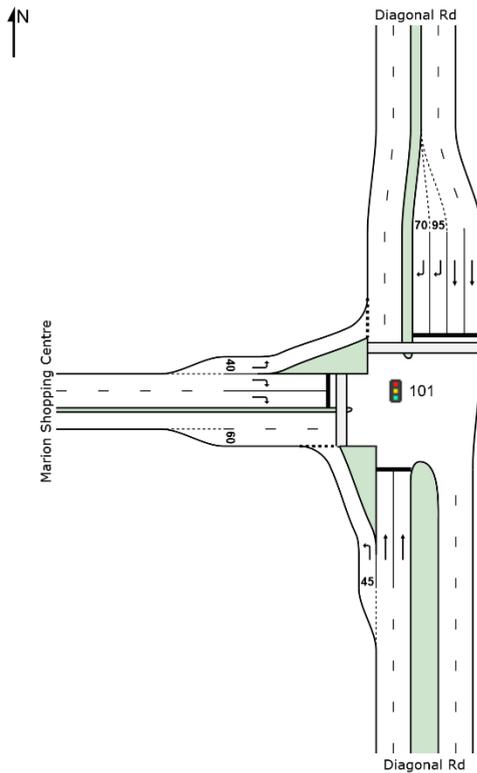


Figure 9: Proposed geometric layout

6.2.2 Phasing

It is proposed that the existing signal phasing is retained but with an average cycle length of 80 seconds which has been reported, albeit the current 100 seconds cycle length could also be maintained. The phase times in the model are identified in Table 7.

Table 7: Green Split

Phase	Phase Time (s)		Phase Split (%)	
	Base Case	Dev Model	Base Case	Dev Model
A	33	25	33	31
B	27	15	27	19
C	25	25	25	31
D	15	15	15	19

The second right-turn lane on Diagonal Road will enable more green time for the exit movements from the development while maintaining a similar level of operation.

6.2.3 Lane Utilisation

Lane Utilisation of the right-turn lanes on Diagonal Road have been set to 100% to replicate a realistic model, even though SIDRA predicts that the utilisation will be imbalanced due to the downstream short-lane effect.

6.2.4 Results

Table 8 summarises the results of the Development model and compares it with the Base Case model.

Table 8: Summary of SIDRA results for the development peak hour

Approach	Movements	DOS		95 th Percentile Queue (m)		LOS	
		Base Case	Dev Model	Base Case	Dev Model	Base Case	Dev Model
Diagonal Road (N)	Through	0.25	0.28	42	42		
	Right	0.87	0.67	125	36	B	B
Access	Left	0.75	0.33	85	28		
	Right	0.75	0.65	85	64	C	B
Diagonal Road (S)	Left	0.27	0.30	39	29		
	Through	0.59	0.65	94	76	C	C

The results identify that the intersection will operate within capacity and the intersection will operate at Level of Service B which is better than the existing situation.

The 95th percentile queues on Diagonal Road turning lanes will be contained within the available storage. Further, the queue on the through lanes will remain at similar levels as per existing. As such, there will be minimal impact on the intersection and in particular, the arterial road.

7 SUMMARY

The proposed development could result in an increase in traffic on Morphet Road and Diagonal Road. Previous surveys of the subject site have identified that approximately 80% of the additional traffic will be accommodated at the signalised access points and this portion has been applied to the subject intersections to ensure a conservative assessment is applied. Analyses of these intersections has been undertaken using SIDRA Intersection software.

Base case models of the two intersections were developed using SCATS data for the weekend development peak hour (critical scenario). The modelling identifies that both intersections operate within capacity. However, the right turn queues of vehicles waits to turn into the site extend beyond the available storage. This has been validated at the Morphet Road site and at the Diagonal Road intersection.

The analysis identifies that proposed changes at each intersection namely, the configuration change at Diagonal Road and the high angle left turn lane at Morphet

Road will readily accommodate the development volumes. The subject intersections will operate within capacity and the queues will be accommodated within the storage.

Appendix B

APPENDIX A

PREVIOUS CORRESPONDENCE

Appendix B

MM:as/06-0224

20 April 2007

Mr George Morias
Transport Services Division
Department for Transport, Energy and Infrastructure
PO Box 1
WALKERVILLE SA 5081

Dear George,

**WESTFIELD MARION
PROPOSED EXTENSION ACCESS REVIEW
(DA 100/0048/2007)**

I refer to the proposed development by Westfield Ltd to expand the existing shopping centre at Marion and our recent meeting regarding this matter.

The proposed expansion of the shopping centre will include 18,275 m² additional retail floor area. The existing centre has a gross retail lettable area of 121,192 m² plus 11,030 m² cinemas.

A traffic and parking report prepared in relation to this application assessed traffic volumes based on the NSW RTA Guidelines "A Guide to Traffic Generating Developments". This assessment has since been reviewed, as detailed below.

Traffic counts were undertaken at the signalised access points to the site and at the adjacent signalised intersections on Thursday, 9 October 2006 (4:00 pm to 6:30 pm), Friday, 20 October 2006 (7:30 am to 9:30 am) and Saturday, 17 March 2007 (10:00 am to 2:00 pm). The results of these turning counts are illustrated in Figures 1 and 2 and show the peak hour volumes recorded during these counts.

In order to calculate the existing peak generation rate for the centre, the following has been assumed:

- the peak hour at each access coincided;
- 20% of traffic associated with the centre used non-signalised access points (and is therefore additional to the counts); and



**Murray F. Young
& Associates**

Director
Melissa Mellen

Consultant
Murray Young

Associates
**Chris Harcourt
Jayne Lovell**

Engineer
Ben Wilson

Transportation, Management
& Feasibility Consultants

- all traffic was generated by the retail area (and not the cinemas).

The forecast traffic generation rates will therefore be conservative, given the following factors:

- the actual peak for the entire centre will be less than the combined peaks at each access;
- the volume of traffic using the non-signalised access points is anticipated to be less than 20%; and
- there will be traffic associated with cinema patrons.

Based on the above, the existing centre generates a peak hour traffic distribution of approximately 3.0 trips per 100 m² on a Thursday evening and 3.2 trips per 100 m² on a Saturday. Traffic volumes during the morning peak equates to approximately 1.0 trip per 100 m².

Figures 3 and 4 illustrate the forecast Thursday pm peak and Saturday peak volumes following the proposed development. Given that the proposal will increase parking on the northern side and that the parking parallel to Sturt Road is fully occupied during peak periods, it has been assumed that all additional traffic will be distributed between the Diagonal Road and Morphett Road signalised access points and will then redistribute to the adjacent road network. In reality, there will be some additional traffic using the non-signalised access points, but this approach will result in a conservative assessment.

SIDRA analysis has been undertaken for the afternoon and Saturday peak hours for the following situation:

- existing traffic volumes at the Diagonal Road access. This identifies an existing queuing issue for the right turn into the centre;
- forecast traffic volumes at the Diagonal Road access with an additional right turn lane into the site (as discussed at our recent meeting). The results show that the additional right turn lane will resolve the existing queuing issue, even with the additional volumes associated with the development;
- existing traffic volumes at the Morphett Road access which identifies that this access operates with a relatively low degree of saturation; and
- forecast volumes at the Morphett Road access which will only have a minimal impact on the degree of saturation at the intersection. The queue length will extend for drivers turning right into the site but will still be accommodated within the existing storage lane.

The increase in volumes during the am peak will be low and will have a reduced impact on the road network. Such modelling for these intersections, therefore, has not been included.

Details of the SIDRA results are included in Appendix A.

In regard to the external road network, the forecast volumes will result in the following:

- approximately 300 additional trips on Diagonal Road during the Thursday afternoon peak period (compared with the existing volume of approximately 2300 vph on this street). This additional traffic will distribute north and south of the access and will result in approximately 130 vph additional traffic on each section of road. This would be equivalent to an increase of approximately 6.5% on Diagonal Road;
- approximately 350 additional vehicles (or 175 in each direction) on Diagonal Road during the Saturday peak hour. This would equate to an estimated 9% increase in traffic volume;
- approximately 245 additional trips (115 on the northern leg and 130 on the southern leg) during a Thursday evening peak hour. This will equate to an increase of approximately 7% on Morphett Road; and
- an increase of 235 vehicles on Morphett Road (125 on the southern leg and 110 on the northern leg) during the Saturday peak hour. This equates to an estimated 8% increase in traffic on this road.

Hence, the forecast traffic increase on the adjacent road network will be less than 10% during the peak hour periods related to the shopping centre.

Given the relatively low increase in volume on the road network, the impact on the operation of the intersections as a direct result of the shopping centre expansion should not be significant. Notwithstanding this, SIDRA models will be prepared using the additional signal data received by the Department for Transport, Energy and Infrastructure (DTEI) and forwarded to your office for use in the network modelling.

In summary, subject to the reconfiguration of the Diagonal Road access point to include an additional right turn into the site, appropriate access will be provided for the proposed expansion. Enclosed is a copy of the concept plan of the access which has also been included on the amended DA plans.

The additional SIDRA analysis for the adjacent signals for use in DTEI's network modelling will be forwarded shortly, but should not directly impact on the assessment

of the operation of the signal at the access points for the proposed expansion. We will liaise with you in regard to this matter.

Please do not hesitate to contact the undersigned with any queries.

Yours sincerely,
MURRAY F YOUNG & ASSOCIATES

A handwritten signature in black ink, appearing to read 'Melissa Mellen', is written over a thin horizontal line.

MELISSA MELLEN
Director

*Encl. Appendix A – SIDRA analysis
Figures 1 and 2 Turning counts
Figures 3 and 4 Forecast peak traffic volumes
Concept Plan*

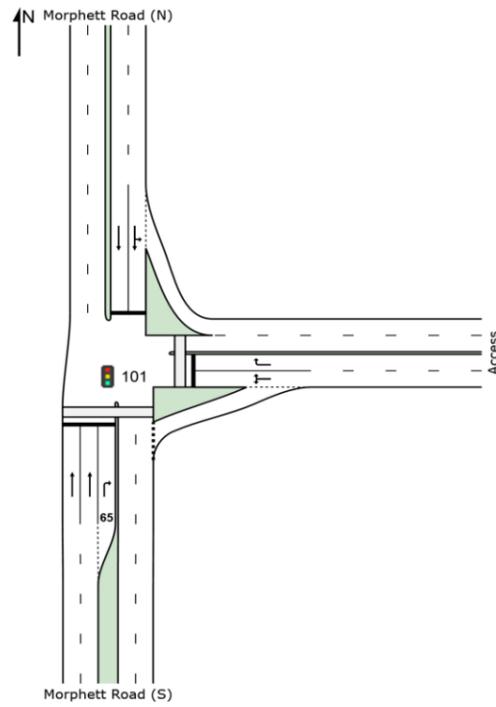
Appendix B



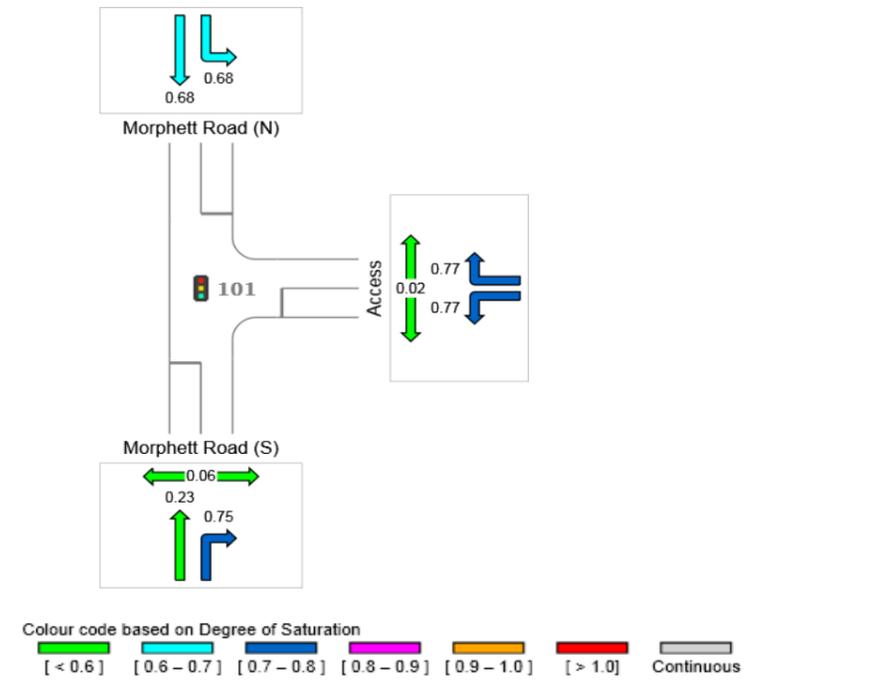
APPENDIX C

SIDRA MODELLING RESULTS FOR MORPHETT ROAD AND DIAGONAL ROAD SIGNALISED ACCESS POINTS

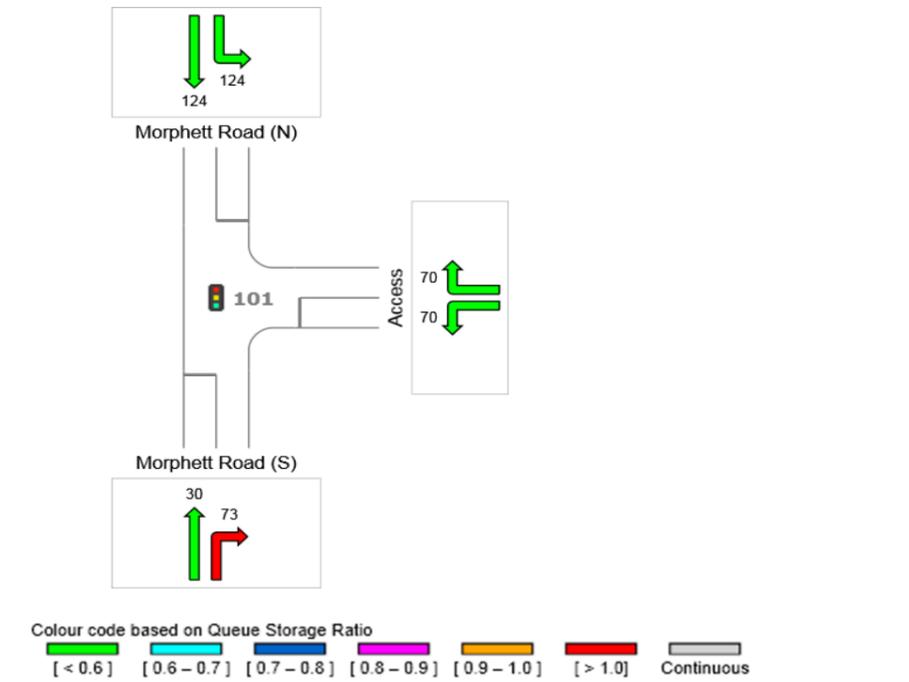
INTERSECTION LAYOUT



DEGREE OF SATURATION



95%ile QUEUE DISTANCE (metres)



PHASING SUMMARY

Phase Timing Results

Phase	A	B	C	D
Phase Change Time (sec)	0	32	50	71
Green Time (sec)	27	12	15	5
Phase Time (sec)	33	18	19	10
Phase Split	41%	23%	24%	13%



PHASING SCENARIO: USER GIVEN PHASE TIMES - SCATS

- Normal Movement
- Slip/Bypass-Lane Movement
- Stopped Movement
- Other Movement Class (MC) Running
- Mixed Running & Stopped MCs
- Other Movement Class (MC) Stopped
- Permitted/Opposed
- Opposed Slip/Bypass-Lane
- Turn On Red
- Undetected Movement
- Continuous Movement
- Phase Transition Applied

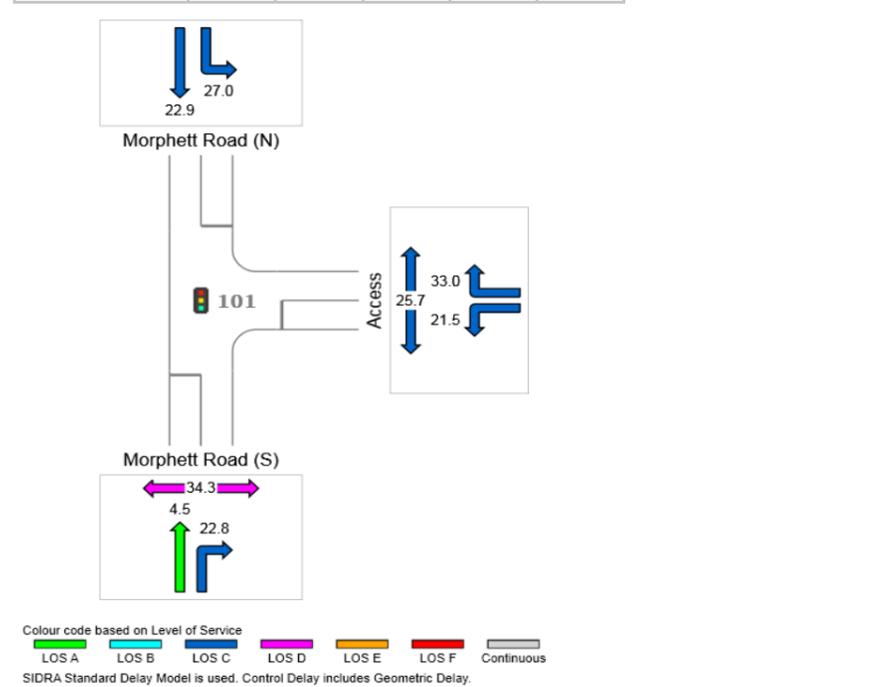
JOB NUMBER: 17-0275

PROJECT NAME: WESTFIELD MARION

DELAY (CONTROL) & LEVEL OF SERVICE

All Movement Classes

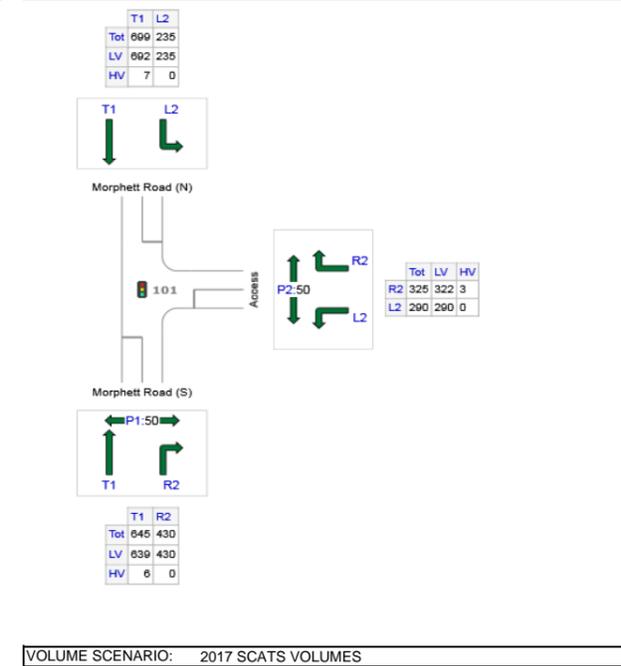
	South	East	North	Intersection
Delay (Control)	11.9	27.9	24	20.1
LOS	B	C	C	C



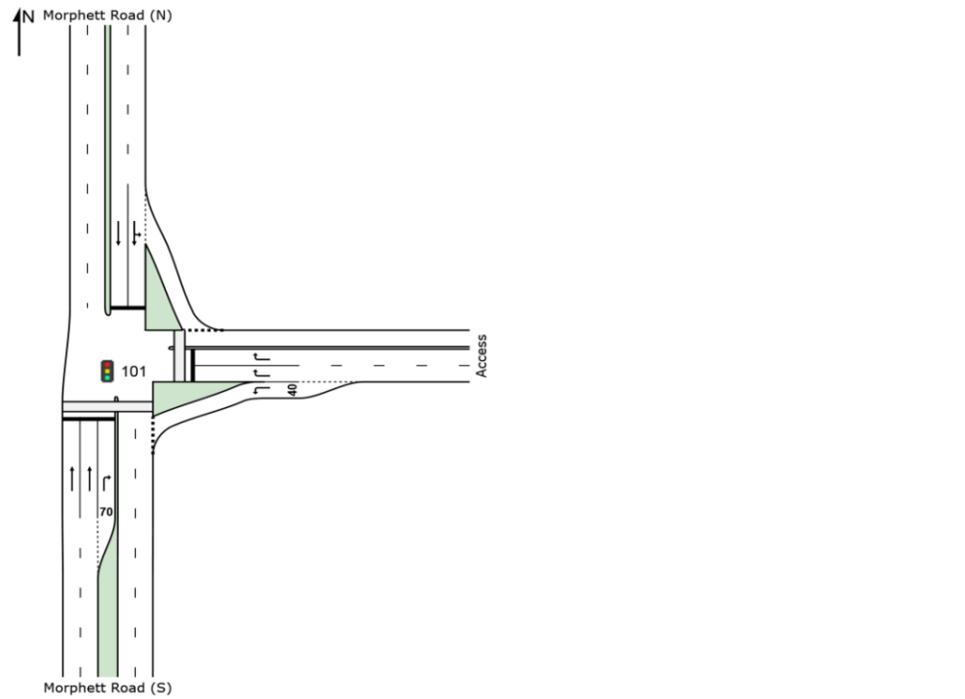
INTERSECTION: MORPHETT ROAD / WESTFIELD ACCESS

SCENARIO: EXISTING SAT PEAK

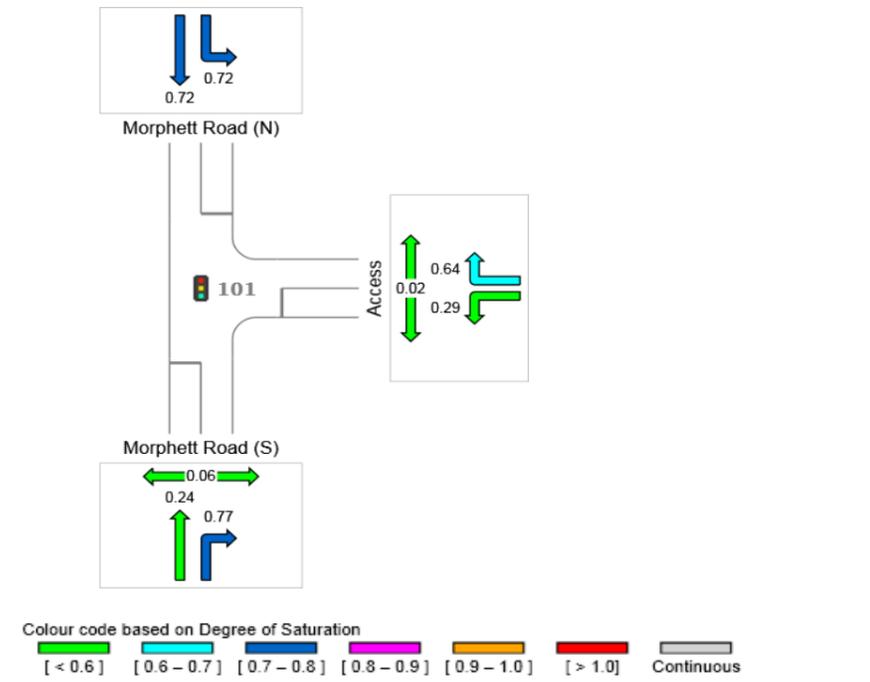
INPUT VOLUMES



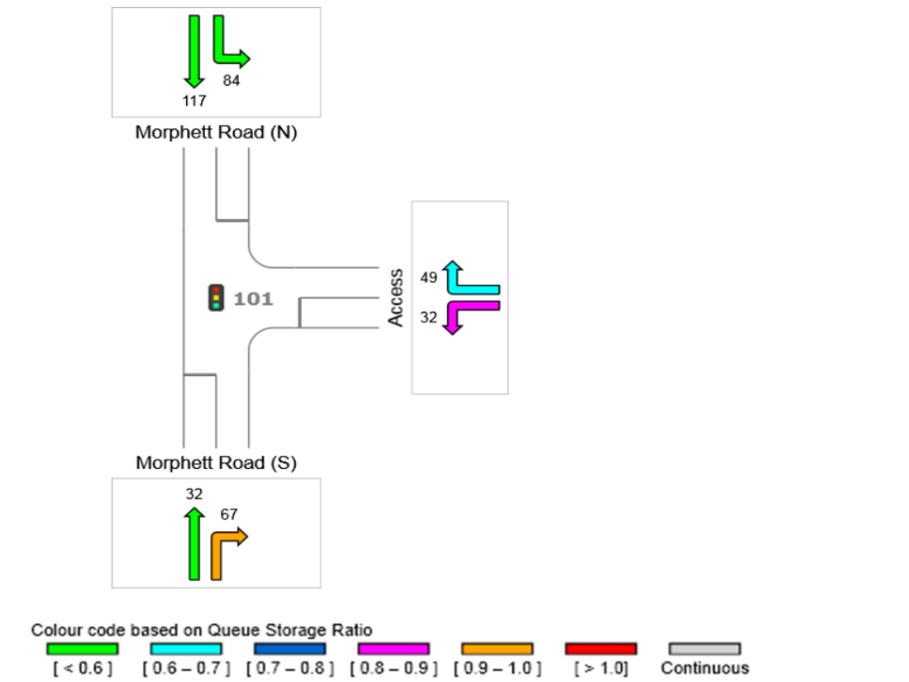
INTERSECTION LAYOUT



DEGREE OF SATURATION



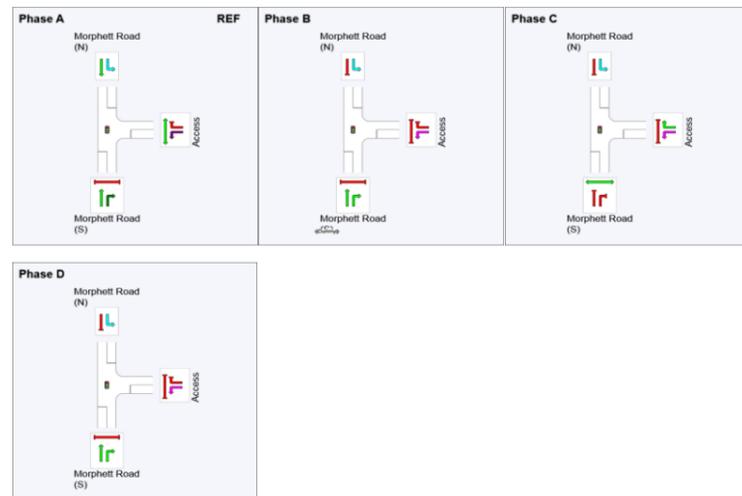
95%ile QUEUE DISTANCE (metres)



PHASING SUMMARY

Phase Timing Results

Phase	A	B	C	D
Phase Change Time (sec)	0	33	40	61
Green Time (sec)	27	1	15	15
Phase Time (sec)	33	7	19	21
Phase Split	41%	9%	24%	26%



PHASING SCENARIO: USER GIVEN PHASE TIMES - SCATS

- Normal Movement
- Slip/Bypass-Lane Movement
- Stopped Movement
- Other Movement Class (MC) Running
- Mixed Running & Stopped MCs
- Other Movement Class (MC) Stopped
- Permitted/Opposed
- Opposed Slip/Bypass-Lane
- Turn On Red
- Undetected Movement
- Continuous Movement
- Phase Transition Applied

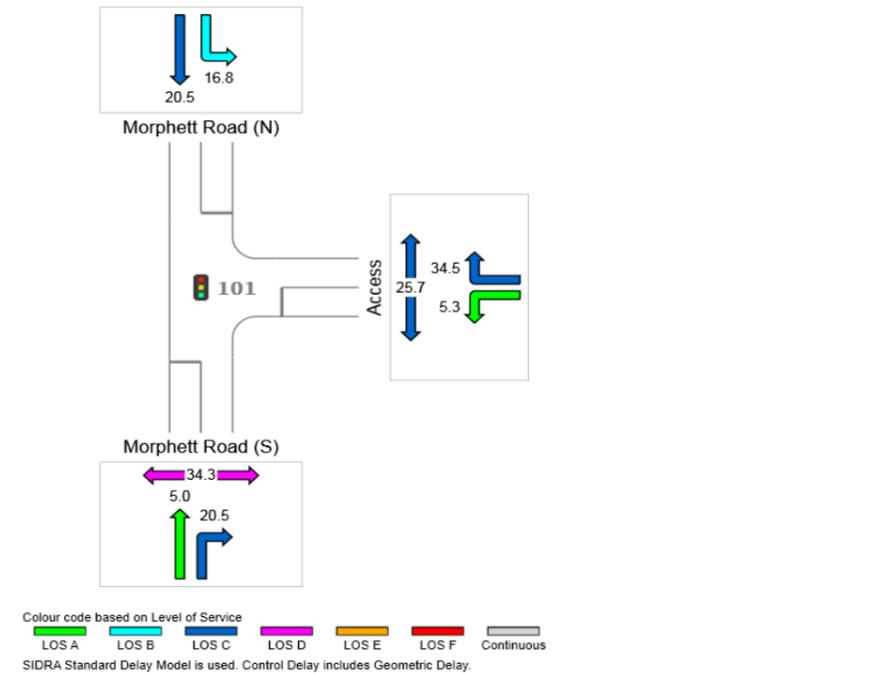
JOB NUMBER: 17-0275

PROJECT NAME: WESTFIELD MARION

DELAY (CONTROL) & LEVEL OF SERVICE

All Movement Classes

	South	East	North	Intersection
Delay (Control)	11.6	21.2	19.3	16.8
LOS	B	C	B	B

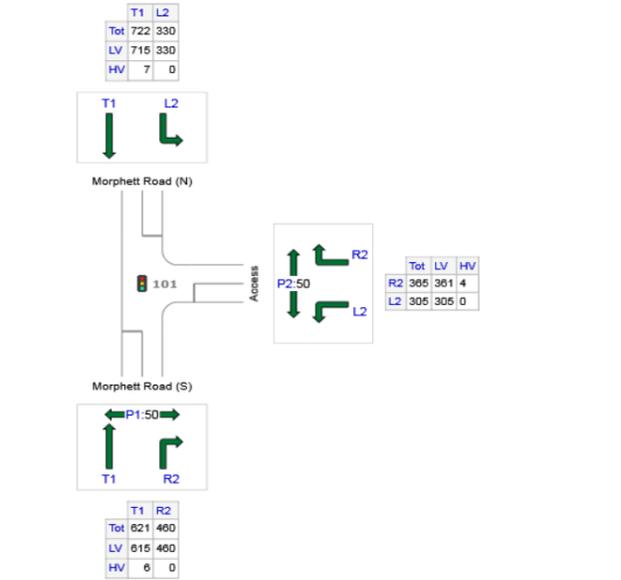


INTERSECTION: MORPHETT ROAD / WESTFIELD ACCESS

SCENARIO: SAT PEAK WITH DEVELOPMENT VOLUMES

PROPOSED LAYOUT

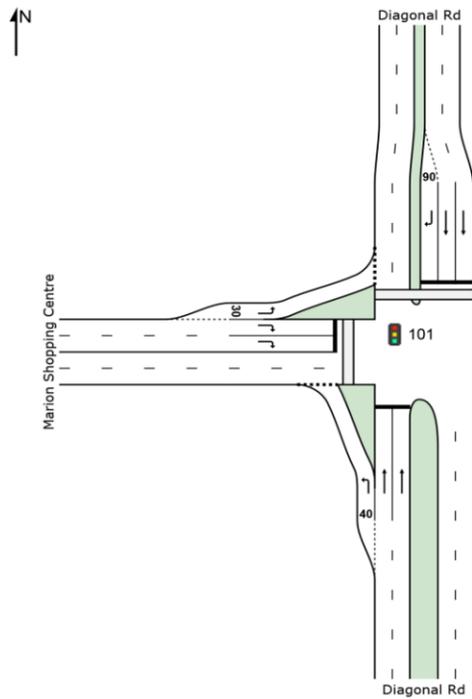
INPUT VOLUMES



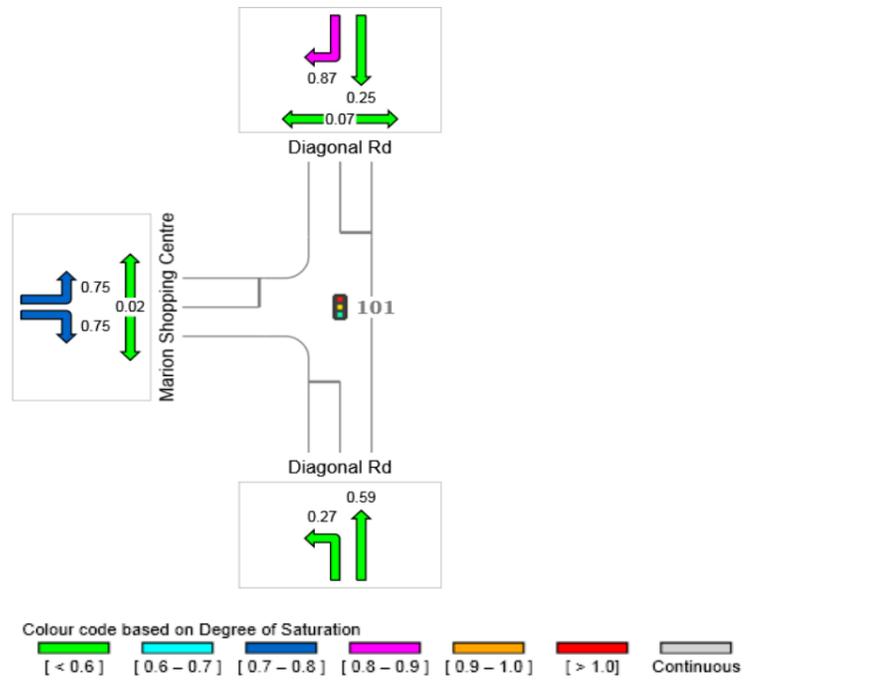
VOLUME SCENARIO: WITH DEVELOPMENT VOLUMES



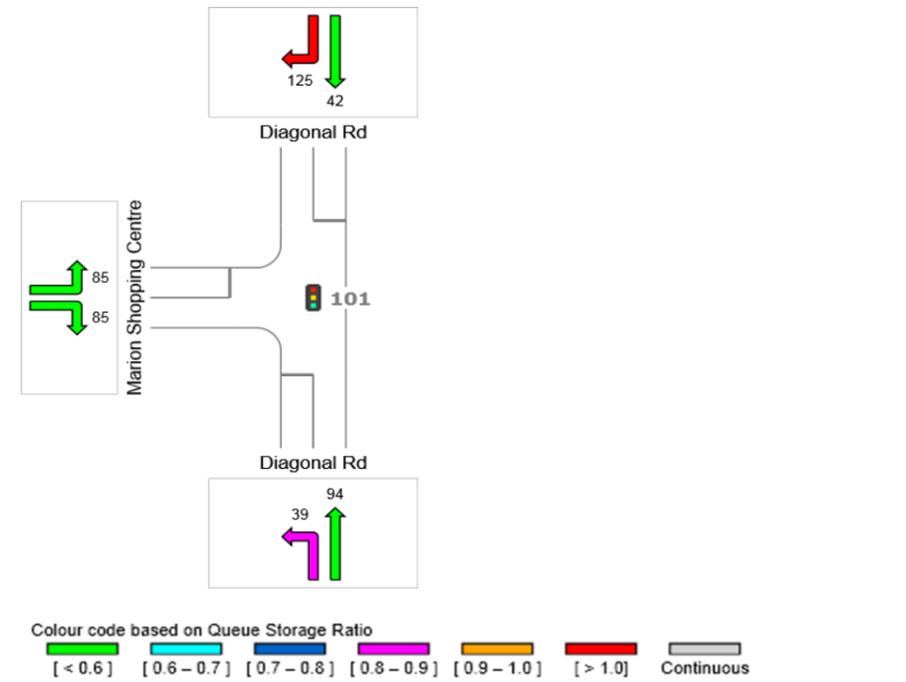
INTERSECTION LAYOUT



DEGREE OF SATURATION



95%ile QUEUE DISTANCE (metres)



PHASING SUMMARY

Phase Timing Results

Phase	A	B	C	D
Phase Change Time (sec)	0	33	60	86
Green Time (sec)	27	21	20	9
Phase Time (sec)	33	27	25	15
Phase Split	33%	27%	25%	15%



PHASING SCENARIO: USER GIVEN PHASE TIMES - SCATS

- Normal Movement
- Slip/Bypass-Lane Movement
- Stopped Movement
- Other Movement Class (MC) Running
- Mixed Running & Stopped MCs
- Other Movement Class (MC) Stopped
- Permitted/Opposed
- Opposed Slip/Bypass-Lane
- Turn On Red
- Undetected Movement
- Continuous Movement
- Phase Transition Applied

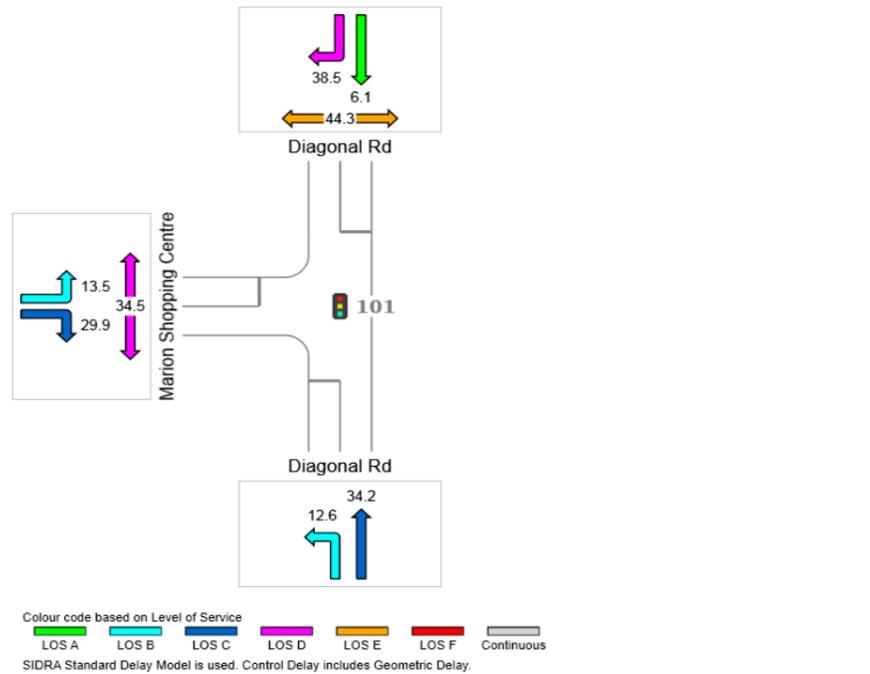
JOB NUMBER: 17-0275

PROJECT NAME: WESTFIELD MARION

DELAY (CONTROL) & LEVEL OF SERVICE

All Movement Classes

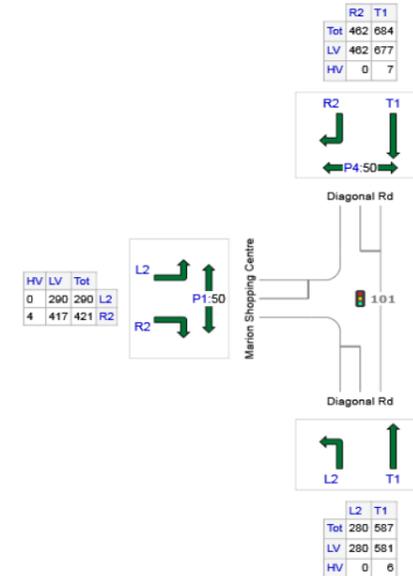
	South	North	West	Intersection
Delay (Control)	26.8	19.4	23.1	22.8
LOS	C	B	C	C



INTERSECTION: DIAGONAL ROAD / WESTFIELD ACCESS

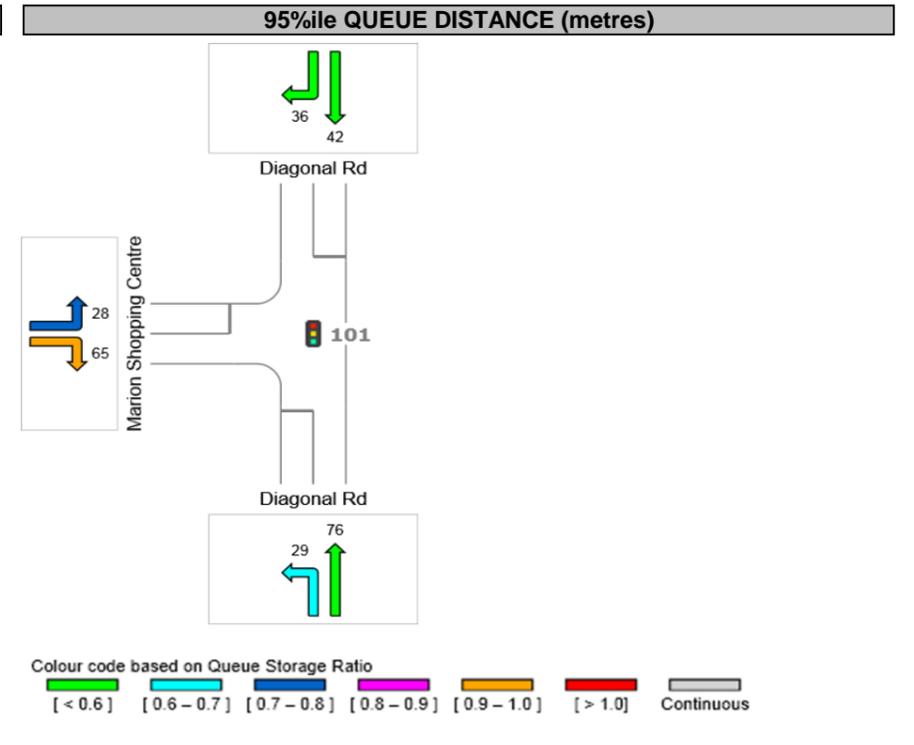
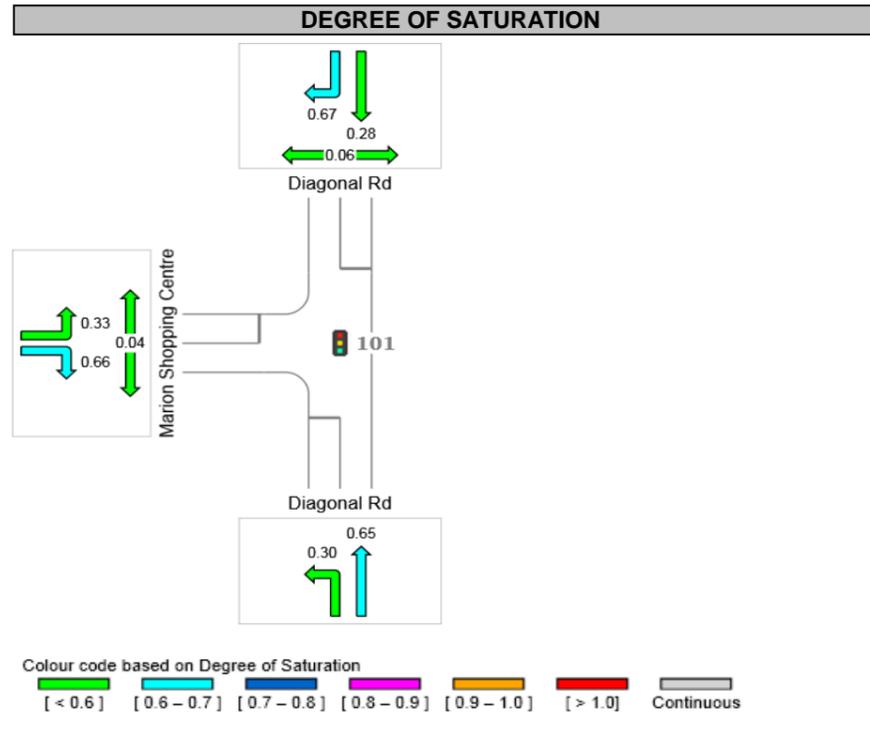
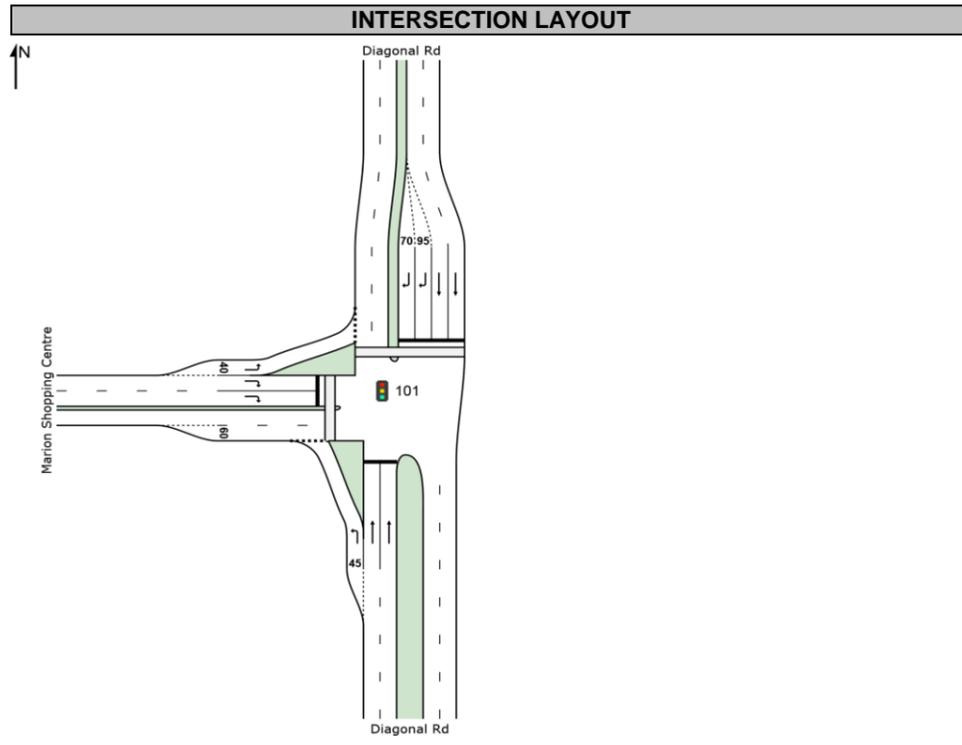
SCENARIO: EXISTING SAT PEAK

INPUT VOLUMES



VOLUME SCENARIO: 2017 SCATS VOLUME

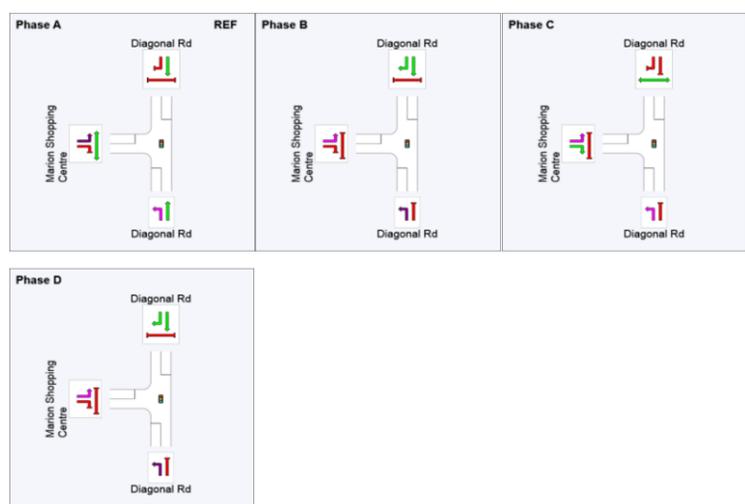




PHASING SUMMARY

Phase Timing Results

Phase	A	B	C	D
Phase Change Time (sec)	0	32	52	90
Green Time (sec)	27	14	32	5
Phase Time (sec)	33	20	37	10
Phase Split	33%	20%	37%	10%



PHASING SCENARIO: USER GIVEN CYCLE TIMES - 80 S

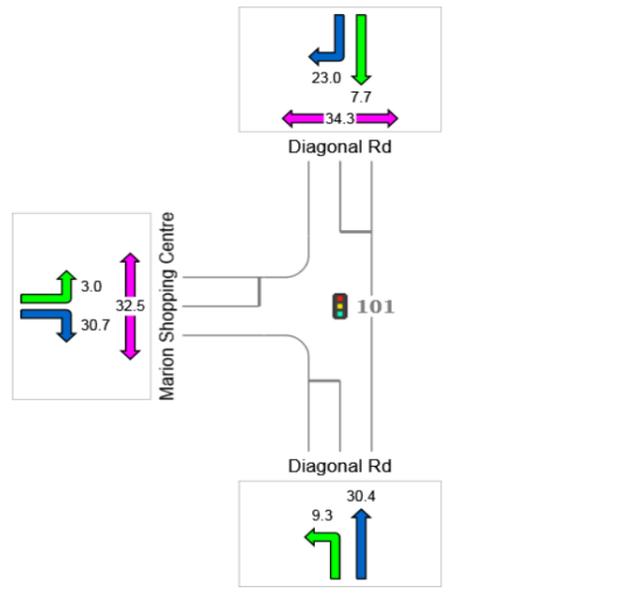
- Normal Movement
- Slip/Bypass-Lane Movement
- Stopped Movement
- Other Movement Class (MC) Running
- Mixed Running & Stopped MCs
- Other Movement Class (MC) Stopped
- Permitted/Opposed
- Opposed Slip/Bypass-Lane
- Turn On Red
- Undetected Movement
- Continuous Movement
- Phase Transition Applied

JOB NUMBER:	17-0275
PROJECT NAME:	WESTFIELD MARION

DELAY (CONTROL) & LEVEL OF SERVICE

All Movement Classes

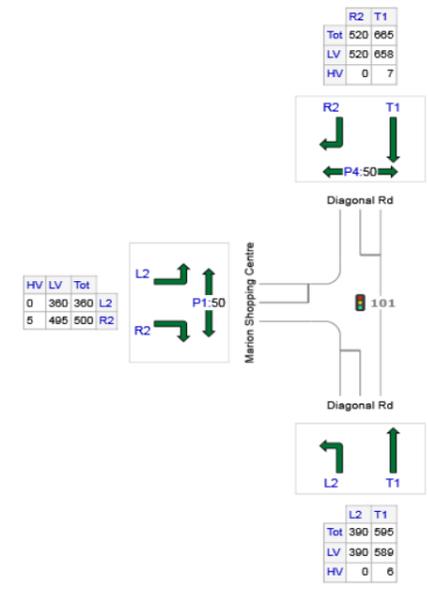
	South	North	West	Intersection
Delay (Control)	24.7	29	20.6	25.3
LOS	C	C	C	C



SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

INTERSECTION:	DIAGONAL ROAD / WESTFIELD ACCESS
SCENARIO:	EXISTING SAT PEAK PROPOSED (APPROVED) LAYOUT

INPUT VOLUMES



VOLUME SCENARIO: WITH DEVELOPMENT VOLUMES





APPENDIX D

2011 CONTROLLED ACCESS ASSESSMENT



WESTFIELD SHOPPING CENTRE, MARION CONTROLLED ACCESS EQUIPMENT TRAFFIC IMPACT STATEMENT

This Traffic Impact Statement relates to the proposal to install access control equipment at the Westfield Shopping Centre in Marion. This proposal, approved by the Development Assessment Commission (DAC) in February 2012, will include boom gates at each access point to control vehicle movements into and out of the shopping centre car park. It will also incorporate an internal nested loop which will operate during major events at the adjacent Aquatic Centre which will also be controlled with boom gates.

This traffic impact assessment, therefore, relates to the potential impact associated with the proposed boom gates and associated medians, signage and line marking. It does not relate to any other traffic control on the subject site which is either existing or, if related to the recently approved Development Application (DA), will be the subject of an application to the City of Marion.

The potential traffic impact for the proposal specifically relates to potential queues and delays associated with drivers being required to stop and pull a ticket to access the shopping centre.

Table 1 is an extract of our original report which documents the queuing assessment at each access point.

Table 1: Queuing assessment in entry lanes

Access point	No. entry lanes	Location	Proposed internal storage length on plans	Peak forecast volume (vehicles per hour)	98 th percentile queue (m)	98 th percentile queue (vehicles)
1	1	Morphett Road	30 m (5 vehicles)	120	18 m	3 vehicles
2*	1	Morphett Road	25 m (4 vehicles)	155	24 m	4 vehicles
3*	4	Morphett Road	80 m x 3 lanes 50 m x 1 lane (48 vehicles)	620	24 m x 4 lanes	4 x 4 vehicles
3A*	Nil	Morphett Road	-	-	-	-
4	Nil	Morphett Road	-	-	-	-
5	1	Morphett Road	8 m (1 vehicles)	20	6 m	1 vehicle
5A	Nil	Morphett Road	-	-	-	-

6	1	Sturt Road	48 m (8 vehicles)	70	12 m	2 vehicles
7	1	Sturt Road	24 m (4 vehicles)	70	12 m	2 vehicles
8*	2	Sturt Road	30 m x 2 lanes (10 vehicles)	270	18 m x 2 lanes	2 x 3 vehicles
9	1	Sturt Road	65 m x 2 lanes (22 vehicles)	280	18 m x 2 lanes	2 x 3 vehicles
9A	2	Sturt Road	70 m x 1 lane 45 m x 1 lane (18 vehicles)	280	12 m x 1 lane	1 x 2 vehicles 1 x 4 vehicles
10	Nil	Sturt Road	-	-	24 m x 1 lane	-
11	2	Diagonal Road	20 m x 2 lanes (6 vehicles)	260	18 m x 2 lanes	2 x 3 vehicles
12*	4	Diagonal Road	65 m x 3 lanes 30 m x 1 lane (38 vehicles)	970	45 m x 3 lanes 30 m x 1 lane	4 x 8 vehicles 1 x 4 vehicles
13	1	Diagonal Road	100 m x 1 lane	120	18m	3 vehicles
14	2	SAALC	60 m x 1 lane 15 m x 1 lane (12 vehicles)	120	12m x 2 lanes	2 x 2 vehicles
15	Nil	Internal gate	-	-	-	-
16	Nil	Internal gate	-	-	-	-
17	Nil	Internal gate	-	-	-	-

* *Signalised access points.*

It is relevant to note that the queue length identified is measured to the boundary of the subject site (not to the kerb) to ensure that the queue does not extend across the footpath. In reality, therefore, there would be additional queue storage length available before a vehicle was to extend onto the road carriageway. Access 5, for example, has a proposed storage length of 8 m to the boundary but approximately 12 m to the kerb. Accordingly, even in the unlikely event that the queue was to exceed one vehicle, a queue of two vehicles could be accommodated without extending onto the carriageway.

In addition, SIDRA analysis of the signalised intersections has been undertaken to establish the length of queue exiting the site.

The proposed boom gates will be located as follows:

- allowing for the 98th percentile queue to be wholly within the site at all unsignalised access points;
- providing for the back of queue during the peak traffic period to be outside the gates at all signalised access points; and

- to maximise queuing distance possible at all signalised entry points (within the infrastructure constraints of the site) while ensuring both the 98th percentile queue and the vehicles accessing the site during a given phase can be accommodated on-site.

In addition to the boom gate structures, the proposal incorporates raised medians (on which the boom gates will be mounted), signage and line marking. These devices will be installed in accordance with the *“Code of Technical Requirements for the Legal Use of Traffic Control Devices”* (the Code) and relevant Australian Standards. A number of signs will only be visible when the nested loop is in operation.

In terms of traffic impact, therefore, the above design standards will provide for queuing within the subject site, thus minimising any risk of queuing across the footpath or on the public road. Accordingly, there will be minimal impact on the operation of the adjacent road network.

The signage and line marking will complement the proposed boom gate structures and provide direction for drivers.

There will be increased delays to drivers accessing the shopping centre but such delays are anticipated to be off-set by the improved turnover in the car park and the subsequent reduced requirement for drivers to circulate to find a parking space.

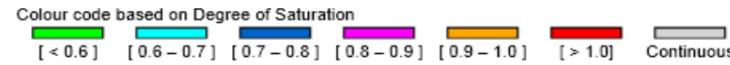
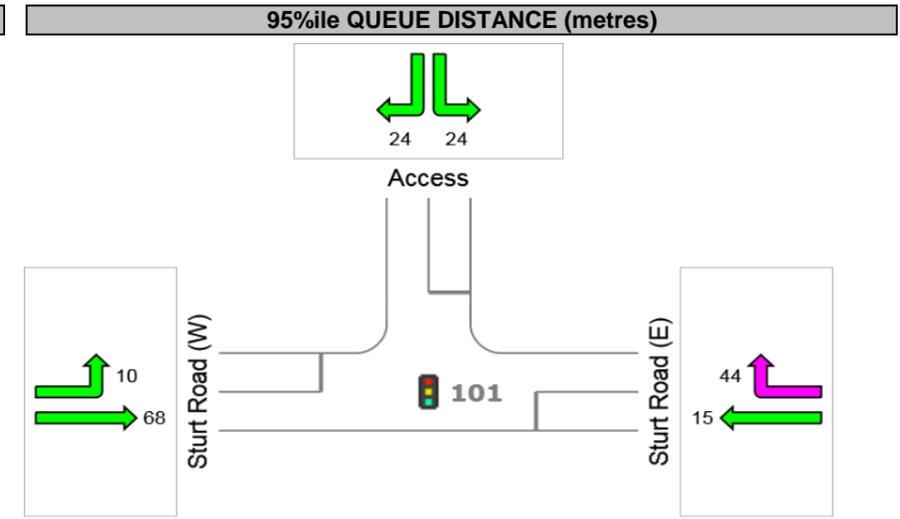
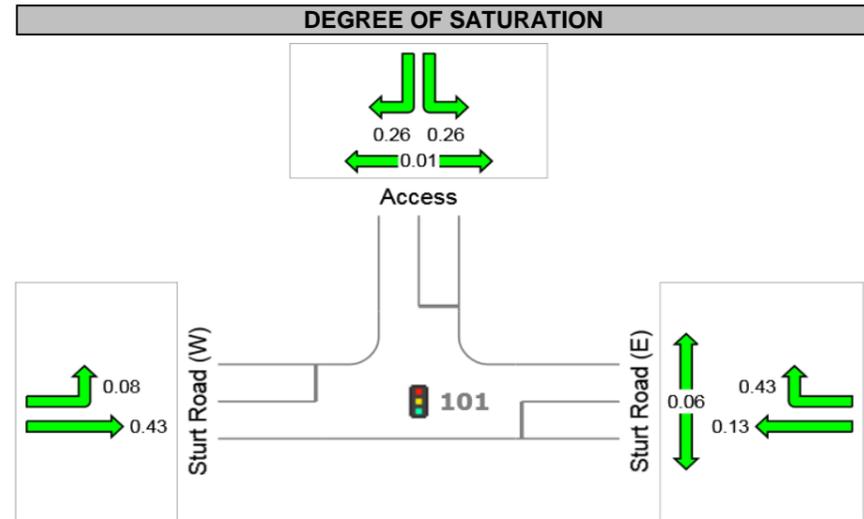
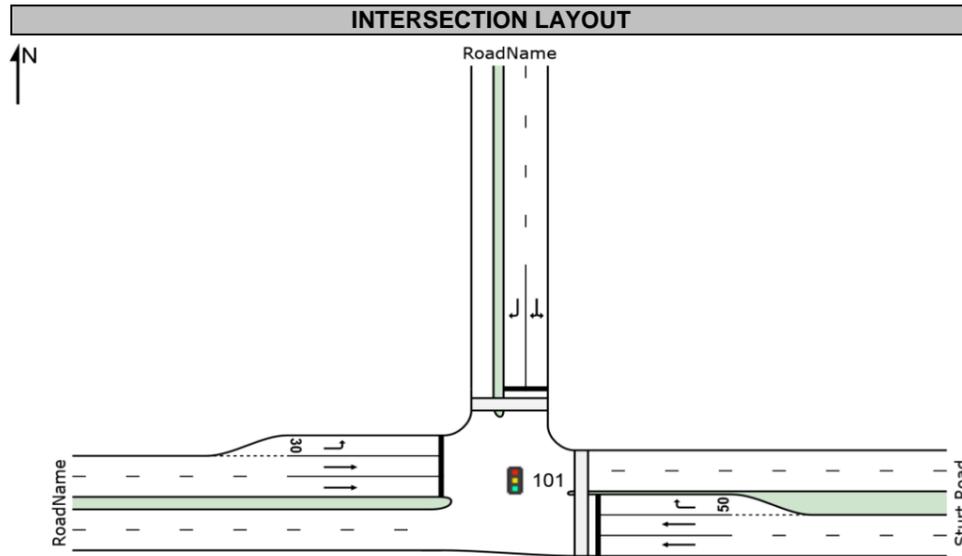
Based on the above, the design of the proposed boom gates will have minimal traffic impact, particularly as it relates to the operation of the adjacent road network.

Appendix D



APPENDIX E

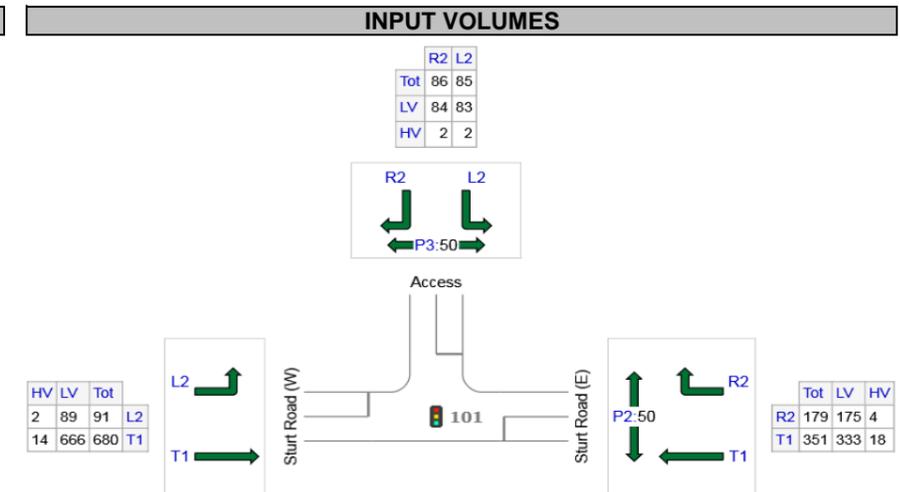
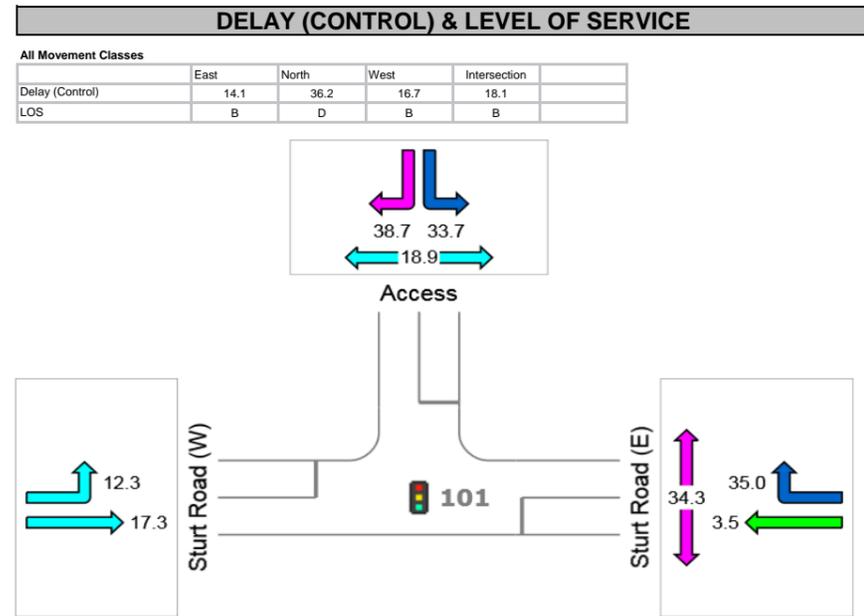
SIDRA MODELLING RESULTS FOR STURT ROAD SIGNALISED ACCESS



PHASING SUMMARY

Phase Timing Results

Phase	A	B	C
Phase Change Time (sec)	0	40	57
Green Time (sec)	34	11	18
Phase Time (sec)	40	16	24
Phase Split	50%	20%	30%



PHASING SCENARIO: USER GIVEN CYCLE TIME - 80 S

- Normal Movement
- Slip/Bypass-Lane Movement
- Stopped Movement
- Other Movement Class (MC) Running
- Mixed Running & Stopped MCs
- Other Movement Class (MC) Stopped
- Permitted/Opposed
- Opposed Slip/Bypass-Lane
- Turn On Red
- Undetected Movement
- Continuous Movement
- Phase Transition Applied

JOB NUMBER: 17-0275

PROJECT NAME: WESTFIELD MARION SHOPPING CENTRE REDEVELOPMENT

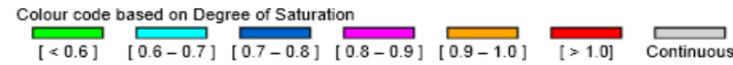
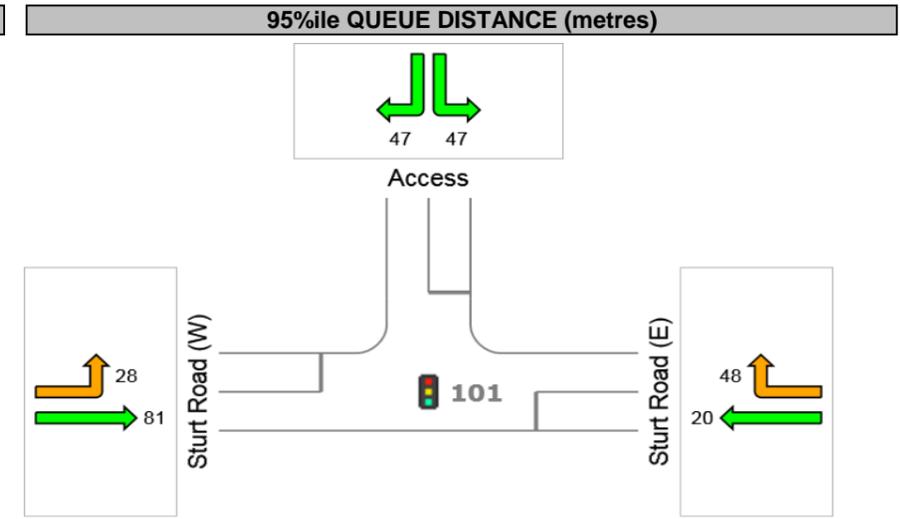
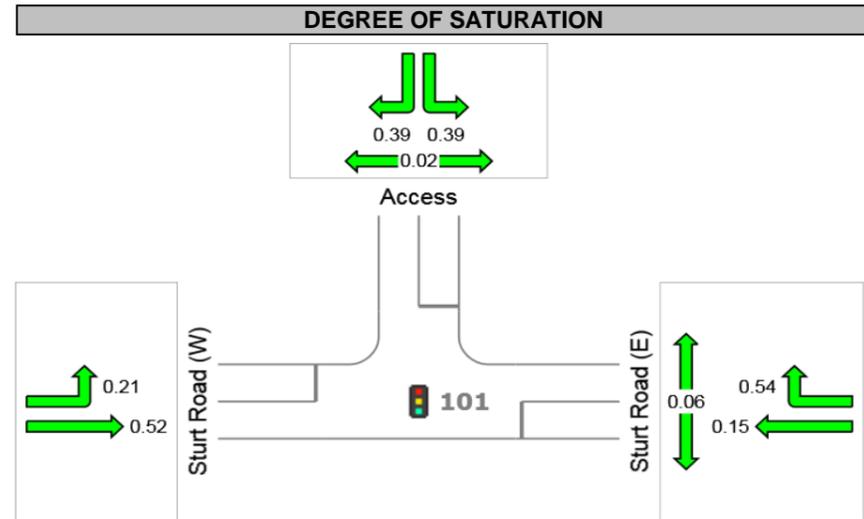
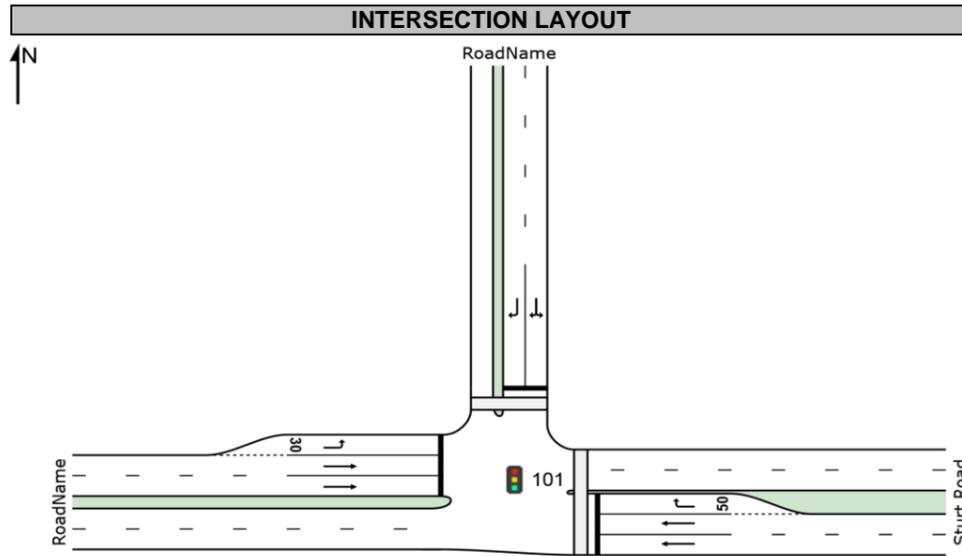
VOLUME SCENARIO:



INTERSECTION: STURT ROAD / ACCESS

SCENARIO: EXISTING DEVELOPMENT PEAK

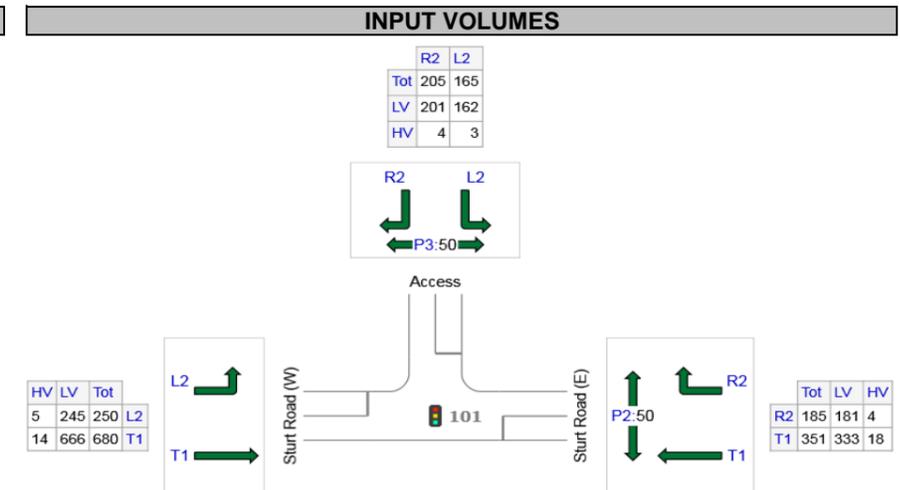
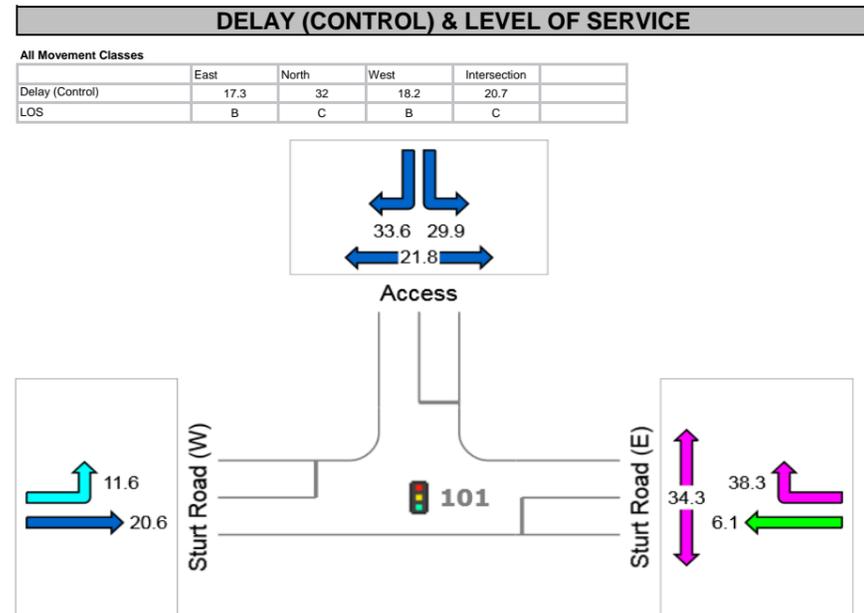




PHASING SUMMARY

Phase Timing Results

Phase	A	B	C
Phase Change Time (sec)	0	36	60
Green Time (sec)	30	18	15
Phase Time (sec)	36	23	21
Phase Split	45%	29%	26%



PHASING SCENARIO: USER GIVEN CYCLE TIME - 80 S

- Normal Movement
- Slip/Bypass-Lane Movement
- Stopped Movement
- Other Movement Class (MC) Running
- Mixed Running & Stopped MCs
- Other Movement Class (MC) Stopped
- Permitted/Opposed
- Opposed Slip/Bypass-Lane
- Turn On Red
- Undetected Movement
- Continuous Movement
- Phase Transition Applied

JOB NUMBER: 17-0275

PROJECT NAME: WESTFIELD MARION SHOPPING CENTRE REDEVELOPMENT



INTERSECTION: STURT ROAD / ACCESS

SCENARIO: PROPOSED DEVELOPMENT PEAK

VOLUME SCENARIO:

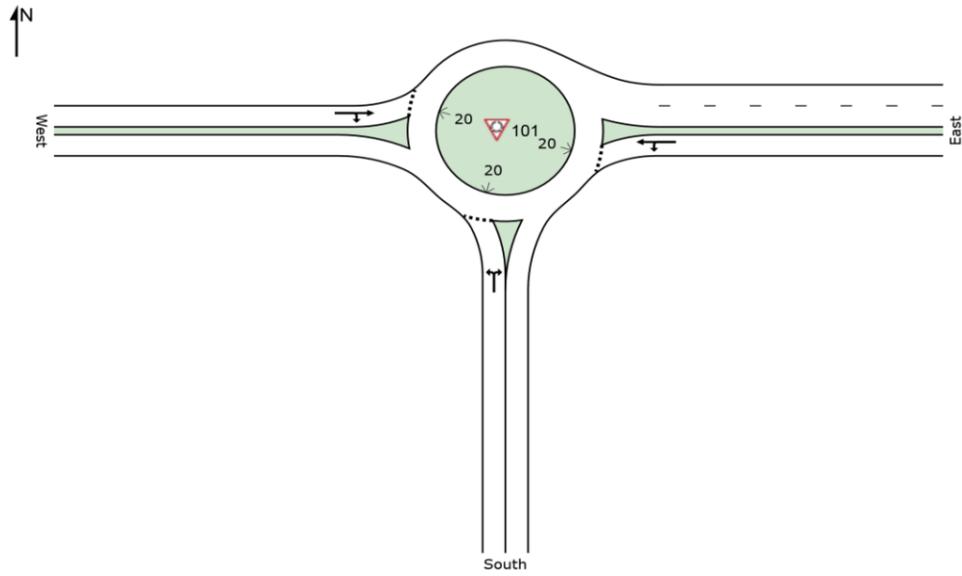




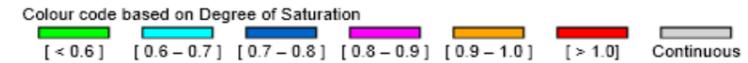
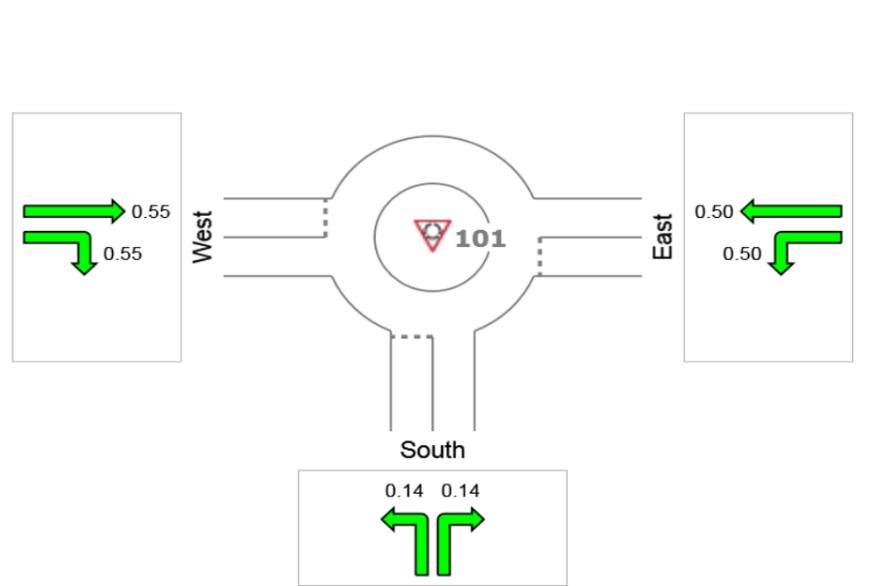
APPENDIX F

SIDRA MODELLING RESULTS FOR ROUNDABOUT

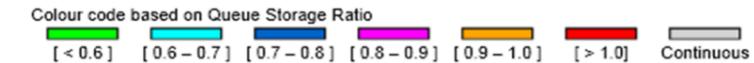
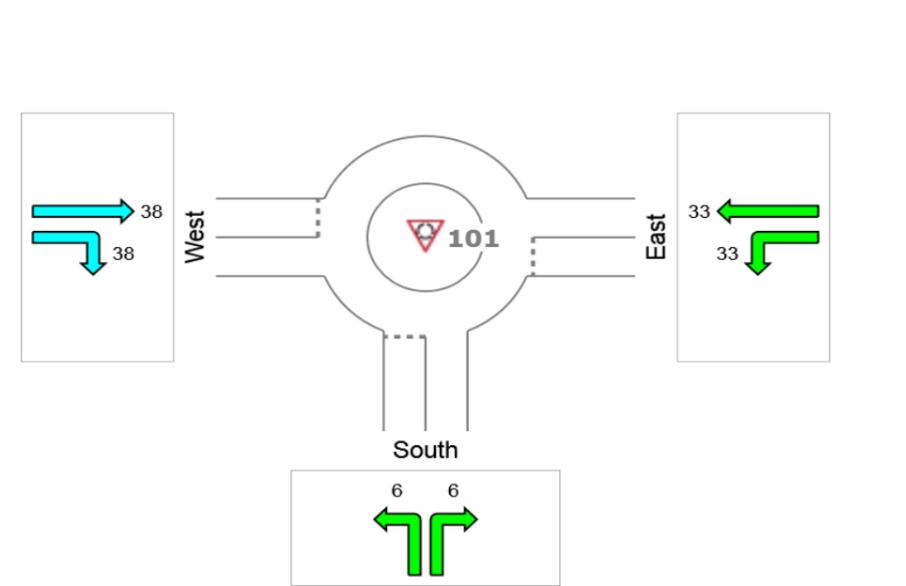
INTERSECTION LAYOUT



DEGREE OF SATURATION



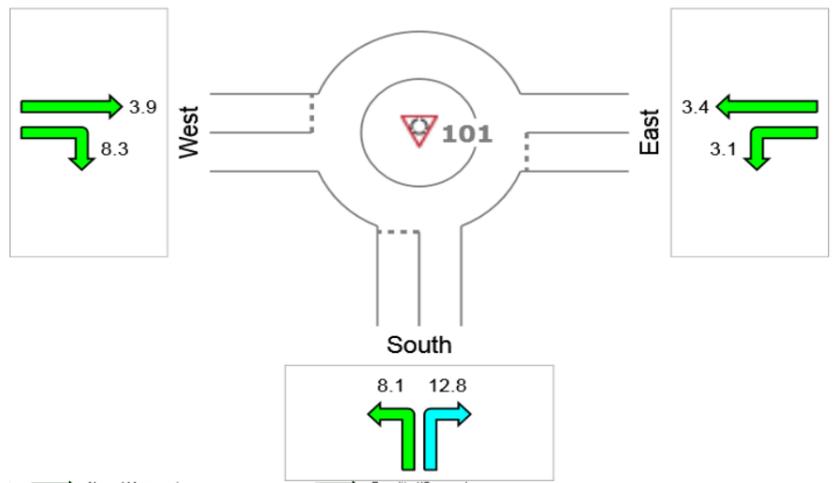
95%ile QUEUE DISTANCE (metres)



DELAY (CONTROL) & LEVEL OF SERVICE

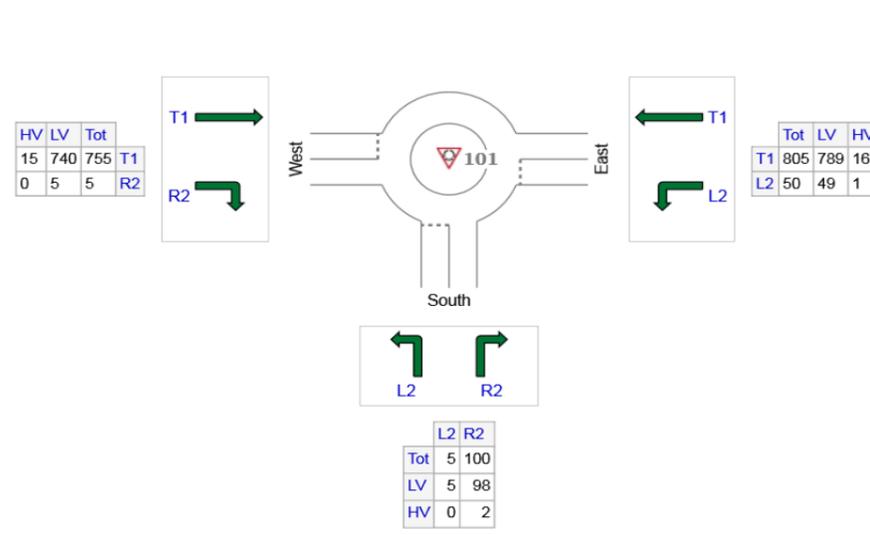
All Movement Classes

	South	East	West	Intersection
Delay (Control)	12.6	3.4	3.9	4.2
LOS	B	A	A	A



- Normal Movement
- Slip/Bypass-Lane Movement
- Stopped Movement
- Other Movement Class (MC) Running
- Mixed Running & Stopped MCs
- Other Movement Class (MC) Stopped
- Permitted/Opposed
- Opposed Slip/Bypass-Lane
- Turn On Red
- Undetected Movement
- Continuous Movement
- Phase Transition Applied

INPUT VOLUMES



VOLUME SCENARIO: _____



JOB NUMBER: 17-0275

PROJECT NAME: WESTFIELD MARION SHOPPING CENTRE REDEVELOPMENT

INTERSECTION: DIAGONAL ROAD ROUNDABOUT

SCENARIO: PROPOSED





Westfield Marion Landscape Development Application

November 2018





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02/	Site Analysis	4
03/	Design Principles	5
04/	Precinct & Entrances	6
05/	Pedestrian Corridor & Entry Plaza	11
06/	ELP	17





01/

Vision.

"To create an activated and vibrant living centre which will give patrons a unique, elevated and personalised retail, dining and leisure experience"

The Westfield Marion Concept Plan will;

- Improve entrance points and connectivity in and through the precinct.
- Provide improved amenity and opportunity for active and passive recreation
- Offer improved linkages to existing facilities
- Create community ownership of the overall vision for the precinct.



02/

Site analysis.



Legend

- Visitor Entrance
- E Direct Vehicle Entrance
- E Indirect Vehicle Entrance
- B Bus Interchange
- T Train Connection
- ↔ Main Pedestrian Circulation
- Area 1 - Level 2 Carpark
- Area 2 - Pedestrian & Vehicle Circulation
- Area 3 - Internals

Existing Site - Scale 1:2500 @ A3



03/

Design Principles.

Connectivity



- Using a consistent planting palette across the precinct to create a cohesive landscape aesthetic.
- The introduction of a 'Landscape Corridor' leading to one of the precinct's key entrance points.
- Improved signage and wayfinding to allow visitors to navigate the precinct more efficiently
- Adding amenity to circulation paths, including seating for visitors.

Greeting Space



- Creating activated spaces and play areas which encourage visitors and families to engage with the landscape and enjoy the outdoors.
- Providing sitting nodes where visitors can relax and socialise whilst enjoying the vibrant atmosphere within the precinct.

Lifestyle & Dining



- An abundant and diverse range of alfresco dining areas to encourage visitors to stay within the precinct.
- Elevated walking platform to give visitors the opportunity to view and engage with the landscape from above.
- Interactive green spaces with play structures and seating.

Green Edges



- Creating seamless integration between the proposed building extension and the proposed landscape is a key design driver for this development.
- Introduction of vertical planting elements such as green walls, cascading planting and indoor trees.
- Extensive use of climbers and planting along edges of multistorey car parking areas to soften edges.
- Increased planting at entry points to create an improved sense of arrival and focal points.



04/

Precinct & Entrances.





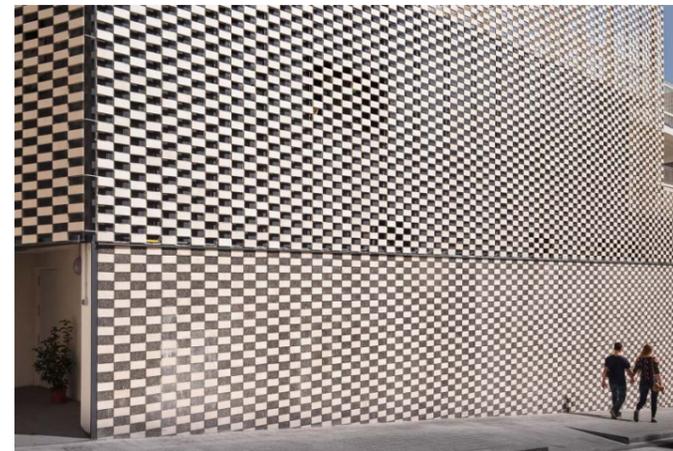
04/

Precinct & Entrances Concepts Palette.

Entrances



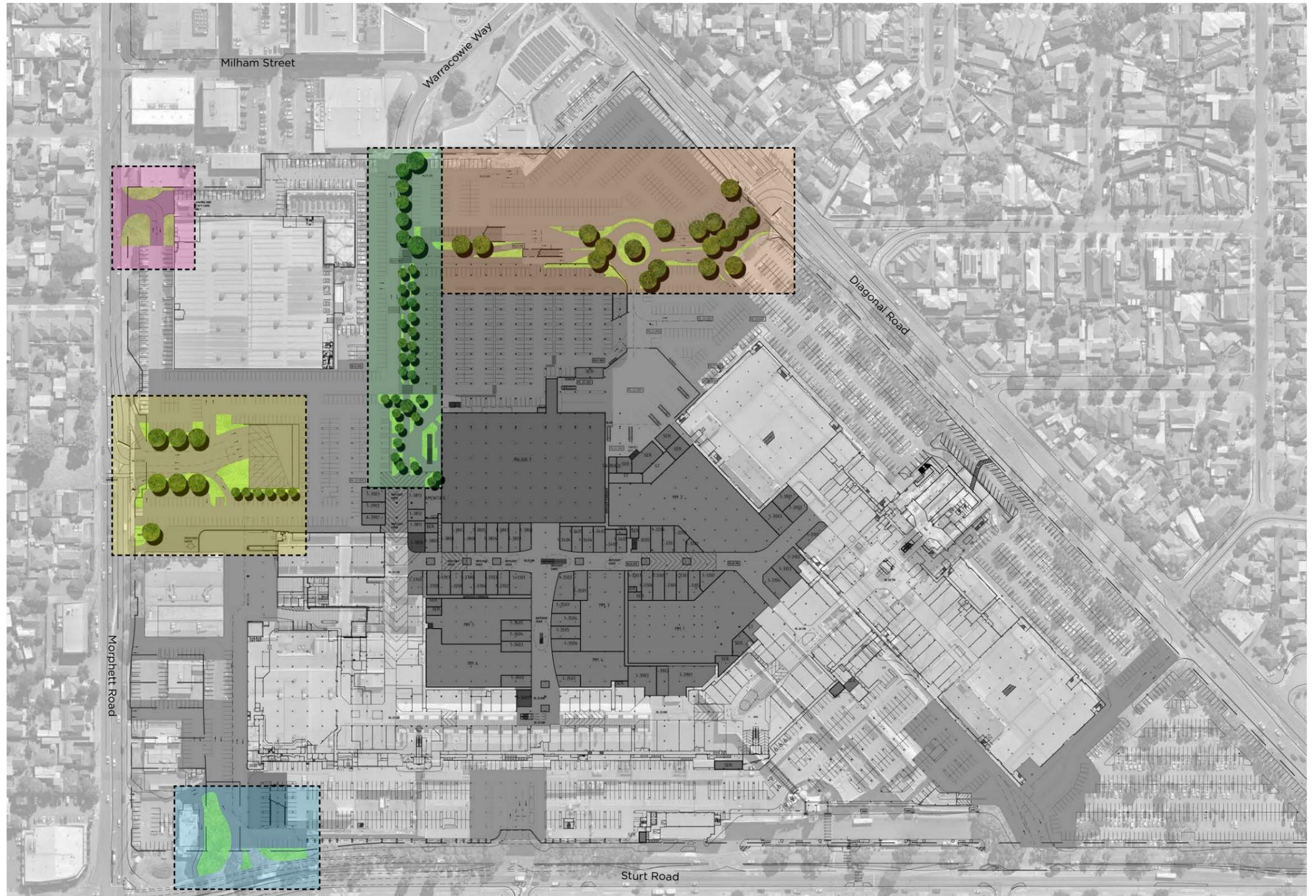
Carpark Facades & Treatments





04/

Precinct & Entrances Concept Plan.



Legend

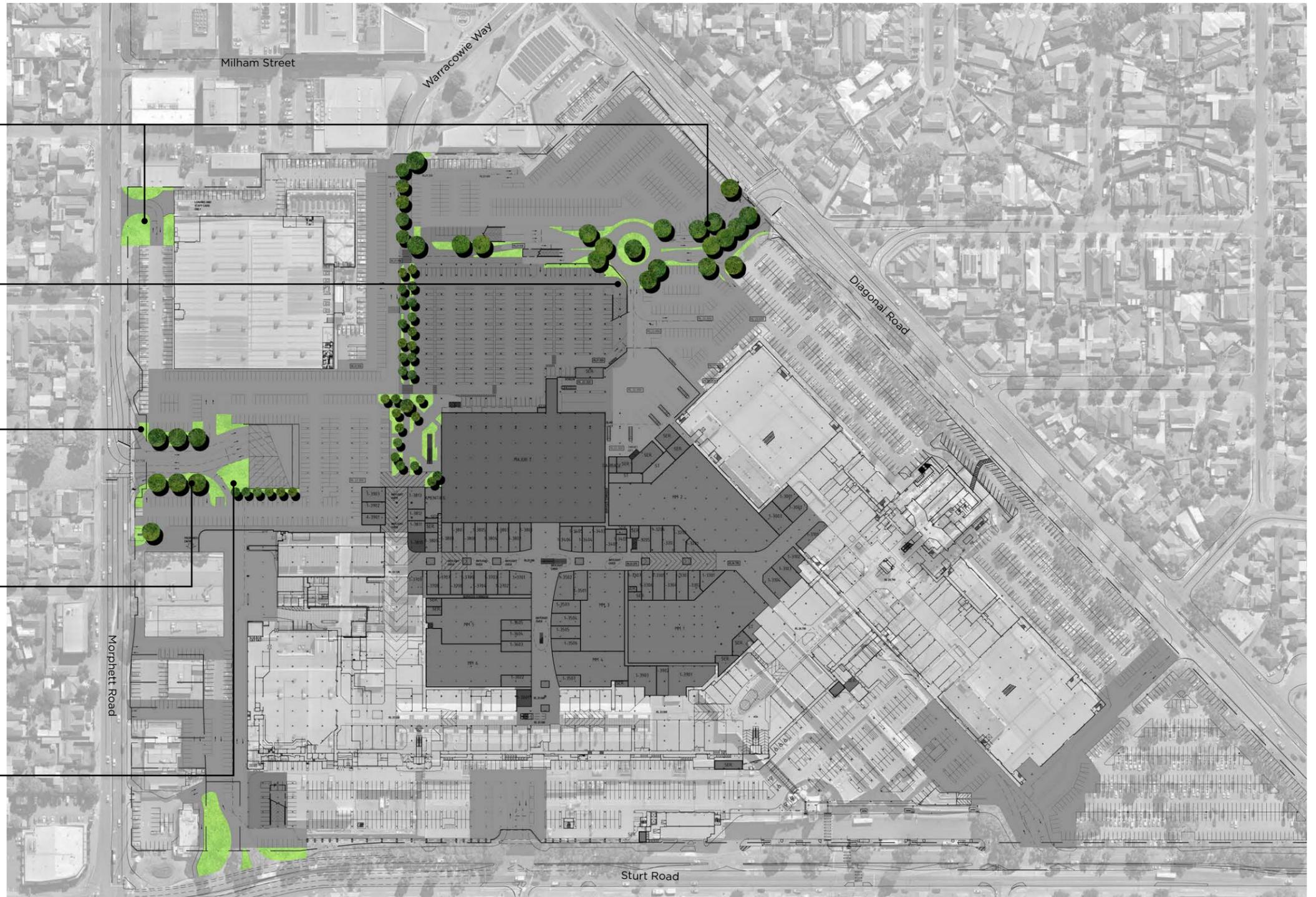
- Area A - Diagonal Road Entrance & Northern Corridor
- Area B - Pedestrian Corridor & Entry Plaza
- Area C - Morphet Road Entrance
- Area D - Morphet Road Bunnings Entrance
- Area E - Sturt Road Entry

Site Plan - Scale 1:2500 @ A3



04/

Precinct & Entrances Concept Plan.



Note:
Example images are indicative only.

Site Plan - Scale 1:2500 @ A3 



04/

Multi-Storey Carpark Planting.



Acer negundo 'Sensation'
Sensation Maple



Platanus orientalis
Plane Tree



Acer freemanii 'Autumn Blaze'
Lipstick Maple



Howea forsteriana
Kentia Palm

Note:
All planting selections shown are indicative only.



Trachelospermum jasminoides
Star Jasmine

Existing Ramp

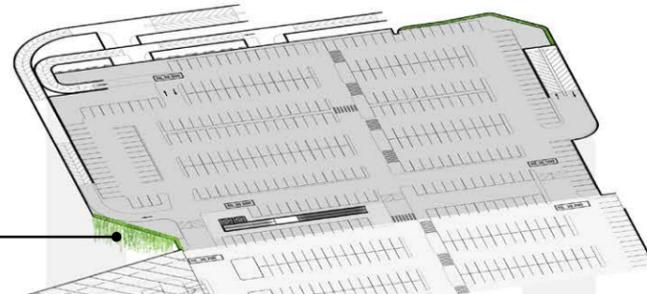
Level 2

Level 1MB

Level 1MA

Ground Level

Relocated Phoenix canariensis
(Canary Island Date Palm)



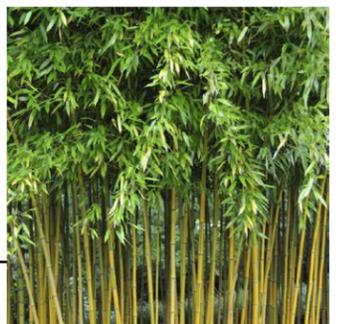
Corymbia maculata
Spotted Gum



Phoenix canariensis (relocated)
Canary Island Date Palm



Rhapis excelsa
Lady Palm



Phyllostachys aurea 'Koi'
Koi Bamboo



05/

Pedestrian Corridor & Entry Plaza.





05/

Pedestrian Corridor & Entry Plaza Concepts Palette.

Pedestrian Corridor



Undercover Corridor



Entry Plaza





05/

Pedestrian Corridor & Entry Plaza Concept Plan.



Pedestrian Corridor & Entry Plaza Plan
Scale 1:500 @ A3



Note:
Example images are indicative only.



05/ Pedestrian Corridor & Entry Plaza Planting.



Pedestrian Corridor & Entry Plaza Plan
Scale 1:500 @ A3



Acer freemanii 'Autumn Blaze'
Lipstick Maple



Platanus orientalis
Plane Tree



Acer negundo 'Sensation'
Sensation Maple



Clivia miniata
Clivia



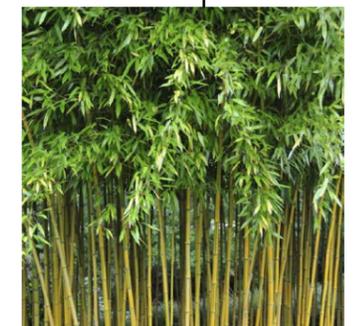
Rhaps excelsa
Lady Palm



Howea forsteriana
Kentia Palm



Phoenix canariensis (relocated)
Canary Island Date Palm



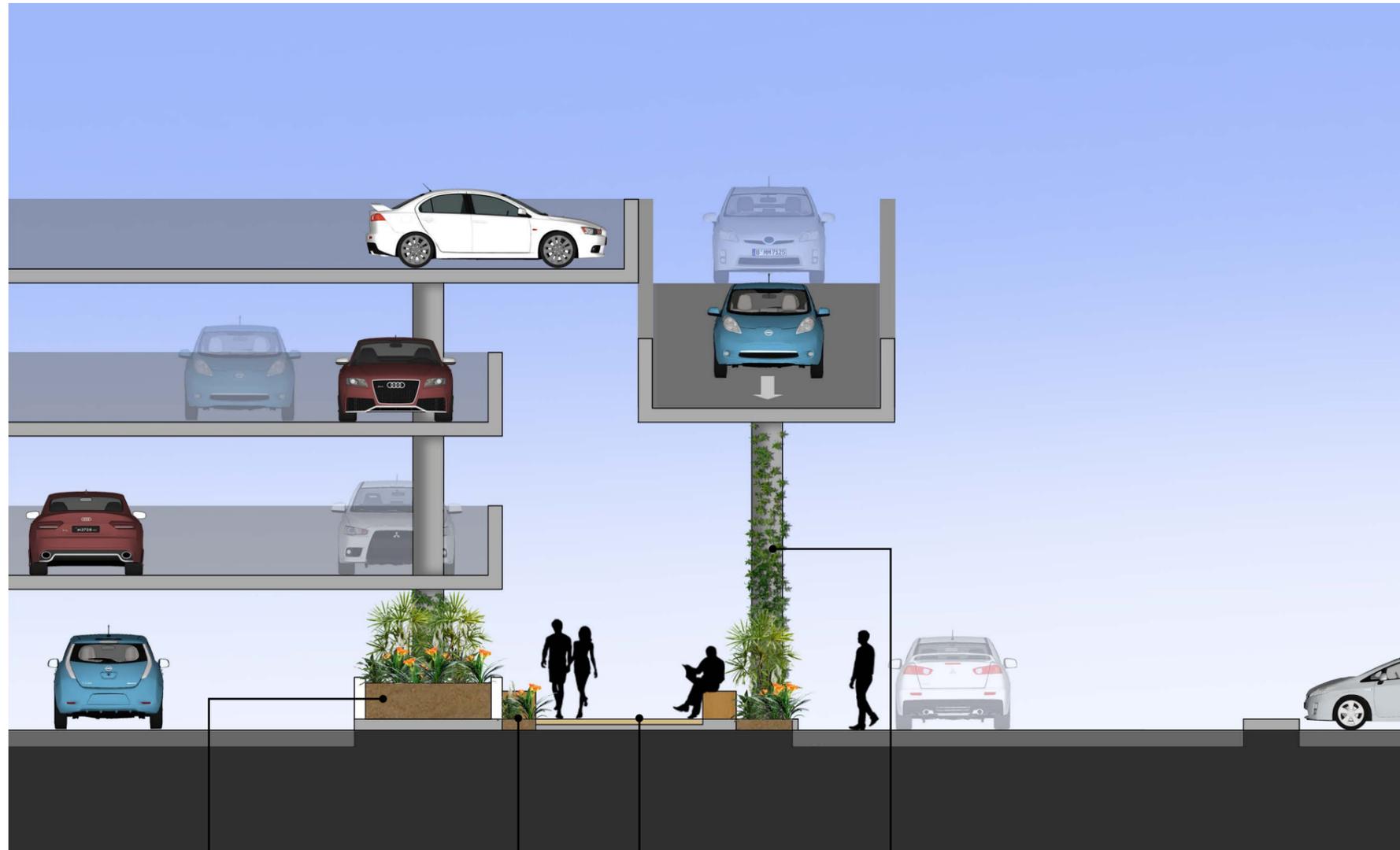
Phyllostachys aurea 'Koi'
Koi Bamboo

Note:
All planting selections shown are indicative only.



05/

Pedestrian Corridor & Entry Plaza Section.



Pedestrian Corridor
Section A-A
Scale 1:100 @ A3



Note:
Example images are indicative only.



05/ Pedestrian Corridor & Entry Plaza Elevation.



Pedestrian Corridor & Entry Plaza West Elevation
Scale 1:500 @ A3



Pedestrian Corridor & Entry Plaza North Elevation
Scale 1:500 @ A3



06/

ELP Concepts Palette.

Arrival & Drop-Off



Landscape



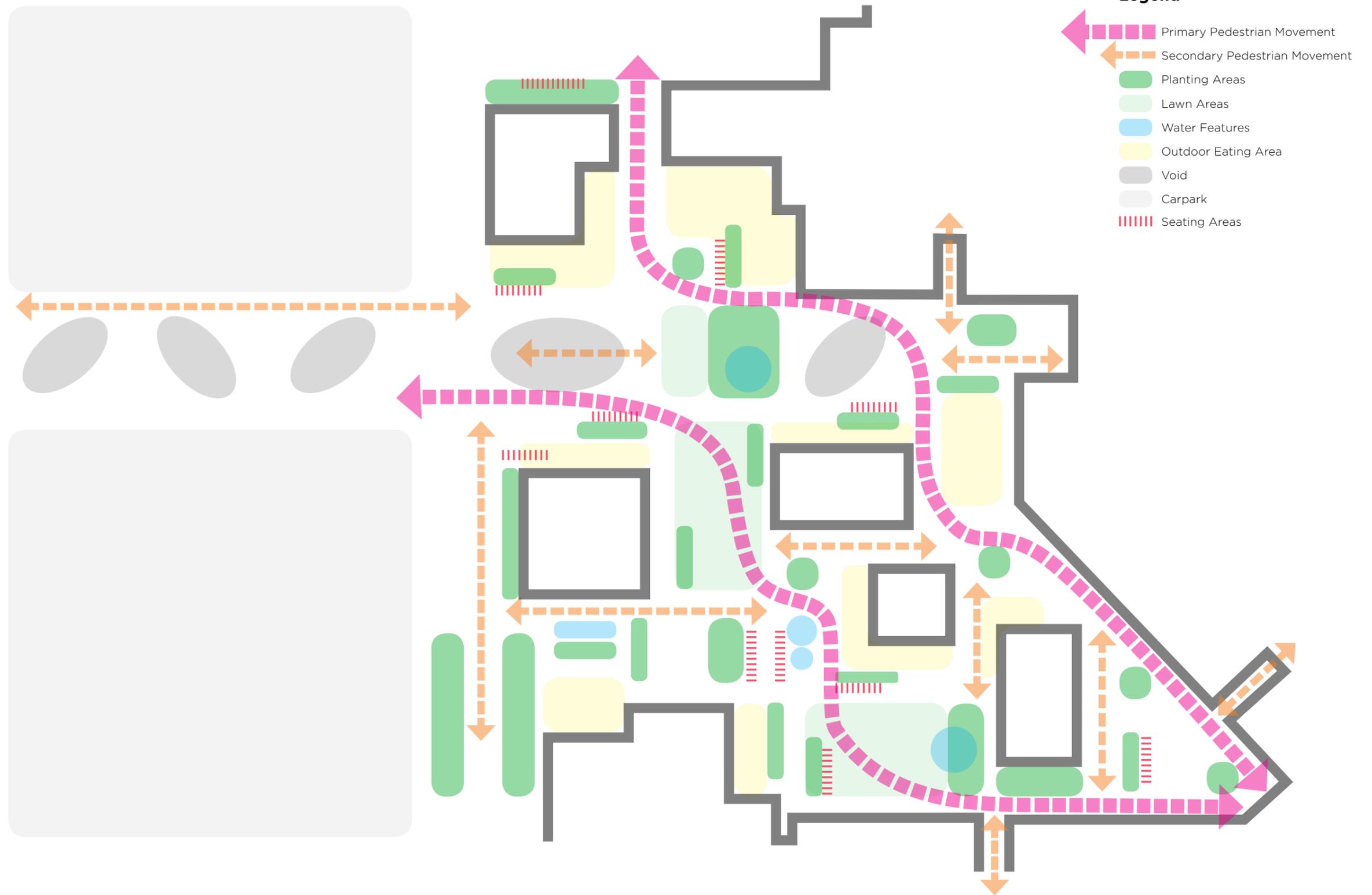
Experience





06/

ELP Movement Plan.





06/

ELP Concept.



Note:
Example images are indicative only.

ELP Plan - Scale 1:500 @ A3 



06/

ELP Planting.



Liriope muscari
Lily Turf



Trachelospermum jasminoides
Star Jasmine



Westringia fruticosa 'Grey Box'
Grey Box



Buxus microphylla 'Japonica'
Japanses Box

Note:
All planting selections shown are indicative only.



Cupaniopsis anacardioides
Tuckeroo



Lagerstroemia indica 'Natchez'
Natchez



Rhaps excelsa
Lady Palm

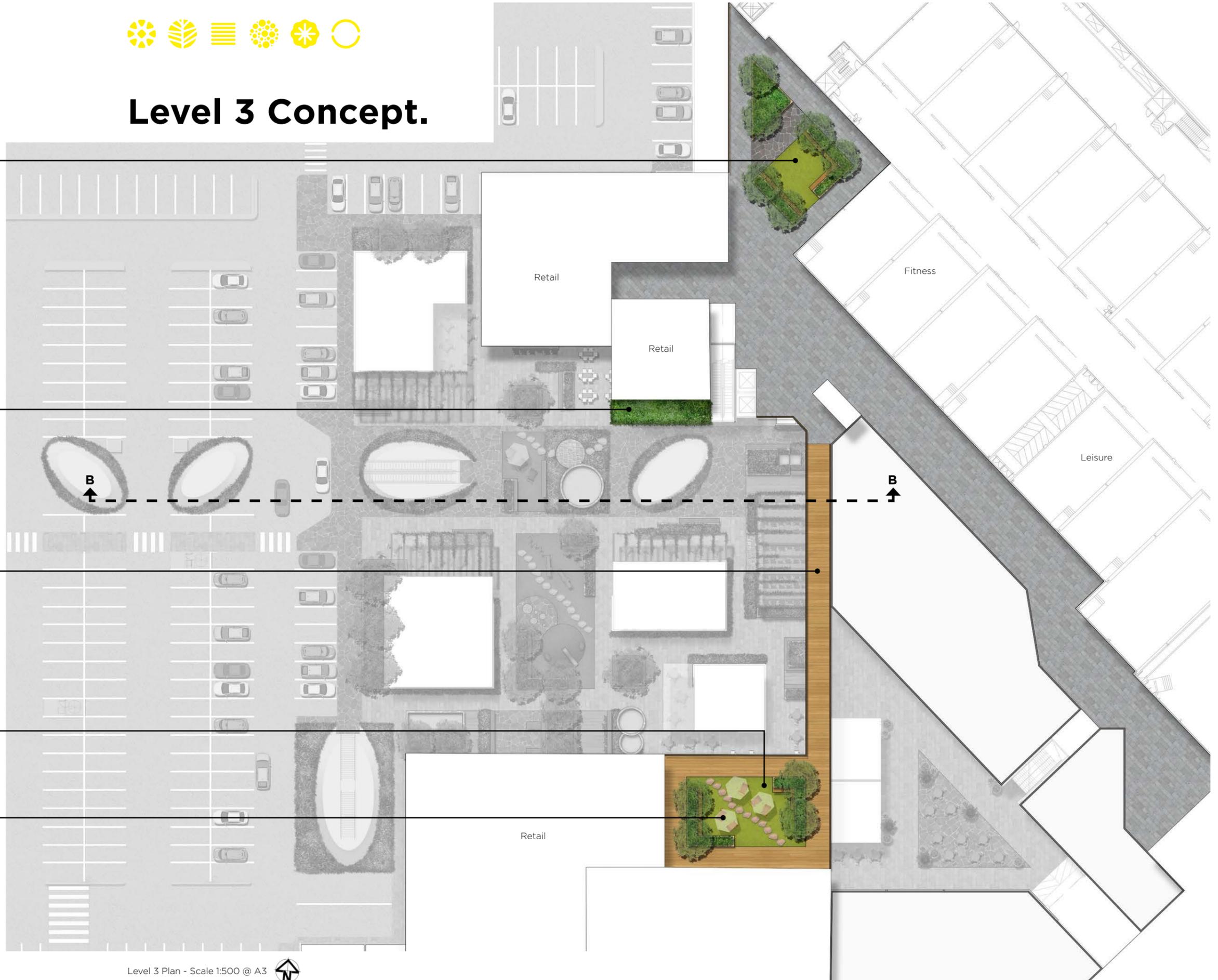
ELP Planting Plan - Scale 1:500 @ A3





06/

Level 3 Concept.



Note: Example images are indicative only.

Level 3 Plan - Scale 1:500 @ A3



06/

ELP Concept Section.



ELP Section B-B
Scale 1:400 @ A3



Note:
Example images are indicative only.



Scentre Group Westfield Marion Landscape Development Application

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arborman®
tree solutions
PROFESSIONALS IN ARBORICULTURE

Preliminary Tree Assessment

Site: Westfield Shopping Centre at Marion

Date: Friday, 16 November 2018
ATS5170-WestMarionPTA

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Appendix B - Tree Assessment Findings	
Appendix C - Mapping	
Appendix D - Tree Assessment Summary	

Report Reference Number: ATS5170-WestMarionPTA

Report prepared for
Richard Pooley, Project Design Manager, Scentre Group

Author

Jason Williams, Consulting Arborist, Arborman Tree Solutions Pty Ltd

Brief

Arborman Tree Solutions was engaged to undertake a Preliminary Tree Assessment at the site location known as the Westfield Shopping Centre at Marion. The purpose of a Preliminary Tree Assessment is to evaluate tree retention suitability in a future development through the use of a Tree Retention Rating system.

In accordance with section 2.2 of the Australian Standard 4970-2009 *Protection of trees on development sites* (AS4970-2009) (2.2) the following information is provided:

- Identification of the species of each tree and assessment of their health and structure.
- Identification of the Legislative Status of trees as defined within the *Development Act 1993* and the local development plan.
- Tree Retention Rating for each tree. The Tree Retention Rating has been applied to all trees regardless of legislative status.
- The identification of the Tree Protection Zone (TPZ) for each tree.

Documents and Information Provided

The following information was provided for the preparation of this assessment

- Aerial image

Executive Summary

Arborman Tree Solutions undertook a Preliminary Tree Assessment of all trees on the site which are Regulated or Significant under the *Development Act 1993*. The purpose of this assessment is to identify trees suitable for retention within a future development through the use of a Tree Retention Rating system.

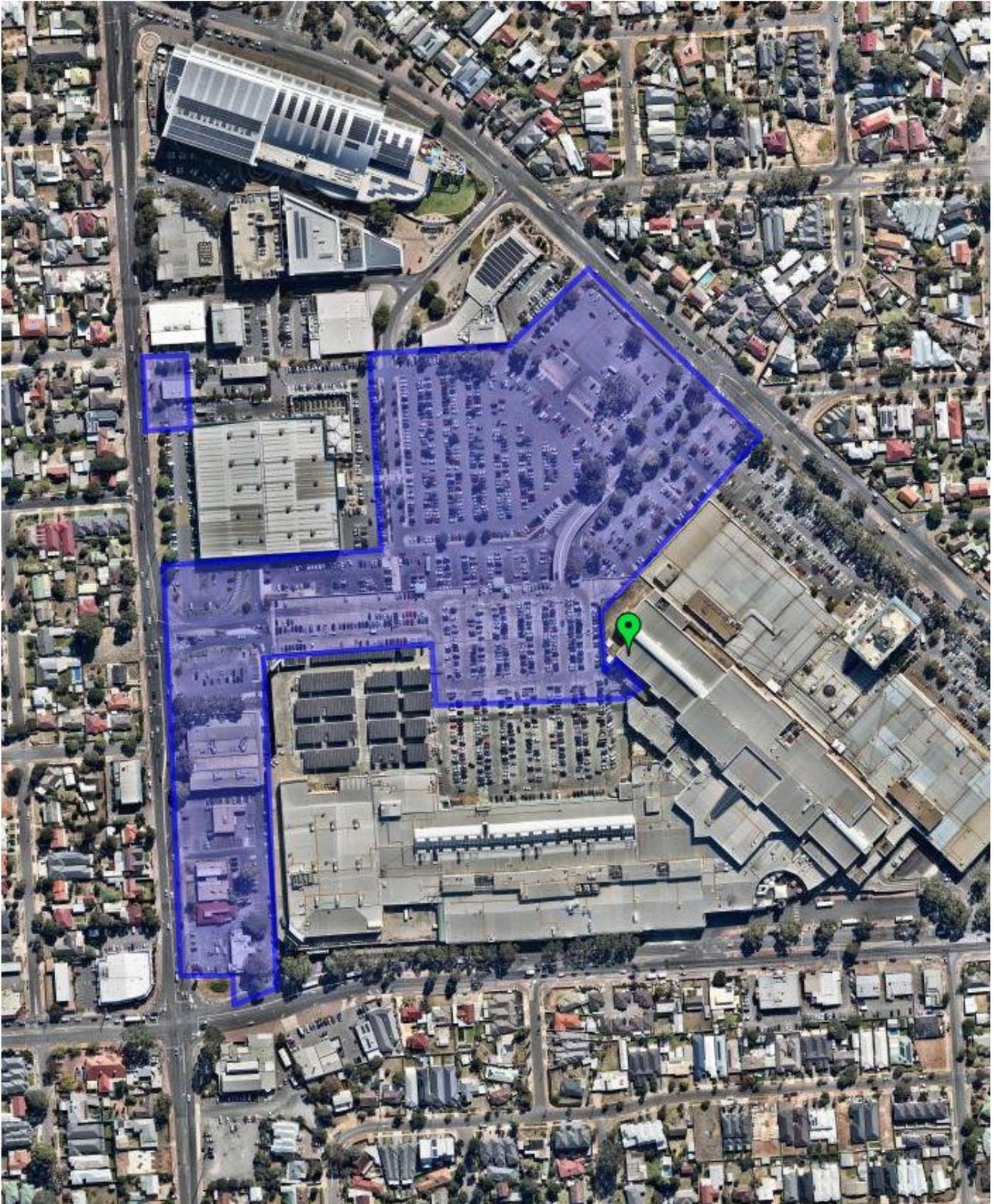
A total of 13 trees were assessed, with 12 identified as a Regulated Trees, and one tree (Tree 12) identified as an Exempt species as defined under the *Development Act 1993*. Of the trees assessed, 12 trees have been identified as suitable for retention while one tree was identified that does not warrant development constraint, alternative designs or tree-friendly construction methodologies.

This assessment identifies:

1. Tree 12 is exempt from legislative control; therefore, its removal, if required, does not require a development application.
2. One tree (Tree 2) is a Regulated Tree with a Low Retention Rating, indicating that it should be removed irrespective of any development.
3. There are 10 trees which are Regulated Tree with a Moderate Retention Rating indicating they should be considered for retention in a future development. Their removal may be approved if it can be demonstrated that they are restricting an otherwise reasonable and expected development and alternative design solutions are not available.
4. Tree 8 is a Regulated Tree with a High Retention Rating and it should be considered for retention in a future development. High Retention Rated trees will in almost all cases achieve one of more the Principles of Development Control in the *Development Act 1993* that indicates their protection is required.
5. Any Regulated Trees require written Development Approval prior to any tree damaging activity occurring. This includes activities within the TPZ, tree removal and may include pruning.
6. A Project Arborist should be appointed to assist in the design around trees to be retained; development impacts and tree protection requirements are to be included in a Development Impact Report and a Tree Protection Plan as identified in Australian Standard AS 4970 2009 *Protection of trees on development sites* (AS4970-2009).

Site Location

Figure 1: Survey site location - Westfield Shopping Centre at Marion



Methodology

A site inspection was undertaken on Wednesday, 8 August 2018. Trees were mapped using a Trimble Geo7X handheld and assigned a unique tree number. Individual tree findings were recorded using the Tree Assessment Form (TAF©). Tree Health Indicator (THI©), Tree Structure Assessment (TSA©) and Useful Life Expectancy (ULE), were assessed using the methodology described within Appendix A. Legislative Status was identified for all trees under the *Development Act 1993*.

Each tree's suitability for retention was determined by reviewing principles under the local development plan or relevant authority and applying these findings in the Tree Retention Rating (TRR©) method, as described within Appendix A. Tree Protection Zones were calculated using the Australian Standard AS4970-2009 (Section 3.2). Mapping was performed using GIS, CAD and Civil 3D software.

Limitations: Tree management options such as pruning, soil amelioration, pathogen treatment are not part of this report and should be considered in relation to any proposed development.

Note: This report is intended to provide preliminary advice to assist with determining scope for development. The local council may require further information to approve the removal of Regulated Trees.

Findings

Arborman Tree Solutions has undertaken a Preliminary Tree Assessment of all Regulated and Significant Trees within the site located at Westfield Shopping Centre at Marion.

1. Tree Population

The assessment identified 13 trees (see Location plan, Appendix C) and the tree population included a variety of exotic, indigenous and Australian native species.

Table 1 Tree Population

Botanic Name	Common Name	Number of Trees	Origin
<i>Corymbia citriodora</i>	Lemon Scented Gum	4	Native
<i>Eucalyptus fasciculosa</i>	Pink Gum	1	Native
<i>Phoenix canariensis</i>	Canary Island Date Palm	2	Exotic
<i>Allocasuarina verticillata</i>	Drooping She-oak	1	Native
<i>Eucalyptus sideroxylon</i>	Mugga or Red Ironbark	2	Native
<i>Eucalyptus camaldulensis</i>	River Red Gum	1	Indigenous
<i>Corymbia maculata</i>	Spotted Gum	1	Native
<i>Cupressus macrocarpa</i>	Monterey Cypress	1	Exotic

Findings on individual tree health and structure are presented within Appendix B, Tree Assessment Findings.

2. Legislation

Of the trees assessed, 12 were identified as Regulated Trees under the *Development Act 1993*. The remaining tree (Tree 12) is an exempt species therefore Exempt from control. Regulated Trees should be protected if they meet the criteria under the local development plan.

Table 2 Legislative Tree Status

Legislative Status	Number of Trees
Regulated	12
Exempt	1

Regulated Tree: a Regulated Tree is one which has a trunk circumference greater than two metres at one metre above ground level and is therefore subject to regulation under the *Development Act 1993* and therefore needs to be assessed against the relevant amenity and environmental criteria to determine its suitability for protection.

Significant Tree: a Significant Tree is one which has a trunk circumference greater than three metres at one metre above ground level and is therefore subject to regulation under the *Development Act 1993* as a Significant Tree and therefore needs to be assessed against the relevant amenity and environmental criteria to determine its suitability for protection. The protection of Significant Trees is generally considered to be of higher importance than Regulated Trees however this is not always the case.

Both Regulated and Significant Trees require a Development Application to be submitted to the local council for the approval of any tree damaging activity such as excavation in the root zone, tree removal and some forms of pruning.

Unregulated Tree: trees identified as unregulated are not subject to control under the *Development Act 1993*. Unregulated Trees may be pruned or removed without the need for a Development Application.

Exempt Trees: there are a number of potential reasons for a tree being exempt from control under the *Development Act 1993* including species, dead trees, proximity to a dwelling or swimming pool and/or in a bushfire prone area. Where trees have been identified as Exempt a note as to the reason has been recorded in the Summary Table (Appendix C).

3. Retention Rating

Trees that provide important environmental and/or aesthetic contribution to the area and are in good overall condition achieved an Important or High Retention Rating and their protection is encouraged. Trees that achieved a Moderate Retention Rating could be retained in a future development. Trees which achieved a Low Retention Rating indicate that development constraint, alternative designs or tree friendly construction methodologies are not warranted. Trees with a Low Retention Rating achieve one or more of the following attributes:-

- a) provide limited environmental/aesthetic benefits to the area,
- b) are a short lived species,
- c) represent a material risk to people or property,
- d) identified as causing or threatening to cause substantial damage to a structure of value,
- e) have a short Useful Life Expectancy.
- f) are young and easily replaced (less than five metres tall).

A total of 12 trees are suitable for retention as they achieved a High or Moderate Retention Rating. The Regulated Trees that scored such a rating meet criteria within the *Development Act 1993* and the local development plan that warrant retention.

Table 3 Retention Rating

Retention Rating	Number of Trees
High	1
Moderate	11
Low	1

The remaining tree achieved a Low Retention Rating indicating that development constraint, alternative designs or tree-friendly construction methodologies are not warranted. As such, tree removal should be considered to achieve the proposed development (this includes Regulated Trees).

4. Tree Protection

Australian Standard AS4970-2009 *Protection of trees on development sites* (AS4970-2009) prescribes the use of a Tree Protection Zone (TPZ) as the principle means of protecting trees throughout the development process. If encroachment is required within any TPZ, the Project Arborist should identify impacts and recommend mitigation measures. The Tree Protection Zones should be used to determine scope for development of the site by maintaining these areas as open space. The Tree Protection Zone radii are included within Appendix D Tree Assessment Summary.

Recommendation

The following recommendations are presented based on the Preliminary Tree Assessment:

1. Tree 8 achieved a High Retention Rating and should be retained and protected.
2. Trees 1, 3 – 7 and 9 - 13 achieved a Moderate Retention Rating and could be considered for retention within a future development. The removal of Regulated trees may be approved if they can be demonstrated that they are restricting a reasonable and expected development and alternative design solutions are not available to retain them.
3. Tree 12 whilst being exempt from legislation still achieves a Moderate Retention Rating due to its condition and impact within the landscape; however it is Exempt and does not need to be retained.
4. Tree 2 achieved a Low Retention Rating and does not warrant development constraint, alternative designs or tree friendly construction methodologies. As such, tree removal should be considered to achieve the development (this includes Regulated Trees).
5. Regulated Trees require Development Approval prior to any tree damaging activity occurring. This includes development activities within the TPZ, tree removal and potentially pruning.
6. A Project Arborist should be appointed to assist in the design around trees to be retained; the development impacts and tree protection requirements are to be included in a Development Impact Report and a Tree Protection Plan as identified in Australian Standard AS4970-2009 *Protection of trees on development sites*.

Thank you for the opportunity to provide this report. Should you require further information, please contact me and I will be happy to be of assistance.

Yours sincerely



JASON WILLIAMS
Consulting Arboriculturist
Diploma of Arboriculture
Graduate Certificate in Arboriculture
International Society of Arboriculture – Tree Risk Assessment



Glossary

Size:	approximate height and width of tree in metres.
Age:	identification of the maturity of the tree.
Useful Life Expectancy:	expected number of the years that the tree will remain alive and sound in its current location and/or continues to achieve the relevant Principles of Development Control.
Health:	visual assessment of tree health.
Structure:	visual assessment of tree structure.
Circumference:	trunk circumference measured at one metre above ground level. This measurement is used to determine the status of the tree in relation to the <i>Development Act 1993</i> .
Diameter at Breast Height (DBH):	trunk diameter measured at 1.4 metres above ground level used to determine the Tree Protection Zone as described in Australian Standard AS4970-2009 <i>Protection of trees on development sites</i> .
Diameter at Root Buttress (DRB):	trunk diameter measured immediately above the root buttress as described in Australian Standard AS4970-2009 <i>Protection of trees on development sites</i> and is used to determine the Structural Root Zone.
Tree Damaging Activity	Tree damaging activity includes those activities described within the <i>Development Act 1993</i> such as removal, killing, lopping, ringbarking or topping or any other substantial damage such as mechanical or chemical damage, filling or cutting of soil within the TPZ. Can also include forms of pruning above and below the ground.
Tree Protection Zone:	area of root zone that should be protected to prevent substantial damage to the root system.
Structural Root Zone:	calculated area within the tree's root zone that is considered essential to maintain tree stability.
Project Arborist	A person with the responsibility for carrying out a tree assessment, report preparation, consultation with designers, specifying tree protection measures, monitoring and certification. The Project Arborist must be competent in arboriculture, having acquired through training, minimum Australian Qualification Framework (AQTF) Level 5, Diploma of Horticulture (Arboriculture) and/or equivalent experience, the knowledge and skills enabling that person to perform the tasks required by this standard.

References

Australian Standard AS4970–2009 *Protection of trees on development sites*: Standards Australia.

Matheny N. Clark J. 1998: *Trees and Development a Technical Guide to Preservation of Trees During Land Development*. International Society of Arboriculture, Champaign, Illinois, USA.

Dunster J.A., Smiley E.T., Metheny N. and Lilly S. 2013. *Tree Risk Assessment Manual*. International Society of Arboriculture, Champaign, Illinois USA.

Appendix A - Tree Assessment Methodology

Tree Assessment Form (TAF©)

Record	Description
Tree	A perennial woody plant with a mature height of greater than 5 metres and life expectancy of more than 10 years.
Genus and Species	Trees are identified using normal field plant taxonomy techniques. Due to hybridisation and plant conditions available on the day of observation it may not always be possible to identify the tree to species level; where species cannot be ascertained <i>sp.</i> is used.
Height	Tree height is observed and recorded in the following ranges; <5m, 5-10m, 10-15m and >20m.
Spread	Crown width (projection) diameter is recorded by the following fields <5m, 5-10m, 10-15m, 15-20m, >20m.
Tree Health	Tree health was assessed using the Arborman Tree Solutions - Tree Health Assessment Method that is based on international best practice.
Tree Structure	Tree structure was assessed using Arborman Tree Solutions - Tree Structure Assessment Method that is based on international best practice.
Tree Risk Assessment	Trees were assessed using the International Society of Arboriculture Level 1 Tree Assessment method. The person conducting the assessment has acquired the International Society of Arboriculture Tree Risk Assessment Qualification (TRAQ).
Legislative Status	Legislation status was identified through the interpretation of the <i>Development Act 1993</i> , and the <i>Natural Resource Management Act 2004</i> as well as other relevant legislation, therefore determining regulatory status of the subject tree.
Mitigation	Measures to reduce tree risk may be recommended in the form of pruning and this listed in the Tree Assessment Findings (Appendix C). Tree pruning is recommended in accordance with AS4373-2007 <i>Pruning amenity trees</i> where practicable. Where measures to mitigate risk is not possible and the risk is unacceptable, then tree removal or further investigation is recommended.

Useful Life Expectancy (ULE)

ULE Rating	Definition
Surpassed	The tree has surpassed its Useful Life Expectancy.
<10 years	The tree displays either or both Poor Health and/or Structure and is considered to have a short Useful Life Expectancy of less than ten years.
>10 years	The tree displays Fair Health or Structure and Good Health and Structure and is considered to have a Useful Life Expectancy of more than ten years.
>20 years	The tree displays Good Health and Structure and is considered to have an extended Useful Life Expectancy of more than twenty years.

Maturity (Age)

Age Class	Definition
Senescent	The tree has surpassed its optimum growing period and is declining and/or reducing in size. May be considered as a veteran in relation to its ongoing management. Tree will have generally reached greater than 80% of its expected life expectancy.
Mature	A tree which has reached full maturity in terms of its predicted life expectancy and size, the tree is still active and experiencing cell division. Tree will have generally reached 20-80% of its expected life expectancy.
Semi Mature	A tree which has established, but has not yet reached maturity. Normally tree establishment practices such as watering will have ceased. Tree will generally not have reached 20% of its expected life expectancy.
Juvenile	A newly planted tree or one which is not yet established in the landscape. Tree establishment practices such as regular watering will still be in place. Tree will generally be a newly planted specimen up to five years old; this may be species dependant.

Tree Health Indication (THI©)

Category	Description
Good	Tree displays high vigour, uniform leaf colour, no or little dieback (<5%), crown density (>85%) and or healthy axillary buds and typical internode length. The tree has little to no pest and/or disease infestation.
Fair	Tree displays low vigour, dull leaf colour, little dieback (<15%), crown density (>70%) and/or reduced axillary buds and internode length. Minor pest and/or disease infestation potentially impacting on tree health.
Poor	Tree displays no vigour, chlorotic or dull leaf colour, moderate to high crown dieback (>15%), low crown density (<70%) and/or few or small axillary buds and shortened internode length. Pest and or disease infestation is evident and/or widespread.
Dead	The tree has died and has no opportunity for recovery.

Tree Structural Assessment (TSA©)

Category	Description
Good	Little to no branch failure observed within the crown, well-formed unions, no included bark, good branch and trunk taper present, root buttressing and root plate are typical.
Fair	History of minor branch failure observed in crown, well-formed unions, no included bark, acceptable branch and trunk taper present, root buttressing and root plate are typical.
Poor	History of significant branch failure observed in crown, poorly formed unions, included bark present, branch and trunk taper absent, root buttressing and root plate are atypical.
Failed	The structure of the tree has or is in the process of collapsing.

Tree Retention Rating (TRR)

The Tree Retention Rating is based on a number of factors that are identified as part of the standard tree assessment criteria including Condition, Size, Environmental, Amenity and Special Values. These factors are combined in a number of matrices to provide a Preliminary Tree Retention Rating and a Tree Retention Rating Modifier which combine to provide a Tree Retention Rating that is measurable, consistent and repeatable

Preliminary Tree Retention Rating

The Preliminary Tree Retention Rating is conducted assessing Tree Health and Structure to give an overall Condition Rating and Height and Spread to give an overall Size Rating. The following matrices identify how these are derived.

Condition Matrix				
Structure	Health			
	Good	Fair	Poor	Dead
Good	C1	C1	C3	C4
Fair	C1	C2	C3	C4
Poor	C3	C3	C4	C4
Failed	C4	C4	C4	C4

Size Matrix					
Spread	Height				
	>20	15-20	10-15	5-10	<5
>20	S1	S1	S1	S2	S3
15-20	S1	S1	S2	S3	S3
10-15	S1	S2	S2	S3	S4
5-10	S2	S3	S3	S4	S5
<5	S3	S3	S4	S5	S5

The results from the Condition and Size Matrices are then placed in the Preliminary Tree Retention Rating Matrix.

Preliminary Tree Retention Rating				
Size	Condition			
	C1	C2	C3	C4
S1	High	High	Low	Low
S2	High	Moderate	Low	Low
S3	Moderate	Moderate	Low	Low
S4	Moderate	Moderate	Low	Low
S5	Low	Low	Low	Low

The Preliminary Tree Retention Rating gives a base rating for all trees regardless of other environmental and/or amenity factors and any Special Value considerations. The Preliminary Tree Retention Rating can only be modified if these factors are considered to be of high or low enough importance to warrant increasing or, in a few cases, lowering the original rating.

Tree Retention Rating Modifier

The Preliminary Tree Retention Rating is then qualified against the recognised Environmental and Amenity benefits that trees present to the community thereby providing a quantitative measure to determine the overall Tree Retention Rating. Data is collected in relation to Environmental and Amenity attributes which are compared through a set of matrices to produce a Tree Retention Rating Modifier.

Environmental Matrix				
Origin	Habitat			
	Active	Inactive	Potential	No Habitat
Indigenous	E1	E1	E2	E3
Native	E1	E2	E3	E3
Exotic	E2	E3	E3	E4
Weed	E3	E3	E4	E4

Amenity Matrix				
Character	Aesthetics			
	High	Moderate	Low	None
Important	P1	P1	P2	P3
Moderate	P1	P2	P3	P3
Low	P2	P3	P3	P4
None	P3	P3	P4	P4

Tree Retention Rating Modifier				
Amenity	Environment			
	E1	E2	E3	E4
P1	High	High	Moderate	Moderate
P2	High	Moderate	Moderate	Moderate
P3	Moderate	Moderate	Moderate	Moderate
P4	Moderate	Moderate	Moderate	Low

Tree Retention Rating

The results of the Preliminary Tree Retention Rating and the Tree Retention Rating Modifier matrices are combined in a final matrix to give the actual Tree Retention Rating.

Tree Retention Rating Matrix			
Tree Retention Rating Modifier	Preliminary Tree Retention Rating		
	High	Moderate	Low
High	Important	High	Moderate
Moderate	High	Moderate	Low
Low	Moderate	Low	Low

Special Value Trees

There are potentially trees that have Special Value for reasons outside of normal Arboricultural assessment protocols and therefore would not have been considered in the assessment to this point; to allow for this a Special Value characteristic that can override the Tree Retention Rating can be selected. Special Value characteristics that could override the Tree Retention Rating would include factors such as the following:

Cultural Values

Memorial Trees, Avenue of Honour Trees, Aboriginal Heritage Trees, Trees planted by Dignitaries and various other potential categories.

Environmental Values

Rare or Endangered species, Remnant Vegetation, Important Habitat for rare or endangered wildlife, substantial habitat value in an important biodiversity area and various other potential categories.

Where a tree achieves one or more Special Value characteristics the Tree Retention Rating will automatically be overridden and assigned the value of Important.

Tree Retention Rating Definitions

- Important** These trees are considered to be important and will in almost all instances be required to be retained within any future development/redevelopment. It is highly unlikely that trees that achieve this rating would be approved for removal or any other tree damaging activity. Protection of these trees should as a minimum be consistent with Australian Standard AS4970-2009 *Protection of trees on development sites* however given the level of importance additional considerations may be required.
- High** These trees are considered to be important and will in most instances be required to be retained within any future development/redevelopment. It is unlikely that trees that achieve this rating would be approved for removal or any other tree damaging activity. Protection of these trees should be consistent with Australian Standard AS4970-2009 *Protection of trees on development sites*.
- Moderate** These trees are considered to be suitable for retention however they achieve less positive attributes than the trees rated as Important or High and as such their removal or other tree damaging activity is more likely to be considered to be acceptable in an otherwise reasonable and expected development. The design process should where possible look to retain trees with a Moderate Retention Rating. Protection of these trees, where they are identified to be retained, should be consistent with Australian Standard AS4970-2009 *Protection of trees on development sites*.
- Low** These trees are not considered to be suitable for retention in any future development/redevelopment; trees in this category do not warrant special works or design modifications to allow for their retention. Trees in this category are likely to be approved for removal and/or other tree damaging activity in an otherwise reasonable and expected development. Protection of these trees, where they are identified to be retained, should be consistent with Australian Standard AS4970-2009 *Protection of trees on development sites*.

Appendix B - Tree Assessment Findings

River Red Gum

Inspected: Wednesday, 8 August 2018

Height: >5 metres

Spread: >10 metres

Health: Fair

Structure: Good

Trunk Circumference: >2 metres

Useful Life Expectancy: >10 years

Tree Protection Zone (TPZ): 6.03 metres

Structural Root Zone (SRZ): 1.50 metres



Legislative Status

This tree is identified as a Regulated Tree as defined in the Development Act 1993. This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation.

GPS Coords (MGA Zone 54)	275821 E, 6122635 N
Legislative Status	Regulated
Retention Rating	Moderate

Retention Rating

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Observations

This tree displays atypical form.

Recommendation

This tree should be protected in accordance with AS4970-2009.

Mugga or Red Ironbark

Inspected: Wednesday, 8 August 2018

Height: >10 metres

Spread: >10 metres

Health: Fair

Structure: Poor

Trunk Circumference: >2 metres

Useful Life Expectancy: <10 years

Tree Protection Zone (TPZ): 8.40 metres

Structural Root Zone (SRZ): 1.50 metres

Legislative Status

This tree is identified as a Regulated Tree as defined in the Development Act 1993. This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation.

Retention Rating

This tree has a Low Retention Rating and should not form a material constraint to any future development.

Observations

There is an unstable union in the primary structure.

Recommendation

Tree removal is recommended.



GPS Coords (MGA Zone 54)	275941 E, 6122656 N
Legislative Status	Regulated
Retention Rating	Low

Lemon Scented Gum

Inspected: Wednesday, 8 August 2018

Height: >15 metres

Spread: >15 metres

Health: Fair

Structure: Good

Trunk Circumference: >2 metres

Useful Life Expectancy: >10 years

Tree Protection Zone (TPZ): 8.64 metres

Structural Root Zone (SRZ): 1.50 metres



Legislative Status

This tree is identified as a Regulated Tree as defined in the Development Act 1993. This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation.

GPS Coords (MGA Zone 54)	275938 E, 6122616 N
Legislative Status	Regulated
Retention Rating	Moderate

Retention Rating

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Observations

This tree is in reasonable overall condition.

Recommendation

This tree should be protected in accordance with AS4970-2009.

Mugga or Red Ironbark

Inspected: Wednesday, 8 August 2018

Height: >10 metres

Spread: >10 metres

Health: Good

Structure: Good

Trunk Circumference: >2 metres

Useful Life Expectancy: >20 years

Tree Protection Zone (TPZ): 8.64 metres

Structural Root Zone (SRZ): 1.50 metres



Legislative Status

This tree is identified as a Regulated Tree as defined in the Development Act 1993. This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation.

GPS Coords (MGA Zone 54)	275933 E, 6122581 N
Legislative Status	Regulated
Retention Rating	Moderate

Retention Rating

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Observations

This tree is in good overall condition.

Recommendation

This tree should be protected in accordance with AS4970-2009.

Lemon Scented Gum

Inspected: Wednesday, 8 August 2018

Height: >15 metres

Spread: >10 metres

Health: Good

Structure: Good

Trunk Circumference: >2 metres

Useful Life Expectancy: >20 years

Tree Protection Zone (TPZ): 9.36 metres

Structural Root Zone (SRZ): 1.50 metres

Legislative Status

This tree is identified as a Regulated Tree as defined in the Development Act 1993. This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation.

Retention Rating

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Observations

This tree is in good overall condition.

Recommendation

This tree should be protected in accordance with AS4970-2009.



GPS Coords (MGA Zone 54)	275915 E, 6122567 N
Legislative Status	Regulated
Retention Rating	Moderate

Forest Oak

Inspected: Wednesday, 8 August 2018

Height: >10 metres

Spread: >10 metres

Health: Fair

Structure: Fair

Trunk Circumference: >2 metres

Useful Life Expectancy: >10 years

Tree Protection Zone (TPZ): 9.15 metres

Structural Root Zone (SRZ): 1.50 metres



Legislative Status

This tree is identified as a Regulated Tree as defined in the Development Act 1993. This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation.

GPS Coords (MGA Zone 54)	275911 E, 6122560 N
Legislative Status	Regulated
Retention Rating	Moderate

Retention Rating

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Observations

This tree is in fair overall condition.

Recommendation

This tree should be protected in accordance with AS4970-2009.

Lemon Scented Gum

Inspected: Wednesday, 8 August 2018

Height: >15 metres

Spread: >10 metres

Health: Fair

Structure: Fair

Trunk Circumference: >2 metres

Useful Life Expectancy: >10 years

Tree Protection Zone (TPZ): 7.80 metres

Structural Root Zone (SRZ): 1.50 metres

Legislative Status

This tree is identified as a Regulated Tree as defined in the Development Act 1993. This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation.

Retention Rating

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Observations

The co-dominant included stem has been previously removed.

Recommendation

This tree should be protected in accordance with AS4970-2009.



GPS Coords (MGA Zone 54)	275923 E, 6122501 N
Legislative Status	Regulated
Retention Rating	Moderate

Spotted Gum

Inspected: Wednesday, 8 August 2018

Height: >15 metres

Spread: >15 metres

Health: Good

Structure: Good

Trunk Circumference: >2 metres

Useful Life Expectancy: >20 years

Tree Protection Zone (TPZ): 10.20 metres

Structural Root Zone (SRZ): 1.50 metres

Legislative Status

This tree is identified as a Regulated Tree as defined in the Development Act 1993. This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation.

Retention Rating

This tree has a High Retention Rating and should be protected in any future development.

Observations

There is an active hollow in the primary structure.

Recommendation

This tree should be protected in accordance with AS4970-2009.



GPS Coords (MGA Zone 54)	276020 E, 6122591 N
Legislative Status	Regulated
Retention Rating	High

Canary Island Date Palm

Inspected: Wednesday, 8 August 2018

Height: >5 metres

Spread: >5 metres

Health: Good

Structure: Good

Trunk Circumference: >2 metres

Useful Life Expectancy: >20 years

Tree Protection Zone (TPZ): 7.50 metres

Structural Root Zone (SRZ): 1.50 metres



Legislative Status

This tree is identified as a Regulated Tree as defined in the Development Act 1993. This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation.

GPS Coords (MGA Zone 54)	275973 E, 6122607 N
Legislative Status	Regulated
Retention Rating	Moderate

Retention Rating

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Observations

This tree is suitable for transplanting.

Recommendation

This tree should be protected in accordance with AS4970-2009.

Canary Island Date Palm

Inspected: Wednesday, 8 August 2018

Height: >5 metres

Spread: >5 metres

Health: Good

Structure: Good

Trunk Circumference: >2 metres

Useful Life Expectancy: >20 years

Tree Protection Zone (TPZ): 7.50 metres

Structural Root Zone (SRZ): 1.50 metres

Legislative Status

This tree is identified as a Regulated Tree as defined in the Development Act 1993. This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation.

Retention Rating

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Observations

This tree is suitable for transplanting.

Recommendation

This tree should be protected in accordance with AS4970-2009.



GPS Coords (MGA Zone 54)	275969 E, 6122602 N
Legislative Status	Regulated
Retention Rating	Moderate

Lemon Scented Gum

Inspected: Wednesday, 8 August 2018

Height: >15 metres

Spread: >10 metres

Health: Good

Structure: Good

Trunk Circumference: >2 metres

Useful Life Expectancy: >20 years

Tree Protection Zone (TPZ): 8.16 metres

Structural Root Zone (SRZ): 1.50 metres

Legislative Status

This tree is identified as a Regulated Tree as defined in the Development Act 1993. This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation.

Retention Rating

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Observations

This tree is in good overall condition.

Recommendation

This tree should be protected in accordance with AS4970-2009.



GPS Coords (MGA Zone 54)	275640 E, 6122390 N
Legislative Status	Regulated
Retention Rating	Moderate

Monterey Cypress

Inspected: Wednesday, 8 August 2018

Height: >10 metres

Spread: >10 metres

Health: Good

Structure: Good

Trunk Circumference: >2 metres

Useful Life Expectancy: >20 years

Tree Protection Zone (TPZ): 10.80 metres

Structural Root Zone (SRZ): 1.50 metres



Legislative Status

This tree is exempt from control under the Development Act 1993. This species of tree is listed as exempt from control under the Development Act 1993.

GPS Coords (MGA Zone 54)	275683 E, 6122242 N
Legislative Status	Exempt
Retention Rating	Moderate

Retention Rating

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Observations

This tree is in good overall condition.

Recommendation

This tree should be protected in accordance with AS4970-2009.

Pink Gum

Inspected: Wednesday, 8 August 2018

Height: >10 metres

Spread: >15 metres

Health: Good

Structure: Good

Trunk Circumference: >2 metres

Useful Life Expectancy: >20 years

Tree Protection Zone (TPZ): 8.77 metres

Structural Root Zone (SRZ): 1.50 metres

Legislative Status

This tree is identified as a Regulated Tree as defined in the Development Act 1993. This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation.

Retention Rating

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Observations

This tree is in good overall condition.

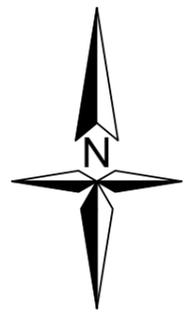
Recommendation

This tree should be protected in accordance with AS4970-2009.



GPS Coords (MGA Zone 54)	275690 E, 6122211 N
Legislative Status	Regulated
Retention Rating	Moderate

Appendix C - Mapping



Legislative Status

- S Significant
- R Regulated
- U Unregulated
- E Exempt
- NV Nat Veg Act

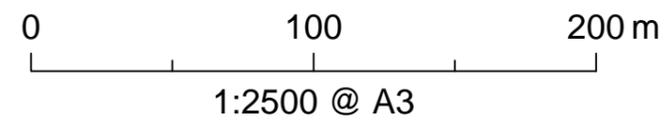
Retention Rating

- Important
- High
- Moderate
- Low

Labels denote tree number, legislative status and TPZ radius in metres, unless otherwise shown.

Date: 9/08/2018 Rev: 1
 Ref: ATS5170-WestMarionPTA
 Arborman Tree Solutions
 23 Aberdeen Street
 Port Adelaide SA 5015
 (08) 8240 5555
www.arborman.com.au

Preliminary Tree Assessment



Appendix D - Tree Assessment Summary

Tree Assessment Summary

Tree Number	Botanic Name	Legislative Status	Retention Rating	TPZ Radius	Observations	Recommendations
1	<i>Eucalyptus camaldulensis</i>	Regulated	Moderate	6.03 metres	This tree displays atypical form.	This tree should be protected in accordance with AS4970-2009.
2	<i>Eucalyptus sideroxylon</i>	Regulated	Low	8.40 metres	There is an unstable union in the primary structure.	Tree removal is recommended.
3	<i>Corymbia citriodora</i>	Regulated	Moderate	8.64 metres	This tree is in reasonable overall condition.	This tree should be protected in accordance with AS4970-2009.
4	<i>Eucalyptus sideroxylon</i>	Regulated	Moderate	8.64 metres	This tree is in good overall condition.	This tree should be protected in accordance with AS4970-2009.
5	<i>Corymbia citriodora</i>	Regulated	Moderate	9.36 metres	This tree is in good overall condition.	This tree should be protected in accordance with AS4970-2009.
6	<i>Allocasuarina verticillata</i>	Regulated	Moderate	9.15 metres	This tree is in fair overall condition.	This tree should be protected in accordance with AS4970-2009.
7	<i>Corymbia citriodora</i>	Regulated	Moderate	7.80 metres	The co-dominant included stem has been previously removed.	This tree should be protected in accordance with AS4970-2009.
8	<i>Corymbia maculata</i>	Regulated	High	10.20 metres	There is an active hollow in the primary structure.	This tree should be protected in accordance with AS4970-2009.
9	<i>Phoenix canariensis</i>	Regulated	Moderate	7.50 metres	This tree is suitable for transplanting.	This tree should be protected in accordance with AS4970-2009.

Tree Assessment Summary

Tree Number	Botanic Name	Legislative Status	Retention Rating	TPZ Radius	Observations	Recommendations
10	<i>Phoenix canariensis</i>	Regulated	Moderate	7.50 metres	This tree is suitable for transplanting.	This tree should be protected in accordance with AS4970-2009.
11	<i>Corymbia citriodora</i>	Regulated	Moderate	8.16 metres	This tree is in good overall condition.	This tree should be protected in accordance with AS4970-2009.
12	<i>Cupressus macrocarpa</i>	Exempt	Moderate	10.80 metres	This tree is in good overall condition.	This tree should be protected in accordance with AS4970-2009.
13	<i>Eucalyptus fasciculosa</i>	Regulated	Moderate	8.77 metres	This tree is in good overall condition.	This tree should be protected in accordance with AS4970-2009.

WGA

WALLBRIDGE GILBERT
AZTEC

Scentre Group

Link Mall

Development

**STORMWATER MANAGEMENT
PLAN**

Job No. ADL189747 / Rev C
19 November 2018

WGA

Revision History

Rev	Date	Issue	Originator	Checker	Approver
A	17 August 18	Draft Issue for Comment	CH	CH	
B	19 Sept 18	Issue for Approval	CH	CH	
C	19 Nov 18	Issue for Approval	CH	CH	

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Appendices

Appendix A AERIAL PHOTOGRAPH

Appendix B EXISTING STORMWATER DRAINAGE DRAWINGS

Appendix C CITY OF MARION DETENTION / RETENTION GUIDELINES

Appendix D 1 IN 100 YEAR FLOOD PLAIN MAPPING

Appendix E CALCULATIONS

Appendix F INDICATIVE STORMWATER SKETCH PLAN

1

INTRODUCTION

1.1 BACKGROUND

WGA has been engaged by Scentre Group to prepare a Stormwater Management Plan (SMP) for the proposed Link Mall development at the Westfield Marion Shopping Centre. It is understood that the development will consist of a new mall, new specialty stores and mini-majors, new multi-deck car parking structures and ramps and re-configured access points to the surrounding roads

This report is intended to conceptually outline the stormwater management design for the development and detail the stormwater management methodology. A final detailed design should be carried out to provide construction documentation and incorporate the stormwater design principles outlined in this report. The final documentation is beyond the scope of this report.

1.2 SCOPE OF THE ASSESSMENT

The preparation of the plan comprises the scope of services listed below:

- Attendance at a briefing meeting.
- Site visit to familiarise ourselves with the current site conditions.
- Liaison with the City of Marion (Council) regarding their requirements for collection, treatment and disposal of stormwater runoff generated from the development.
- Preparation of report detailing the methodology to deal with stormwater runoff in accordance with Council's requirements.
- Preliminary sketch plan outlining stormwater methodology.

1.2.1 Documentation

Scentre Group has provided preliminary architectural plans and engineering survey for the site.

2 DETAILED REPORT

2.1 DEVELOPMENT DESCRIPTION

The proposed development is located at the Westfield Marion Shopping Centre which is situated between Diagonal Road, Morphett Road and Sturt Road at Marion. The development involves the construction of new multi-deck car parking structures and an increase in the total retail area.

2.2 CATCHMENT DESCRIPTION

The existing site is currently fully developed with either buildings or on-grade asphalt car parking / roads covering the entire site. Refer to Appendix A for an aerial photograph of the site.

The current Shopping Centre has a Gross Floor Area (GFA) of approximately 135,000m² and approximately 5,270 car parking spaces. The proposed expansion will increase the GFA to approximately 152,000m² and a total of approximately 4,950 car parking spaces.

The northern portion of the site is occupied by an on-grade asphalt car park. It is noted that the majority of this area is to be converted into a new multi-deck car parking structure.



Photo 1 – Existing northern car parking area (looking north)

The western side of the site contains a vehicular ramp that allows cars access from Morphett Road onto the roof car park. This area will be slightly re-configured as part of the redevelopment.



Photo 2 – Ramp up to upper car parking area (looking east)

The central part of the site is occupied by car parking areas. This area is undercover with on-grade car parks located below a concrete deck car parking area. The majority of this undercover area will be replaced by retail areas as part of the development. The existing roof car parking area will remain in place.



Photo 3 – Undercover and roof car parking area (looking south)

2.3 EXISTING STORMWATER DRAINAGE

There are a large network of existing underground drainage pipes located in the undercover car parking area. These typically connect downpipes from the northern side of the mall area.

The existing roof car parking area is drained by a series of small grated inlet pits set into the concrete deck. These pits are connected by flying downpipes strapped to the underside of the concrete roof. The downpipes discharge generally along the northern side of the car parking structure and connect into the existing underground stormwater drainage system.



Photo 4 – Example of roof car park drainage system

The eastern side of the roof drainage systems connects to a 750mm dia RCP that runs along the existing entrance road off Diagonal Road. This pipe ultimately connects into Council's drainage system in Diagonal Road. Copies of the marked up existing internal stormwater drainage for this area of the site are attached in Appendix B

The western side of the roof drainage system appears to connect into existing underground drainage pipes that run along the northern side of the ramp towards Council's system in Morphett Road. The alignment of the pipes has been estimated based on our inspection on site.

The existing northern on-grade car parking area falls both to the east and the west. The eastern portion is collected by a series of grated inlet pits and connects to the 750mm dia RCP noted above heading towards Diagonal Road. The western portion is collected by grated inlet pits located on the eastern side of the internal road located on the eastern side of the Bunnings Warehouse. This system runs south along the Bunnings Road and connects into the system heading towards Morphett Road.

It is noted that the exact alignment and extent of existing stormwater drainage within the development site is not known. A site inspection, coupled with the engineering survey and a review of the available existing drawings, has assisted in gaining an understanding of the general conditions however it is recommended that a thorough underground services survey is undertaken during detailed design to determine the exact location and condition of the existing system.

Council underground drainage pipes are located within all three major roads surrounding the site.

Refer to Appendix B for copies of the internal stormwater drainage drawings and also the Council external stormwater drainage infrastructure.

2.4 COUNCIL REQUIREMENTS

A preliminary meeting was held between Council, Scentre Group and WGA on 24th July 2018. Subsequent advice has been received from Council on 13th August 2018.

Council's Information Guide relating to "Stormwater Detention / Retention" outlines the requirements for the control of the flow rate of stormwater exiting the site. The relevant portion of the guide (Non-Residential Zones) requires that "sufficient on-site detention / retention should be provided in new development in order to limit stormwater runoff from the subject land so that the flows determined using the runoff coefficients are not exceeded:

- 5 year ARI event – Runoff Coefficient 0.65
- 100 year ARI event – Runoff coefficient 0.85

Council also advised that stormwater runoff is to be treated in order to meet the following pollutant reductions:

- 80% Total suspended solids
- 60% Total phosphorus
- 45% Total nitrogen

No specific requirement has been given regarding development in areas that are affected by 1 in 100 year flooding. It is noted that Flood Maps are available on the City of Marion website.

Copies of the Council guidelines are contained in Appendix C. Copies of the Flood Plain mapping are contained in Appendix D

2.5 STORMWATER MANAGEMENT METHODOLOGY

Based on Council's requirements, the following stormwater management methodology is proposed:

2.5.1 Finished Floor Levels

A review of the Council Flood Maps indicates that there is some localised areas within the overall site that are subject to approximately 200mm depth of flooding during a 1 in 100year storm event. These areas however are not located adjacent any of the proposed new buildings and as such it is our belief that the proposed new works will not be impacted by the 1 in 100 year flood plain.

2.5.2 Stormwater Collection and Disposal

The design for the multi-deck car parking structure is still in the very preliminary phase and as such detailed drainage of the exposed upper deck is yet to be finalised. It is anticipated that the drainage for this structures will operate in a similar manner to the existing roof car parking area – ie a series of small grated drains connected to flying downpipes that will discharge on the edge of the structure.

For the northern new multi-deck car parking area, it is likely that the stormwater drainage associated with this structure will connect into the existing stormwater system located on the eastern side of the Bunnings Warehouse.

It is noted that the impervious area for the re-developed areas will not alter from the existing conditions. However Council's requirements are such that on-site stormwater detention is required to limit the post-development flow rates prior to connect to the existing external Council stormwater drainage network.

The catchment area of the northern car parking structure is approximately 10,000m². The pre-development flow rate for a 1 in 5 year storm event (based on the Council required runoff coefficient of 0.65) is 89l/s. In order to reduce the post-development flow rates to this amount, a detention storage of 33m³ is required. The pre-development flow rate for a 1 in 100 year storm event (based on the Council required runoff coefficient of 0.85) is 260l/s. In order to reduce the post-development flow rates to this amount, a detention storage of 15m³ is required.

The proposed re-configuration of the western car parking and internal roads adjacent the Morphett Road entrance will not change the extent of asphalt pavement and as such no stormwater detention storage is proposed.

Stormwater detention of the multi-deck car parking structure will be provided underground in either over-sized pipes or shallow retaining units (such as Humes StormTrap) prior to connect to the adjacent existing stormwater network.

No detention storage is proposed for the works associated with the existing undercover car parking area. The covered roof area remains the same with no change to the flow conditions from the undercover area.

The majority of the changes to the surrounding internal roads and on-grade car parking area will require new kerbing which will alter the existing flow paths for the surface runoff. This includes works proposed on the Sturt Road side of the site (as depicted on the Architectural drawings). The existing stormwater infrastructure will be utilised in these area as much as practical, noting that there will most likely be the need to install new pits based on the new layouts. No stormwater detention is proposed for these external areas as there is no change in use of the surfaces.

Given the extent of existing underground stormwater pipes within the proposed development site and the need for these pipes to continue to operate in order to convey stormwater runoff from the existing roof areas, it is proposed that these existing pipes will generally remain in their current location. Typically the structural design of the new buildings will need to cater for these existing underground pipes however there may need to be occasional localised diversion of the existing system. The extent of alterations will not be known until detailed design has been undertaken and the exact location of the existing system is better understood. The existing flying downpipes in the current undercover parking area will remain strapped to the concrete deck above and will be included within a void created above the new retail stores.

It is also noted that Scentre Group are exploring the options to install retention tanks as part of the proposed development as part of addressing Council's requirements for stormwater management. If installed, these tanks would be utilised for toilet flushing within the Shopping Centre. It is likely that the tanks would be in the order of 50,000 litres. The exact location and size are yet to be determined.

Refer to Appendix E for stormwater calculations and Appendix F for an indicative sketch plan showing the possible connection points for the new stormwater drainage.

2.5.3 Stormwater quality

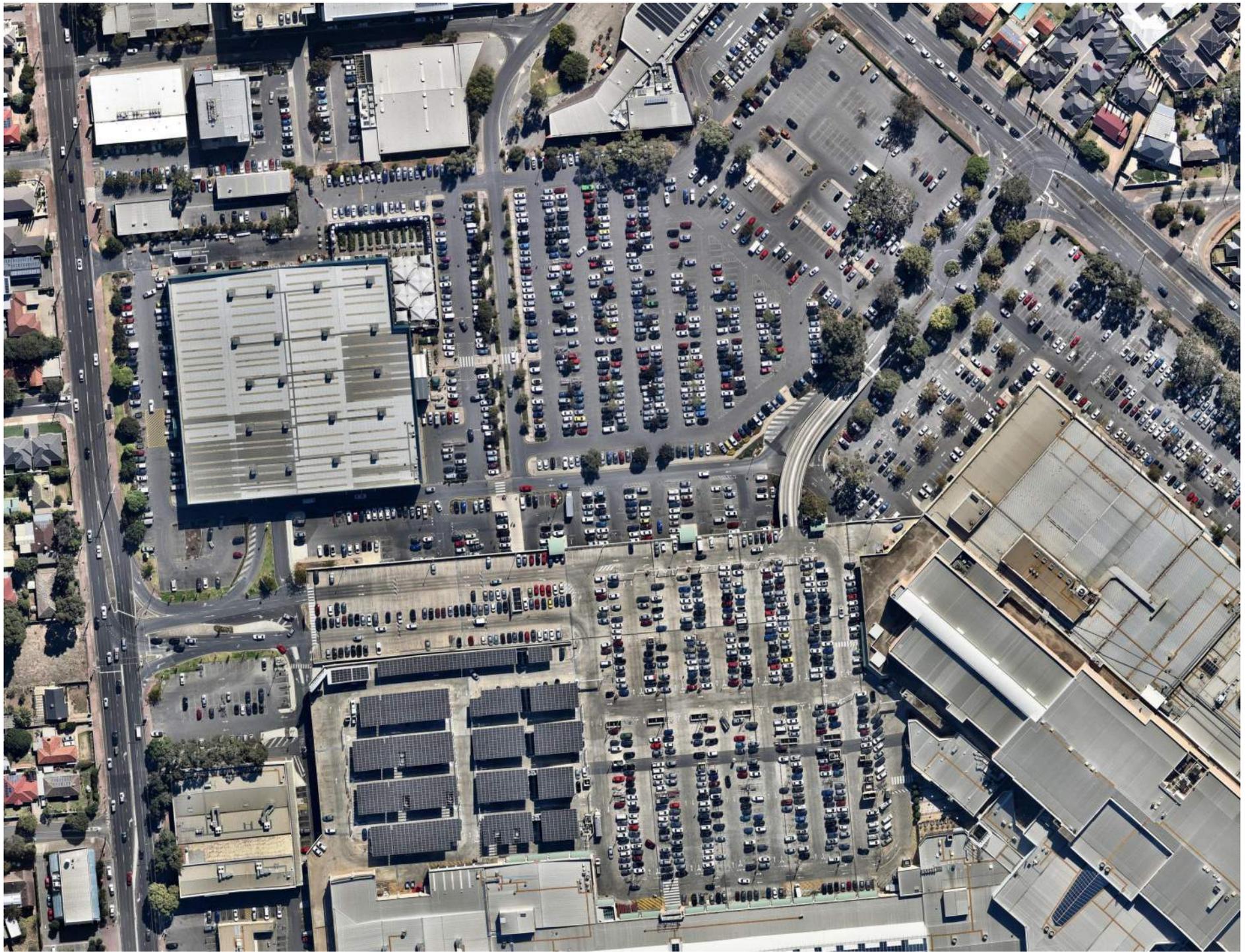
While it is acknowledged that Council has set targets for the reduction of pollutants as part of the development, it is noted that the overall pollutant load from the site will not change once the development has occurred. As such it is not considered necessary to implement water quality improvement measures for this development.

2.6 SUMMARY

The preliminary SMP contained within this report has been prepared to demonstrate the philosophy behind proposed management of the stormwater runoff from this development. The information provided is preliminary and will be subject to detailed design and documentation. .

APPENDIX A

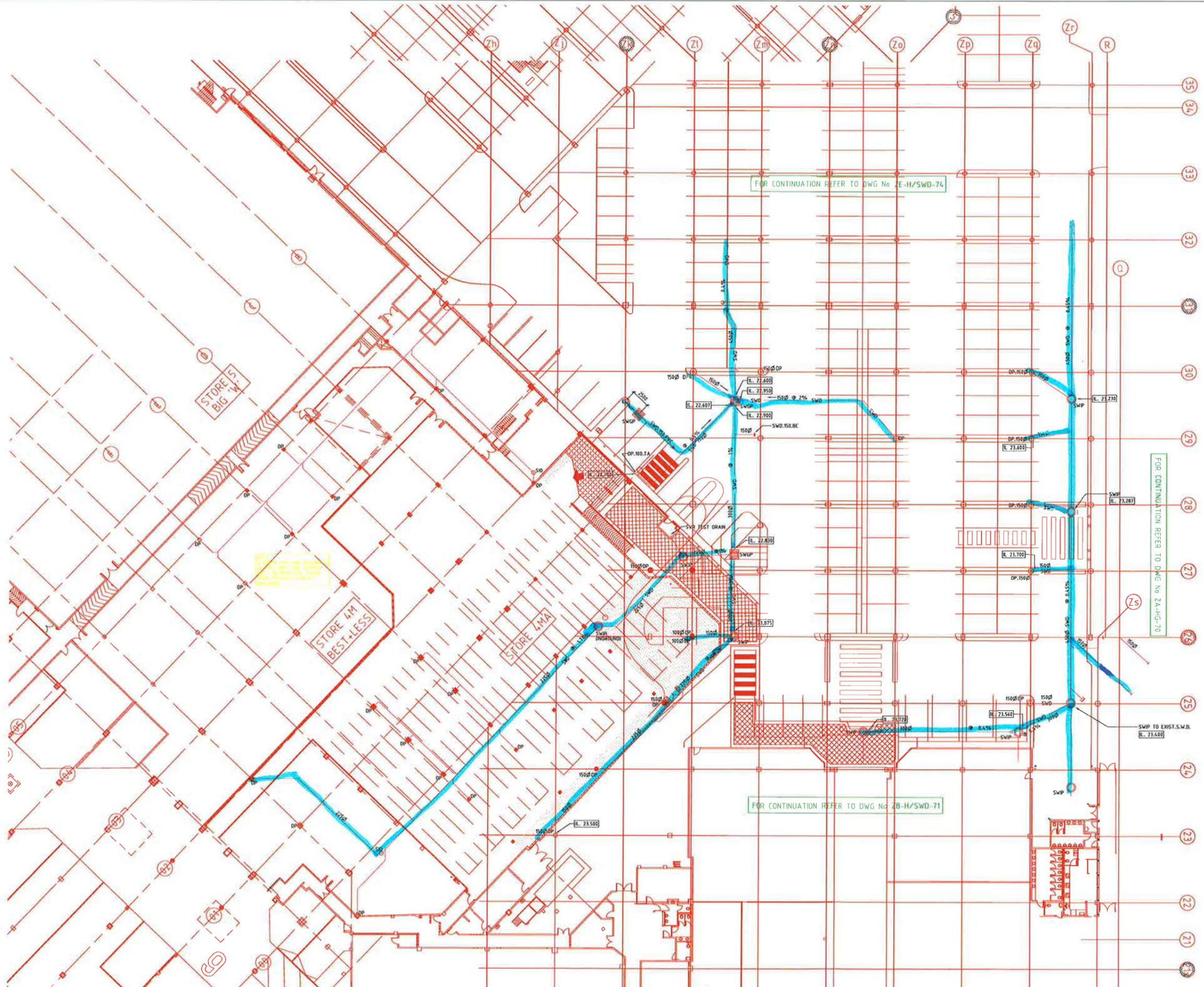
AERIAL PHOTOGRAPH



Aerial Photograph - 2018

APPENDIX B

EXISTING STORMWATER DRAINAGE DRAWINGS

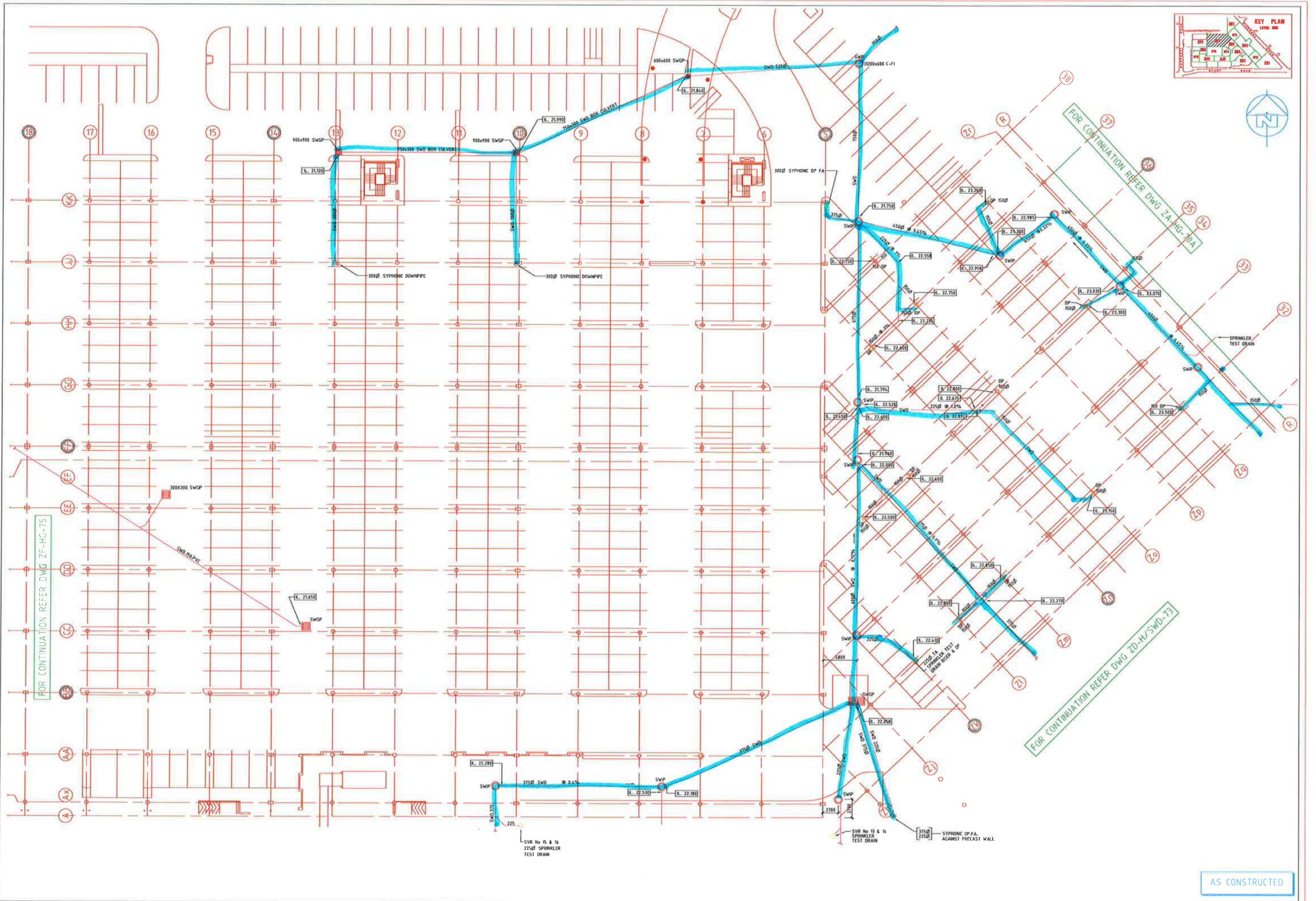


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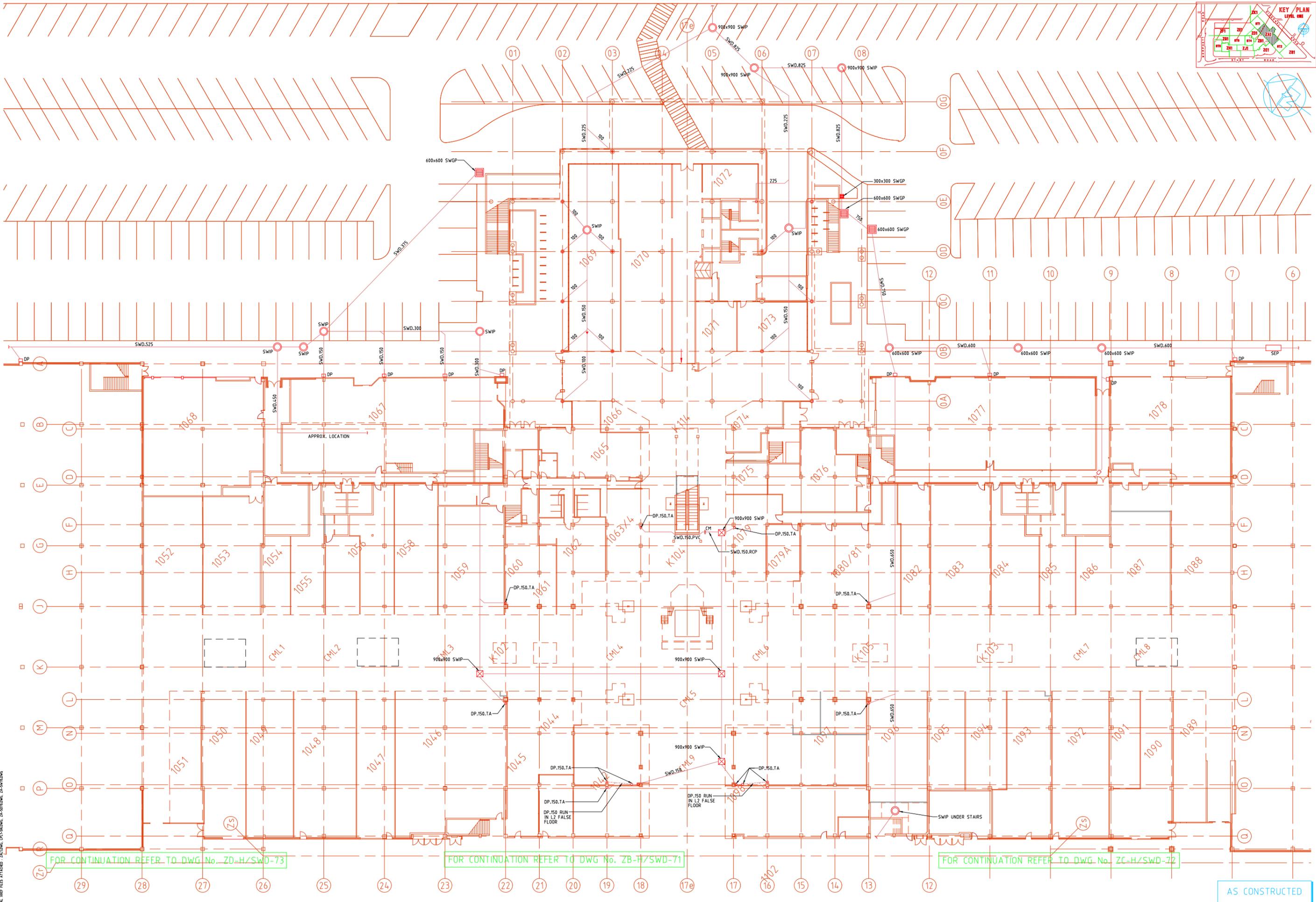
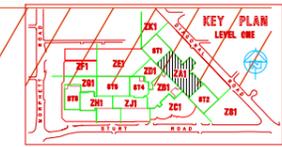
HINDMARSH LUMBER SERVICES
 7 RICHARD STREET, HINDMARSH, S.A. 5007
 TELEPHONE: (08) 8340 0322
 FACSIMILE: (08) 8340 3008

Library Ref. S/M/HYD/VASB
 Job No.
 Date Plotted
 Division



No.	Date	Description	By	Date	Description	By	Date	Description
1	10/10/2023	EXISTING WORKS ADDED						

		7 RICHARD STREET, HINDMARSH, S.A. 5007 TELEPHONE: (08) 8340 0122 FACSIMILE: (08) 8340 3008		Project Manager R.P.	Design by R.P.	Project Zone E - Level 1 Stormwater Drainage	Scale As Shown	Project Zone E - Level 1 Stormwater Drainage	Computer Ref. S:\M\HYD\ASB	Drawing Number ZE-H/SWD-74
				Checked R.P.	Drawn by S.M.				Revision 1	



FOR CONTINUATION REFER TO DWG. No. ZD-H/SWD-73

FOR CONTINUATION REFER TO DWG. No. ZB-H/SWD-71

FOR CONTINUATION REFER TO DWG. No. ZC-H/SWD-72

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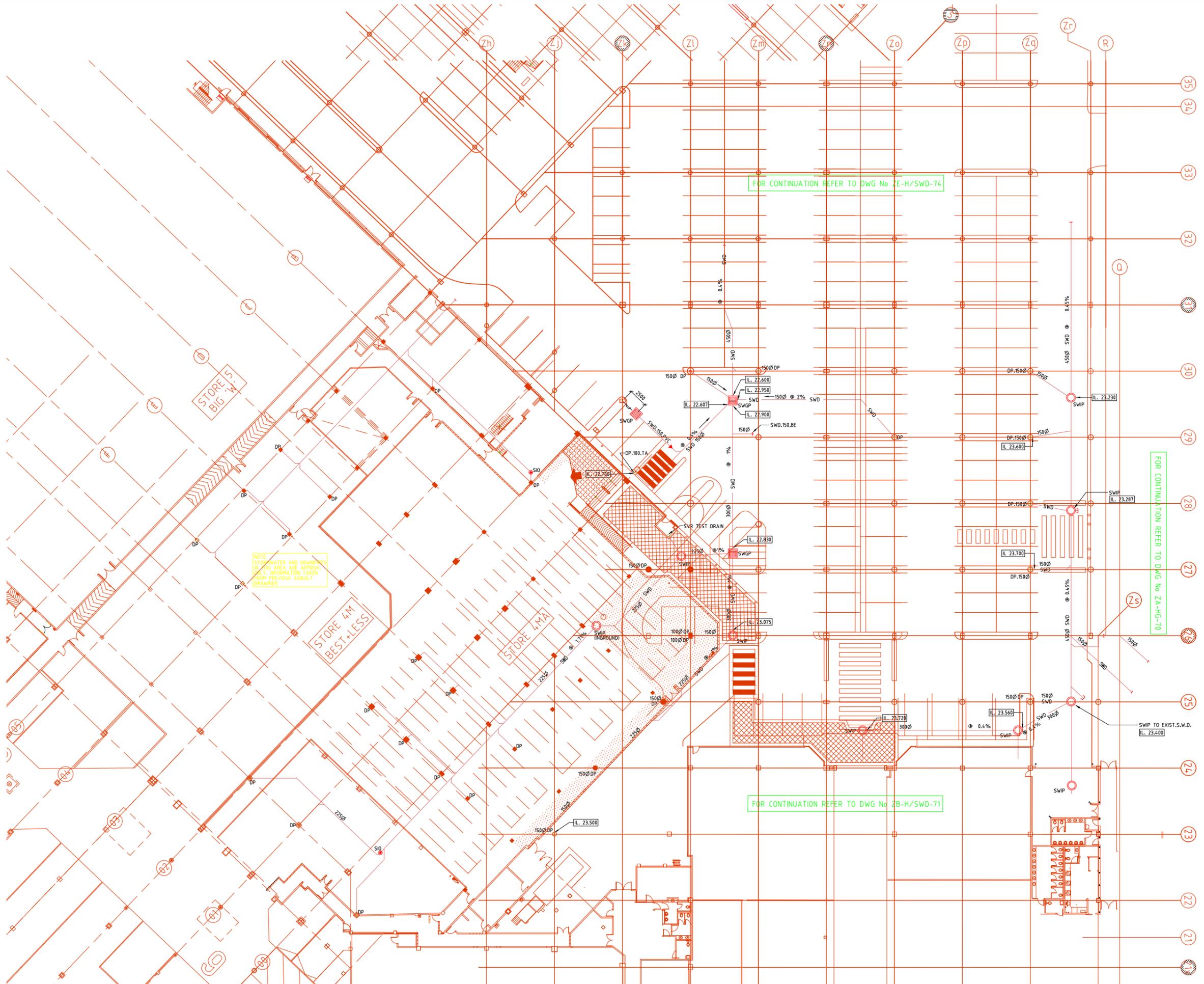
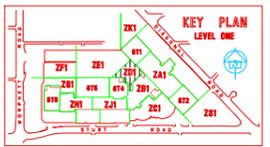
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INDMARSH LUMBER SERVICES
 7 RICHARD STREET, HINDMARSH, S.A. 5007
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Project Manager: R.P.
 Design by: R.P.
 Checked: R.P.
 Drawn by: S.M.

Project: **INDMARSH LUMBER SERVICES**
 Title: **ZONE A - LEVEL 1 STORMWATER DRAINAGE**

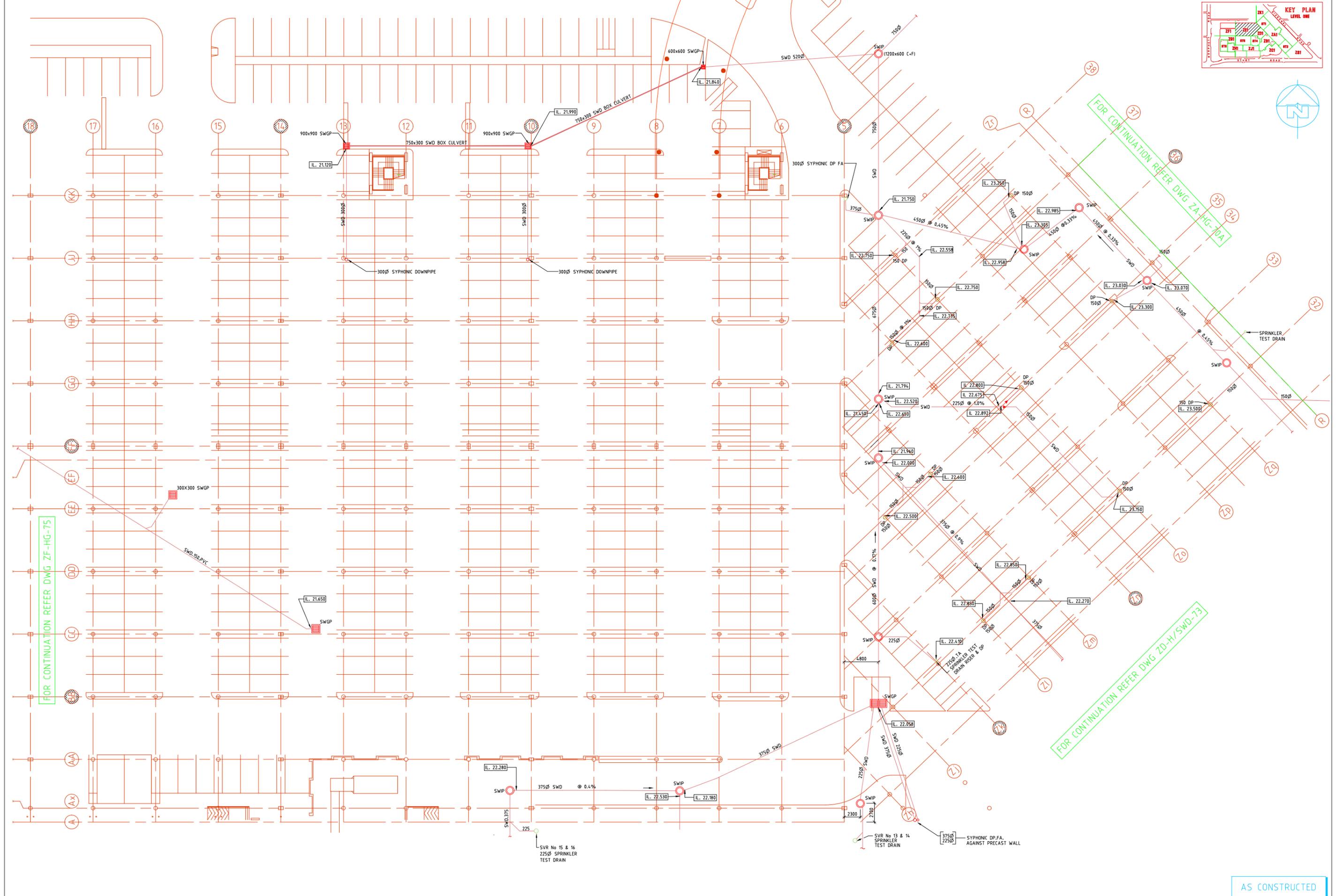
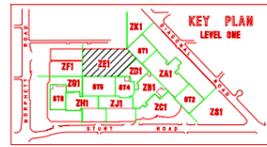
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 Library Ref.: S\MA\HYD\ASB
 Job No.:
 Date Plotted:
 Revision:



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										Checked	Drawn by	Title		Library Ref.	Job No.	Date Plotted	Revision	
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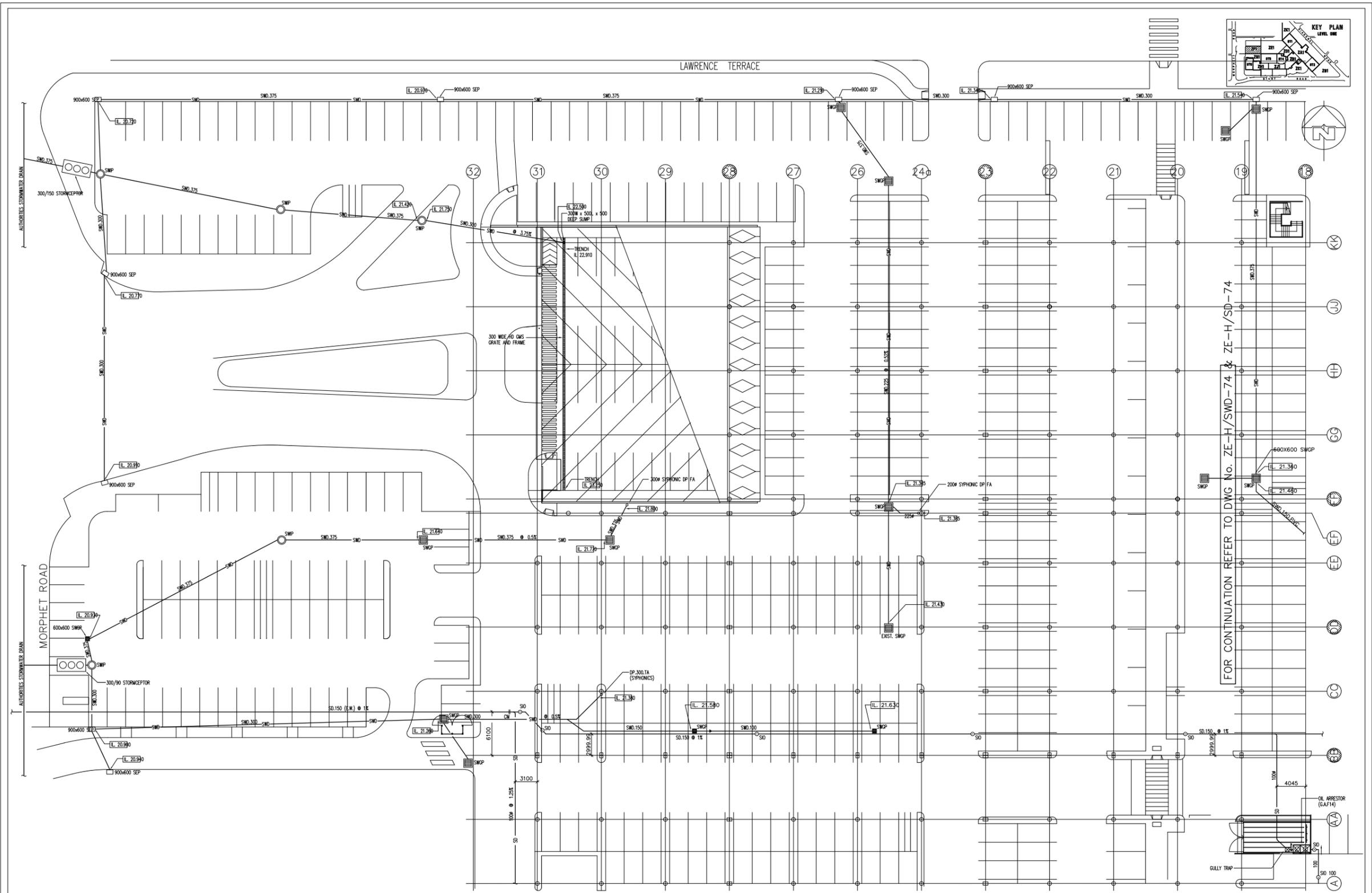
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 A.C.N. 887 744 792



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												R.P.	S.M.					

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Project Manager: R.P.
 Design by: R.P.
 Checked: R.P.
 Drawn by: S.M.
 Project: ZONE E - LEVEL 1 STORMWATER DRAINAGE
 Title: ZONE E - LEVEL 1 STORMWATER DRAINAGE
 Scale: 1:100
 Project: ZE-H/SWD-74
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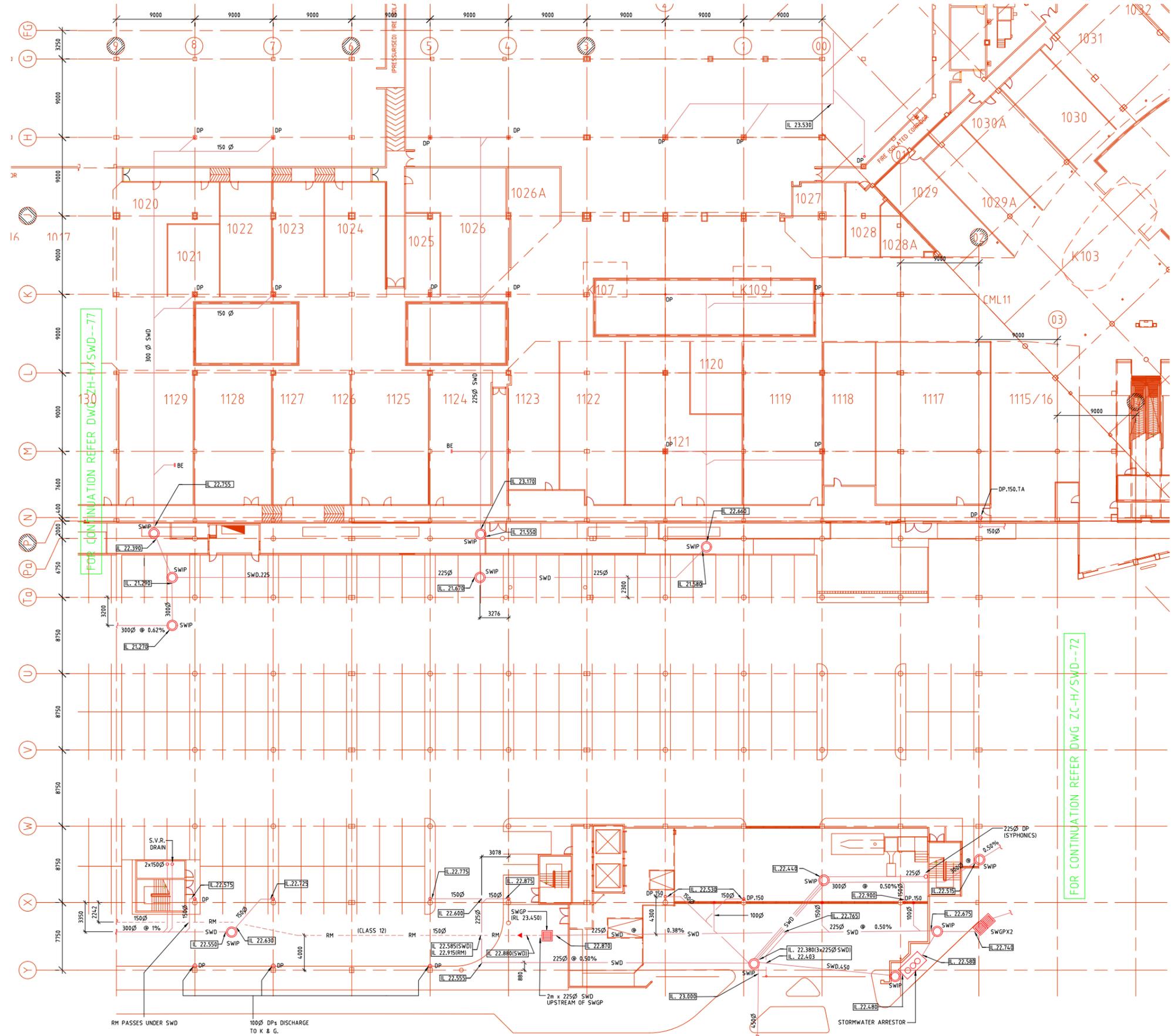
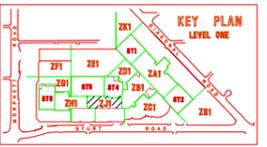
INDMARSH LUMBING
 7 RICHARD STREET,
 HINDMARSH, S.A. 5007
 SERVICES PHONE: (08) 8340 0122
 FACSIMILE: (08) 8340 3068
 A.C.N. 007 744 792

Project Manager
R.P.
 Design by
R.P.
 Checked
R.P.
 Drawn by
S.M.

Project
Title
ZONE F - LEVEL 1 HYDRAULIC SERVICES
 SEWER & STORMWATER DRAINAGE

Scale	Project	Computer Ref.	Drawing Number
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Library Ref.	Job No.	Date Plotted	Revision

STORE 4 (FOODLAND)



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FOR CONTINUATION REFER DWG ZC-H/SWD--72

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INDMARSH ZALDING SERVICES
 7 RICHARD STREET, HINDMARSH, S.A. 5007
 TELEPHONE: (08) 8340 0122
 FACSIMILE: (08) 8340 3008
 A.C.N. 887 744 792

Project: INDMARSH ZALDING PART 1 EXPANSION
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Created by eng
Monday, 13 August 2018



Legend

- Drainage Pits
- Junction Box
- Headwalls
- GPTs
- Wetlands

Wetland sizes by area (m2)

- 5000 to 43,000
- 500 to 5000
- 0 to 500

- Culverts
- Stormwater Pipes
- Properties (Linked)
- Parcels (All)
- Survey Documents
- Marion Council Boundary
- Suburbs
- Aerial 2018 (Jan)

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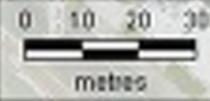
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-  Drainage Pits
-  Junction Box
-  Headwalls
-  GPTs
-  Wetlands

Wetland sites by area (m2)

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-  500 to 5000
-  0 to 500

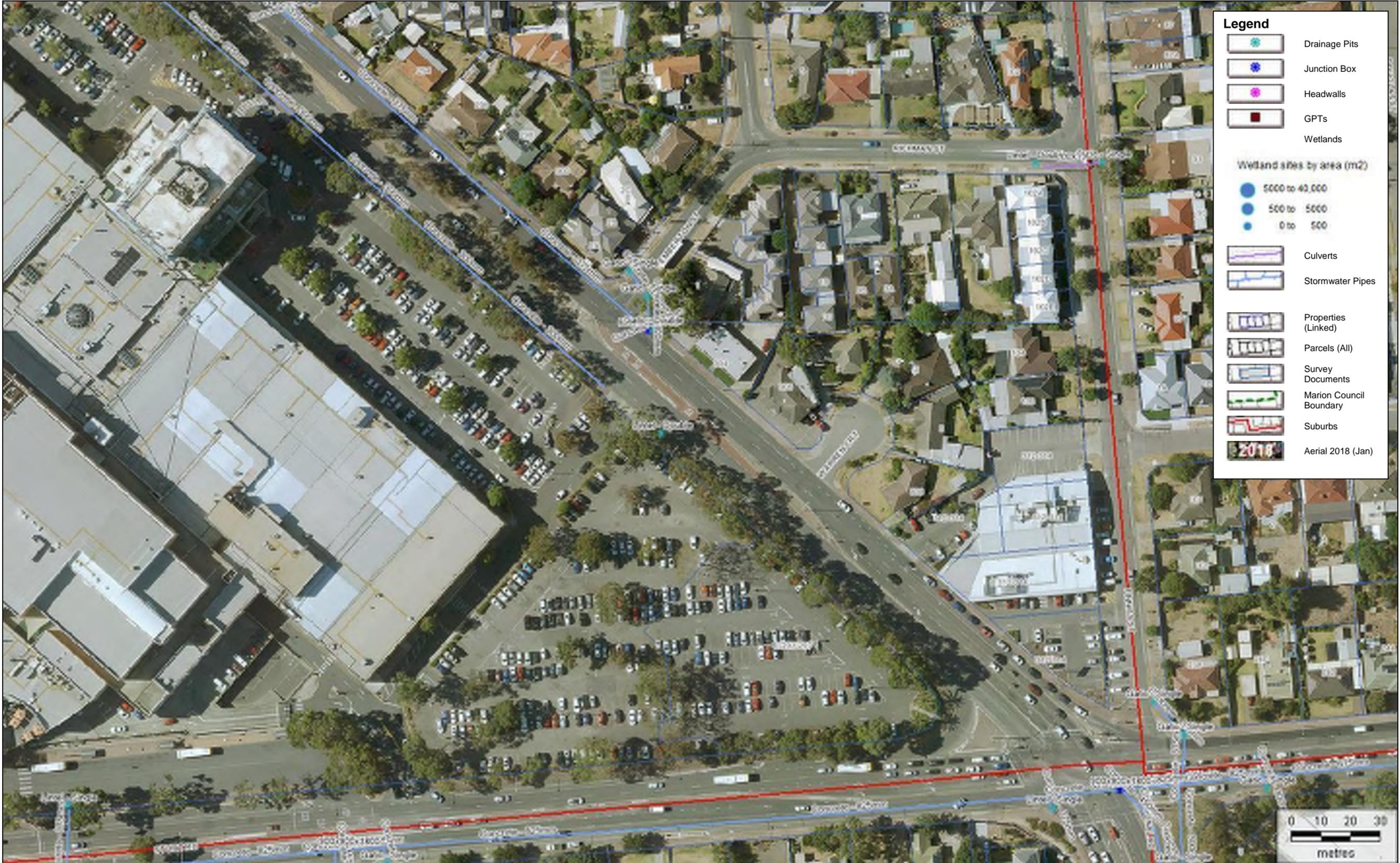
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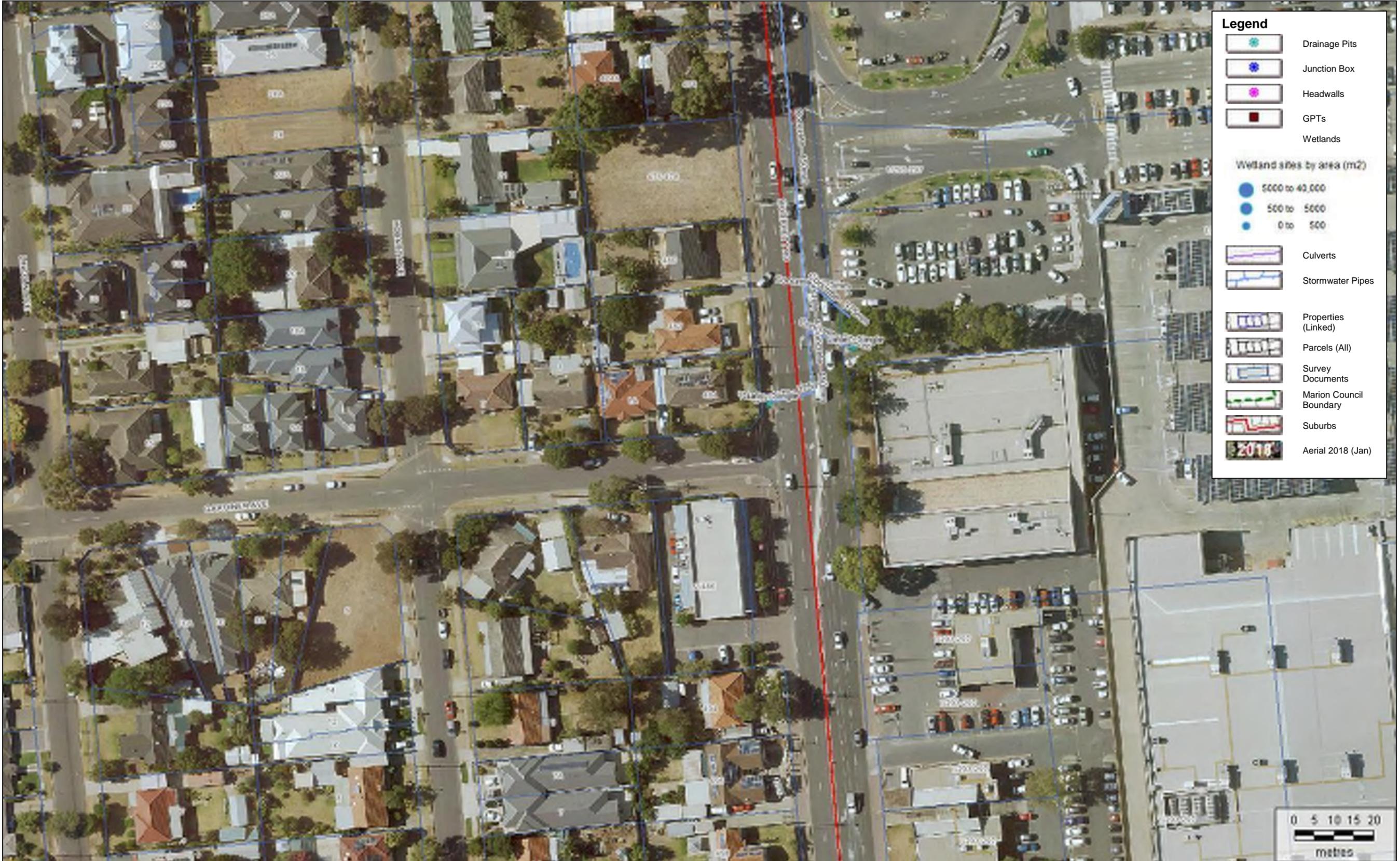
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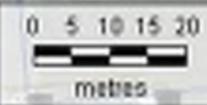
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- Drainage Pits
- Junction Box
- Headwalls
- GPTs
- Wetlands

Wetland sites by area (m2)

- 5000 to 40,000
- 500 to 5000
- 0 to 500

- Culverts
- Stormwater Pipes
- Properties (Linked)
- Parcels (All)
- Survey Documents
- Marion Council Boundary
- Suburbs
- Aerial 2018 (Jan)



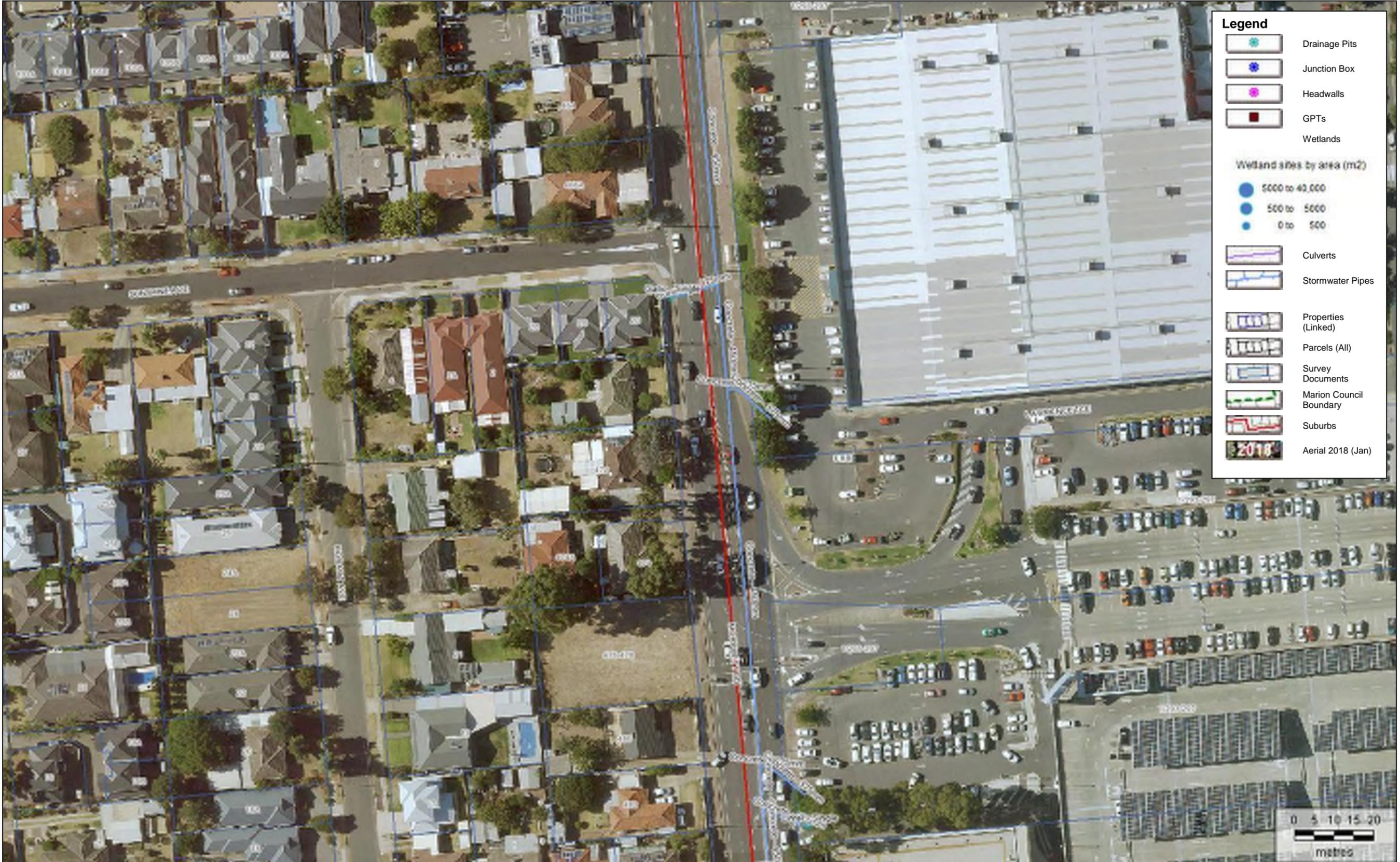
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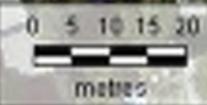
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- Drainage Pits
- Junction Box
- Headwalls
- GPTs
- Wetlands

Wetland sizes by area (m2)

- 5000 to 40,000
- 500 to 5000
- 0 to 500

- Culverts
- Stormwater Pipes
- Properties (Linked)
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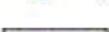
Map Width: 425 m
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Monday, 13 August 2018



Legend

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-  Junction Box
-  Headwalls
-  GPTs
-  Wetlands

Wetland sites by area (m2)

-  5000 to 43,000
-  500 to 5000
-  0 to 500

-  Culverts
-  Stormwater Pipes
-  Properties (Linked)
-  Parcels (All)
-  Survey Documents
-  Marion Council Boundary
-  Suburbs
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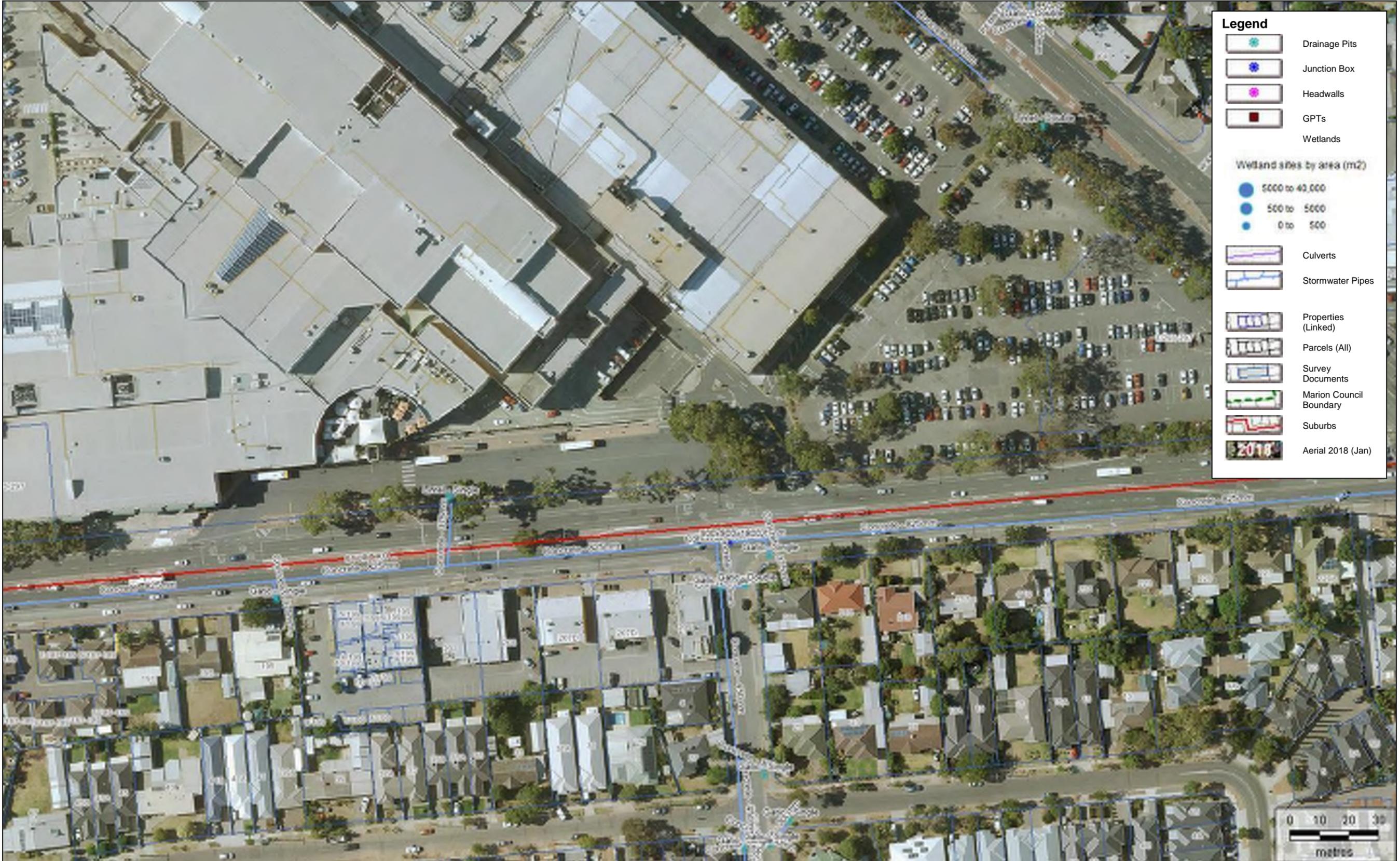
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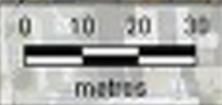
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-  Drainage Pits
-  Junction Box
-  Headwalls
-  GPTs
-  Wetlands

Wetland sites by area (m2)

-  5000 to 40,000
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-  Culverts
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APPENDIX C

CITY OF MARION

DETENTION /

RETENTION

GUIDELINES

Stormwater Retention/Detention

Last Updated September 2017

Introduction

Council's Development Plan states that, on land north of Seacombe Road, all new buildings and building extensions of 40 square metres or more in floor area, should incorporate sufficient on-site stormwater detention/retention to limit the rate of stormwater runoff.

Additionally, Building Rules introduced on 1 July 2006 require new dwellings (and some extensions or alterations) in South Australia to have an additional water supply to supplement the mains water. These provisions aim to reduce the demand on the State's mains water supply.

This brochure details the requirements for both different regulations as they relate to residential development, and how they can be satisfied through different tank configurations.

Stormwater detention/retention

Why are detention/retention tanks required?

The policies in Council's Development Plan are based on detailed engineering studies into the capacity of the Council's existing drainage systems. In the areas north of Seacombe Road, increasing residential densities and expanding industrial and commercial buildings are placing increased pressure on the existing underground drainage infrastructure, to the point where measures need to be considered immediately to prevent serious problems from arising in the near future.

Increasing the capacity of existing drainage infrastructure throughout the Council area to cater for the increase in stormwater flows is not feasible due to space and cost constraints.

Current best practice and the most cost effective method of controlling increased stormwater runoff is through either on site detention or retention of stormwater, both on a large and small scale.

Council will therefore require a stormwater detention tank or tanks to be provided in many developments to cater for extra stormwater runoff generated from increased roof area and other hard surfaces. Without this, the increase in roofed areas and other hard surfaces will result in flows exceeding the capacity of the existing underground drainage system that was designed and constructed in the 1960's.

The requirement to install stormwater detention/retention systems has been applied from 1 January 2000.

What is a Detention Tank?

A stormwater detention tank **detains** or slows the release of stormwater from your property through the provision of on-site storage. It is important to note that a detention tank only slows down the rate of flow from your property compared to a traditional rainwater tank (which is a 'retention' tank) that also stores stormwater for domestic use.

A stormwater detention tank will be empty except during periods of rainfall and for a short time after rainfall ceases.

Where are stormwater retention/detention systems required?

An on-site detention/retention system is required in all residential zones* north of Seacombe Road where the roof area of all buildings expressed as a percentage of the allotment/site area exceeds 30% and the development proposed is one of the following:

- A new dwelling
- An addition to a dwelling greater than 40m²
- Land division where existing buildings are to remain

** Requirements for on-site detention/retention systems in Commercial/Industrial Zones are available from the City of Marion's Infrastructure Department*

Where appropriate, larger subdivisions should also provide for on-site stormwater detention or retention in a reserve. If this achieves the necessary level of detention from the overall site, Council may not require additional detention measures when the individual lots in the subdivision are developed.

Retention/Detention Tank Requirements

Council's Development Plan contains policies stating that in residential areas north of Seacombe Road, sufficient on-site stormwater retention/detention should be provided in new development in order to limit stormwater runoff from the subject land so that the flows determined using the following runoff coefficients are not exceeded:

Within residential zones:	Runoff Coefficient:
5 year ARI* flood event	0.25
100 years ARI* flood event	0.45
Within non-residential zones:	Runoff Coefficient:
5 year ARI* flood event	0.65
100 year ARI* flood event	0.85

**ARI refers to "Average Return Interval"*

Stormwater Retention/Detention

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Traditionally, the coefficients have been satisfied through the provision of on-site stormwater detention. However, Council's latest Stormwater Management Plans recommend plumbed-in retention tanks instead of detention tanks because retention achieves both peak flow reduction in addition to volume reduction by enabling water conservation through reuse. These plumbed-in retention tanks also provide the additional water supply required under the Building Rules.

To assist developers, tables have been developed outlining the minimum retention/detention tank capacity/size to satisfy the relevant coefficients ([Page 5](#) of this brochure). Either option 1 (detention tanks) or option 2 (retention tanks) can be followed to satisfy the coefficients.

The size of tanks required depends upon the size of the building(s) proposed (site coverage) and the allotment area/site area of that dwelling. Where more than one building is proposed per allotment, tank capacity should be individually determined for each site and its building/s.

Alternative designs (based on accepted engineering parameters and complying with the nominated flow rates in the Development Plan) can also be submitted for the consideration of Council as part of your development application.

Note: The detention tanks referred to in the Table are standard 2 or 3 module rainwater tanks that are modified to include a 90mm inlet with a leaf guard, a 90mm outlet with an inspection opening and an outlet restriction orifice (available from Council). Detention tanks must also incorporate a permanent orifice (to ensure an appropriate rate of flow from the tank) of diameter 15mm (or 20mm if the allotment is greater than 751m² in area).

Can I use a detention tank to collect rainwater to use?

If you wish to use your detention tank to collect rainwater, you should choose to instead install a retention tank as outlined as Option 2 on [Page 5](#) of this brochure.

If you choose to follow Option 1 and provide a detention tank, the detention tank cannot be used to collect rainwater for use. A stormwater detention tank will only work effectively if it is empty when a rainfall event occurs. If a rainwater tank to store rainwater for later use is desired, a separate tank would be required.

How do I maintain a stormwater detention tank?

Maintenance is simply a matter of opening the inspection cover and checking to ensure the orifice plate has not

become blocked. Periodic checks and cleaning of the leaf guard would also be required.

The largest rainfall events are more likely to occur during the summer months - therefore, it is important that the tank is maintained all year round.

When the detention tank drains, a small amount of water will remain either in the bottom of the tank or in the pipework joining adjacent tanks. If left untreated, this water may attract mosquitoes. In order to prevent the mosquitoes breeding, the tank must either be drained on a regular basis or the water must be treated.

Please contact the Council's Environmental Health Officers for further information regarding prevention of mosquito breeding.

Additional Water Supply

Why are rainwater tanks required?

Separate to the policies in Council's Development Plan, the Building Code of Australia require new dwellings and certain dwelling additions to be provided with an additional water supply to supplement mains water.

Installing specially plumbed, minimum-sized rainwater tanks is the most common way of meeting the additional water supply requirement. Other means of providing the required additional water supply could include developments using a dual reticulated (fixed pipe) water supply system – such as Mawson Lakes – or approved bore water.

Under the rules, the additional water supply has to be plumbed to either a toilet, a water heater or to all cold water outlets in the laundry of a new home.

The same rules apply to new extensions or alterations where the area of the extension or alteration is greater than 50m² and includes a toilet, water heater or laundry cold water outlet.

What is a Retention Tank?

A retention tank **retains** water for reuse. Under the requirements, retention or "rainwater" tanks must be plumbed to a toilet or laundry for reuse.

Plumbed rainwater tanks

If rainwater tanks are to be used to provide the additional water supply required by the Building Code of Australia, new homes will need to be designed to ensure that rainwater from not less than 50m² of the roof is:

Stormwater Retention/Detention

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- Collected by gutters and downpipes
- Stored in a rainwater tank; and
- Plumbed to a toilet or a water heater or all laundry cold water outlets.

If the roof catchment area of the building is less than 50m² all the water run-off from the roof must be collected, stored and plumbed.

What size rainwater tank should be installed?

The rainwater tank must have a storage capacity not less than 1 kilolitre (1000 litres).

Where a number of dwellings contribute to a communal rainwater storage tank, each dwelling must contribute rainwater from 50m² of its roof catchment area to the rainwater tank and water from the tank must be plumbed back to each individual dwelling. In these situations, the minimum rainwater tank size required is determined by multiplying the number of dwellings that contribute to the rainwater tank by one kilolitre for each dwelling.

Additionally, an overflow device must be fitted, and a mosquito proof, non-degradable screen must be attached to protect the water quality.

The requirement for a minimum one kilolitre plumbed rainwater tank is additional to the on-site detention water storage tank requirements, but can form part of a retention tank system, as per Option 2 on [Page 5](#) of this brochure.

Plumbing requirements

The plumbing aspects of the policy are regulated by the South Australian Water Corporation (SA Water) in accordance with the Waterworks Act 1932 and Waterworks Regulations 1996. SA Water require all plumbing work to comply with AS/NZS 3500:2003, the National Plumbing and Drainage Code and any SA Variations published by SA Water. The technical requirements for rainwater tanks are contained in Section 14 of AS/NZS 3500:2003 Part 1 and the SA Water Variations

A licensed plumber must:

- Install the piping system delivering the rainwater to the water closet, water heater or cold water laundry outlets and
- Complete a Certificate of Compliance certifying that the installation has been installed in accordance with AS/NZS 3500 and the SA Variations. The Certificate of Compliance must be provided to SA Water and

the home owner within 7 days of completion of the work.

When must the rainwater tank be installed?

Regulation 83A of the Development Regulations 2008 states that all new Class 1a buildings (i.e. dwellings and dwelling additions) are required to have all connections made for the supply of water from all sources prior to the occupation of the dwelling. That is, all sources of water identified in the development approval (mains, rainwater tank, third pipe scheme) must be connected before the dwelling is occupied.

Combined Retention and Detention Tanks

Where both detention and retention tanks are required, combination tanks are permitted. A combination tank is a tank constructed to store at least 1000 litres of water while also containing the required stormwater detention volume as specified under Option 1 on [Page 5](#) of this brochure. Such a tank would have to be connected to the dwelling as per the retention requirements and must also have the slow release orifice installed partway up to meet the detention requirements. You will need to consult a licensed plumber or tank manufacturer to assist in specifying the tank system.

Alternatively, a retention system can be provided in accordance with Option 2 on [Page 5](#) of this brochure to substitute for both detention and rainwater tanks.

Stormwater Retention/Detention

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Other Information

Development applications

All development applications lodged with local councils for new houses and relevant extensions/alterations for houses need to include details of how they will meet the water saving requirements. If rainwater tanks are to be used, details of the size, location, whether the tank is to be on a stand or at ground level, area of roof catchment to the tank and plumbing details for the installation of the tank must be included on the plans.

Installation of new rainwater tanks to existing houses

Under Schedule 3 of the Development Regulations 2008, a new rainwater tank to an existing dwelling (and any supporting structure) does not require Development Approval if it meets the following requirements:

- is part of a roof-drainage system; and
- has a total floor area not exceeding 10 square metres; and
- is located wholly above ground; and
- has no part higher than 4 metres above the natural surface of the ground.

Irrespective of whether a tank requires Development Approval or not, the overflow from rainwater tanks should always be directed to the street. If the tank is to be supported by a stand, care should be taken to ensure that there is adequate support for the stand as a 1000 litre tank will weigh over 1 tonne when full. It is recommended that a licensed builder be consulted to provide advice on adequate support for the stand.

Regulated trees

Any work that may substantially damage or affect a significant tree or trees, whether on your property or an adjoining property, requires approval from the Council. For clarification on what a significant tree is and what are considered to be tree damaging activities, please refer to separate Information Brochure "[Regulated and Significant Trees](#)".

Note that, a tree damaging activity may occur as a result of work associated with installation of a stormwater system (for example, digging of trenches for pipework may affect root systems). In these cases, a Development Application for tree damaging activities must be lodged with and approved by the Council before construction commences.

Want to Know More?

The above information is advisory only. It is intended to provide a guide and a general understanding of the key points associated with the particular topic. It is not a substitute for reading the relevant legislation or the Development Plan.

It is recommended that if you are intending to undertake development, you seek professional advice or contact the Council for any specific enquiries or for further assistance concerning the use and development of land.

Contact Details - City of Marion Development and Regulatory Services Division

245 Sturt Road
Sturt SA 5047

PO Box 21
Oaklands Park SA 5046

Telephone: (08) 8375 6685
Facsimile: (08) 8375 6899

Website: www.marion.sa.gov.au
Email: council@marion.sa.gov.au

Stormwater Retention/Detention

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Option 1: Minimum Tank Requirements for On-Site Detention/Retention					
Allotment/ Site Area ²	Roof area ³ as percentage of allotment (or site) area:				
	<30%	30-35%	35-45%	45-55%	>55%
	Required minimum percentage of main roof area ⁴ directed to tank				
	N/A	60%	70%	80%	80%
350m ² or less	Nil	1 x 2-module tank ¹ , or equiv. volume (660L)	1 x 2-module tank, or equiv. volume (660L)	1 x 3-module tank, or equiv. volume (1000L)	2800L
351-450m ²	Nil	1 x 2-module tank, or equiv. volume (660L)	1 x 3-module tank, or equiv. volume (1000L)	1 x 2-module tank + 1 x 3-module tank, or equiv. volume (1660L)	4400L
451-550m ²	Nil	1 x 3-module tank, or equiv. volume (1000L)	2 x 2-module tanks, or equiv. volume (1320 L)	2200L	5800L
551-650m ²	Nil	2 x 2-module tanks, or equiv. volume (1320L)	1 x 2-module tank + 1 x 3-module tank, or equiv. volume (1660 litres)	2900L	7400L
651-750m ²	Nil	1 x 2-module tank + 1 x 3-module tank, or equiv. volume (1660L)	2 x 3-module tanks, or equiv. volume (2000L)	3700L	9200L
751-850m ²	Nil	2 x 2-module tanks, or equiv. volume (1320L)	2 x 3-module tanks, or equiv. volume (2000L)	3400L	9500L
851-950m ²	Nil	1 x 2-module tank + 1 x 3-module tank, or equiv. volume (1660L)	2200L	4100L	10500L
951-1050m ²	Nil	2 x 3-module tanks, or equiv. volume	2700L	4700L	12130L
PLUS	1000L retention (rainwater) tank Rainwater from not less than 50m ² of the roof must be collected by gutters and downpipes, stored in the tank, and plumbed to a toilet, water heater, or all laundry cold water outlets				

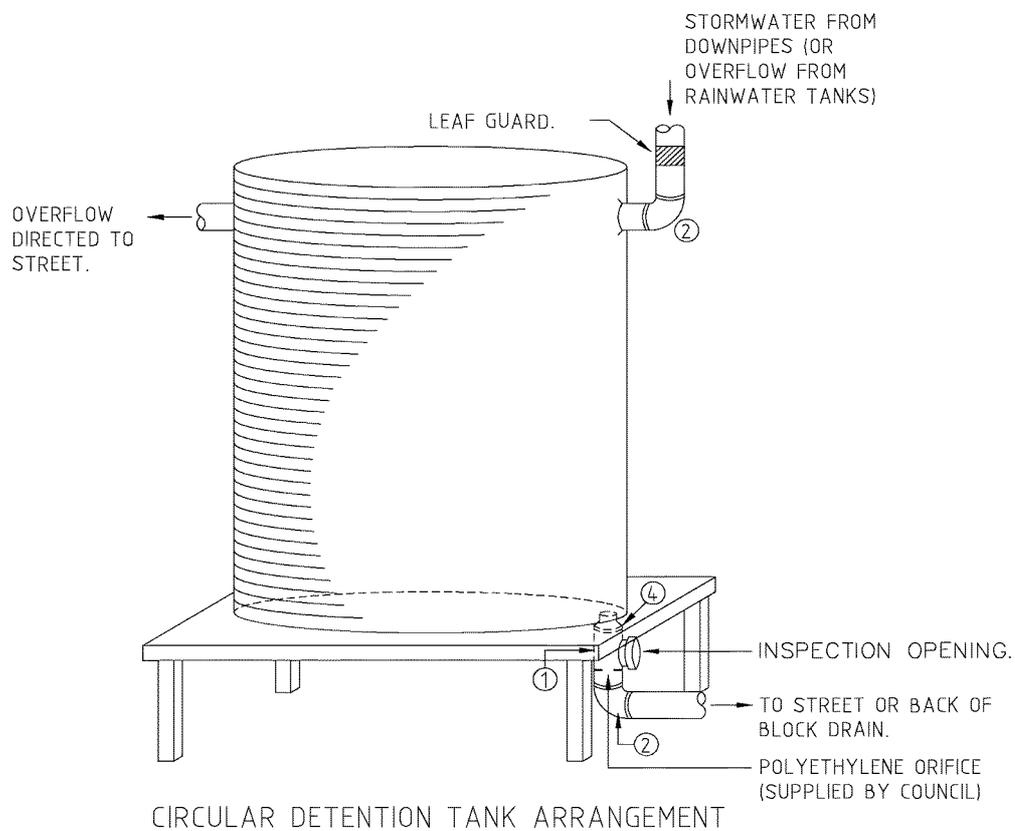
OR

Option 2: Minimum Tank Requirements for On-Site Retention (recommended)		
Roof Area ³	Tank Capacity	Design Requirements
150m ² or less	3000L	Fully plumbed into toilet and laundry ⁵ At least 80% of the main roof area connected to tank
Greater than 150 ²	5000L	Fully plumbed into toilet and laundry ⁵ At least 80% of the main roof area connected to tank

1. A 2-module tank refers to a 660 litre rectangular tank and a 3-module tank refers to a 1000 litre rectangular tank
2. Allotment and site area to be rounded to the nearest whole square metre
3. 'Roof area' refers to the roof area of all buildings on the allotment, including any net addition to the roof area as a result of the proposed development
4. 'Main roof area' excludes any roof not contiguous with the main roof of the dwelling
5. Larger rainwater retention tanks that are also plumbed into a water heater are encouraged

Stormwater Retention/Detention

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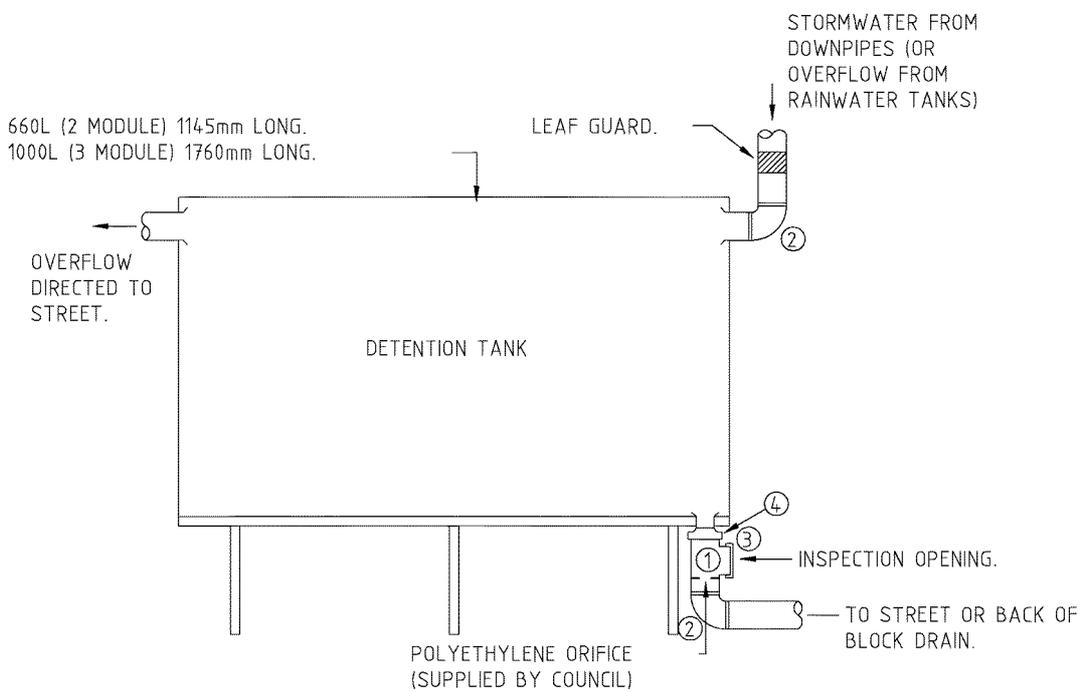


FITTINGS

- ① 90mm TEE PIECE
- ② 90mm 45° BEND
- ③ 90mm PUSH ON CAP
- ④ 75/90mm EXPANSION

Stormwater Retention/Detention

Last Updated September 2017



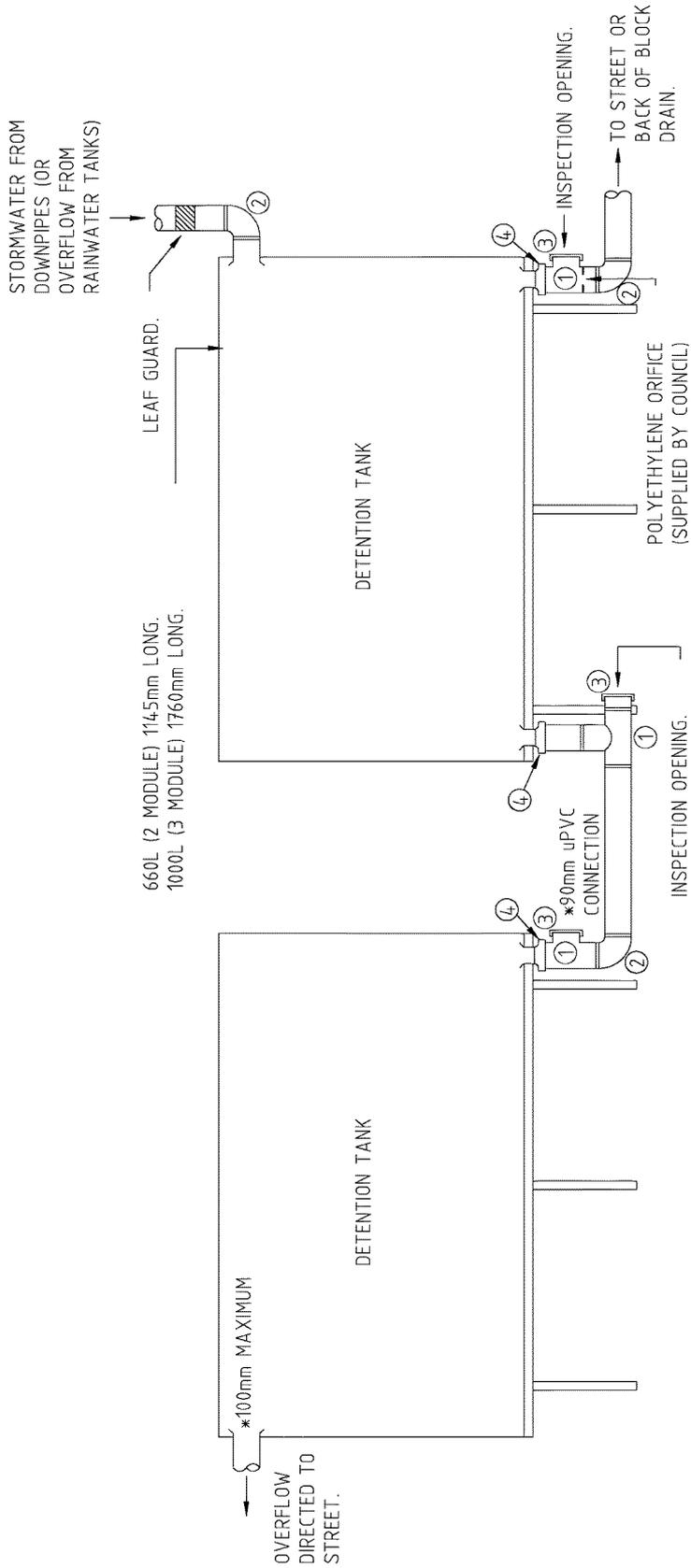
SINGLE DETENTION TANK ARRANGEMENT

FITTINGS

- ① 90mm TEE PIECE
- ② 90mm 45° BEND
- ③ 90mm PUSH ON CAP
- ④ 75/90mm EXPANSION

Stormwater Retention/Detention

Last Updated September 2017

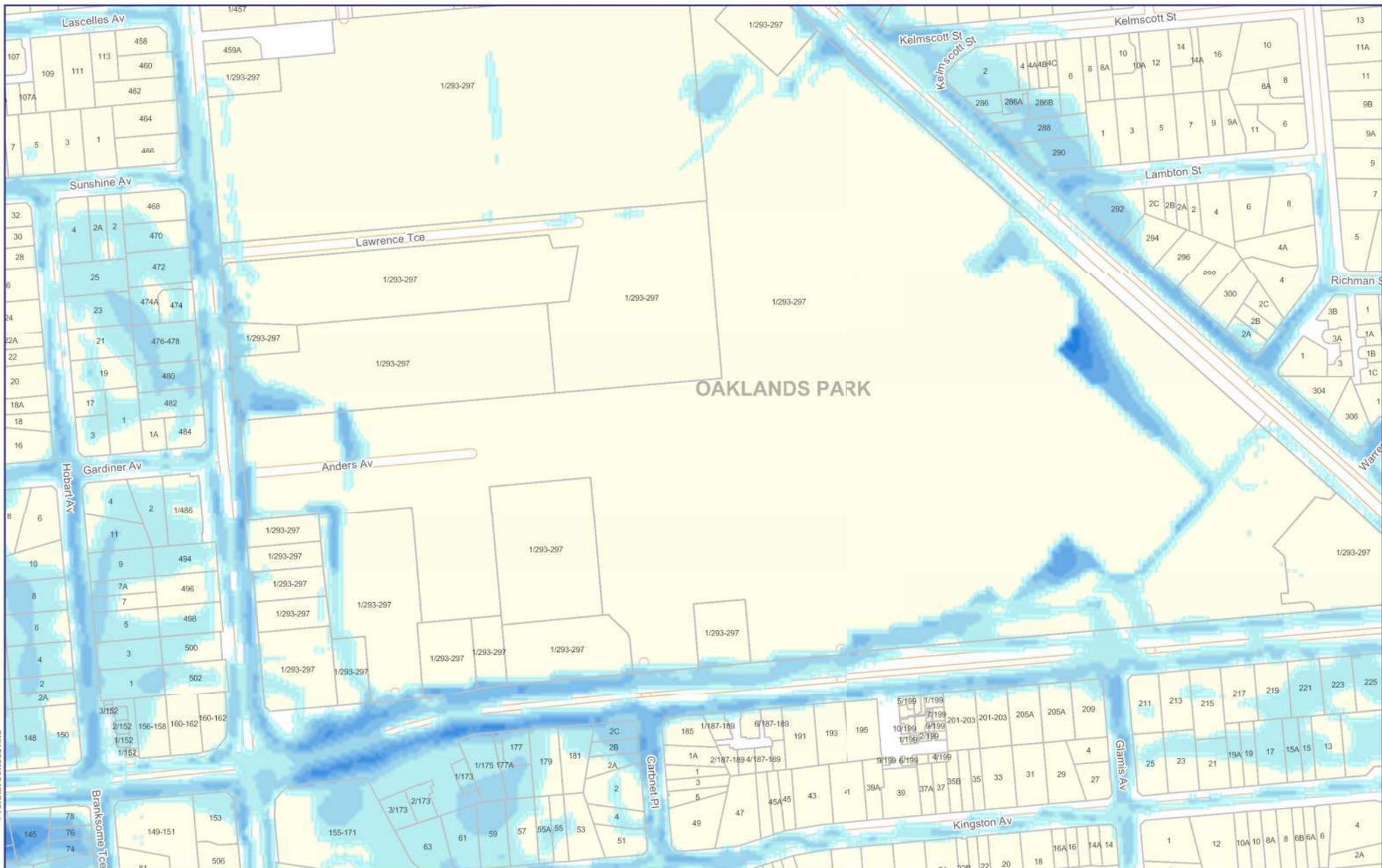


MULTIPLE DETENTION TANK ARRANGEMENT

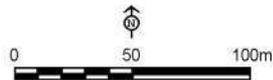
FITTINGS	
①	90mm TEE PIECE
②	90mm 45° BEND
③	90mm PUSH ON CAP
④	75/90mm EXPANSION

APPENDIX D

1 IN 100 YEAR FLOOD PLAIN MAPPING



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Disclaimer

This map is provided on the basis that those responsible for its preparation and publication do not accept any responsibility for any loss or damage alleged to be suffered by anyone as a result of the publication of the map unless it contains an error or, as a result of the use or misuse of the information provided herein.

The data contained on this map is based on survey, hydraulic and hydrological modelling to an accuracy sufficient for broad scale flood risk management and planning. Further development, wetlands and/or other changes to the catchment may affect the actual flood extents.

The modelling reflects current practice but it must be realised that there are uncertainties and assumptions associated with the data and the processes on which the models are based, and therefore the flood extents shown on this map cannot be regarded as exact predictions. The flood extents are not based on actual historical floods.

Maximum Flood Depth (m)



City of Marion / City of Holdfast Bay
**100YR ARI FLOOD INUNDATION
 EXISTING SCENARIO**
 Map 10.2

APPENDIX E

CALCULATIONS

Westfield Marion - Stormwater Drainage

- Council require post-development flows for Q_s and Q_{100} events to be limited to the pre-development rates (based on runoff coefficients of 0.65 and 0.85 respectively)

- Northern car park - Area = $10,000\text{m}^2$
Pre-dev $C = 0.65$ (Q_s) and 0.85 (Q_{100})
 $t_c = 15\text{mins}$
 $I_s = 49.2\text{mm/hr}$
 $I_{100} = 110\text{mm/hr}$

$$\begin{aligned}\text{Pre-dev } Q_s &= 2.78 \times 0.65 \times 49.2 \times 1.00 \\ &= \underline{89\text{ l/s}}\end{aligned}$$

$$\begin{aligned}\text{Pre-dev } Q_{100} &= 2.78 \times 0.85 \times 110 \times 1.00 \\ &= \underline{260\text{ l/s}}\end{aligned}$$

Post-development, $C = 0.90$

\therefore Detention storage, $Q_s = 33\text{m}^3$
 $Q_{100} = 15\text{m}^3$
- refer attached spreadsheets

Basic Stormwater Detention Assessment

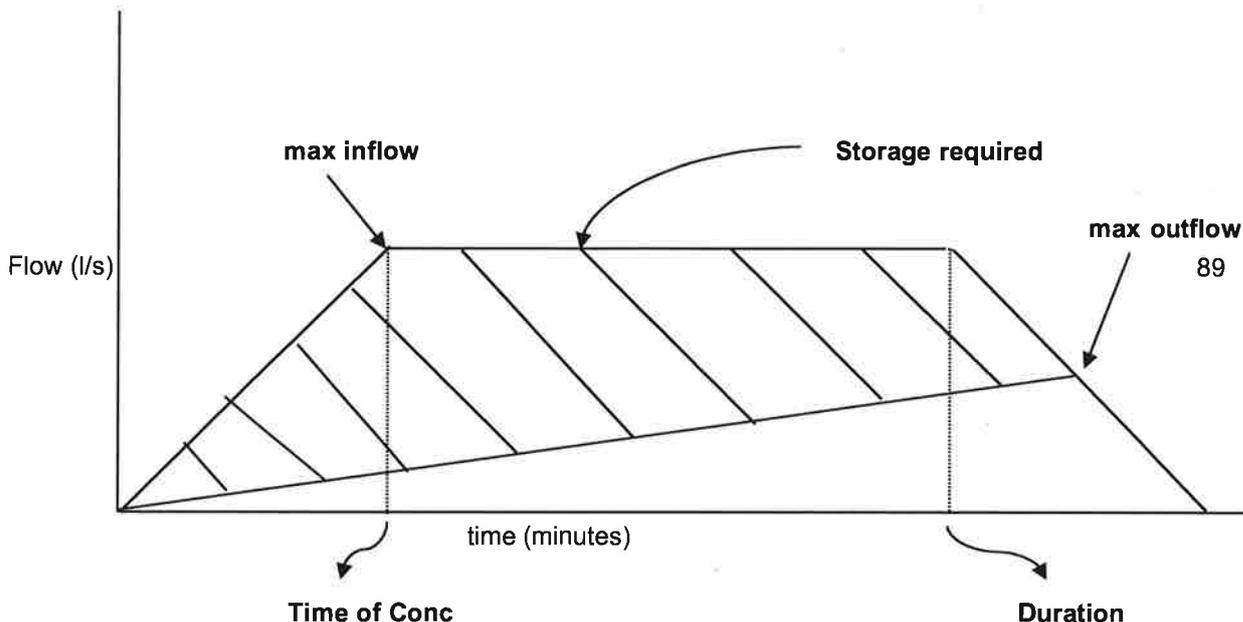
Title: Westfield Marion - Northern Car Park

Date: 15/08/18

Job No: WGA189747

Area	10000	m ²
Coeff Permeability	0.9	
Time of conc.	15	min
ARI Storm	5 Year	▼
Max Outflow Qp	89	l/sec

Duration min	Intensity mm/hr	Inflow rate Ip l/sec	Inflow Vol Vi m3	Max Storage Smax m3
10	61	152.5	91.50	24.75
11	58	145.0	95.70	26.28
12	55	137.5	99.00	26.91
13	53	132.5	103.35	28.59
14	51	127.5	107.10	29.67
15	49.2	123.0	110.70	30.60
16	47.5	118.8	114.00	31.23
17	46.1	115.3	117.56	32.12
18	44.7	111.8	120.69	32.58
19	43.4	108.5	123.69	32.91
20	42.2	105.5	126.60	33.15
21	41.1	102.8	129.47	33.35
22	40	100.0	132.00	33.21
23	39	97.5	134.55	33.09
24	38.1	95.3	137.16	33.03



Basic Stormwater Detention Assessment

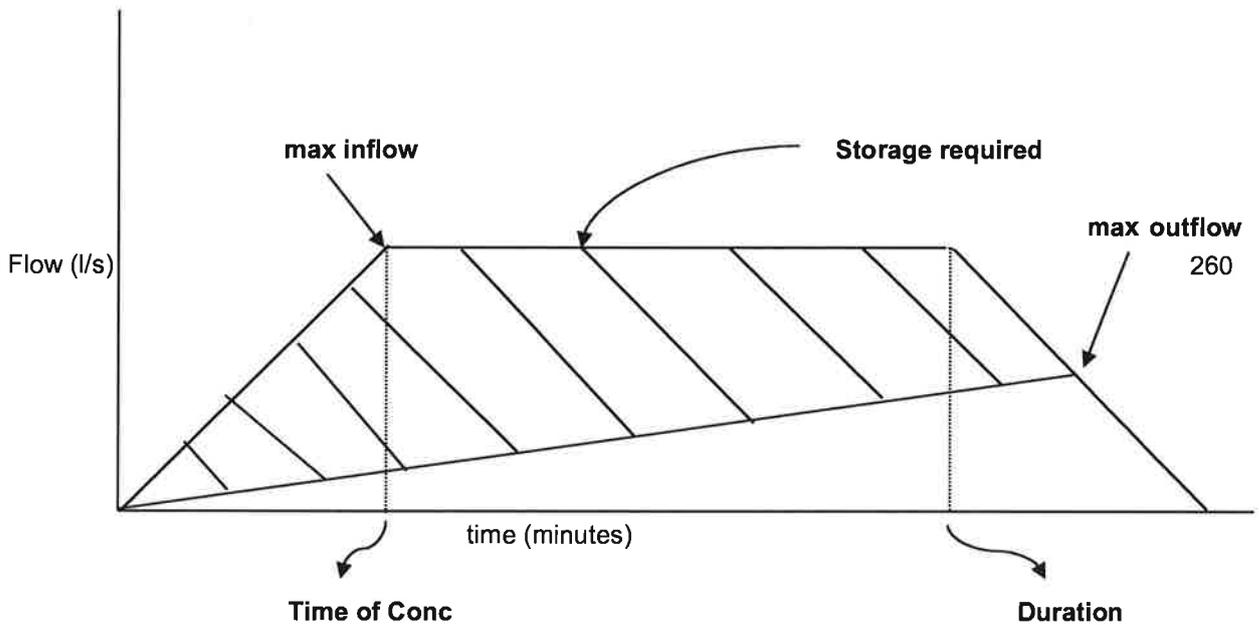
Title: Westfield Marion - Northern Car Park

Date: 15/08/18

Job No: WGA189747

Area	10000	m ²
Coeff Permeability	0.9	
Time of conc.	15	min
ARI Storm	100 Year	▼
Max Outflow Qp	260	l/sec

Duration min	Intensity mm/hr	Inflow rate Ip l/sec	Inflow Vol Vi m3	Max Storage Smax m3
10	136	340.0	204.00	9.00
11	130	325.0	214.50	11.70
12	124	310.0	223.20	12.60
13	119	297.5	232.05	13.65
14	115	287.5	241.50	15.30
15	110	275.0	247.50	13.50
16	107	267.5	256.80	15.00
17	103	257.5	262.65	13.05
18	100	250.0	270.00	12.60
19	97	242.5	276.45	11.25
20	94	235.0	282.00	9.00



APPENDIX F

INDICATIVE STORMWATER SKETCH PLAN

Colin Hill
SENIOR CIVIL ENGINEER

Telephone: 08 8223 7433

Email: chill@wga.com.au

ADELAIDE

60 Wyatt St

Adelaide SA 5000

Telephone: 08 8223 7433

Facsimile: 08 8232 0967

MELBOURNE

Level 2, 31 Market St

South Melbourne VIC 3205

Telephone: 03 9696 9522

PERTH

634 Murray St

West Perth WA 6005

Telephone: 08 9336 6528

DARWIN

Suite 7/9 Keith Ln

Fannie Bay NT 0820

Telephone: 08 8941 1678

Facsimile: 08 8941 5060

WHYALLA

1/15 Darling Tce

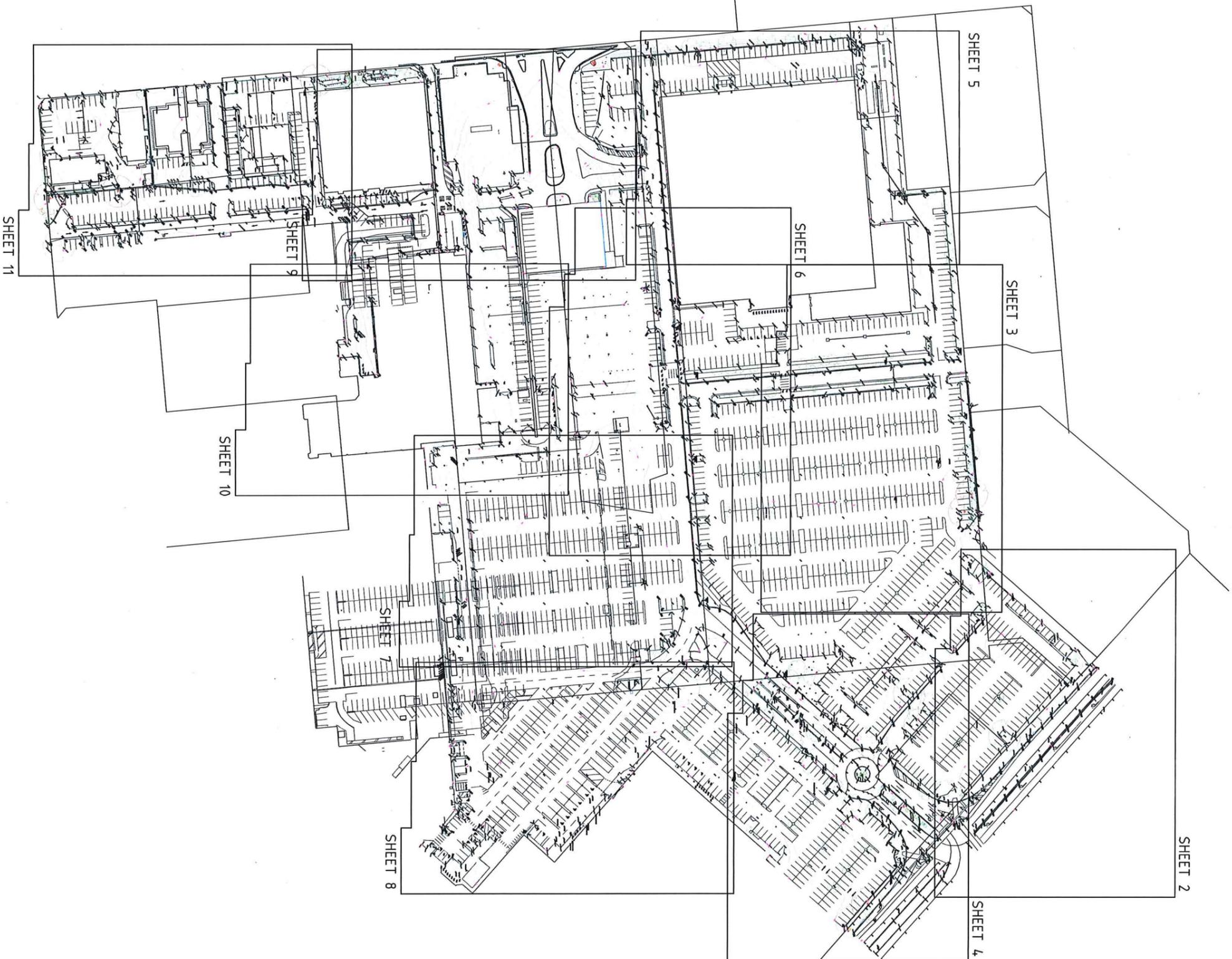
Whyalla SA 5600

Phone: 08 8644 0432

WALLBRIDGE GILBERT AZTEC

www.wga.com.au

adelaide@wga.com.au



SKS SURVEYS PTY LTD
43 EDWARD STREET
Northwood SA 5067
Ph: 0418 673 705
REFERENCE: 337618

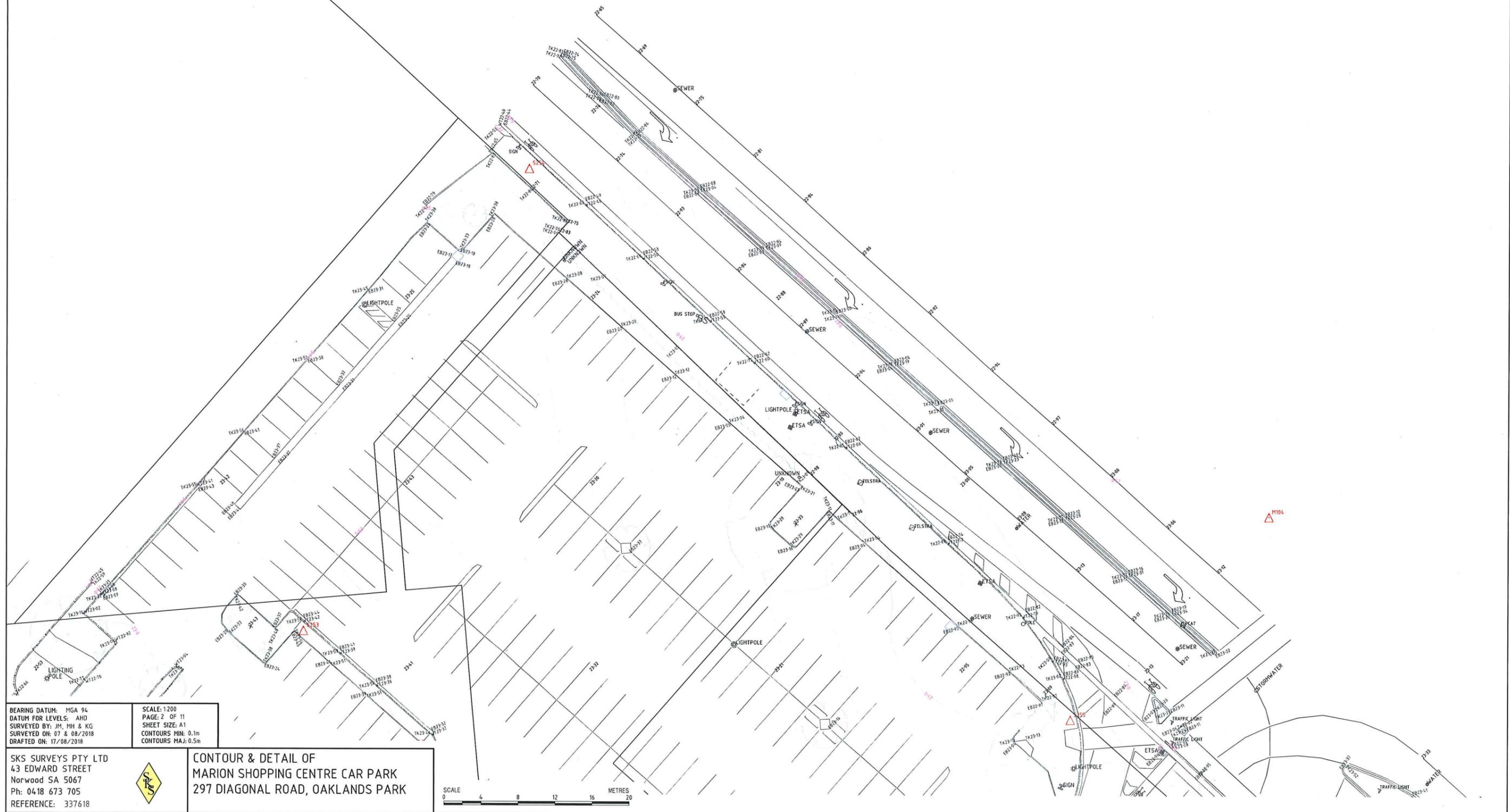


CONTOUR & DETAIL OF
MARION SHOPPING CENTRE CAR PARK
297 DIAGONAL ROAD, OAKLANDS PARK
LOCATION PLAN

BEARING DATUM: MGA 94
DATUM FOR LEVELS: AHD
SURVEYED BY: JH, PH & KG
CHECKED BY: JH & KG
DRAWN ON: 17/09/2018

SCALE: 1:1000
PAGE: 1 OF 11
SHEET SIZE: A1
CONTOUR INTERVAL: 0.5M





BEARING DATUM: MGA 94
DATUM FOR LEVELS: AHD
SURVEYED BY: JM, MH & KG
SURVEYED ON: 07 & 08/2018
DRAFTED ON: 17/08/2018

SCALE: 1:200
PAGE: 2 OF 11
SHEET SIZE: A1
CONTOURS MIN: 0.1m
CONTOURS MAJ: 0.5m

SKS SURVEYS PTY LTD
43 EDWARD STREET
Norwood SA 5067
Ph: 0418 673 705
REFERENCE: 337618



CONTOUR & DETAIL OF
MARION SHOPPING CENTRE CAR PARK
297 DIAGONAL ROAD, OAKLANDS PARK





VIDE SHEET 5 FOR CONTINUATION

BEARING DATUM: MGA 94
 DATUM FOR LEVELS: AHD
 SURVEYED BY: JM, MH & KG
 SURVEYED ON: 07 & 08/2018
 DRAFTED ON: 17/08/2018

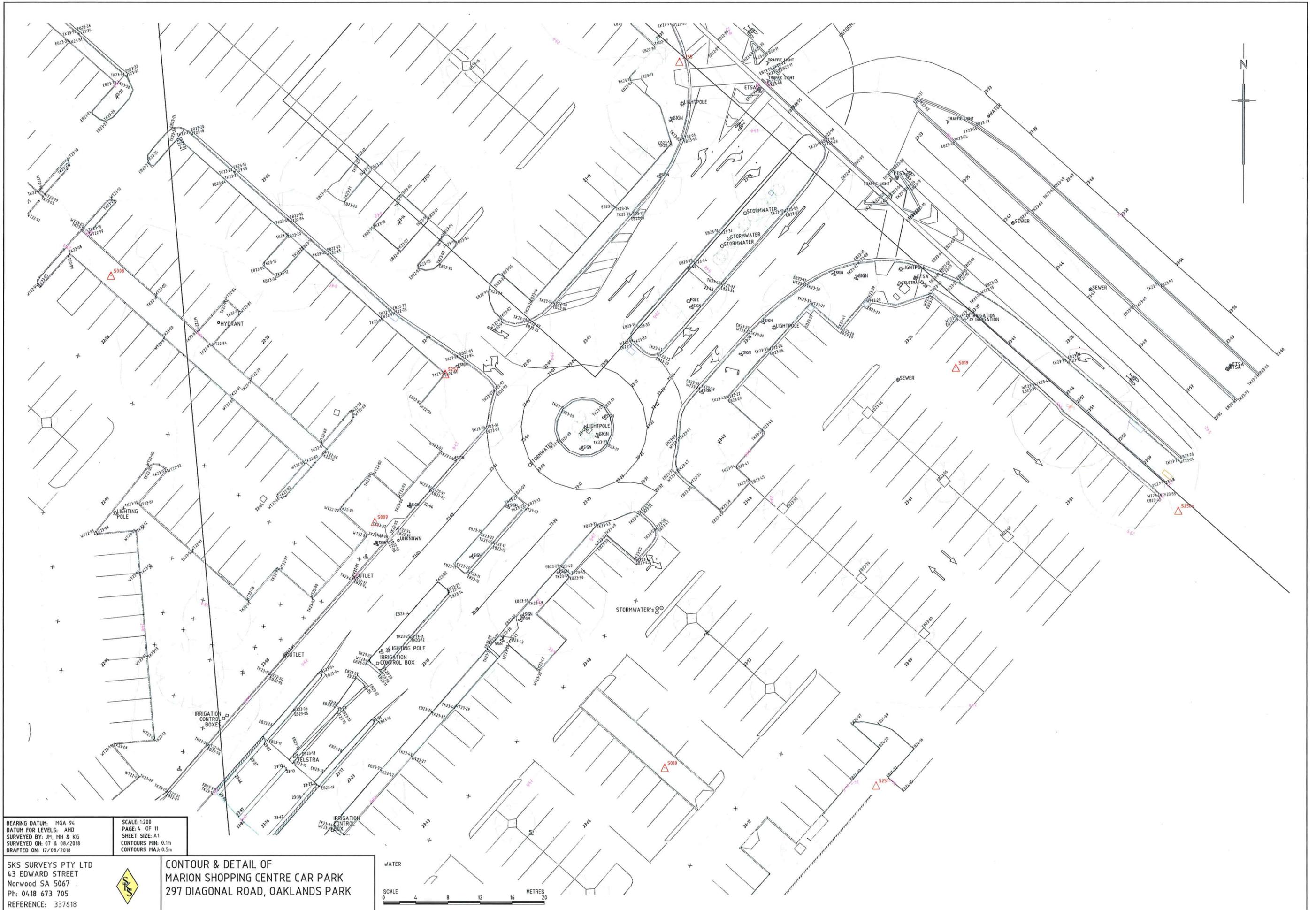
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 PAGE: 3 OF 11
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 CONTOURS MIN: 0.1m
 CONTOURS MAX: 0.5m

SKS SURVEYS PTY LTD
 43 EDWARD STREET
 NORWOOD SA 5067
 Ph: 0418 673 705
 REFERENCE: 337618



CONTOUR & DETAIL OF
 MARION SHOPPING CENTRE CAR PARK
 297 DIAGONAL ROAD, OAKLANDS PARK





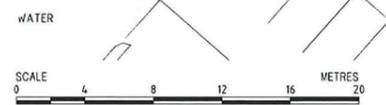
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 SURVEYED ON: 07 & 08/2018
 DRAFTED ON: 17/08/2018

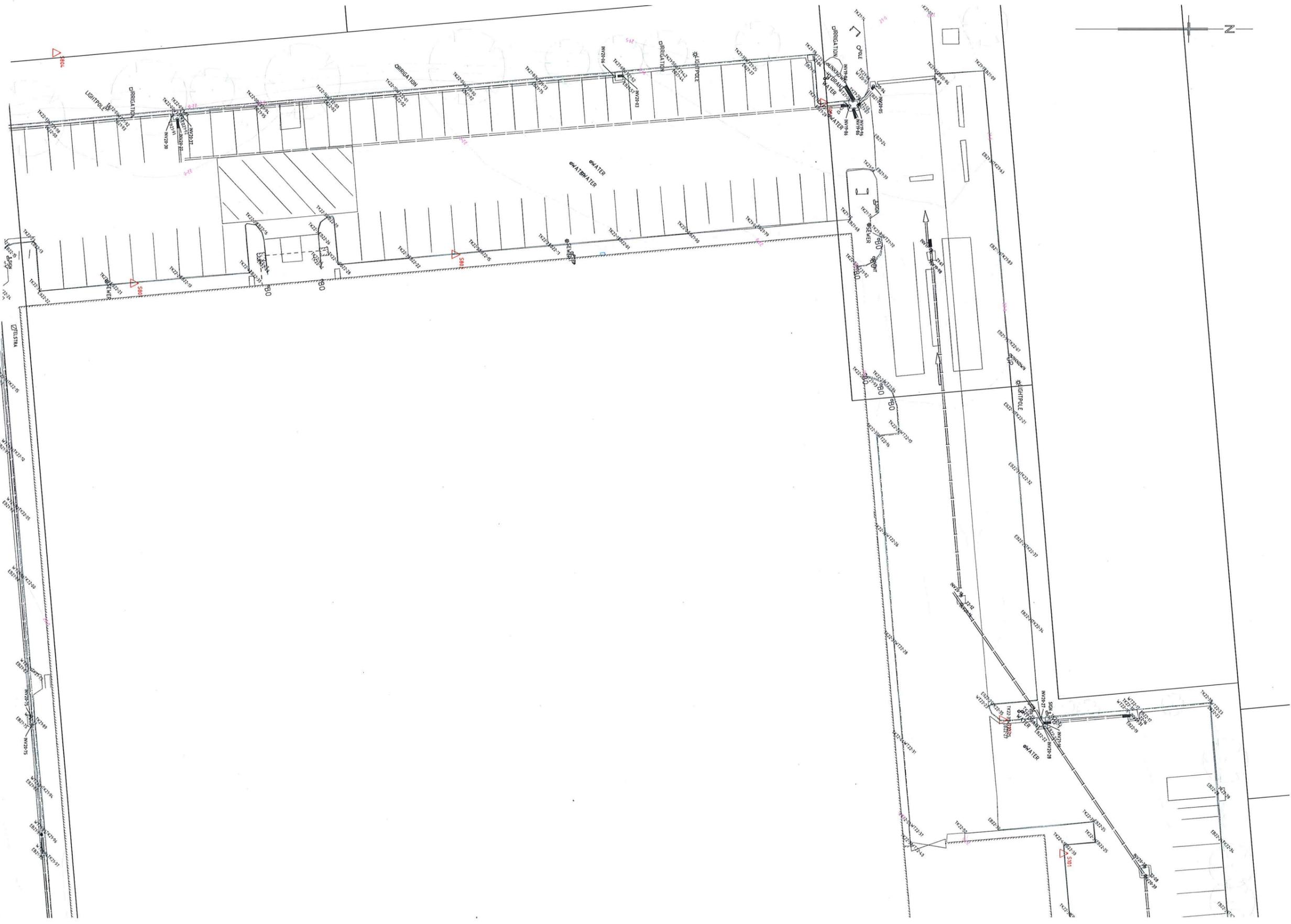
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 CONTOURS MIN: 0.1m
 CONTOURS MAJ: 0.5m

SKS SURVEYS PTY LTD
 43 EDWARD STREET
 NORWOOD SA 5067
 Ph: 0418 673 705
 REFERENCE: 337618



CONTOUR & DETAIL OF
 MARION SHOPPING CENTRE CAR PARK
 297 DIAGONAL ROAD, OAKLANDS PARK





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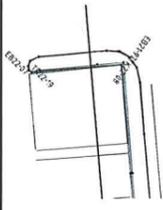
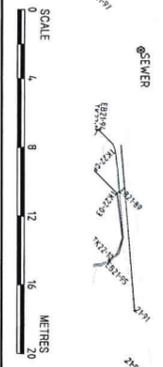
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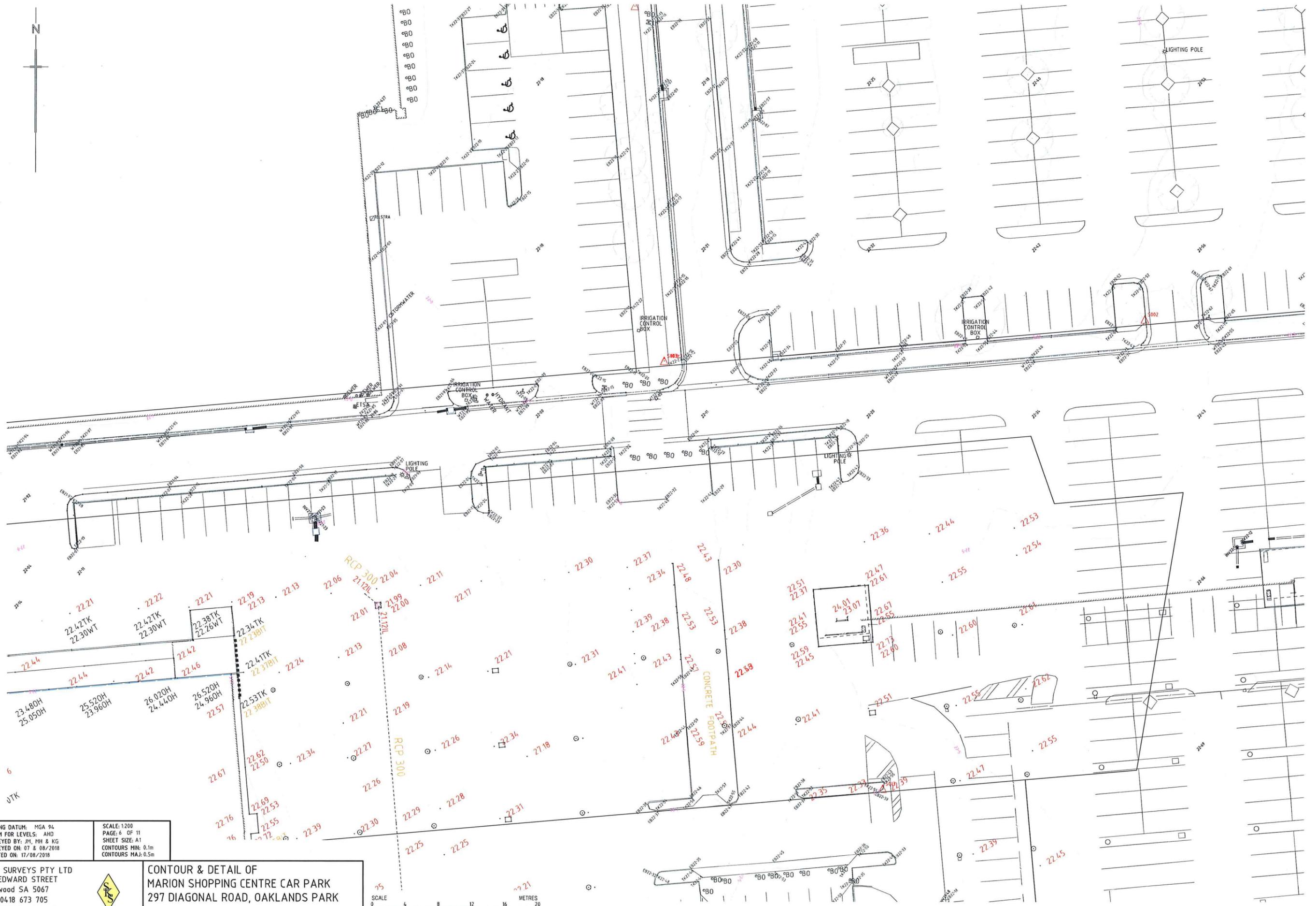


CONTOUR & DETAIL OF
 MARION SHOPPING CENTRE CAR PARK
 297 DIAGONAL ROAD, OAKLANDS PARK

BEARING DATUM: NGA 94
 DATUM FOR LEVELS: AHD
 SURVEYED ON: 27 & 28/2/2018
 DRAFTER ON: 17/08/2018

SCALE 1:200
 OF 11
 SHEET SIZE A1
 CONTOURS MIN. 0.1m
 CONTOURS MAX. 0.5m





BEARING DATUM: MGA 94
 DATUM FOR LEVELS: AHD
 SURVEYED BY: JM, MH & KG
 SURVEYED ON: 07 & 08/2018
 DRAFTED ON: 17/08/2018

SCALE: 1:200
 PAGE: 6 OF 11
 SHEET SIZE: A1
 CONTOURS MIN: 0.1m
 CONTOURS MAJ: 0.5m

SKS SURVEYS PTY LTD
 43 EDWARD STREET
 NORWOOD SA 5067
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CONTOUR & DETAIL OF
 MARION SHOPPING CENTRE CAR PARK
 297 DIAGONAL ROAD, OAKLANDS PARK



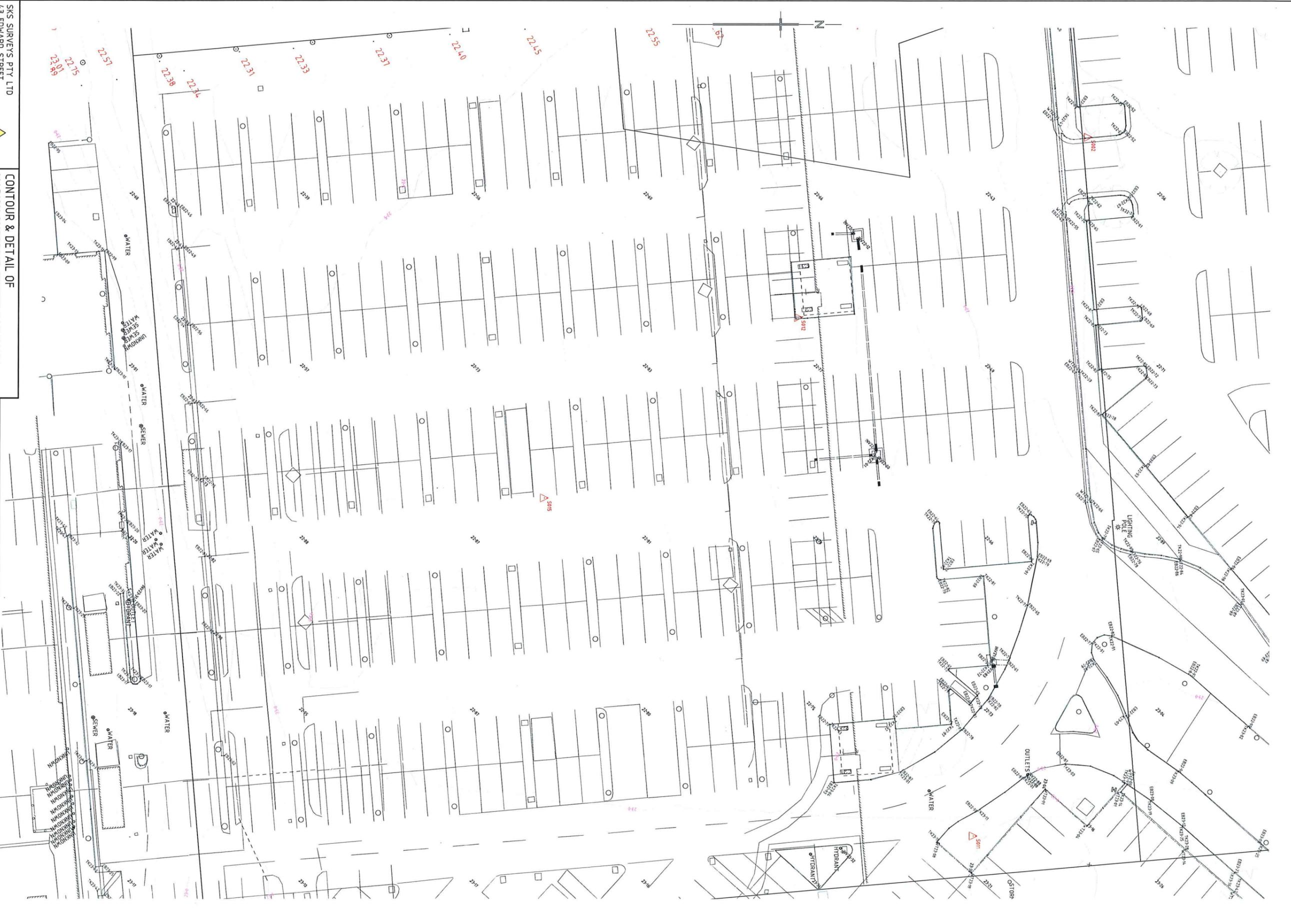
S&S SURVEYS PTY LTD
43 EDWARD STREET
Northwood SA 5067
Ph: 0418 673 705
REFERENCE: 337618

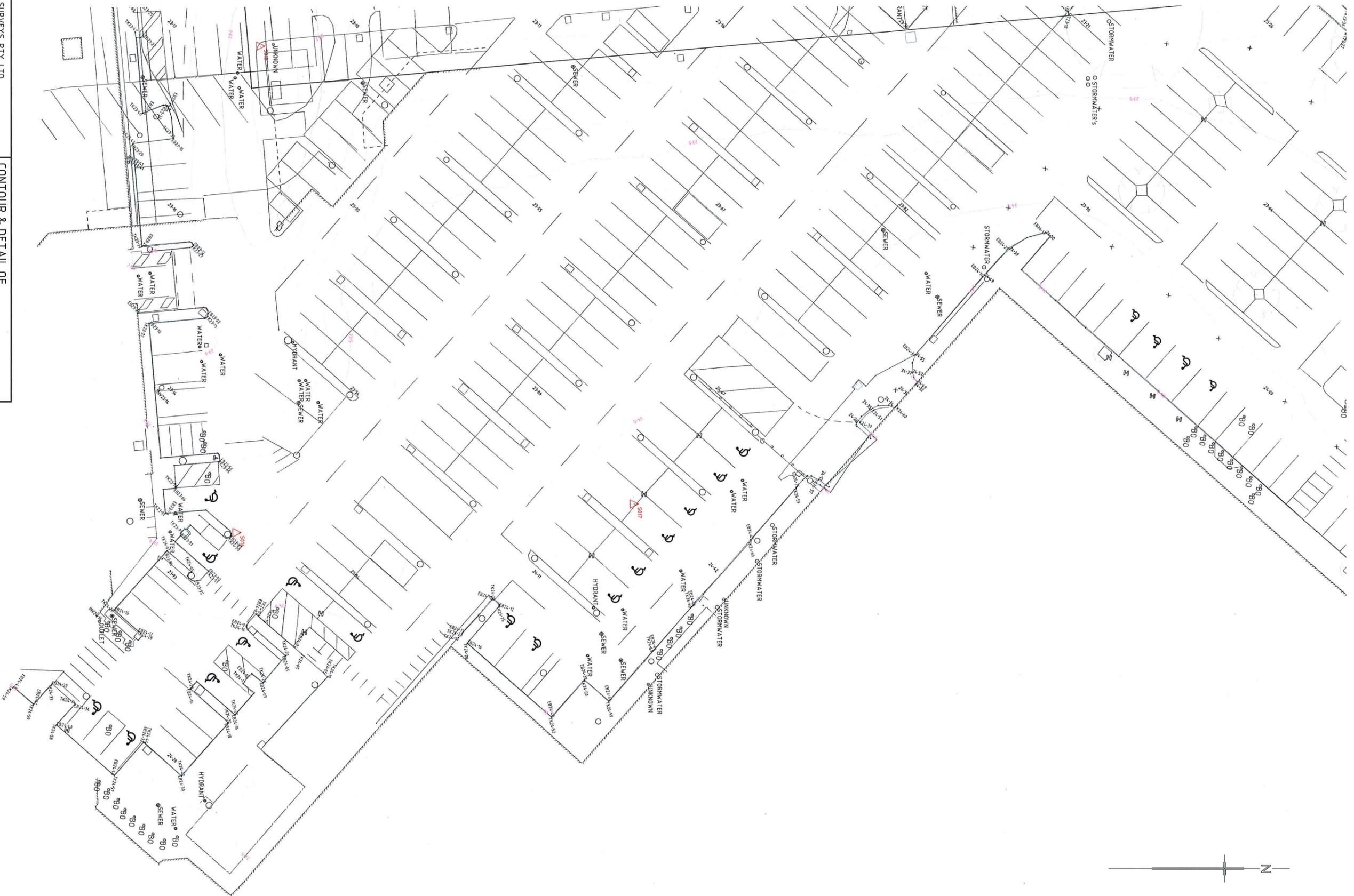


**CONTOUR & DETAIL OF
MARION SHOPPING CENTRE CAR PARK**
297 DIAGONAL ROAD, OAKLANDS PARK

BEARING DATUM: MGA 94
DRAWN FOR LEVELS, AHD
SURVEYED BY: JN, PH & KG
SURVEYED ON: 07 & 08/2018
DRAFTED ON: 17/08/2018

SCALE: 1:200
PAGE 7 OF 11
SHEET SIZE: A1
CONTOURS MIN: 0.1m
CONTOURS MAX: 0.5m





SKS SURVEYS PTY LTD
 43 EDWARD STREET
 Norwood SA 5067
 Ph. 0478 673 705
 REFERENCE: 337618



CONTOUR & DETAIL OF
 MARION SHOPPING CENTRE CAR PARK
 297 DIAGONAL ROAD, OAKLANDS PARK

BEARING DATUM: MGA 94
 DATUM FOR LEVELS: AHD
 SURVEYED BY: JM, HL & XG
 SURVEYED ON: 07 & 08/2018
 DRAFTED ON: 17/08/2018

SCALE: 1:200
 PAGE 8 OF 11
 SHEET SIZE: A1
 CONTOURS MIN: 0.1m
 CONTOURS MAX: 0.5m



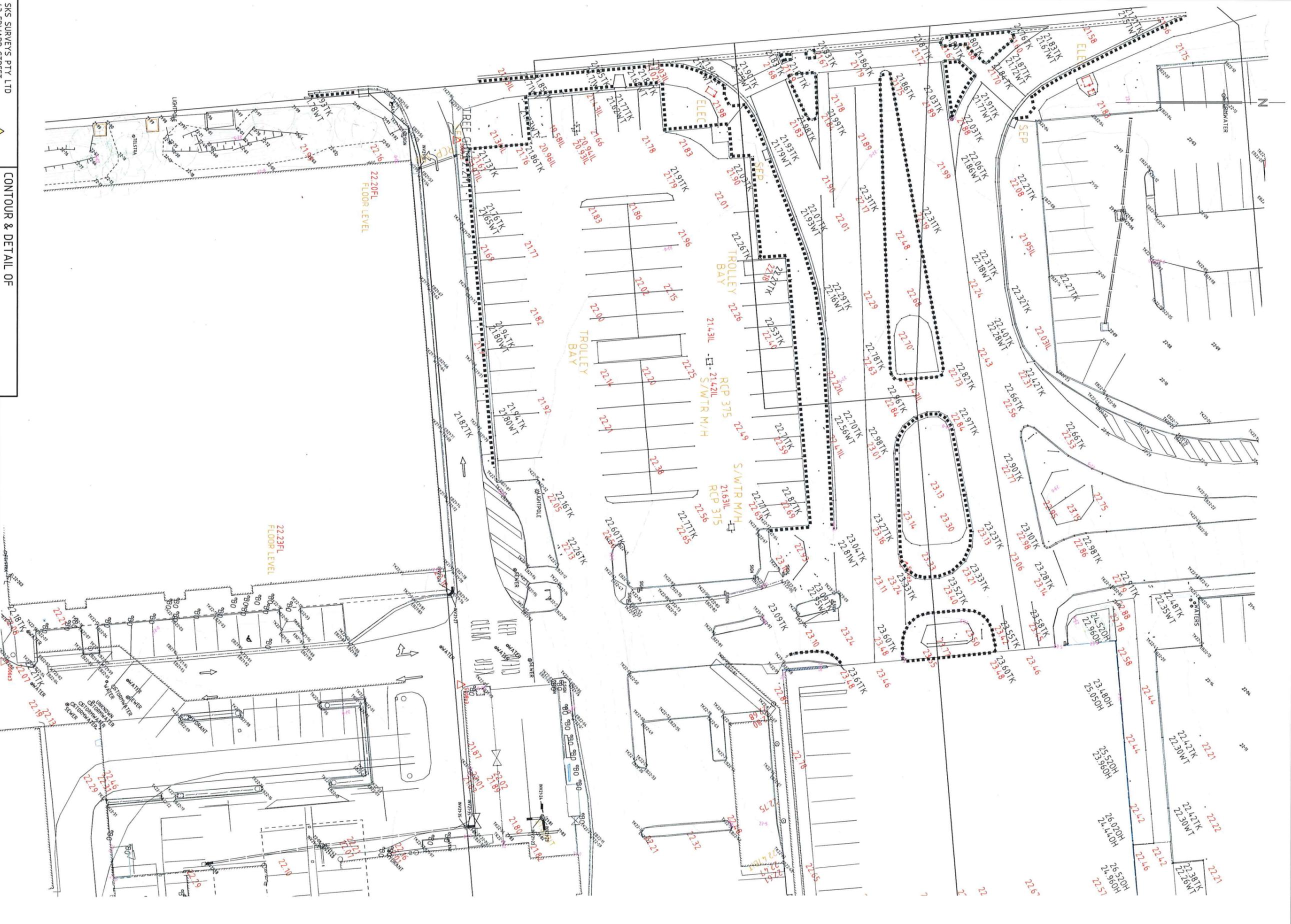
SKS SURVEYS PTY LTD
43 EDWARD STREET
Norwood SA 5067
Ph. 0418 673 705
REFERENCE: 337618

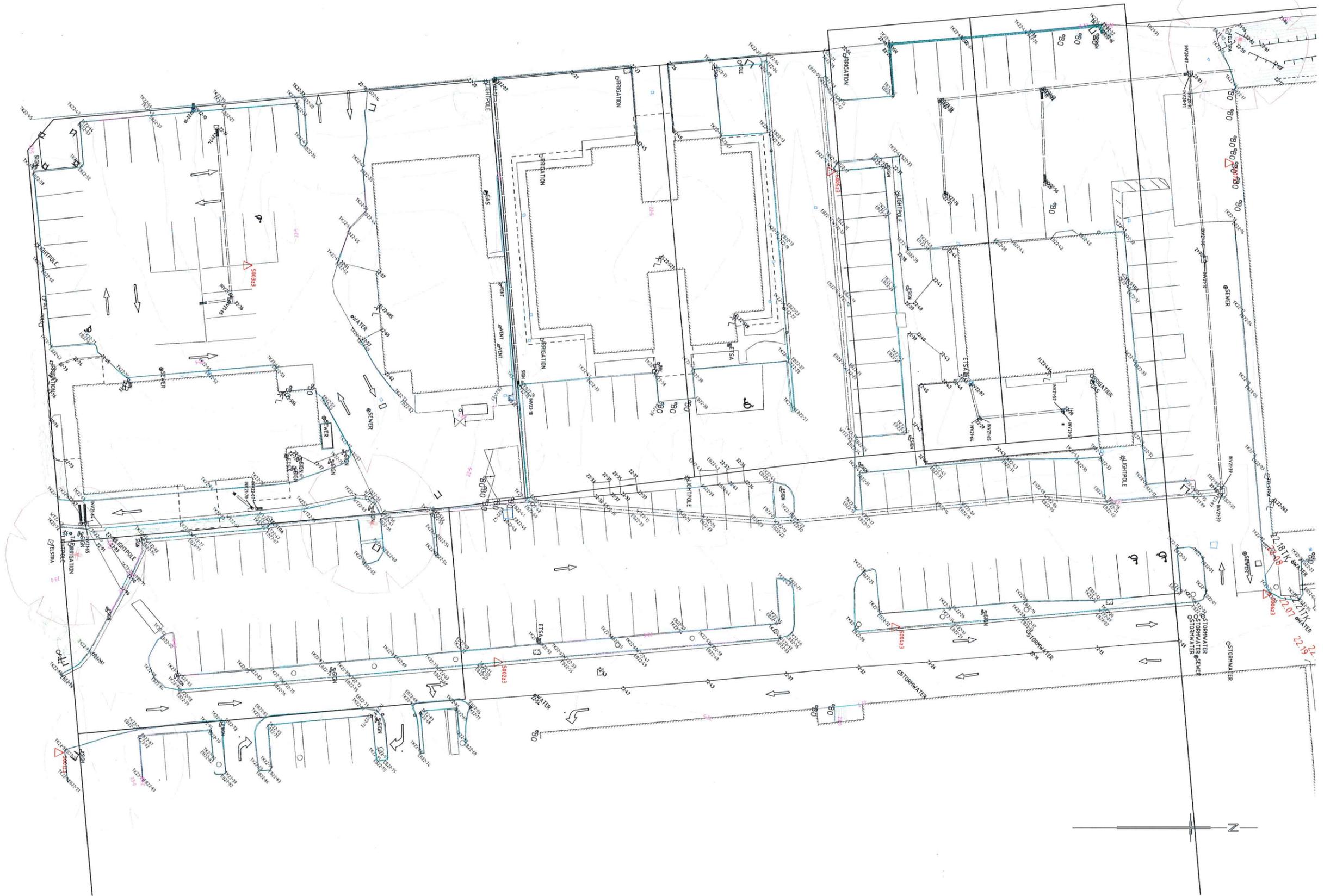


CONTOUR & DETAIL OF
MARION SHOPPING CENTRE CAR PARK
297 DIAGONAL ROAD, OAKLANDS PARK

BEARING DATUM: MGA 94
DRAWN OR REVISED: MJD
DRAWING NO. 074/18/2018
DRAFTED ON: 17/08/2018

SCALE: 1:200
PAGE 9 OF 11
SHEET SIZE: A1
CONTOURS: 1M, 0.5M





SKS SURVEYS PTY LTD
 43 EDWARD STREET
 NORWOOD SA 5067
 Ph: 0418 673 705
 REFERENCE: 337618



**CONTOUR & DETAIL OF
 MARION SHOPPING CENTRE CAR PARK
 297 DIAGONAL ROAD, OAKLANDS PARK**

BEARING DATE: 10/04/18
 SURVEYED BY: M. H. & K.G.
 SURVEYED ON: 07 & 08/2018
 DRAFTED ON: 17/08/2018

SCALE: 1:200
 PAGE: 1 OF 11
 SHEET SIZE: A1
 CONTOURS: MIN. 0.1m
 CONTOURS: MAX. 0.5m

