WGA

WALLBRIDGE GILBERT AZTEC

Sunshine Coast Council

MAROOCHYDORE

AWCS COLLECTION STATION

STORMWATER MANAGEMENT PLAN

Job No. WPH160263

Rev: C

22nd January 2018

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2017/874

Date: 1 AUGUST 2018

Queensland Government

WGA

REVISION HISTORY					
Rev	**Date**	**Issue**	**Originator**	**Checker**	**Approver**
A	**02-06-17**	**Issued for 50% Review**	**WB**	**MH**	**MH**
B	**28-06-17**	**Issued for Use**	**WB**	**MH**	**MH**
C	**22-01-18**	**Issued for Use**	**WB**	**MH**	**MH**

CONTENTS

1 INTRODUCTION

1.1 Background

Sun Central Maroochydore represents a unique opportunity to develop a 63 hectare greenfield site (previously a golf course and driving range) owned by Council into a central business district in on the Australia's fastest growing regions.

Rather than adopting a traditional wheelie bin waste collection arrangement, the new development will adopt Australia's first automated waste collection system which transports waste through an underground vacuum pipe system to a central location (Automatic Waste Collection Station (AWCS).

The AWCS will be the central collection point for all waste from the proposed development and will include an ENVAC operated waste transfer station building, circulating roadway for refuse trucks and parking for staff.

1.2 Scope of Report

This report outlines the method of handling the stormwater runoff from the AWCS site for all storm events. The report documents the design standards and design criteria adopted in the design.

1.3 Applicable Codes and Standards

The following design codes and standards form the basis of the civil design:

(i) Queensland Urban Drainage Manual (IPWEA)
(ii) Austroads Guide to Road Design Part 5 - Drainage General and Hydrology Considerations (2013)
(iii) Austroads Guide to Road Design Part 5A - Road Surface Networks, Basins and Subsurface (2013)
(iv) Austroads Guide to Road Design Part 5B - Drainage - Open Channels, Culverts and Floodways (2013)
(v) Australian Rainfall and Runoff (2016)
(vi) Sunshine Coast Council Standard Engineering Drawings

2 DESIGN

2.1 General

The drainage has been designed in accordance with the Queensland Urban Drainage Manual (IPWEA), Austroads Guide to Road Design Part 5 – Drainage General and Hydrology Considerations (2013), 5A – Road Surface Networks, Basins and Subsurface (2013) and Part 5B – Drainage – Open Channels, Culverts and Floodways (2013).

The proposed pavement has been designed to generally fall towards the eastern quadrant of the site and is picked up in a pit and pipe network at strategic locations. Roof drainage is collected in both a traditional down pipe and siphonic down pipe arrangement, discharging to the main civil network. All drainage is discharged to the main subdivision network at the northern quadrant at pit GG02.Discharge is via a direct connection to the twin 1200mm culverts (designed by others).

All stormwater runoff generated from the AWCS site is controlled on site. All other drainage for the surrounding site/subdivision development is being completed by others. No stormwater runoff will enter or leave the site other than controlled runoff which is discharged via an underground pipe network connecting to the overall network as shown on WPH160263-C-02.

For more details, refer to Appendix A for civil design drawings WPH160263-C-01 and WPH160263-C-02.

2.2 Design Criteria

2.2.1 Design Annual Exceedance Probability (AEP)

The proposed stormwater drainage pipe network has been designed for an annual exceedance probability (AEP) of 10% (10 Year) with a critical time of concentration of 6 minutes. A check has been carried out for both the 1% and 0.5% AEP for flooding of roadways and the AWCS building.

2.2.2 Runoff Coefficients

The adopted runoff coefficients are in accordance with Austroads Guide to Road Design Part 5 - Drainage Design Section 6.7.3 and are as follows:

- Asphalt paving (Impervious): 0.90
- Landscaped Areas (Pervious): 0.70

2.2.3 Rainfall Catchment

The stormwater catchment for the AWCS site is bounded by the site boundary only. The total contributing catchment area including roof runoff is 2252m^2. Refer to Appendix B – sketch WPH160263-C-06.

APPENDIX A – Civil Layout Plans

MAROOCHYDORE - AWCS COLLECTION STATION

CIVIL DESIGN

DRAWING LIST

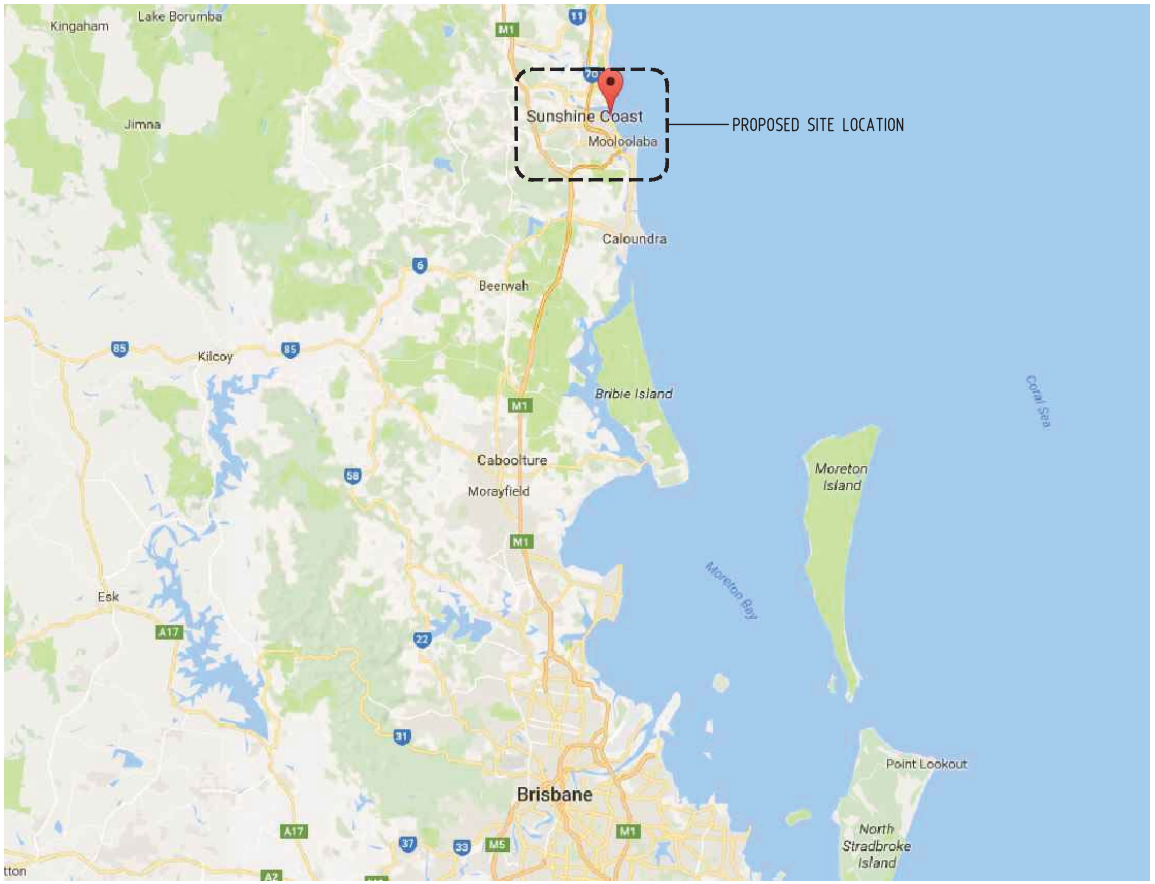
DRAWING No.	DRAWING TITLE
C-00	INDEX AND LOCALITY PLAN
C-01	GENERAL ARRANGEMENT
C-02	DRAINAGE AND GRADING PLAN

SUNSHINE COAST COUNCIL - REFERENCE DRAWINGS

DRAWING No.	DRAWING TITLE
RS-051	HEAVY DUTY VEHICLE CROSSING
RS-065	CONCRETE PATHWAY - CONSTRUCTION DETAILS
RS-080	KERB PROFILES AND DIMENSIONS
RS-090	RAMPED PEDESTRIAN CROSSINGS
RS-092	INSTALLATION OF TGSI's ON RAMPED KERB CROSSINGS
DS-010	STORMWATER ACCESS CHAMBER DETAIL - 1050 TO 2100 DIAMETER
DS-015	MANHOLE FRAME - ROADWAY AND NON-ROADWAY
DS-020	MANHOLE COVER (NON ROADWAY 1050 TO 2100 DIAMETER)
DS-030	EXCAVATION, BEDDING AND BACKFILLING OF STORMWATER DRAINAGE PIPES
DS-050	FIELD INLET - TYPE 1 AND TYPE 2
DS-062	KERB INLET - GRATE AND FRAME

GENERAL NOTES

1. LOCAL AUTHORITY : SUNSHINE COAST COUNCIL
2. ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE
3. ALL LEVELS ARE IN METRES AHD.
4. ALL COORDINATES ARE TO MAP GRID OF AUSTRALIA, ZONE 56 (MGA94-56)
5. ALL WORKS ARE TO CONFORM TO THE CURRENT REVISION OF ALL RELEVANT AUSTRALIAN STANDARDS, AND MANUFACTURERS SPECIFICATIONS.
6. THE CONTRACTOR SHALL OBTAIN ALL RELEVANT AUTHORITIES APPROVALS (PRIOR TO COMMENCEMENT AND UPON COMPLETION).
7. THE CONTRACTOR SHALL ENGAGE A LICENSED SURVEYOR TO ASSIST WITH THE TRANSFER OF 3D DIGITAL FILE INFORMATION TO NATURAL GROUND SURVEY. THE CONTRACTOR WILL BE SUPPLIED WITH THE DESIGN DATA UPON REQUEST.
8. ON COMPLETION OF THE WORKS THE SITE SHALL BE LEFT IN A CLEAN AND TIDY CONDITION TO THE SATISFACTION OF THE SUPERINTENDENT.
9. ALL CIVIL WORKS TO BE READ IN CONJUNCTION WITH THE ARCHITECTS DRAWINGS, OTHER CONSULTANTS DRAWINGS & THE SPECIFICATION.
10. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK.
11. THE CONTRACTOR SHALL NOT DISTURB ANY EXISTING SURVEY BENCH MARKS OR REFERENCE MARKS (UNLESS INDICATED FOR REMOVAL) WITHOUT APPROVAL IN WRITING.
12. THE CONTRACTOR SHALL LOCATE AND CONFIRM LEVELS AND LOCATIONS OF ALL EXISTING SERVICES PRIOR TO COMMENCING WORK.
13. ALL CONSTRUCTION WORK SHALL BE CARRIED OUT SO THAT AT ANY TIME ADJOINING PROPERTY OWNERS ARE NOT DEPRIVED OF AN ALL-WEATHER ACCESS OR SUBJECTED TO ADDITIONAL STORM WATER RUN-OFF DURING THE PERIOD OF CONSTRUCTION.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OF ANY DAMAGE TO COUNCIL'S INFRASTRUCTURE. SUCH REPAIR OR REINSTATEMENT TO BE CARRIED OUT IMMEDIATELY TO THE SATISFACTION OF THE SUPERINTENDENT AND COUNCIL.
15. CIVIL SET OUT INFORMATION IN THE FORM OF AN AUTOCAD DRAWING FILE OR SIMILAR IS AVAILABLE AND WILL BE ISSUED FOR SITE SET OUT.
16. THE CONTRACTOR SHALL MAINTAIN PROPER SITE DRAINAGE TO ALL AREAS THROUGHOUT THE CONSTRUCTION PERIOD AND SHALL BE RESPONSIBLE FOR MAINTAINING EXCAVATIONS IN A SAFE AND STABLE CONDITION AT ALL TIMES.
17. THE CONTRACTOR SHALL LIMIT THE MOVEMENT OF EQUIPMENT AND MANPOWER TO THE MINIMUM AREA NECESSARY AND PROTECT ALL VEGETATION AND EXISTING SERVICES BEYOND THE WORKS BOUNDARY
18. ON COMPLETION OF SERVICES INSTALLATION, ALL DISTURBED AREAS SHALL BE RESTORED TO ORIGINAL, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AREAS, GRASSED AREAS AND ROAD PAVEMENTS.



REFERENCE: GOOGLE MAPS

SITE LOCATION

SCALE: NTS

When sheet printed full size, the scale bar is 100mm.

0 50 100mm

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION	DRAFT	ENG.	CHKD
A	25.05.17	ISSUED FOR 50% COORDINATION	WB	WB	MH
B	02.06.17	ISSUED FOR 50% REVIEW	WB	WB	MH
C	17.10.17	RE-ISSUED FOR 50% REVIEW	EN	WB	MH
D	21.12.17	ISSUED FOR 75%	RP	WB	MH

WGA
WALLBRIDGE GILBERT AZTEC
634 Murray Street, West Perth
Western Australia 6005
Telephone 08 9336 6528
Email perth@wga.com.au

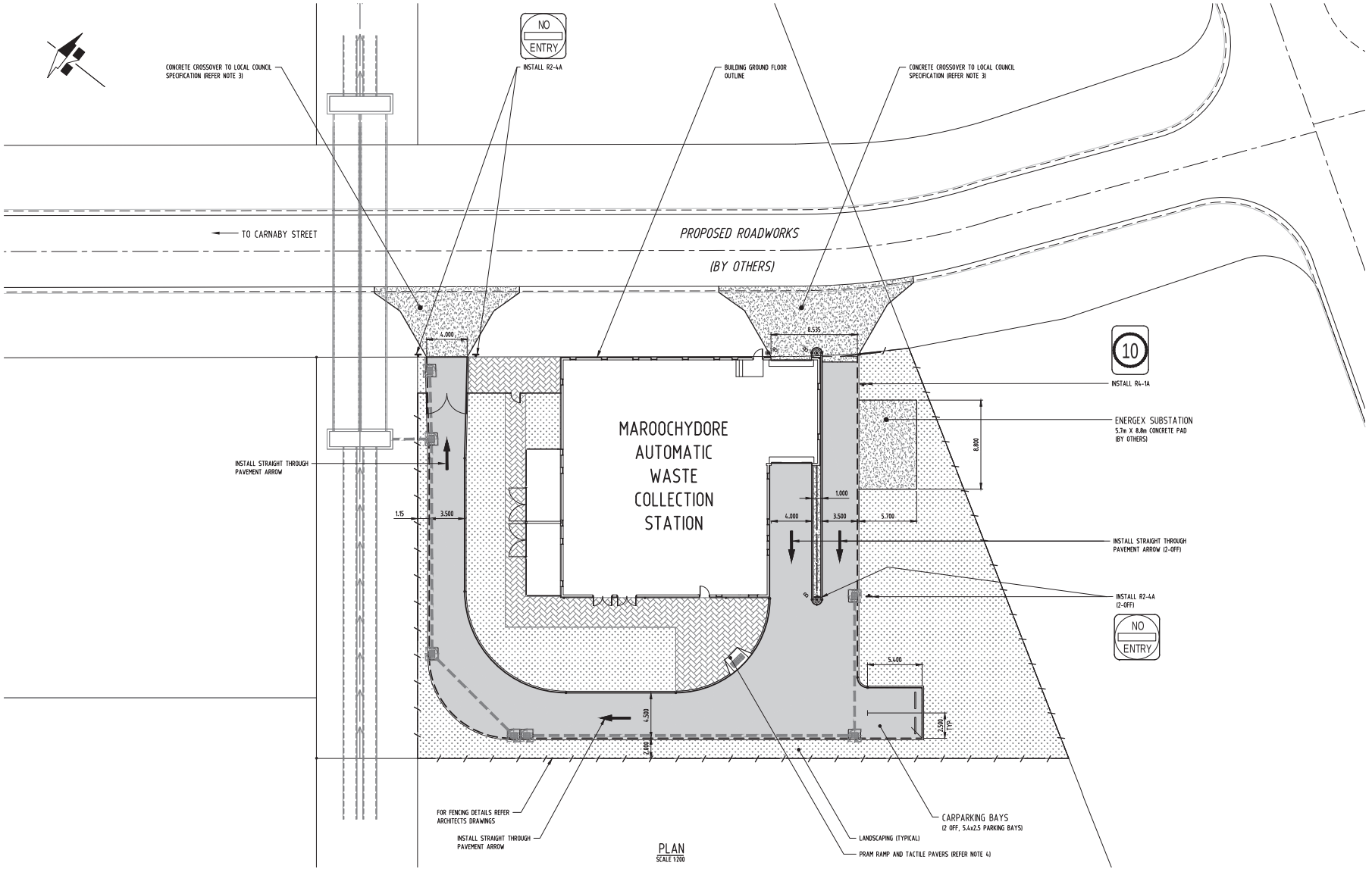
MAROOCHYDORE - AWCS COLLECTION STATION
MAROOCHYDORE, QLD

INDEX AND LOCALITY PLAN

A1

DRAWING NUMBER
Job Number WPH160263 Sheet No. C-00 Rev. D

Design WB Drawn WB



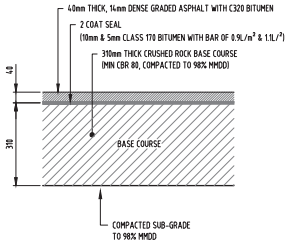
PLAN
SCALE 1:200

NOTES

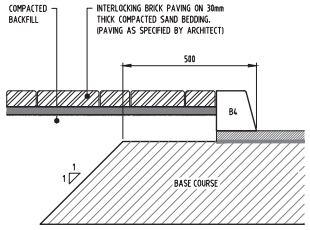
1. LINE MARKING AND SIGNAGE TO BE IN ACCORDANCE WITH AS1742-1999, AS1743-2001 AND AS/NZS2890.1:2004.
2. FOR STANDARD KERB DETAILS AND PROFILES, REFER TO SUNSHINE COAST COUNCIL STANDARD DRAWING RS-080.
3. FOR STANDARD CONCRETE CROSSOVER DETAILS, REFER TO SUNSHINE COAST COUNCIL STANDARD DRAWING RS-051.
4. FOR STANDARD PEDESTRIAN RAMP DETAILS, REFER TO SUNSHINE COAST COUNCIL STANDARD DRAWING RS-090.

LEGEND

- KERB AND CHANNEL B1 (BARRIER)
- BARRIER KERB B4
- PROPOSED STORMWATER SIDE ENTRY PIT, GRATED GULLY PIT, MANHOLE
- STEEL BOLLARD
- FENCE TO ARCHITECTS SPECIFICATIONS
- PAVEMENT TYPE 1
- CONCRETE PAVEMENT (REFER STRUCTURAL DRAWINGS)
- BRICK PAVING (TO ARCHITECTS SPECIFICATIONS)
- LANDSCAPING (TO ARCHITECTS SPECIFICATIONS)



PAVEMENT TYPE 1
SCALE 1:10



BRICK PAVING DETAIL
SCALE 1:10

SCALE BAR (m)
1:200
4 2 0 4 8

When sheet printed full size, the scale bar is 100mm.
0 50 100mm

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION	DRAFT	ENG.	CHKD
A	21.04.17	ISSUED FOR REVIEW	EN	WB	WB
B	09.05.17	ISSUED FOR REVIEW	EN	WB	WB
C	25.05.17	ISSUED FOR 50% COORDINATION	WB	WB	MH
D	01.06.17	ISSUED FOR 50% REVIEW	WB	WB	MH
E	10.10.17	RE-ISSUED FOR 50% REVIEW	EN	WB	MH
F	17.10.17	RE-ISSUED FOR 50% REVIEW	EN	WB	MH
G	21.12.17	RE-ISSUED FOR 75% REVIEW	RP	WB	MH

WGA
WALLBRIDGE GILBERT AZTEC
634 Murray Street, West Perth
Western Australia 6005
Telephone 08 9336 6528
Email perth@wga.com.au

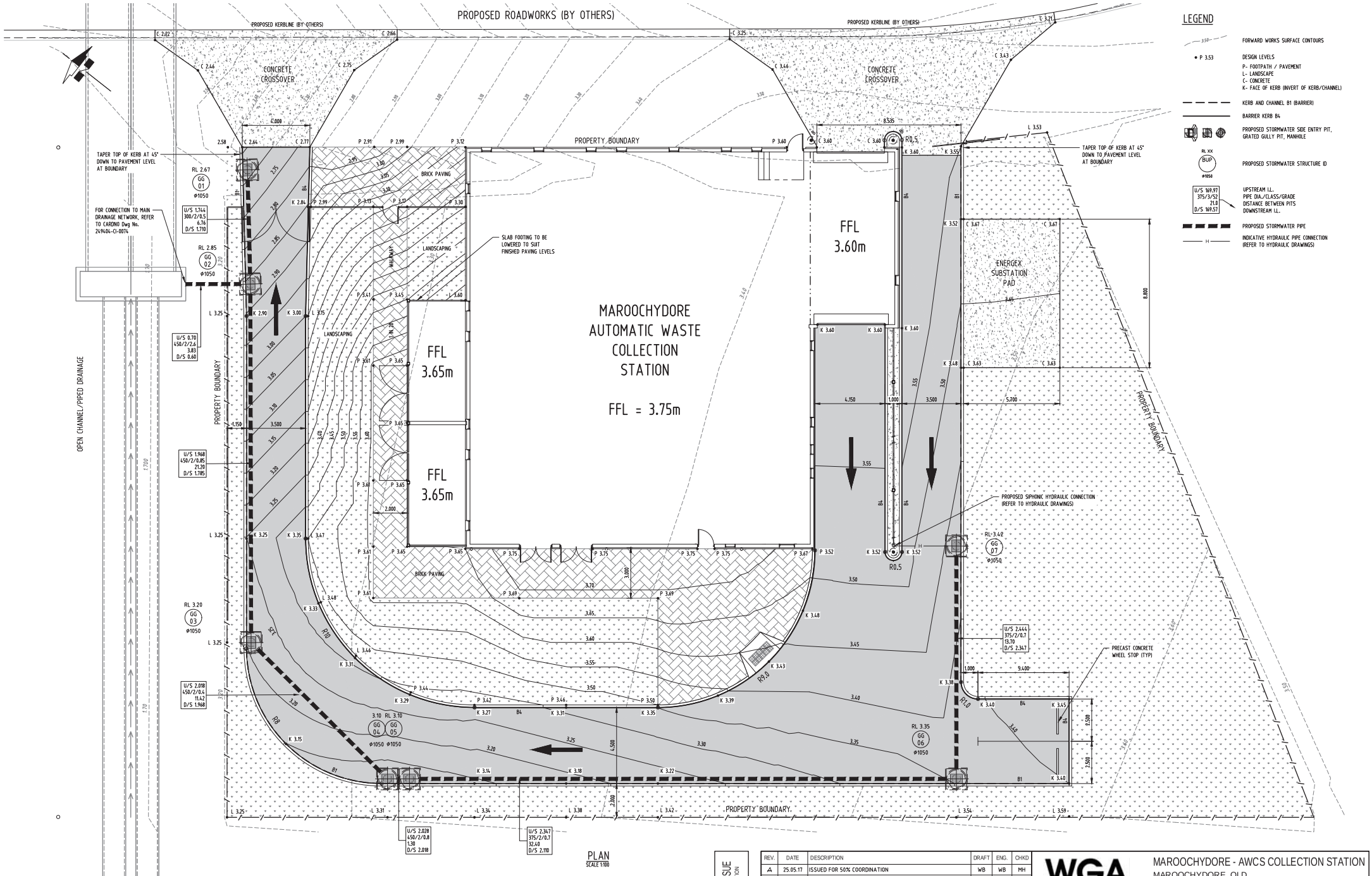
MAROOCHYDORE - AWCS COLLECTION STATION
MAROOCHYDORE, QLD

GENERAL ARRANGEMENT

A1

DRAWING NUMBER
Job Number WPH160263 Sheet No. C-01 Rev. G

Design WB Drawn WB



PLAN
SCALE 1:100

SCALE BAR (m)
1:100

When sheet printed full size, the scale bar is 100mm.
0 50 100mm

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION	DRAFT	ENG.	CHKD
A	25.05.17	ISSUED FOR 50% COORDINATION	WB	WB	MH
B	01.06.17	ISSUED FOR 50% REVIEW	WB	WB	MH
C	17.10.17	RE-ISSUED FOR 50% REVIEW	EN	WB	MH
D	21.12.17	ISSUED FOR 75% REVIEW	RP	WB	MH

WGA
WALLBRIDGE GILBERT AZTEC
634 Murray Street, West Perth
Western Australia 6005
Telephone 08 9336 6528
Email perth@wga.com.au

MAROOCHYDORE - AWCS COLLECTION STATION
MAROOCHYDORE, QLD

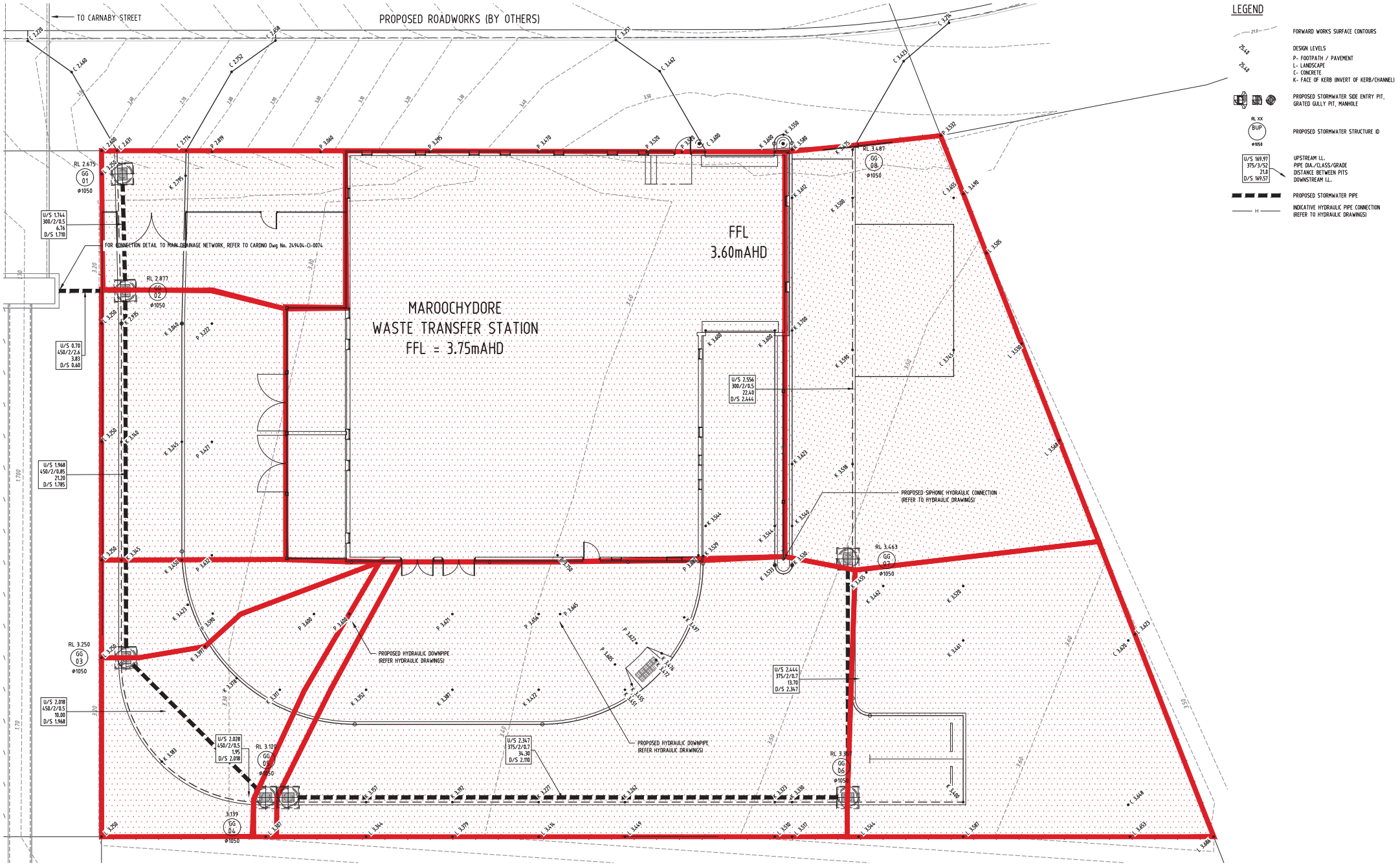
DRAINAGE AND GRADING PLAN

A1

DRAWING NUMBER
Job Number WPH160263 Sheet No. C-02 Rev. D

Design WB Drawn WB

APPENDIX B - Calculations



PLAN
SCALE 1:100

SCALE BAR (m)
1:100

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION	DRAFT	ENG.	CHKD
A	28.06.17	ISSUED FOR INFORMATION	WB	WB	MH
B	22.01.18	ISSUED FOR INFORMATION	WB	WB	MH

WGA
WALLBRIDGE GILBERT AZTEC
634 Murray Street, West Perth
Western Australia 6005
Telephone 08 9336 6528
Email perth@wga.com.au

MAROOCHYDORE - AWCS COLLECTION STATION
MAROOCHYDORE, QLD

AWCS CATCHMENT PLAN

A1

DRAWING NUMBER
Job Number WPH160263 Sheet No. SK-06 Rev. B

Design WB Drawn WB

When sheet printed full size, the scale bar is 100mm.
0 50 100mm

WALLBRIDGE GILBERT AZTEC

634 Murray Street

West Perth, WA 6005

www.wallbridgeandgilbert.com.au

PROJECT NO.	WPH160263	DESIGNED	W.BOWYER	22.01.18
PROJECT TITLE	MAROOCHYDORE STORMWATER DRAINAGE DESIGN	CHECKED	M. HURBA	22.01.18
		APPROVED	B. HARRISON	22.01.18
SHEET TITLE	DRAINAGE CATCHMENT DESIGN	REVISION	A	
References	Main Roads Western Australia - Drainage and Waterways			

Drainage Catchment Area Details

ID	Total Area (m^2)	Impervious Area (m^2)	Pervious Area (m^2)	Total Area (Ha)	Impervious Area (Ha)	Pervious Area (Ha)	% Impervious	% Pervious	Critical Length (m)	Critical Slope (m/m)	Description
Lot Area	2252	2252	0	0.012	0.012	0.000	100.0	0.0			
GG01	120	120	0	0.0164	0.016	0.000	100.0	0.0			
GG02	164	164	0	0.0054	0.005	0.000	100.0	0.0			
GG03	54	54	0	0.0173	0.017	0.000	100.0	0.0			
GG04	173	173	0	0.0482	0.048	0.000	100.0	0.0			
GG05	482	482	0	0.0482	0.048	0.000	100.0	0.0			
GG06	289	289	0	0.0289	0.029	0.000	100.0	0.0			
GG07	332	332	0	0.0332	0.033	0.000	100.0	0.0			

						2 Year				*10 Year*				*100 Year*				*200 Year*			
Rainfall Analysis						**39% AEP - 6 Minute Storm**				**10% AEP - 6 Minute Storm**				**1% AEP - 6 Minute Storm**				**0.5% AEP - 6 Minute Storm**			
ID	**Total Area**	**Impervious Area**	**Pervious Area**	**Runoff Coefficient**	**Equivalent Area**	**Intensity**	**Q**	**Q**	**Volume**	**Intensity**	**Q**	**Q**	**Volume**	**Intensity**	**Q**	**Q**	**Volume**	**Intensity**	**Q**	**Q**	**Volume**
-	m^2	m^2	m^2	-	m^2	mm/hr	m^3/s	L/s	m^3	mm/hr	m^3/s	L/s	m^3	mm/hr	m^3/s	L/s	m^3	mm/hr	m^3/s	L/s	m^3
TOTAL Lot Area	2252	2252	0	1	2252	154.0	0.0963	96.3	34.7	207	0.1295	129.5	466.2	296	0.1852	185.2	666.6	325	0.2033	203.3	731.9
GG01	51	51	0	1	51	154.0	0.0022	2.2	0.8	207	0.0029	2.9	10.6	296	0.0042	4.2	15.1	325	0.0046	4.6	16.6
GG02	100	100	0	1	100	154.0	0.0043	4.3	1.5	207	0.0058	5.8	20.7	296	0.0082	8.2	29.6	325	0.0090	9.0	32.5
GG03	36	36	0	1	36	154.0	0.0015	1.5	0.6	207	0.0021	2.1	7.5	296	0.0030	3.0	10.7	325	0.0033	3.3	11.7
GG04	109	109	0	1	109	154.0	0.0047	4.7	1.7	207	0.0063	6.3	22.6	296	0.0090	9.0	32.3	325	0.0098	9.8	35.4
GG05	494	494	0	1	494	154.0	0.0211	21.1	7.6	207	0.0284	28.4	102.3	296	0.0406	40.6	146.2	325	0.0446	44.6	160.6
GG06	285	285	0	1	285	154.0	0.0122	12.2	4.4	207	0.0164	16.4	59.0	296	0.0234	23.4	84.4	325	0.0257	25.7	92.6
GG07	210	210	0	1	210	154.0	0.0090	9.0	3.2	207	0.0121	12.1	43.5	296	0.0173	17.3	62.2	325	0.0190	19.0	68.3

Rainfall Analysis						**39% AEP - 72 Hour Storm**				**10% AEP - 72 Hour Storm**				**1% AEP - 72 Hour Storm**				**0.5% AEP - 72 Hour Storm**			
ID	**Total Area**	**Impervious Area**	**Pervious Area**	**Runoff Coefficient**	**Equivalent Area**	**Intensity**	**Q**	**Q**	**Volume**	**Intensity**	**Q**	**Q**	**Volume**	**Intensity**	**Q**	**Q**	**Volume**	**Intensity**	**Q**	**Q**	**Volume**
-	m^2	m^2	m^2	-	m^2	mm/hr	m^3/s	L/s	m^3	mm/hr	m^3/s	L/s	m^3	mm/hr	m^3/s	L/s	m^3	mm/hr	m^3/s	L/s	m^3
TOTAL Lot Area	2252	2252	0	1	2252	3.6	0.0022	2.2	575.6	5.9	0.0037	3.7	956.6	10.1	0.0063	6.3	1637.7	11.5	0.0072	7.2	1864.7

WALLBRIDGE GILBERT AZTEC

634 Murray Street

West Perth, WA 6005

www.wallbridgeandgilbert.com.au

PROJECT NO.	WPH160263	DESIGNED	W.BOWYER	22.01.18
PROJECT TITLE	MAROOCHYDORE STORMWATER DRAINAGE DESIGN	CHECKED	M. HURBA	22.01.18
		APPROVED	B. HARRISON	22.01.18
SHEET TITLE	DRAINAGE BASIN DESIGN SUMMARY	REVISION	A	

References

Main Roads Western Australia - Drainage and Waterways

Pipe Design (Flow Rate)

Pipe ID	U/S Structure ID	D/S Structure ID	Inflow Runoff (L/s)	Inflow Roof (L/s)	Cumulative Flow (L/s)	Min Pipe Size (mm)
GG07 - GG06	GG07	GG06	12.08	80.00	92.08	375.00
GG06 - GG05	GG06	GG05	16.39		108.46	375.00
GG05 - GG04	GG05	GG04	28.41	5.00	141.87	375.00
GG04 - GG03	GG04	GG03	6.27		148.14	450.00
GG03 - GG02	GG03	GG02	2.07		150.21	450.00
GG02 - JP01	GG02	JP01	5.75		158.89	450.00
GG01 - GG02	GG01	GG02	2.93		2.93	150.00

Pipe Design (Grading)

Pipe ID	U/S Structure ID	D/S Structure ID	U/S FGL (mAHD)	D/S FGL (mAHD)	Pipe ID (mm)	Pipe OD to Invert (mm)	Pipe Length (m)	Min Slope (%)	Min Cover (mm)	U/S Invert Level Cover Criteria (mAHD)	D/S Invert Level Cover Criteria (mAHD)	U/S Invert Level Slope Criteria (mAHD)	D/S Invert Level Slope Criteria (mAHD)	U/S Invert (mAHD)	D/S Invert (mAHD)	GRADE
GG07 - GG06	GG07	GG06	3.42	3.35	375	410	13.700	0.5	600	2.444	2.347	2.444	2.376	2.444	2.347	0.708
GG06 - GG05	GG06	GG05	3.35	3.1	375	410	32.400	0.5	600	2.34	2.09	2.34	2.178	2.347	2.110	0.731
GG05 - GG04	GG05	GG04	3.1	3.1	450	492	1.300	0.5	600	2.008	2.008	2.008	2.002	2.028	2.018	0.769
GG04 - GG03	GG04	GG03	3.1	3.2	450	492	11.420	0.5	600	2.008	2.108	2.008	1.951	2.018	1.968	0.438
GG03 - GG02	GG03	GG02	3.2	2.85	450	492	21.200	0.5	600	2.108	1.758	2.108	2.002	1.968	1.785	0.863
GG02 - JP01	GG02	JP01	2.85	2.5	450	492	3.825	0.4	600	1.758	1.408	1.758	1.743	0.700	0.600	2.614
GG01 - GG02	GG01	GG02	2.67	2.85	300	331	6.760	0.5	600	1.739	1.919	1.739	1.705	1.744	1.710	0.503

CIVIL ENGINEER
Will Bowyer
Telephone: 08 9336 6528
Email: wbowyer@wga.com.au

ADELAIDE
60 Wyatt Street
Adelaide SA 5000
Telephone: 08 8223 7433

DARWIN
Suite 7, 9 Keith Lane
Fannie Bay NT 0820
Telephone: 08 8941 1678

MELBOURNE
Level 2, 31 Market Street
South Melbourne VIC 3205
Telephone: 03 9696 9522

PERTH
634 Murray Street
West Perth WA 6005
Telephone: 08 9336 6528

WHYALLA
Level 1,15 Darling Terrace
Whyalla SA 5600
Telephone: 08 8644 0432

WALLBRIDGE GILBERT AZTEC
www.wga.com.au
adelaide@wga.com.au