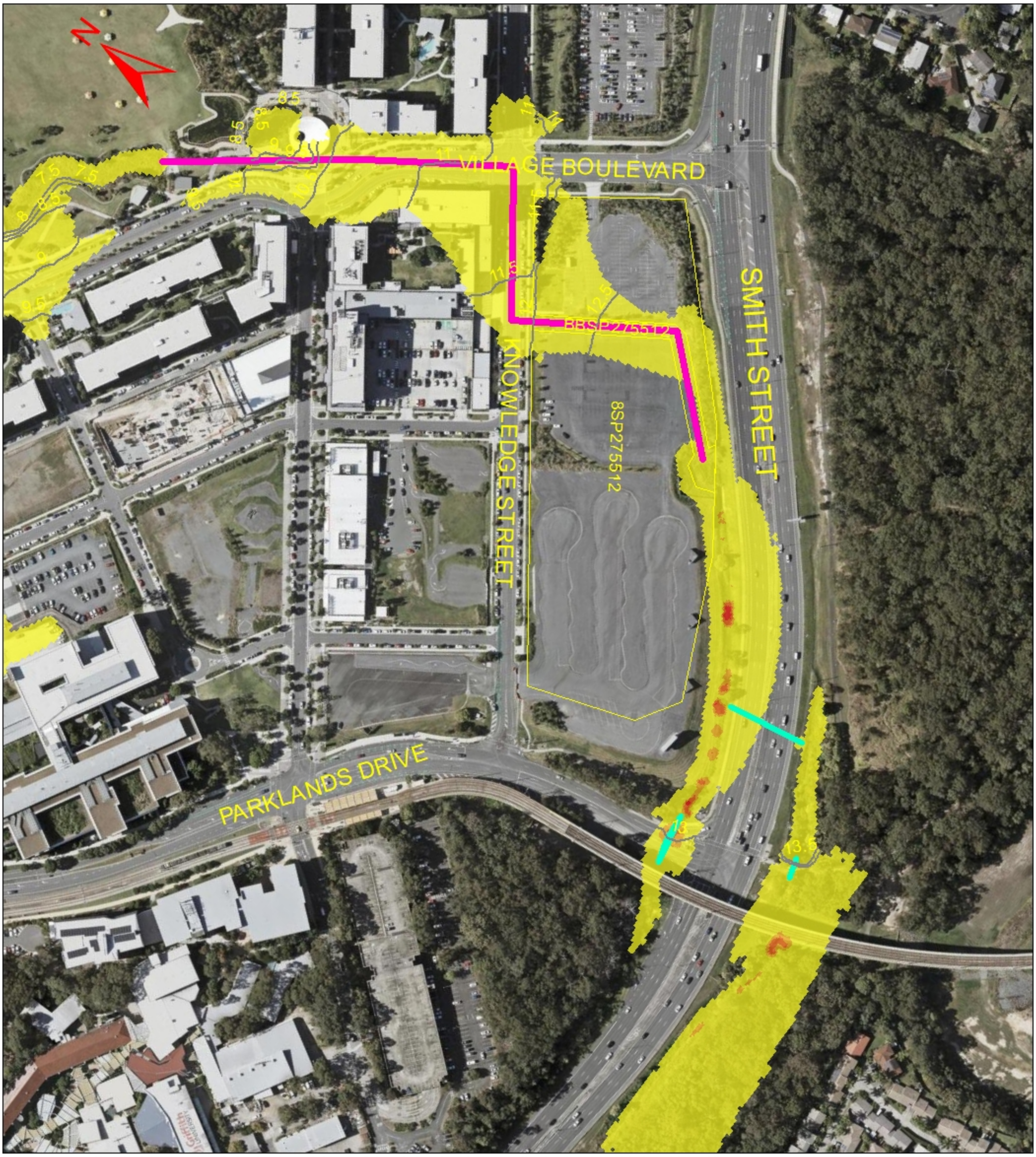




Legend

- 100% BF Year 2100_1% AEP Flood Level Contour Existing Surface
- PROJECT SITE
- TRUNK DRAINAGE CULVERTS
- MAJOR CULVERTS

100% BF Year 2100_1% AEP Flow Velocity_Existing Surface Survey_DEM (m/s)

- < 0.5
- 0.5 - 1.5
- 1.5 - 2.0
- 2.0 - 2.5
- > 2.5

0 75 150 Meters

PLANS AND DOCUMENTS referred to in the PDA DEVELOPMENT APPROVAL

Approval no: DEV-2026-GCP-5471

Date: 11 November 2026

Queensland Government

Notes
1. Coordinate System: GCS GDA 1994
2. Background: Includes material © State of Queensland (Department of Resources), © Planet Labs Netherlands B.V. reproduced under licence from Planet and Geoplex, all rights reserved, 2024.

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Brisbane, QLD

Prepared by BW on 2026-03-12
TR by MG on 2026-03-15

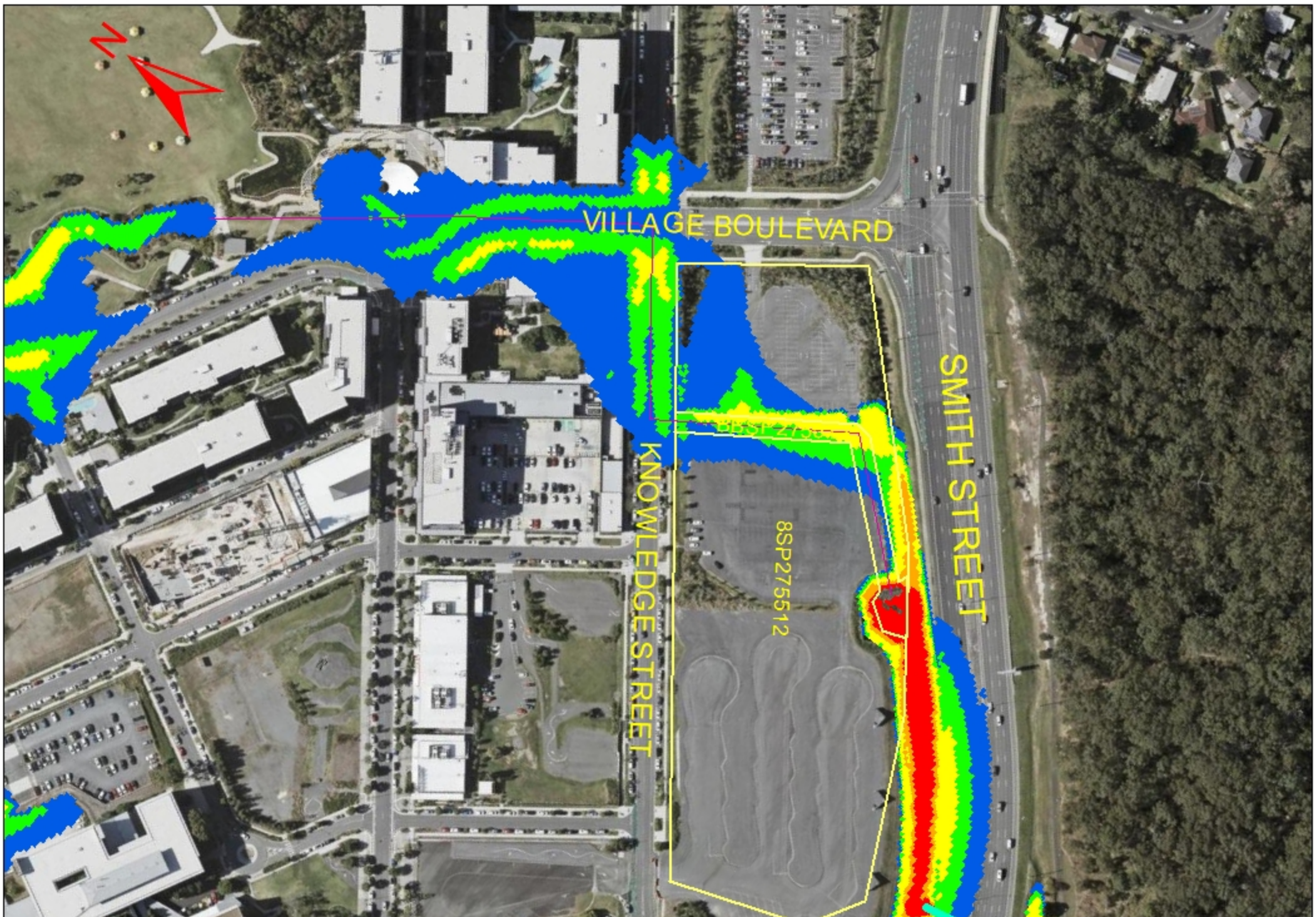
Project: 304701862 2 Village Road FIA

EDQ
2 Village Boulevard, Southport FIA

Appendix C.5 100% BF Existing Survey Surface _DEM Year 2100 1% _AEP_FLow Velocity

D:\NotBackedUp\tuflow_data\active\Lumina\Lumina.mxd Revised: 2026-04-20 By: Bwolelo

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D:\NotBackedUp\tuflow_data\active\Lumina\Lumina.mxd Revised: 2026-04-05 By: Bwololo

SOUTHPORT
GOLD COAST

Legend

100% BF Y2100_1% AEP Flow Hazard_Project Site Survey Surface DEM

- H1
- H2
- H3
- H4
- H5
- Major_Culverts
- Trunk_Drainage_Culverts
- PROJECT SITE

0 75 150 Meters

Stantec

Stantec Australia Pty Ltd
Brisbane, QLD

Prepared by BW on 2026-03-30
TR by MG on 2026-03-31

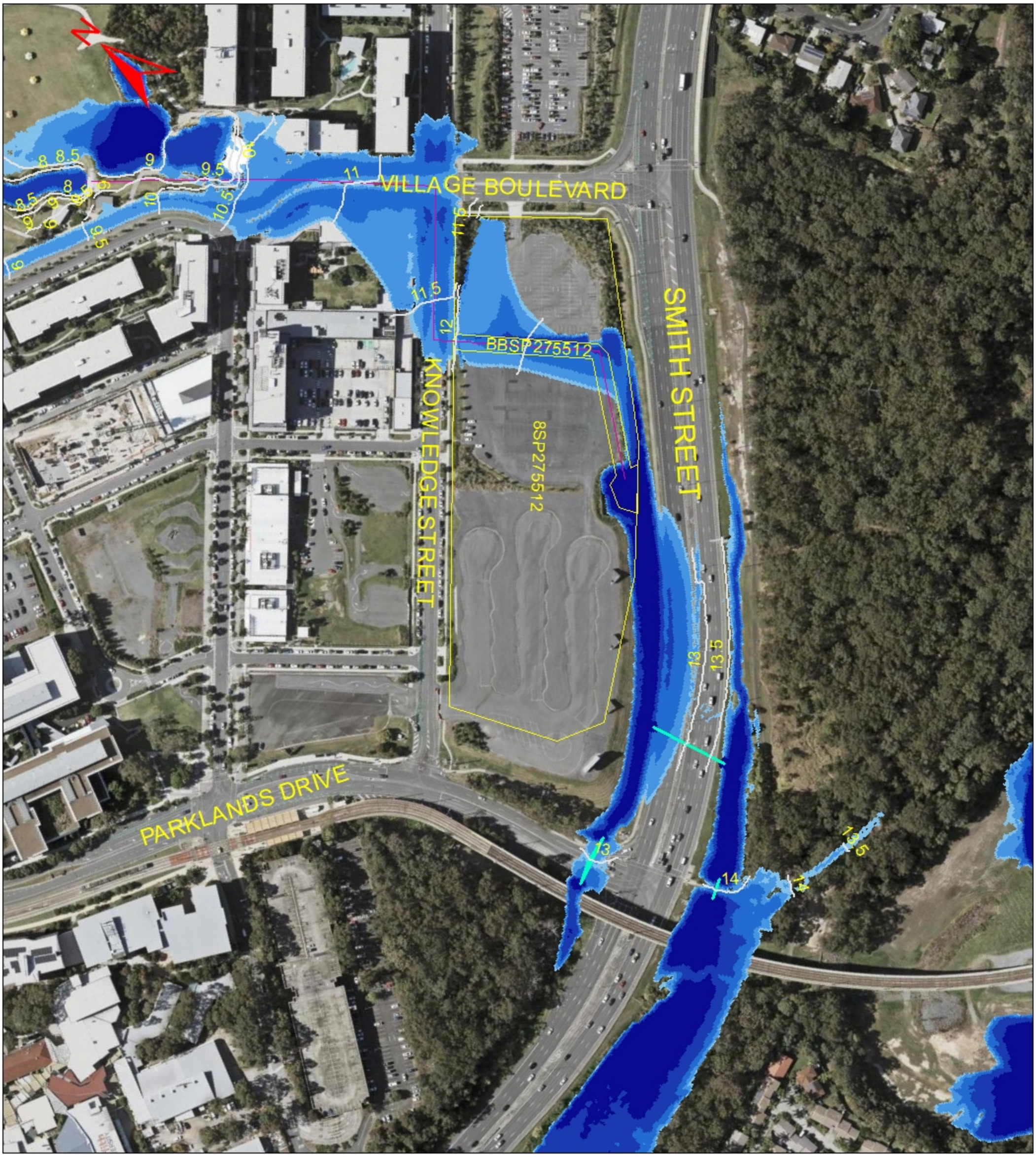
Project: 304701862 2 Village Road FIA

EDQ
2 Village Boulevard, Southport FIA

Appendix C.6 100% BF Existing Survey Surface DEM YEAR 2100 1% Flow Hazard

Notes
1. Coordinate System: GDA 1994 MGA Zone 56
2. Background: Esri, HERE, Garmin, (c) OpenStreetMap contributors
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Legend

100% BF Year 2030_1% AEP Flood Level Contour Existing Surface

100% BF Year 2030_1% AEP Depth of Flooding_ Existing Surface Survey_DEM (m)

- < 0.05
- 0.05 - 0.1
- 0.10 - 0.25
- 0.25 - 0.5
- 0.5 - 1
- > 1.0

1d_nwk_Loders_Biggera_culverts_L_WT_002_ID1

1d_nwk_Loders_Biggera_drainage_L_WT_002

PROJECT SITE

0 75 150 Meters

Stantec

Stantec Australia Pty Ltd
Brisbane, QLD

Prepared by BW on 2026-03-12
TR by MG on 2026-03-15

Project: 304701862 2 Village Road FIA

EDQ
2 Village Boulevard, Southport FIA

Appendix C.7 100% BF Existing Surface Survey_DEM Year 2030_1% AEP Depth of Flooding and Level

D:\NotBackedUp\tuflow_data\active\Lumina\Lumina_Results.mxd Revised: 2026-04-07 By: Bwolelo

Notes
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Legend

100% BF Year 2030_1% AEP Flow Velocity_ Existing Surface Survey_DEM (m/s)

- < 0.5
- 0.5 - 1.5
- 1.5 - 2.0
- 2.0 - 2.5
- > 2.5
- 1d_nwk_Loders_Biggera_culverts_L_WT_002_ID1
- 1d_nwk_Loders_Biggera_drainage_L_WT_002
- PROJECT SITE

0 75 150 Meters

Stantec

Stantec Australia Pty Ltd
Brisbane, QLD

Prepared by BW on 2026-03-12
TR by MG on 2026-03-15

Project: 304701862 2 Village Road FIA

EDQ
2 Village Boulevard, Southport FIA

Appendix C.8 100% BF Existing Surface Survey_DEM Year 2030_1% AEP Flow Velocit

D:\NotBackedUp\tuflow_data\active\Lumina\Lumina_Results.mxd Revised: 2026-04-07 By: Bwolelo

Notes
1. Coordinate System: GDA 1994 MGA Zone 56
2. Background: Includes material © State of Queensland (Department of Resources), © Planet Labs Netherlands B.V. reproduced under licence from Planet and Geoplex, all rights reserved, 2024.

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VILLAGE BOULEVARD

SMITH STREET

KNOWLEDGE STREET

PARKLANDS DRIVE

BBSP275512

8SP275512



Legend

100% BF Year 2030_1% AEP Flow Hazard Category_ Existing Surface Survey_DEM

- H1
- H2
- H3
- H4
- H5
- 1d_nwk_Loders_Biggera_culverts_L_WT_002_ID1
- 1d_nwk_Loders_Biggera_drainage_L_WT_002
- PROJECT SITE

0 75 150 Meters

Stantec

Stantec Australia Pty Ltd
Brisbane, QLD

Prepared by BW on 2026-03-12
TR by MG on 2026-03-15

Project: 304701862 2 Village Road FIA

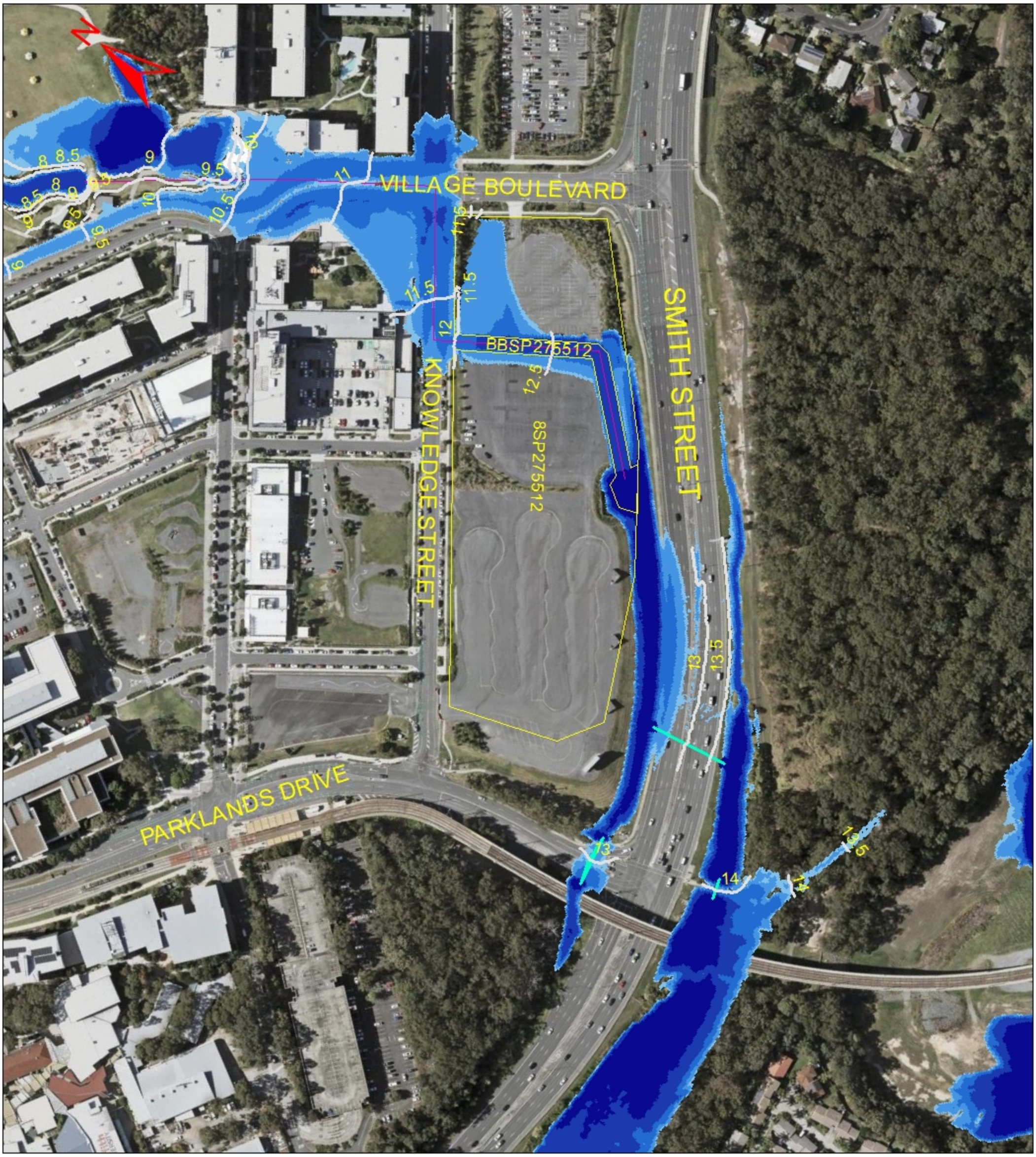
EDQ
2 Village Boulevard, Southport FIA

Appendix C.9 100% BF Existing Survey Surface DEM Year 2030 1% AEP Flow Hazard

Notes
1. Coordinate System: GDA 1994 MGA Zone 56
2. Background: Includes material © State of Queensland (Department of Resources), © Planet Labs Netherlands B.V. reproduced under licence from Planet and Geoplex, all rights reserved, 2024.

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D:\NotBackedUp\tuflow_data\active\Lumina\Lumina_Results.mxd Revised: 2026-04-07 By: Bwolelo





Legend

100% BF Year 2030_1% AEP Flood Level Contour 2014 Design Surface

100% BF Year 2030_1% AEP Depth of Flooding_ 2014_Design Surface Survey_DEM (m)

- < 0.05
- 0.05 - 0.1
- 0.10 - 0.25
- 0.25 - 0.5
- 0.5 - 1
- > 1.0

1d_nwk_Loders_Biggera_culverts_L_WT_002_ID1

1d_nwk_Loders_Biggera_drainage_L_WT_002

PROJECT SITE

0 75 150 Meters

Stantec

Stantec Australia Pty Ltd
Brisbane, QLD

Prepared by BW on 2026-03-12
TR by MG on 2026-03-15

Project: 304701862 2 Village Road FIA

EDQ
2 Village Boulevard, Southport FIA

Appendix C.10 100% BF 2014 Design Surface_DEM Year 2030_1% AEP Depth of Flooding and Level

D:\NotBackedUp\tuflow_data\active\Lumina\Lumina_Results.mxd Revised: 2026-04-07 By: Bwolelo

Notes
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Legend

100% BF Year 2030_1% AEP Flow Velocity_ 2014_Design Surface Survey_DEM (m/s)

- < 0.5
- 0.5 - 1.5
- 1.5 - 2.0
- 2.0 - 2.5
- > 2.5
- 1d_nwk_Loders_Biggera_culverts_L_WT_002_ID1
- 1d_nwk_Loders_Biggera_drainage_L_WT_002
- PROJECT SITE

0 75 150 Meters

Stantec

Stantec Australia Pty Ltd
Brisbane, QLD

Prepared by BW on 2026-03-12
TR by MG on 2026-03-15

Project: 304701862 2 Village Road FIA

EDQ
2 Village Boulevard, Southport FIA

Appendix C.11 100% BF 2014 Design Surface DEM Year 2030 1% AEP Flow Velocity

D:\NotBackedUp\tuflow_data\active\Lumina\Lumina_Results.mxd Revised: 2026-04-07 By: Bwolelo

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VILLAGE BOULEVARD

SMITH STREET

KNOWLEDGE STREET

8SP275512

PARKLANDS DRIVE



Legend

100% BF Year 2030_1% AEP Flow Hazard Category_ 2014_Design Surface Survey_DEM

- H1
- H2
- H3
- H4
- H5
- 1d_nwk_Loders_Biggera_culverts_L_WT_002_ID1
- 1d_nwk_Loders_Biggera_drainage_L_WT_002
- PROJECT SITE

0 75 150 Meters

Notes
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Prepared by BW on 2026-03-12
TR by MG on 2026-03-15

Project: 304701862 2 Village Road FIA

EDQ
2 Village Boulevard, Southport FIA

Appendix C.12 100% BF 2014 Design Surface DEM Year 2030 1% AEP Flow Hazard

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D:\NotBackedUp\tuflow_data\active\Lumina\Lumina_Results.mxd Revised: 2026-04-07 By: Bwolelo

Appendix D 2014 Cardno Trunk Drainage Design Documentation

DATE PLOTTED: 18 December 2014 4:04 PM BY: LAURIE BRINDELL

XREFs: X_721785EW - Base; X_721785EW - A1 Title Sheet; X_721785EW - Road AC Extent; X_721785EW - Survey; X_721785EW - Parklands_Dve_Smith St; X_721785EW - Sewer; X_721785EW - Water; X_721785EW - Conts Early Works; X_721785EW - Conts External; X_721785EW - External Bdys; X_721785EW - Electrical
CAD File: P:\721785 Commonwealth Games Village\10IC Design\Cad\01 Drawings\EARLY WORKS\721785EW - Road & SW Layouts.dwg

FOR CONTINUATION REFER DRAWING CAR-CV-DWG-0124

FOR CONTINUATION REFER DRAWING CAR-CV-DWG-0125

MATCHLINE

PROVIDE STUB FOR STAGE 2 CONNECTION

EXISTING DRAINAGE TO BE REMOVED

HOSPITAL BOULEVARD

LIMIT OF WORKS

JOIN NEATLY TO EXISTING SMITH ST MOTORWAY UPGRADE BY DTMR

SMITH STREET MOTORWAY

NORTH

900 (pt)

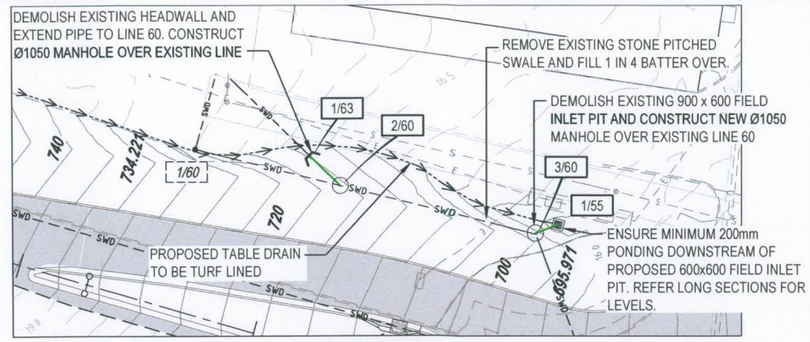
LOCALLY REGRADE AND DIVERT EXISTING SWALE INTO SWD LINE 1 Q_{100} CULVERTS.

FOR INLET PROTECTION DETAILS REFER CAR-CV-DWG-0243

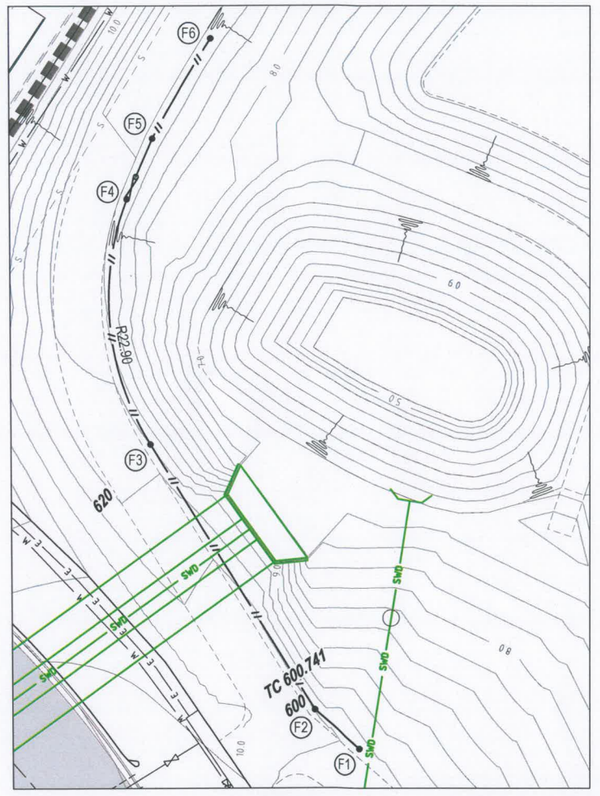
NOTE:

1. REFER TO DRAWING CAR-CV-DWG-0110 FOR GENERAL NOTES AND LEGEND.

5 0 5 10 15 20 25m
1:500 - A1 1:1000 - A3



INSET B
CAR-CV-DWG-0121
SCALE 1:250



INSET C
CAR-CV-DWG-0121
SCALE 1:250

FLOW
1:4
0.4m
1:4

TYPICAL SECTION
CATCH DRAIN
1:20 (A1) 1:40 (A3)

0.2 0 0.2 0.4 0.6 0.8 1.0m
1:20 - A1 1:40 - A3

2.5 0 2.5 5.0 7.5 10 12.5m
1:250 - A1 1:500 - A3

BARRIER FENCE SETOUT TABLE

POINT	EASTING	NORTHING
F1	537898.925	6907285.152
F2	537895.212	6907288.377
F3	537881.764	6907310.254
F4	537879.907	6907330.486
F5	537882.030	6907335.489
F6	537886.875	6907343.750

Rev.	Date	Description	Des.	Verif.	Appd.
C	19/12/2014	FENCING SETOUT ADDED RE-ISSUED FOR CONSTRUCTION	GT	SK	RB
B	14/11/2014	RE-ISSUED FOR CONSTRUCTION	GT	SK	RB
A	4/08/2014	ISSUED FOR CONSTRUCTION	GT	SK	RB

Grocon

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Drawn	LB	Date 4/08/2014
Checked	SC	Date 4/08/2014
Designed	GT	Date 4/08/2014
Verified	SK	Date 4/08/2014
Approved	RPEQ: 7067	Date: 19/12/2014

Client: GROCON (PARKLANDS) PTY LTD
Project: PARKLANDS EARLY WORKS STAGE 1
Title: TRUNK INFRASTRUCTURE WORKS ROADWORKS & STORMWATER DRAINAGE LAYOUT PLAN SHEET 6 OF 6

Status: FOR CONSTRUCTION
Datum: AHD | Scale: 1:500 | Size: A1
Drawing Number: CAR-CV-DWG-0126 | Revision: C

DATE PLOTTED: 25 November 2014 5:11 PM BY - LAURIE BRINDELL
XREFs: X_721785EW - Base; X_721785EW - A1 Title Sheet; X_721785EW - Water; X_721785EW - Sewer; X_721785EW - Conts Early Works; X_721785EW - Conts External; X_721785EW - External Bdys; X_721785EW - Road AC Extent; X_721785EW - Survey; X_721785EW - Parklands_Dve_Smith St; X_721785EW - Electrical
CAD File: p:\721785 commonwealth games village\10\C Design\Cad\01 drawings\early works\721785EW - Road & SW Layouts.dwg

FOR CONTINUATION REFER DRAWING CAR-CV-DWG-0123

FOR CONTINUATION REFER DRAWING CAR-CV-DWG-0122

MATCHLINE

FUTURE BIO-BASINS. REFER CARDNO STAGE 2 DRAWINGS FOR DETAILS.

FUTURE LAKE. REFER LAT 27 LANDSCAPE PLANS FOR DETAILS.

EXISTING DRAINAGE TO BE REMOVED

PROVIDE STUB FOR STAGE 2 CONNECTION

PROVIDE STUB FOR STAGE 2 CONNECTION

PROVIDE STUBS FOR STAGE 2 CONNECTIONS

HW/1A

STUB/70

HW/1

GPT/5

12/5

11/5

10/5

1/18

9/5

8/5

1/16

1/15

2/17

1/17

7/1

5/1

6/1

1/34

2/36

3/2

2/35

1/37

2/2

1/38

2/33

2/32

1/2

4/1

CT 314.379

CTP 279.835

CTP 230.378

TC 197.033

TC 488.976

CT 516.136

120.852

FOURTH AVENUE

FIRST STREET

MAIN STREET

HOSPITAL BOULEVARD

LIMIT OF WORKS

900 (pt)

900 (pt)

2301
WD804788

NORTH

3

4

NOTE:

1. REFER TO DRAWING CAR-CV-DWG-0110 FOR GENERAL NOTES AND LEGEND.

5 0 5 10 15 20 25m

1:500 - A1 1:1000 - A3

Rev.	Date	Description	Des.	Verif.	Appd.
B	14/11/2014	RE-ISSUED FOR CONSTRUCTION	GT	SK	RB
A	4/08/2014	ISSUED FOR CONSTRUCTION	GT	SK	RB

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Web: www.cardno.com.au

		Date
Drawn	LB	4/08/2014
Checked	SC	4/08/2014
Designed	GT	4/08/2014
Verified	SK	4/08/2014
Approved		
RPEQ: 7067		Date: 24/11/2014

Client: GROCON (PARKLANDS) PTY LTD

Project: PARKLANDS
EARLY WORKS
STAGE 1

Title: TRUNK INFRASTRUCTURE WORKS
ROADWORKS & STORMWATER DRAINAGE
LAYOUT PLAN SHEET 4 OF 6

Status: FOR CONSTRUCTION

Datum		Scale	Size
AHD		1:500	A1

Drawing Number: CAR-CV-DWG-0124

Revision: B

DATE PLOTTED: 19 June 2015 8:29 AM BY: REGGIE KEANE

XREFs: X_721785EW - A1 Title Sheet
CAD File: P:\721785 Commonwealth Games Village\10IC Design\Cad\01 Drawings\EARLY WORKS\721785EW - SW Long Sections.dwg

STRUCTURE NAME	1/1	2/1	3/1	4/1	5/1	6/1	7/1	HW/1
STRUCTURE DESCRIPTION	INLET HEADWALL STRUCTURE REFER DWG No.CAR-CV-DWG-0245	900 x 600 LETTERBOX FIELD INLET PIT ON MANHOLE STRUCTURE REFER DWG No.CAR-CV-DWG-0233	900 x 600 LETTERBOX FIELD INLET PIT OVER CULVERT. REFER NOTE 1 BELOW	MANHOLE STRUCTURE REFER DWG No.CAR-CV-DWG-0233	CULVERT SIDE PENETRATION. REFER NOTE 2 BELOW	MANHOLE STRUCTURE REFER DWG No.CAR-CV-DWG-0236	MANHOLE STRUCTURE REFER DWG No.CAR-CV-DWG-0236	OUTLET STRUCTURE. REFER DWG No.CAR-CV-DWG-0235
PIPE SIZEmm (Class)	2 / 3000 x 1500 (RCBC)	2 / 3000 x 1500 (RCBC)	2 / 3000 x 1500 (RCBC)	2 / 3300 x 1500 (RCBC)	2 / 3300 x 1500 (RCBC)	2 / 3300 x 1500 (RCBC)	2 / 3300 x 1500 (RCBC)	
PIPE GRADE %	0.80%	0.82%	0.82%	0.20%	0.20%	0.55%	0.40%	
PIPE SLOPE 1 in X	125.00	121.89	122.29	500.00	502.53	182.29	250.00	
FULL PIPE FLOW VELOCITY (m/s)						0.89	0.89	
PART FULL FLOW VELOCITY (m/s)	3.18	3.21	3.21	2.03	2.03	2.89		
DATUM RL -1.0								
WATER LEVEL IN STRUCTURE	9.814 / 9.087	8.782	8.717	8.643	8.590	8.510	8.464	
HYDRAULIC GRADE LEVEL	9.814 / 9.298 / 9.087	8.809 / 8.782	8.721 / 8.717	8.664 / 8.643	8.596 / 8.590	8.539 / 8.510	8.502 / 8.464	8.400
PIPE FLOW (Cumecs)	7.600	7.636	7.636	8.404	8.465	8.813	8.813	
DEPTH TO INVERT	2.500 / 3.601	3.631 / 4.208	4.208 / 4.201	4.231 / 3.505	3.505 / 3.867	3.897 / 3.662	3.692 / 3.176	
INVERT LEVEL OF DRAIN	8.900 / 8.294	8.264 / 7.555	7.555 / 7.444	7.414 / 7.269	7.269 / 7.230	7.200 / 6.706	6.676 / 6.211	
DESIGN SURFACE LEVEL	11.400 / 11.895	11.763	11.645	10.774	11.097	10.388	9.387	
	538130.396 / 6906763.472 / 538180.996 / 6906819.808	538133.501 / 6906892.034	538126.075 / 6906903.328	538184.801 / 6906946.239	538200.626 / 6906957.802	538147.487 / 6907030.527	538078.917 / 6907124.369	
RUNNING CHAINAGE	0.000 / 75.724 / 75.724	86.443 / 162.167	13.517 / 175.684	72.733 / 248.417	19.599 / 268.016	90.070 / 358.086	116.225 / 474.311	

STRUCTURE NAME	1/11	2/5
	STD GCCC SIDE INLET GULLY PIT (ON GRADE) TYPE 'S' LINTEL	STD GCCC MANHOLE 1050mm DIAMETER
PIPE SIZEmm (Class)	375(3)	
PIPE GRADE %	1.00%	
PIPE SLOPE 1 in X	100.00	
FULL PIPE FLOW VELOCITY (m/s)	0.22	
PART FULL FLOW VELOCITY (m/s)		
DATUM RL -7.0		
WATER LEVEL IN STRUCTURE	20.285 / 20.261	
HYDRAULIC GRADE LEVEL	20.285 / 20.262 / 20.261	20.041
PIPE FLOW (Cumecs)	0.024	
DEPTH TO INVERT	1.287 / 1.479	
INVERT LEVEL OF DRAIN	19.758 / 19.706	
DESIGN SURFACE LEVEL	21.045 / 21.185	
	537857.856 / 6906926.823 / 537855.096 / 6906924.368	
RUNNING CHAINAGE	0.000 / 5.241 / 5.241	

STRUCTURE NAME	EX/102	1/102	2/102	OUT/102
		STD GCCC MANHOLE 1050mm DIAMETER	STD GCCC MANHOLE 1050mm DIAMETER	HEADWALL
PIPE SIZEmm (Class)		675(3)	675(3)	675(3)
PIPE GRADE %			2.92%	2.00%
PIPE SLOPE 1 in X			34.30	50.03
FULL PIPE FLOW VELOCITY (m/s)			1.90	1.67
PART FULL FLOW VELOCITY (m/s)				
DATUM RL -7.0				
WATER LEVEL IN STRUCTURE				
HYDRAULIC GRADE LEVEL				
PIPE FLOW (Cumecs)		EXISTING FLOWS	EXISTING FLOWS	
DEPTH TO INVERT		1.780	1.830 / 1.600	1.650 / 1.490
INVERT LEVEL OF DRAIN		5.010	4.960 / 4.750	4.700 / 4.660
DESIGN SURFACE LEVEL		6.790	6.350	6.150
	538093.534 / 6907389.605	538073.569 / 6907387.542	538078.041 / 6907394.306	538077.995 / 6907394.735
RUNNING CHAINAGE	0.000	12.802 / 12.802	7.202 / 20.004	2.001 / 22.005

STRUCTURE NAME	EX/103	1/103	2/103	OUT/103
		STD GCCC MANHOLE 1050mm DIAMETER	STD GCCC MANHOLE 1050mm DIAMETER	HEADWALL
PIPE SIZEmm (Class)		375(3)	375(3)	375(3)
PIPE GRADE %			1.53%	2.00%
PIPE SLOPE 1 in X			65.48	50.00
FULL PIPE FLOW VELOCITY (m/s)			1.62	1.78
PART FULL FLOW VELOCITY (m/s)				
DATUM RL -7.0				
WATER LEVEL IN STRUCTURE				
HYDRAULIC GRADE LEVEL				
PIPE FLOW (Cumecs)		EXISTING FLOWS		
DEPTH TO INVERT		1.050	1.100 / 1.400	1.450 / 1.490
INVERT LEVEL OF DRAIN		4.950	4.900 / 4.750	4.700 / 4.660
DESIGN SURFACE LEVEL		6.000	6.150	6.150
	538093.526	6907380.202 / 538081.675	6907382.369 / 538082.412	6907392.183 / 538081.064
RUNNING CHAINAGE	0.000	12.051 / 12.051	9.821 / 21.873	2.000 / 23.873

LEGEND:

FINISHED SURFACE
Q10 HGL
Q100 HGL

NOTE:

1. CO-ORDINATE SHOWN FOR RAISED INLET 3/1 IS AT CENTRE OF DUAL CULVERTS. ACTUAL POSITION OF RAISED INLET SHALL BE PLACED CENTRALLY OVER 1 CULVERT ONLY. REFER DWG No. CAR-CV-DWG-0239.
2. FOR SIDE WALL PIPE DIAMETERS REFER SWD LINE 32 AND SWD LINE 33 ON LONGITUDINAL SECTION. FOR SIDE WALL PENETRATION STRUCTURAL DETAILS REFER DWG No. CAR-CV-DWG-0239.

150dia WATER
ELECTRICAL
SEWER LINE 4
ELECTRICAL
150dia WATER
2.503m
5.726m
4.179m
2.050m
9.495m
2.4m

LINE 1 11 102 103

HOR. 10 0 10 20 30 40 50m 1:1000-A1 1:2000-A3
VERT. 1 0 1 2 3 4 5m 1:100-A1 1:200-A3

Rev.	Date	Description	Des.	Verif.	Appd.
E	17/06/2015	SWD LINES 102 AND 103 ADDED; RE-ISSUED FOR CONSTRUCTION	GT	SK	RB
D	2/04/2015	SWD LINE 11 ADDED	GT	SK	RB
C	24/11/2014	RE-ISSUED FOR CONSTRUCTION	GT	SK	RB
B	31/10/2014	SWD LINE 1 UPDATED. ISSUED FOR CONSTRUCTION	GT	SK	RB
A	4/08/2014	ISSUED FOR CONSTRUCTION	GT	SK	RB

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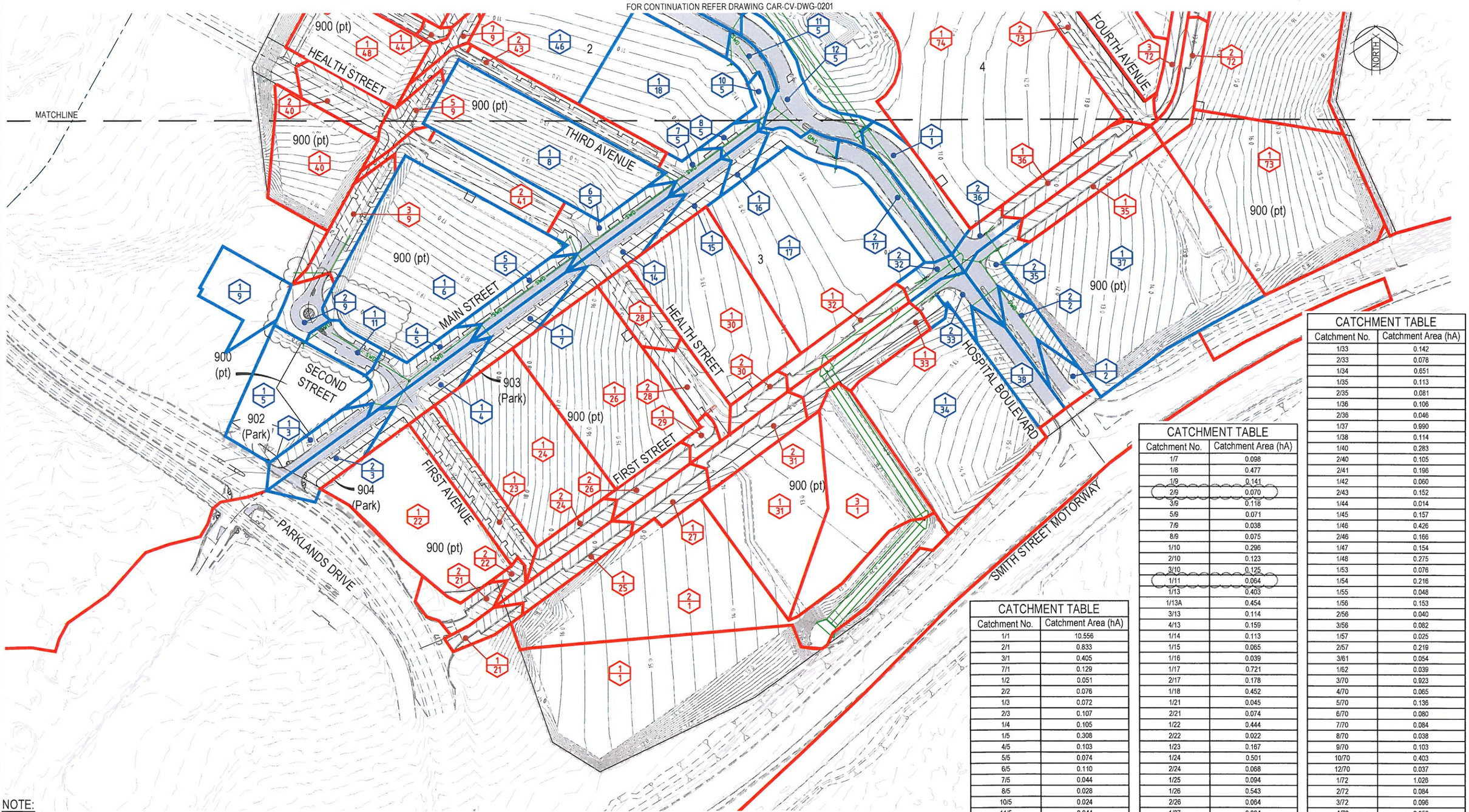
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		Date
Drawn	LB	4/08/2014
Checked	SC	4/08/2014
Designed	GT	4/08/2014
Verified	SK	4/08/2014
Approved		
RPEQ: 7067		Date: 17/06/2015

Client: GROCON (PARKLANDS) PTY LTD
Project: PARKLANDS EARLY WORKS STAGE 1
Title: TRUNK INFRASTRUCTURE WORKS STORMWATER LONGITUDINAL SECTIONS SHEET 1
Status: FOR CONSTRUCTION
Datum: AHD
Scale: AS SHOWN
Size: A1
Drawing Number: CAR-CV-DWG-0211
Revision: E

DATE PLOTTED: 2 April 2015 9:35 AM BY - LAURIE BRUNDELL

FOR CONTINUATION REFER DRAWING CAR-CV-DWG-0201



NOTE:

1. REFER TO DRAWING CAR-CV-DWG-0201 FOR LEGEND.

10 0 10 20 30 40 50m

1:1000 - A1 1:2000 - A3

CATCHMENT TABLE

Catchment No.	Catchment Area (hA)
1/1	10.556
2/1	0.833
3/1	0.405
7/1	0.129
1/2	0.051
2/2	0.076
1/3	0.072
2/3	0.107
1/4	0.105
1/5	0.308
4/5	0.103
5/5	0.074
6/5	0.110
7/5	0.044
8/5	0.028
10/5	0.024
11/5	0.044
12/5	0.168
1/6	0.763
1/EX4	0.461
1/101	0.491
2/101	0.066
3/101	0.064
4/101	0.146
5/101	0.048
6/101	0.072

CATCHMENT TABLE

Catchment No.	Catchment Area (hA)
1/7	0.098
1/8	0.477
1/9	0.141
2/9	0.070
3/9	0.118
5/9	0.071
7/9	0.038
8/9	0.075
1/10	0.296
2/10	0.123
3/10	0.125
1/11	0.064
1/13	0.403
1/13A	0.454
3/13	0.114
4/13	0.159
1/14	0.113
1/15	0.065
1/16	0.039
1/17	0.721
2/17	0.178
1/18	0.452
1/21	0.045
2/21	0.074
1/22	0.444
2/22	0.022
1/23	0.167
1/24	0.501
2/24	0.068
1/25	0.094
1/26	0.543
2/26	0.064
1/27	0.084
1/28	0.097
2/28	0.102
1/29	0.027
1/30	0.479
2/30	0.047
1/31	0.400
2/31	0.121
1/32	0.100
2/32	0.039

CATCHMENT TABLE

Catchment No.	Catchment Area (hA)
1/33	0.142
2/33	0.076
1/34	0.651
1/35	0.113
2/35	0.081
1/36	0.106
2/36	0.046
1/37	0.990
1/38	0.114
1/40	0.283
2/40	0.105
2/41	0.196
1/42	0.060
2/43	0.152
1/44	0.014
1/45	0.157
1/46	0.426
2/46	0.166
1/47	0.154
1/48	0.275
1/53	0.076
1/54	0.216
1/55	0.048
1/56	0.153
2/56	0.040
3/56	0.082
1/57	0.025
2/57	0.219
3/61	0.054
1/62	0.039
3/70	0.923
4/70	0.065
5/70	0.136
6/70	0.080
7/70	0.084
8/70	0.038
9/70	0.103
10/70	0.403
12/70	0.037
1/72	1.026
2/72	0.084
3/72	0.096
4/72	0.052
5/72	0.192
6/72	0.134
1/73	0.723
2/73	0.147
3/73	0.003
1/74	1.222
1/76	0.351
1/77	0.127
1/200	2.204

Rev.	Date	Description	Des.	Verif.	Appd.
D	2/04/2015	CATCHMENTS AMENDED			
C	19/12/2014	SECOND ST REALIGNMENT RE-ISSUED FOR CONSTRUCTION	GT	SK	RB
B	24/11/2014	RE-ISSUED FOR CONSTRUCTION	GT	SK	RB
A	4/08/2014	ISSUED FOR CONSTRUCTION	GT	SK	RB

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Drawn	LB	Date 4/08/2014
Checked	SC	Date 4/08/2014
Designed	GT	Date 4/08/2014
Verified	SK	Date 4/08/2014
Approved	RPEQ: 7067	Date 02/04/2015

Client: GROCON (PARKLANDS) PTY LTD

Project: PARKLANDS EARLY WORKS STAGE 1

Title: TRUNK INFRASTRUCTURE WORKS STORMWATER CATCHMENT PLAN SHEET 2 OF 2

Status: FOR CONSTRUCTION

Datum		Scale	Size
AHD		1:1000	A1

Drawing Number: CAR-CV-DWG-0202

Revision: D

XREF's: X_721785EW - Base; X_721785EW - A1 Title Sheet; X_721785EW - Contx Extxrnal; X_721785EW - Survey Retained; X_721785EW - Road A/C Extent; X_721785EW - Parklands_Dve_Smith St; X_721785EW - SW Catchment Layouts.dwg
CAD File: P:\721785 Commonwealth Games Village\10\C Design\Cad\01 Drawings\EARLY WORKS\721785EW - SW Catchment Layouts.dwg

DATE PLOTTED: 16 June 2015 2:08 PM BY - RYAN BOWER

XREF's: X_721785EW - Base; X_721785EW - A1 Title Sheet; X_721785EW - Conts External; X_721785EW - Survey Retained; X_721785EW - Road AC Extent; X_721785EW - Parklands_Dve_Smith St; X_721785EW - Conts Early Works; X_721785EW - Catchment Bdys
CAD File: P:\721785 Commonwealth Games Village\10C Design\Cad\01 Drawings\EARLY WORKS\721785EW - SW Catchment Layouts.dwg

LEGEND

- STAGE 1 CATCHMENT BOUNDARY
- STAGE 2 CATCHMENT BOUNDARY
- STAGE 1 CATCHMENT NUMBER (e.g. 1B / 3)
- STAGE 2 CATCHMENT NUMBER (e.g. 4 / 72)
- SITE BOUNDARY
- EXISTING SURFACE CONTOUR (0.5m INTERVALS)
- FINISHED SURFACE CONTOUR (0.25m INTERVALS)
- PROPOSED STORMWATER PIPE AND PIT (SWD)
- FUTURE STORMWATER PIPE AND PIT (SWD)
- EXISTING STORMWATER PIPE AND PIT (SWD)

NORTH

THE CATCHMENT AREAS FOR LINE 101 ARE BASED ON AERIAL AND LASER SURVEY DATA.

INNOVATION DRIVE
HOSPITAL BOULEVARD
THIRD AVENUE
SECOND STREET
HEALTH STREET
FIRST STREET
FOURTH AVENUE
900 (pt)
901 (PARK)
MATCHLINE

NOTE:
1. REFER TO DRAWING CAR-CV-DWG-0202 FOR CATCHMENT TABLE.

FOR CONTINUATION REFER DRAWING CAR-CV-DWG-0202

10 0 10 20 30 40 50m
1:1000 - A1 1:2000 - A3

Rev.	Date	Description	Des.	Verif.	Appd.
C	17/06/2015	LINE 101 AMENDED RE-ISSUED FOR CONSTRUCTION			
B	24/11/2014	RE-ISSUED FOR CONSTRUCTION	GT	SK	RB
A	4/08/2014	ISSUED FOR CONSTRUCTION	GT	SK	RB

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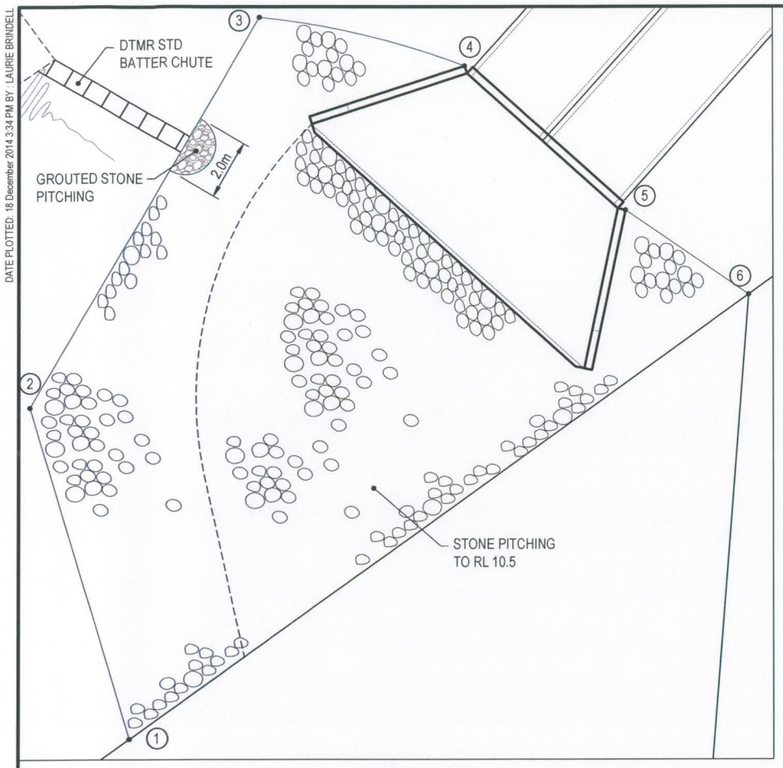
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Drawn	LB	Date 4/08/2014
Checked	SC	Date 4/08/2014
Designed	GT	Date 4/08/2014
Verified	SK	Date 4/08/2014
Approved	RPEQ: 7067	Date: 17/06/2015

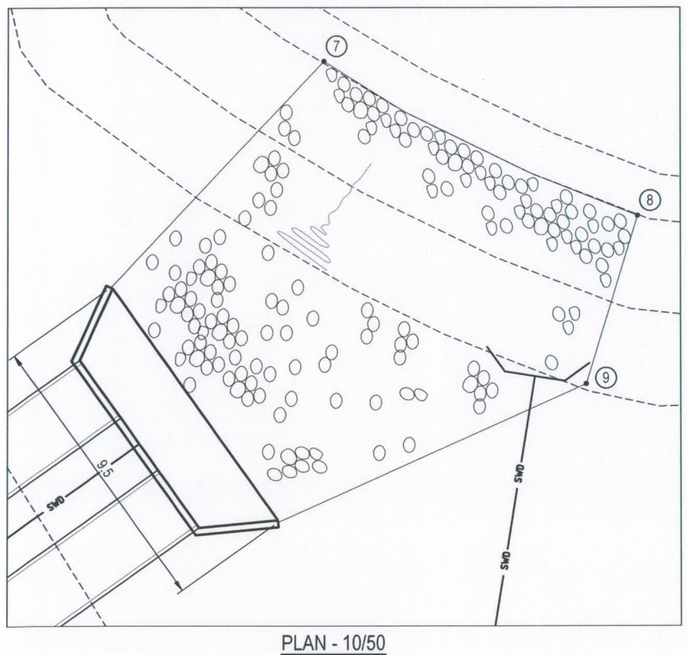
Client: GROCON (PARKLANDS) PTY LTD
Project: PARKLANDS EARLY WORKS STAGE 1
Title: TRUNK INFRASTRUCTURE WORKS STORMWATER CATCHMENT PLAN SHEET 1 OF 2

Status: FOR CONSTRUCTION
Datum: AHD | Scale: 1:1000 | Size: A1
Drawing Number: CAR-CV-DWG-0201 | Revision: C

DATE PLOTTED: 18 December 2014 3:34 PM BY: LAURE BRINDELL



PLAN - INLET 1/1
SCALE 1:100



PLAN - 10/50
SCALE 1:100

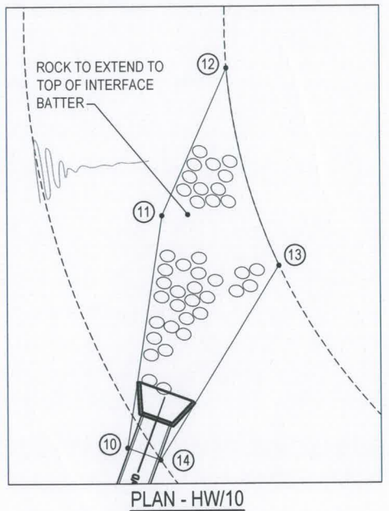
NORTH

ROCK GRADATION TABLE

SMALLEST DIMENSIONS IN (mm)					% OF ROCK SMALLER THAN SIZE SHOWN
$200d_{50}$	$300d_{50}$	$400d_{50}$	$500d_{50}$	$600d_{50}$	
380	525	630	750	850	100
300	450	550	650	750	50-70
200	300	400	500	600	35-50
75	100	130	150	175	2-10

OUTLET / INLET PROTECTION TABLE

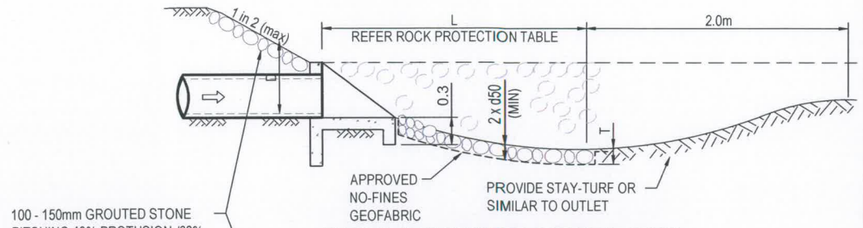
HEADWALL No.	PIPE SIZE	VELOCITY	LENGTH OF PROTECTION	WIDTH OF PROTECTION	NOMINAL ROCK SIZE	THICKNESS OF PROTECTION
	D	V	L	W	d50	T
HW/1	2/3300x1500 RCBC	-	2.0m ROCK MATTRESS	-	300	600
10/50	3/2100x1200 RCBC	3.10	10.0	9.5/13.5	400	800
1/1	2/3000x1500 RCBC	3.80	-	-	400	800
HW/10	**Ø900 RCP**	1.9	5.4	2.0/4.2	200	400



PLAN - HW/10
SCALE 1:100

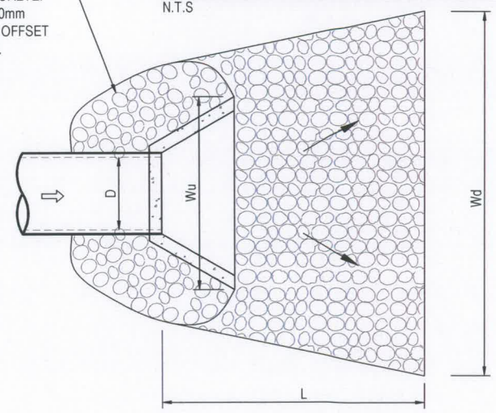
NORTH

NOTE:
STORMWATER OUTLETS TO BLEND NEATLY WITH EXISTING TOPOGRAPHY AND TO BE LANDSCAPED TO BLEND WITH NATURAL ENVIRONMENT.



100 - 150mm GROUTED STONE PITCHING 40% PROTUSION /60% EMBEDMENT IN N32 CONCRETE. CONCRETE SLAB MIN. 300mm THICK WITH SL92 MESH , OFFSET 100mm FROM SLAB BASE.

TYPICAL STORMWATER OUTLET SECTION
N.T.S



SETOUT TABLE

POINT	EASTING	NORTHING
1	538116.764	6906743.705
2	538113.489	6906754.651
3	538121.011	6906767.568
4	538127.823	6906765.958
5	538133.142	6906761.180
6	538137.220	6906758.392
7	537896.138	6907315.961
8	537906.479	6907310.869
9	537904.780	6907305.328
10	537978.030	6907180.257
11	537979.193	6907187.902
12	537981.333	6907192.758
13	537983.051	6907186.242
14	537979.112	6907179.859

1 0 1 2 3 4 5m
1:100 - A1 1:200 - A3

Rev.	Date	Description	Des.	Verif.	Appd.
C	19/12/2014	LINE 86 REMOVED RE-ISSUED FOR CONSTRUCTION	GT	SK	RB
B	24/11/2014	RE-ISSUED FOR CONSTRUCTION	GT	SK	RB
A	4/08/2014	ISSUED FOR CONSTRUCTION	GT	SK	RB

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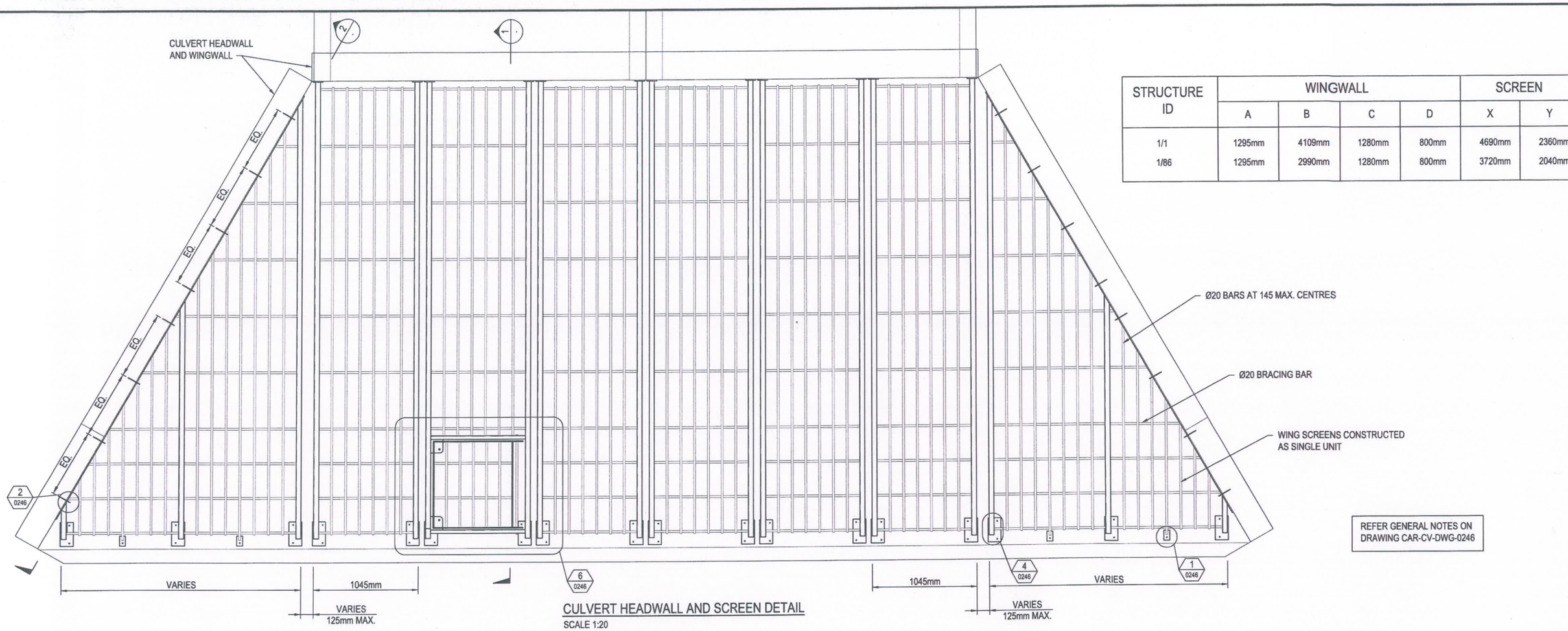
Drawn	LB	4/08/2014
Checked	SC	4/08/2014
Designed	GT	4/08/2014
Verified	SK	4/08/2014
Approved	RPEQ: 7067	Date: 19/12/2014

Client: GROCON (PARKLANDS) PTY LTD
Project: PARKLANDS EARLY WORKS STAGE 1
Title: TRUNK INFRASTRUCTURE WORKS STORMWATER OUTLET & INLET PROTECTION DETAILS
Status: FOR CONSTRUCTION
Datum: AHD | Scale: | Size: A1
Drawing Number: CAR-CV-DWG-0243 | Revision: C

XREFs: X_721785EW - A1 Title Sheet; X_721785EW - Base; X_721785EW - Contls Design 100mm
CAD File: P:\721785 Commonwealth Games Village\10\C Design\Cad\01 Drawings\EARLY WORKS\S721785EW - SW Outlet & Inlet Protection.dwg

DATE PLOTTED: 14 May 2015 11:23 AM BY : LAURIE BRINDELL

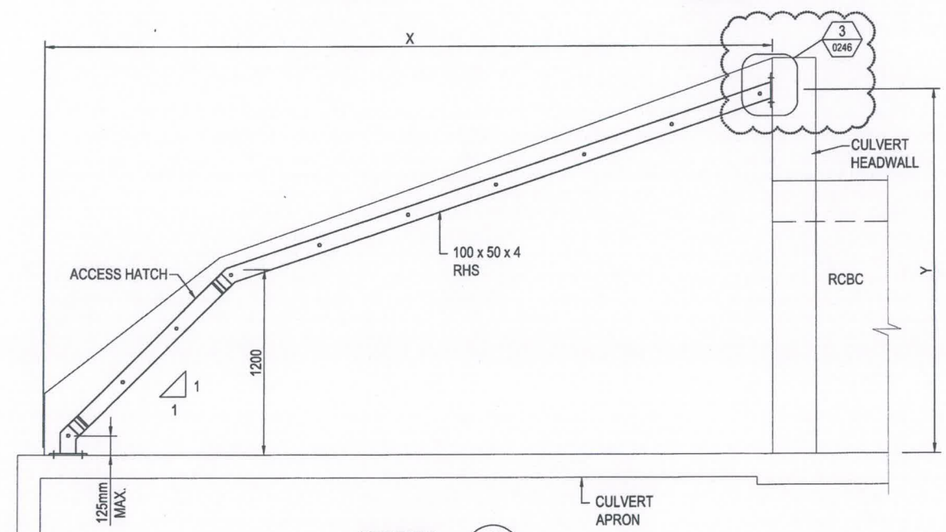
STRUCTURE ID	WINGWALL				SCREEN	
	A	B	C	D	X	Y
1/1	1295mm	4109mm	1280mm	800mm	4690mm	2360mm
1/86	1295mm	2990mm	1280mm	800mm	3720mm	2040mm



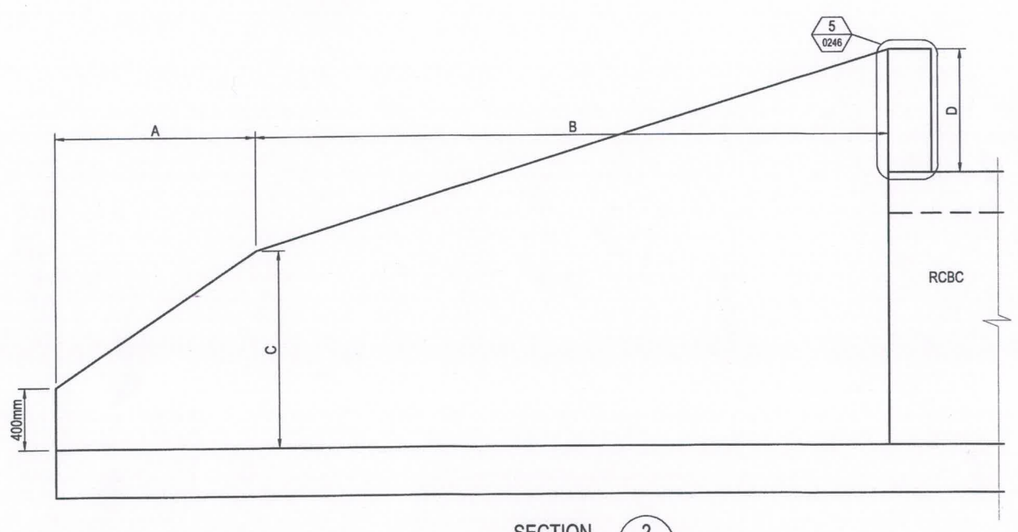
REFER GENERAL NOTES ON DRAWING CAR-CV-DWG-0246

CULVERT HEADWALL AND SCREEN DETAIL

SCALE 1:20



SECTION 1 - SCALE 1:20



SECTION 2 - SCALE 1:20

0.2 0 0.2 0.4 0.6 0.8 1.0m

1:20 - A1 1:40 - A3

Rev.	Date	Description	Des.	Verif.	Appd.
C	12/05/2015	SECTION LOCATION AMENDED	GT	SK	RB
B	24/11/2014	RE-ISSUED FOR CONSTRUCTION	GT	SK	RB
A	4/08/2014	ISSUED FOR CONSTRUCTION	GT	SK	RB

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Drawn	LB	Date 4/08/2014
Checked	SC	Date 4/08/2014
Designed	GT	Date 4/08/2014
Verified	SK	Date 4/08/2014
Approved	RPEQ: 5528	Date: 12/05/2015

Client: GROCON (PARKLANDS) PTY LTD

Project: PARKLANDS EARLY WORKS STAGE 1

Title: TRUNK INFRASTRUCTURE WORKS STORMWATER CULVERT PROTECTION DETAILS - SHEET 1

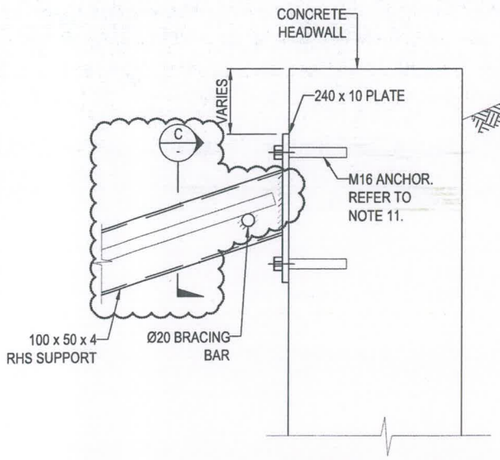
Status: FOR CONSTRUCTION

Datum: AHD | Scale: AS SHOWN | Size: A1

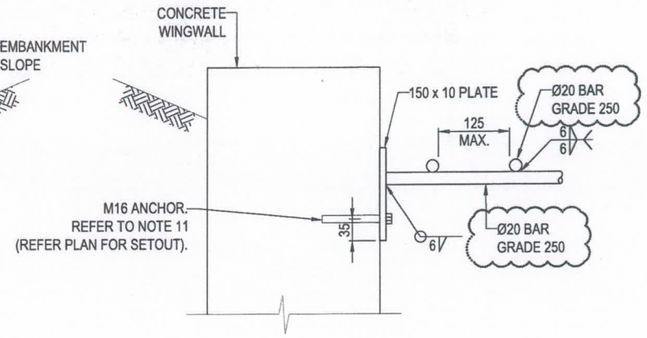
Drawing Number: CAR-CV-DWG-0245 | Revision: C

XREF's: X_721785EW - A1 Title Sheet, X_721785EW - Base
CAD File: P:\721785 Commonwealth Games Village\10\C Design\Cad\01 Drawings\EARLY WORKS\721785EW - SW Culvert Protection.dwg

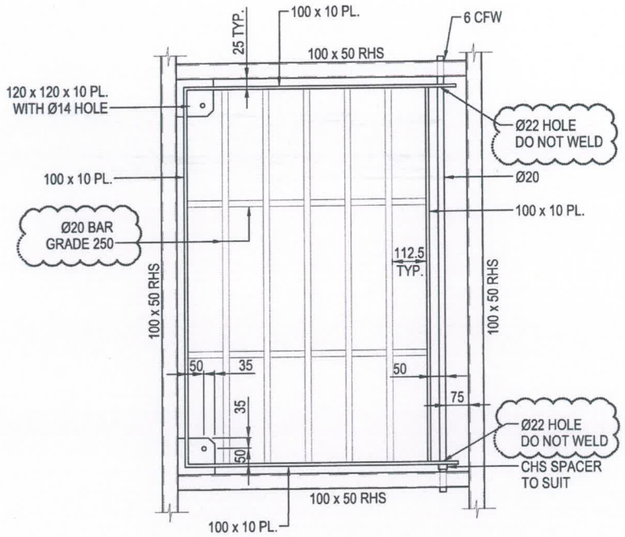
DATE PLOTTED: 14 May 2015 2:03 PM BY : LAURIE BRINDELL



DETAIL 3 / 0245
SCALE 1:5



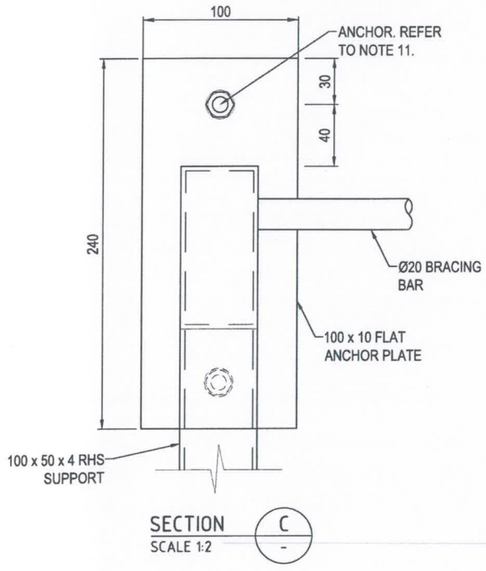
DETAIL 2 / 0245 2 / 0247
SCALE 1:5



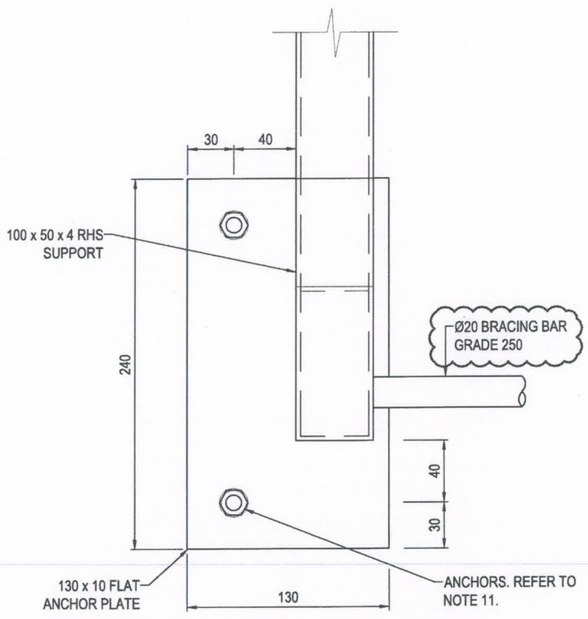
DETAIL 6 / 0245
SCALE 1:10

NOTES:

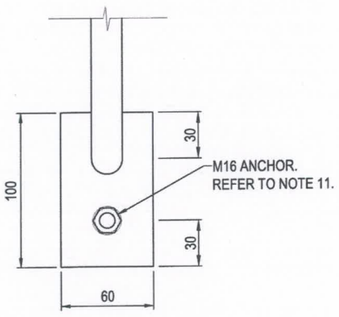
1. ALL DIMENSIONS TO BE CONFIRMED ON SITE. PRIOR TO FABRICATION, CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR APPROVAL BY GCCC ON SITE.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS SPECIFICATIONS AND THE LATEST EDITION OF QUEENSLAND URBAN DRAINAGE MANUAL SECTION 12.
3. STEEL PLATES SHALL BE GRADE 250 TO AS/NZS 3678, UNLESS NOTED OTHERWISE.
4. THE WELD CATEGORY SHALL BE SP IN ACCORDANCE WITH AS 1554. WELDING SYMBOLS SHALL COMPLY WITH AS 1101.3. EDGES TO BE PROTECTIVE TREATED AND SHALL BE ROUNDED TO A RADIUS OF 1.5mm.
5. ALL COMPONENTS SHALL BE HOT-DIP GALVANISED AFTER FABRICATION IN ACCORDANCE WITH AS/NZS 4680.
6. DAMAGED GALVANIZED SURFACES SHALL BE RENOVATED WITH A SUITABLE TWO PACK ORGANIC ZINC-RICH PRIMER.
7. BOLTS, NUTS AND WASHERS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AS 1214.
8. ALL REINFORCING BAR SHALL BE IN ACCORDANCE WITH MRTS71 AND AS 4671.
9. ALL STEEL ROUND BAR SHALL BE GRADE R500N TO AS 4671.
10. ALL STEELWORK SHALL BE IN ACCORDANCE WITH MRTS78.
11. ANCHORS TO BE DRILL AND EPOXY HILTI HIT-HY150/ M16 HIS-N INTERNALLY THREADED SLEEVE AND WASHERS BY HILTI OR EQUIVALENT, 150 EMBEDMENT.



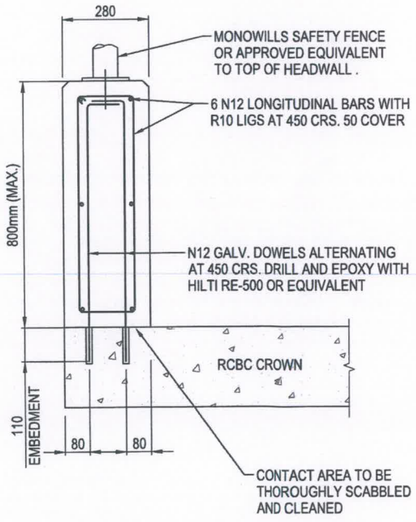
SECTION C / -
SCALE 1:2



DETAIL 4 / 0245 4 / 0247
SCALE 1:2



DETAIL 1 / 0245
SCALE 1:2



DETAIL 5 / 0245
SCALE 1:10

20 0 20 40 60 80 100mm
1:2 - A1 1:4 - A3

0.1 0 0.1 0.2 0.3 0.4 0.5m
1:10 - A1 1:20 - A3

Rev.	Date	Description	Des.	Verif.	Appd.
B	12/05/2015	NOTES AMENDED	GT	SK	RB
A	24/11/2014	ISSUED FOR CONSTRUCTION			

Grocon

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		Date
Drawn	LB	24/11/2014
Checked	SC	24/11/2014
Designed	GT	24/11/2014
Verified	SK	24/11/2014
Approved	RPEQ: 5528	Date: 12/05/2015

Client: GROCON (PARKLANDS) PTY LTD
Project: PARKLANDS EARLY WORKS STAGE 1
Title: TRUNK INFRASTRUCTURE WORKS STORMWATER CULVERT PROTECTION DETAILS - SHEET 2
Status: FOR CONSTRUCTION
Datum: AHD | Scale: AS SHOWN | Size: A1
Drawing Number: CAR-CV-DWG-0246 | Revision: B

XREFs: X_721785EW - A1 Title Sheet; X_721785EW - Base
CAD File: P:\721785 Commonwealth Games Village\10\C Design\Cad\01 Drawings\EARLY WORKS\S721785EW - SW Culvert Protection.dwg

Appendix E ARR2019 Blockage Assessment

BLOCKAGE ASSESMENT FORM

STRUCTURE : 2 Village Boulevard, Southport

OPENING WIDTH:3.0m W x 1.5m H**.....m**

Australian Rainfall & Runoff

DEBRIS TYPE/MATERIAL/L_{10}/SOURCE AREA - ***There may be more than one material type to consider!***

Debris Type/Material	L_{10}	Source Area	How Assessed
Small trees and debris	2.0m	Upstream heavily vegetated catchment	Site visit photos, aerial imagery, Google streetview

DEBRIS AVAILABILITY (HML) – ***for the selected debris type/size and its source area***

Availability	Typical Source Area Characteristics	Notes
High	• *Dense forest, thick vegetation, extensive canopy, difficult to walk through with considerable fallen limbs, leaves and high levels of floor litter.* • *Streams with boulder/cobble beds and steep bed slopes and banks showing signs of substantial past bed/bank movements.* • *Arid areas, where loose vegetation and exposed loose soils occur and vegetation is sparse.* • *Urban areas that are not well maintained and/or old paling fences, sheds, cars and/or stored loose material etc., are present on the floodplain close to the water course.*	Upstream heavily vegetated catchment
Medium	• *State forest areas with clear understory, grazing land with stands of trees* • *Source areas generally falling between the High and Low categories.*	
Low	• *Well maintained rural lands and paddocks, with minimal outbuildings* • *Streams with moderate to flat slopes and stable beds and banks.* • *Arid areas where vegetation is deep rooted and soils resistant to scour* • *Urban areas that are well maintained with limited debris present in the source area.*	

DEBRIS MOBILITY (HML) - ***for the selected debris type/size and its source area***

Mobility	Typical Source Area Characteristics	Notes
High	• *Steep source area with fast response times and high annual rainfall and/or storm intensities and/or source areas subject to high rainfall intensities with sparse vegetation cover.* • *Receiving streams that frequently overtop their banks.* • *Main debris source areas close to streams*	
Medium	• *Source areas generally falling between the High and Low categories.*	Area of high rainfall but not considered steep catchment
Low	• *Low rainfall intensities and large, flat source areas.* • *Receiving streams that Infrequently overtop their banks.* • *Main source areas well away from streams*	

DEBRIS TRANSPORTABILITY (HML) - ***for the selected debris type/size and stream characteristics***

Transportability	Typical Transporting Stream Characteristics	Notes
High	• *Steep bed slopes (> 3%).and/or high stream velocity (V>2.5m/sec)* • *Deep stream relative to vertical debris dimension (D>0.5L_{10})* • *Wide streams relative to horizontal debris dimension. (W>L_{10})* • *Streams relatively straight and free of constrictions/snag points.* • *High temporal variability in maximum stream flows*	Not considered steep and flood hazard in channels upstream are relatively low, and broken up by several road crossings upstream
Medium	• *Streams generally falling between High and Low categories*	
Low	• *Flat bed slopes (< 1%).and/or low stream velocity (V<1m/sec)* • *Shallow stream relative to vertical debris dimension (D<0.5L_{10})* • *Narrow streams relative to horizontal debris dimension.(W<L_{10})* • *Streams meander with frequent constrictions/snag points.* • *Low temporal variability in maximum stream flows*	

BLOCKAGE ASSESMENT FORM

Australian Rainfall & Runoff

SITE BASED DEBRIS POTENTIAL 1%AEP (HML) - *for the selected debris type/size arriving at the site*

Debris Potential	Combinations of the Above (any order)	Notes
DP_{High}	HHH or HHM	
DP_{Medium}	MMM or HML or HMM or HLL	
DP_{Low}	LLL or MML or MLL	Eg. MML, therefore DP_{Low} selected

AEP ADJUSTED SITE DEBRIS POTENTIAL (HML) - *for the selected debris type/size*

Event AEP	At Site 1% AEP Debris Potential			AEP Adjusted At Site Debris potential
	DP_{High}	**DP_{Medium}**	**DP_{Low}**	
AEP > 5% *(frequent)*	**M**edium	**L**ow	**L**ow	Eg. Low
AEP 5% - AEP 0.5%	**H**igh	**M**edium	**L**ow	Eg. Low
AEP < 0.5% *(rare)*	**H**igh	**H**igh	**M**edium	Eg. Medium

Debris Blockage

MOST LIKELY DESIGN INLET BLOCKAGE LEVEL (B_{DES}%) *for the selected debris type/size*

Control Dimension Inlet Width W (m)	At-Site Debris Potential (Generally)		
	High	**M**edium	**L**ow
$W < L_{10}$	100%	50%	25%
$W \geq L_{10} \leq 3*L_{10}$	20%	10%	0%
$W > 3*L_{10}$	10%	0%	0%

Event AEP	Bdes %
AEP > 5% ***(frequent)***	Eg. Low – 0%
AEP 5% - AEP 0.5%	Eg. Low – 0%
AEP < 0.5% ***(rare)***	Eg. Medium – 10%

Refer Guideline if opening H<0.33W

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We care about the communities we serve—because they're our communities too. This allows us to assess what's needed and connect our expertise, to appreciate nuances and envision what's never been considered, to bring together diverse perspectives so we can collaborate toward a shared success.

We're designers, engineers, scientists, and project managers, innovating together at the intersection of community, creativity, and client relationships. Balancing these priorities results in projects that advance the quality of life in communities across the globe.

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