

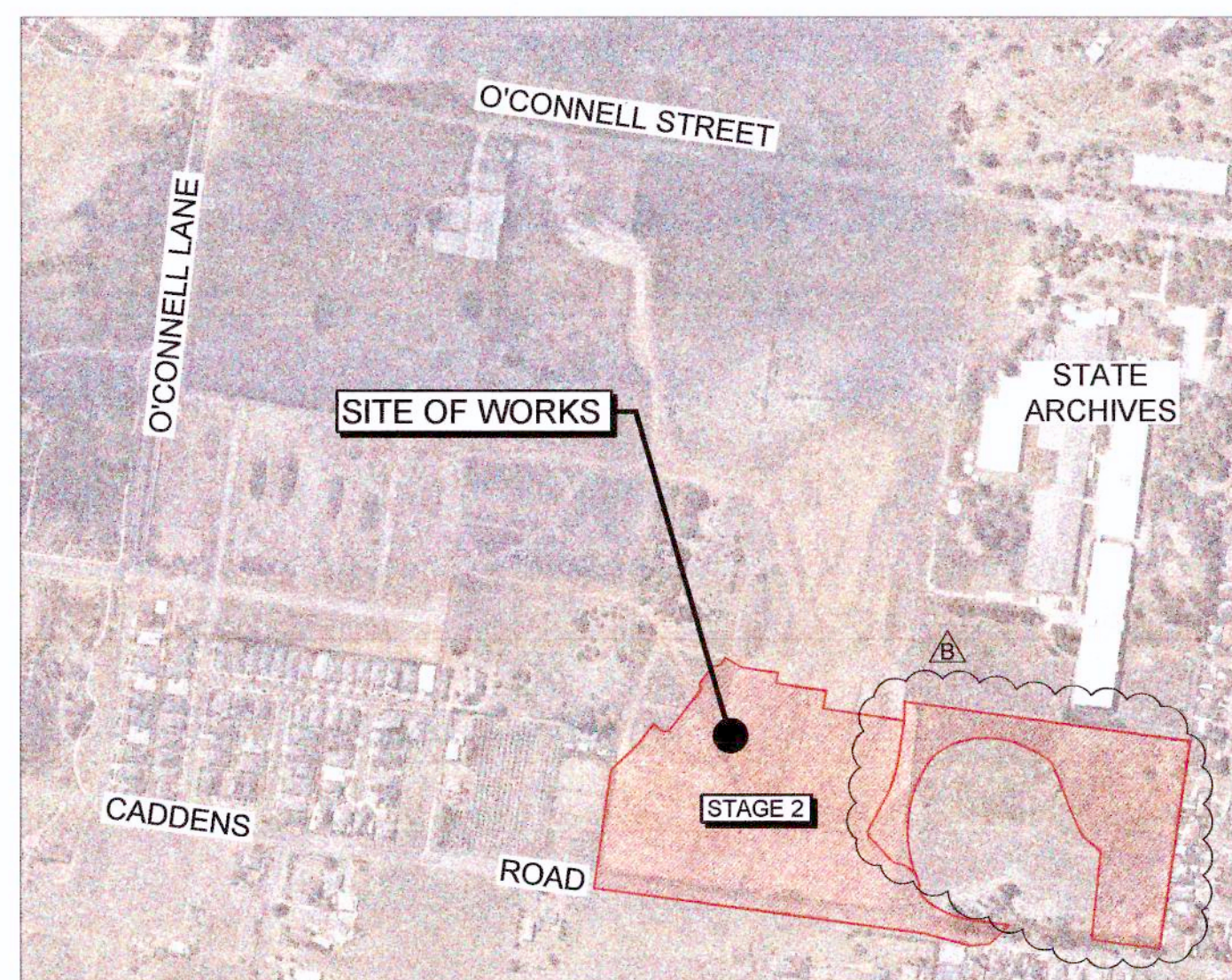


LEGACYPROPERTY

CADDENS HILL - STAGE 2 CONSTRUCTION CERTIFICATE

PROPOSED ROAD & DRAINAGE WORKS

DA 16/1166



WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: *P.R.*
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 **REF:** 20457/2

LOCALITY SKETCH

Prepared By:

J. WYNDHAM PRINCE

**CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS**

PO Box 4366 PENRITH WESTFIELD NSW 2750

P 02 4720 3300 F 02 4720 3399

W www.jwprince.com.au

E jwp@jwprince.com.au

These plans are referred to in
certificate no **14323** approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1, C1, C2, C3, C4, C6, C15 & D1
LAND DEVELOPMENT CERTIFICATES
www.Ldcerts.com.au

ISSUED FOR CONSTRUCTION APPROVAL

PLAN No.
110358/CC200 **B**
FILE No. 110358CC200

LEGEND			
DESCRIPTION	PROPOSED	EXISTING	FUTURE
EXTENT OF WORKS			
KERB & GUTTER			
PRAM RAMP			
DRAINAGE LINE, PIT & EASEMENT			
DRAINAGE LINE & PIT			
HEADWALL			
GPT			
GUIDE POSTS			
EXTENT OF FILL			
EXTENT OF CUT			
CONTOURS			
CATCH DRAIN			
KERB RETURN No			
ELECTRICITY, POWER POLE			
TELECOM, BOX			
WATER, STOP VALVE, HYDRANT			
SEWER, MANHOLE			
GAS			
TREES TO BE RETAINED			
TREES TO BE REMOVED			
STREET NAME SIGNS			
SURVEY MARKS - BENCH MARKS			
STATE SURVEY MARKS			
RECOVERY PEGS			
STAGE BOUNDARY			
STABILISED SITE ACCESS			
SEDIMENT FENCE			
STRAW BALE BARRIER			
STOCKPILE			
PROTECTIVE FENCING			
MESH AND GRAVEL INLET FILTER			
GEOTEXTILE INLET FILTER			

WORKS AS EXECUTED SHOWN IN RED

SIGNATURE:

PETER ROBERT WARWICK
Registered Land Surveyor

VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 20467/2

GENERAL NOTES:

- ALL WORKS ARE TO BE IN ACCORDANCE WITH PENRITH CITY COUNCILS "DESIGN GUIDELINES FOR ENGINEERING WORKS FOR SUBDIVISIONS AND DEVELOPMENTS" & "ENGINEERING CONSTRUCTION SPECIFICATION FOR CIVIL WORKS".
- SURVEY MARKS:-
 - STATE SURVEY MARKS LOCATIONS TO BE FIXED BY PROJECT SURVEYOR DURING WORK AS EXECUTED SURVEY OF SUBDIVISION.
 - SURVEY MARKS SHOWN THUS ▲ SHALL BE RETAINED AT ALL TIMES. WHERE RETENTION IS NOT POSSIBLE THE SUPERINTENDENT MUST BE NOTIFIED AND CONSENT RECEIVED PRIOR TO THEIR REMOVAL.
- THE CONTRACTOR SHALL LOCATE AND LEVEL ALL EXISTING SERVICES PRIOR TO COMMENCING CONSTRUCTION AND MAKE ARRANGEMENTS WITH THE RELEVANT AUTHORITY TO RELOCATE OR ADJUST IF NECESSARY.
- THE CONTRACTOR SHALL NOT ENTER UPON NOR DO ANY WORK WITHIN ADJACENT LANDS WITHOUT THE WRITTEN PERMISSION OF THE OWNERS. TO BE PROVIDED PRIOR TO THE APPROVAL OF THE PLANS.
- THE CONTRACTOR SHALL MAINTAIN SERVICES AND ALL WEATHER ACCESS AT ALL TIMES TO ADJOINING PROPERTIES.
- NO TREE SHALL BE FELLED, LOPPED OR REMOVED WITHOUT THE PRIOR APPROVAL OF COUNCIL'S ENGINEER.
- TREES TO BE RETAINED ON SITE SHALL BE PROTECTED BY SUITABLE STURDY APPROVED PROTECTIVE FENCING PRIOR TO COMMENCEMENT OF SITE WORKS.
- THE CONTRACTOR SHALL CLEAR THE SITE BY REMOVING ALL RUBBISH, FENCES OUT-HOUSES, CAR BODIES AND DEBRIS ETC.
- EXISTING SEDIMENT BASINS SHALL BE DEWATERED AND DESILTED. LEVELS SHALL BE OBTAINED ON SOUND MATERIAL PRIOR TO FILLING.
- FILLING IS TO BE FROM A NOMINATED SOURCE, OF SOUND CLEAN MATERIAL, FREE FROM LARGE ROCK, STUMPS, CONTAMINATED MATTER, INDUSTRIAL AND BUILDING WASTE, ORGANIC MATTER AND OTHER DEBRIS. PLACING OF FILLING ON THE PREPARED AREAS SHALL NOT COMMENCE UNTIL THE AUTHORITY TO DO SO HAS BEEN OBTAINED FROM THE COUNCIL.
- SITE FILL AREAS:- THE CONTRACTOR SHALL TAKE LEVELS OF EXISTING SURFACE AFTER STRIPPING TOPSOIL AND PRIOR TO COMMENCING FILL OPERATIONS.
- ALL SITE FILLING TO BE COMPACTED TO 95% STANDARD COMPACTION AND SHALL BE CONTROLLED BY A REGISTERED SOIL LABORATORY IN ACCORDANCE WITH COUNCIL'S "ENGINEERING CONSTRUCTION SPECIFICATION FOR CIVIL WORKS".
- ALL SITE REGRADING AREAS SHALL BE GRADED AT A MINIMUM 1% TO THE ENGINEERS. REQUIREMENTS.
- SURPLUS EXCAVATED MATERIAL SHALL BE PLACED WHERE DIRECTED BY THE SUPERINTENDENT.
- EASEMENT WIDTHS SHALL BE IN ACCORDANCE WITH 3.11 DRAINAGE EASEMENTS OF PENRITH CITY COUNCIL'S DESIGN GUIDELINES FOR ENGINEERING WORKS FOR SUBDIVISION AND DEVELOPMENTS.

PIPE DIA.	EASEMENT WIDTH
150Ø	1.5m
225Ø	2.0m
300Ø	2.0m
375Ø	2.5m
450Ø	2.5m
540Ø	2.5m
600Ø	2.5m
675Ø	3.0m
- DRAINAGE LINES UNDER ROADS SHALL BE BACKFILLED WITH NON-COHESIVE SAND AND HAVE 3m OF SUBSOIL DRAIN WRAPPED IN APPROVED FILTER SOCK, DISCHARGING INTO DOWN STREAM PITS. PIPE CLASS INDICATED ARE FOR REINFORCED CONCRETE PIPES (RCP) IF FIBRE REINFORCED CONCRETE PIPES (FRC) REFER TO PENRITH CITY COUNCIL "ENGINEERING CONSTRUCTION SPECIFICATION FOR CIVIL WORKS"
- ALL CONDUITS AND MAINS SHALL BE LAID PRIOR TO LAYING FINAL ASPHALTIC CONCRETE SEAL.
- VEHICULAR CROSSINGS SHALL BE CONSTRUCTED IN KERB AND GUTTER WHERE SHOWN IN ACCORDANCE WITH PCC STANDARD DRAWING SD1004.
- PRAM CROSSINGS SHALL BE CONSTRUCTED IN KERB AND GUTTER IN ACCORDANCE WITH COUNCIL'S STANDARD DRAWING SD1002.
- STREET NAME SIGNS SHALL BE ERECTED, WHERE SHOWN, IN ACCORDANCE WITH COUNCIL'S STANDARD SD1006/1 AND SD1006/2.
- ALL NEW WORKS SHALL MAKE A SMOOTH JUNCTION WITH EXISTING CONDITIONS.
- ALL INTERLOTMENT DRAINAGE LINES SHALL BE LAID AT A MINIMUM GRADE OF 1% UNLESS OTHERWISE INDICATED.
- DRAINAGE LINES ON PLANS ARE DIAGRAMMATIC ONLY AND PIPE CENTRELINES SHALL ENTER AND EXIT PITS AT THE CENTRE OF THE RESPECTIVE PIT WALLS.
- DIMENSIONS OF ANY DETAIL SHALL NOT BE SCALED - DIMENSIONS, IF IN DOUBT, SHALL BE VERIFIED BY THE SUPERINTENDENT.
- ALL CONSTRUCTION AND RESTORATION WORK ON COUNCIL'S ROAD AND FOOTPATH AREA ARE TO BE CARRIED OUT IN ACCORDANCE WITH THE APPROVED DRAWINGS AND COUNCIL'S STANDARD SPECIFICATIONS AND APPROVED BY PENRITH CITY COUNCIL THROUGH A S138 ROADS ACT APPROVAL.
- ALL LAND THAT HAS BEEN DISTURBED BY EARTHWORKS IS TO BE SPRAY GRASSED OR SIMILARLY TREATED TO ESTABLISH A GRASS COVER.
- NO FILL MATERIAL IS TO BE IMPORTED TO THE SITE WITHOUT THE PRIOR APPROVAL OF PCC IN ACCORDANCE WITH SYDNEY REGIONAL ENVIRONMENTAL PLAN No.20 (HAWKESBURY-NEPEAN RIVER) (No.2-1997), NO RECYCLING OF MATERIAL FOR USE OF FILL MATERIAL SHALL BE CARRIED OUT ON THE SITE WITHOUT THE PRIOR APPROVAL OF COUNCIL.
- ALL EARTHWORKS SHALL BE UNDERTAKEN IN ACCORDANCE WITH AS3798 AND PCC DESIGN GUIDELINES FOR ENGINEERING WORKS FOR SUBDIVISIONS AND DEVELOPMENTS AND ENGINEERING CONSTRUCTION SPECIFICATIONS FRO CIVIL WORKS.
- VEHICLE CROSSINGS TO BE LOCATED 1.0m CLEAR OF ANY LINTELS.
- ALL VERGE AREAS EXTEND FROM BACK OF KERB TO PROPERTY BOUNDARY TO BE TURFED.
- ALL STORMWATER PITS WITH DEPTHS GREATER THAN 1.0m TO HAVE GALVANISED OR OTHERWISE APPROVED STEEL IRONS AT 300mm SPACING INSTALLED.
- KERB TYPES USED IN SITE ARE KERB AND GUTTER UNLESS OTHERWISE NOTED. FOR DETAILS REFER TO PENRITH CITY COUNCIL "ENGINEERING CONSTRUCTION SPECIFICATION FOR CIVIL WORKS" STANDARD SD1003/1 & SD1003/2.
- KERB ADAPTORS SHALL BE PROVIDED FOR ALL LOTS DRAINING TO THE STREET. FOR DETAIL REFER TO PENRITH CITY COUNCIL "ENGINEERING CONSTRUCTION SPECIFICATION FOR CIVIL WORKS"
- ALL WASTE MATERIAL STORED ON-SITE ARE TO BE CONTAINED WITHIN A DESIGNATED AREA SUCH AS A WASTE BAY OR BIN. CONTRACTOR TO ENSURE THAT NO WASTE MATERIALS ARE ALLOWED TO ENTER THE STORMWATER SYSTEM OR NEIGHBOURING PROPERTIES. THE DESIGNATED WASTE STORAGE AREAS SHALL PROVIDE AT LEAST TWO WASTE BAYBINS SO AS TO ALLOW FOR THE SEPARATION OF WASTES, AND ARE TO BE FULLY ENCLOSED WHEN SITE IS UNATTENDED.

SURVEY SET OUT INFORMATION NOTES:

- ALL SITE SET OUT AND CONTROL POINTS ARE TO BE CERTIFIED BY A REGISTERED SURVEYOR.
- THE INFORMATION DETAILED ON THE CERTIFIED CONSTRUCTION CERTIFICATE PLANS TAKES PRECEDENCE OVER ALL ELECTRONIC INFORMATION PROVIDED. THE ORDER OF PRIORITY FOR USE OF ALL INFORMATION PROVIDED IS AS FOLLOWS:
 - CERTIFIED CONSTRUCTION CERTIFICATE DRAWINGS
 - 2D DRAFTING BASE (ELECTRONIC FILE)
 - 3D DTM (ELECTRONIC FILE)
- ANY DISCREPANCY BETWEEN ANY OF THE INFORMATION CONTAINED WITHIN THESE FILES IS TO BE BROUGHT TO THE ATTENTION OF THE SUPERINTENDENT PRIOR TO CONSTRUCTION WHO WILL SEEK CLARIFICATION AND ISSUE INSTRUCTIONS ON THE APPROPRIATE COURSE OF ACTION.

LOT CALCULATIONS BY:

VINCE MORGAN (SURVEYORS) PTY. LTD.
CONSULTING SURVEYORS
P.O. Box 227, Penrith. 2751
Ph. (02) 4721 5293
FILE: 20467 - IL DATE: 10/08/16

SURVEY BY:

SDG LAND DEVELOPMENT SOLUTIONS
UNIT 7 1B KLEINS ROAD
NORTHMEND 2152
Ph. (02) 9630 7955
FILE: 6072 CONTOUR ISSUE D.DWG DATE: 22/4/16

Survey By:

VINCE MORGAN (SURVEYORS) PTY. LTD.
CONSULTING SURVEYORS
P.O. Box 227, Penrith. 2751
Ph. (02) 4721 5293

Date: 21/09/16 File Name: 20467-L2.dwg
Date: 21/09/16 File Name: 210916topo.dxf

CUSTOM MADE PRECAST PIT NOTES:

- DESIGN DOCUMENTATION REFLECTS PRECAST DRAINAGE PITS BEING USED FOR THE SITE. UNLESS NOTED OTHERWISE.
- AUSPITS OR SIMILAR APPROVED CUSTOM MADE PRECAST PITS TO BE USED.
- PITS TO COMPLY WITH THE FOLLOWING PARAMETERS:
 - ARE SPECIFICALLY MANUFACTURED FOR THE PROJECT.
 - EACH PIT IS ACCOMPANIED BY A CERTIFICATE OF STRUCTURAL ADEQUACY SIGNED BY A NPER ENGINEER (STRUCTURAL)
 - THE STRUCTURAL CERTIFICATION OF THE PITS SHOULD INCLUDE ANY ADDITIONAL PRECAST ELEMENTS REQUIRED TO BRING THE PIT UP TO FINAL LEVELS ON SITE.
 - PITS MUST BE FIRMLY BEDDED ON SOUND MATERIAL.
 - CONCRETE IS TO BE POURED AROUND THE BASE TO AID IN STABILISATION OF THE PIT.
 - PIT FLOORS ARE TO HAVE A 1% FALL TOWARDS THE OUTLET PIPE.
 - ANY PIT REQUIRING MODIFICATION AFTER IT HAS BEEN POURED IN THE FACTORY OR DAMAGED IN TRANSPORT CANNOT BE USED.
 - ALL WORK TO BE TO THE SATISFACTION OF COUNCIL'S DEVELOPMENT INSPECTORS.

IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE DETAILED PIT DRAWINGS AND STRUCTURAL CERTIFICATION IF INSITU PITS ARE TO BE CONSTRUCTED.



DRAWING INDEX

Drawing Number	Drawing Title	Revision Number
110358/CC200	COVER SHEET	B
110358/CC201	GENERAL NOTES, INDEX & LEGEND	B
110358/CC202	SITE LAYOUT PLAN	A
110358/CC203	ROAD SETOUT PLAN	A
110358/CC204	ENGINEERING PLAN	B
110358/CC205	ROAD No.1 LONGITUDINAL SECTION	A
110358/CC206	ROAD No.1 LONGITUDINAL SECTION & TYPICAL CROSS SECTIONS	A
110358/CC207	ROAD No.12,14 & 15 LONGITUDINAL SECTION & TYPICAL CROSS SECTIONS	A
110358/CC208	ROAD No.16,19 & 22 LONGITUDINAL SECTION	A
110358/CC209	ROAD 1 CROSS SECTIONS	A
110358/CC210	ROAD No.1 & 12 CROSS SECTIONS	A
110358/CC211	ROAD No.14,15 & 22 CROSS SECTIONS	A
110358/CC212	ROAD No.16 & 19 CROSS SECTIONS	A
110358/CC213	KERB RETURNS	A
110358/CC214	KERB RETURNS	A
110358/CC215	KERB RETURNS	A
110358/CC216	KERB RETURNS	B
110358/CC217	KERB RETURNS	A
110358/CC218	ROUNDAABOUT PLAN - SETOUT PLAN	A
110358/CC219	ROUNDAABOUT SIGNAGE & LINEMARKING PLAN	B
110358/CC220	ROUNDAABOUT TURNING PATHS	A
110358/CC221	CATCHMENT PLAN	A
110358/CC222	PIT DETAILS & PIT SCHEDULE	B
110358/CC223	DRAINAGE LONG SECTIONS	B
110358/CC224	DRAINAGE LONG SECTIONS	A
110358/CC225	DRAINAGE LONG SECTIONS	B
110358/CC226	DRAINAGE LONG SECTIONS	A
110358/CC227	DRAINAGE LONG SECTIONS	A
110358/CC228	DRAINAGE LONG SECTIONS	B
110358/CC229	DRAINAGE LONG SECTIONS	B
110358/CC230	DRAINAGE LONG SECTIONS	A
110358/CC231	DRAINAGE LONG SECTIONS	B
110358/CC232	DRAINAGE CALCULATIONS - 5 YR HYDROLOGIC	B
110358/CC233	DRAINAGE CALCULATIONS - 5 YR HYDROLOGIC	B
110358/CC234	DRAINAGE CALCULATIONS - 5 YR HYDRAULICS	B
110358/CC235	DRAINAGE CALCULATIONS - 5 YR HYDRAULICS	B
110358/CC236	DRAINAGE CALCULATIONS - 100 YR HYDROLOGIC	B
110358/CC237	DRAINAGE CALCULATIONS - 100 YR HYDRAULICS	B
110358/CC238	PLAYING FIELD BASIN PLAN	B
110358/CC239	OUTLET PLAN & DETAILS	B
110358/CC240	BASIN SECTIONS AND DETAILS	A
110358/CC241	DROP STRUCTURE PLAN & SECTION	B
110358/CC242	RETAINING WALL PLAN & DETAILS	B
110358/CC243	RETAINING WALL SECTION	A
110358/CC244	RETAINING WALL SECTION	A
110358/CC245	RETAINING WALL SECTION	A
110358/CC246	RETAINING WALL SECTION	A
110358/CC247	SOIL AND WATER MANAGEMENT PLAN	A
110358/CC248	SOIL AND WATER MANAGEMENT PLAN NOTES	A
110358/CC249	SIGNAGE & LINEMARKING PLAN	B
110358/CC250	CADDENS ROAD - PLAN & LONGITUDINAL SECTION	B
110358/CC251	CADDENS ROAD - CROSS SECTIONS	B
110358/CC252	CADDENS ROAD - KERB RETURNS	A
110358/CC253	CADDENS ROAD - CATCHMENT PLAN	B
110358/CC254	CADDENS ROAD - DRAINAGE LONG SECTION	B
110358/CC255	CADDENS ROAD - DRAINAGE LONG SECTION	A
110358/CC256	CADDENS ROAD - DRAINAGE LONG SECTION	B
110358/CC257	CADDENS ROAD - INLET PLAN & DETAILS	A
110358/CC258	CADDENS ROAD - PAVEMENT PLAN	A
110358/CC259	CADDENS ROAD - SOIL AND WATER MANAGEMENT PLAN	A
110358/CC260	SPECIAL PIT GEOMETRY PLAN	B

UTILITIES SHOWN ARE DIAGRAMMATIC ONLY, CONTRACTORS ARE RESPONSIBLE TO LOCATE AND AVOID DAMAGE TO THEM.
NOTE: UTILITIES SHOWN MAY NOT INCLUDE ALL SERVICES WITHIN THE LIMIT OF WORKS

ISSUED FOR CONSTRUCTION APPROVAL

B	CERTIFIER COMMENTS	JT	NM	RT	MS	26/05/17
A	ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS	18/05/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

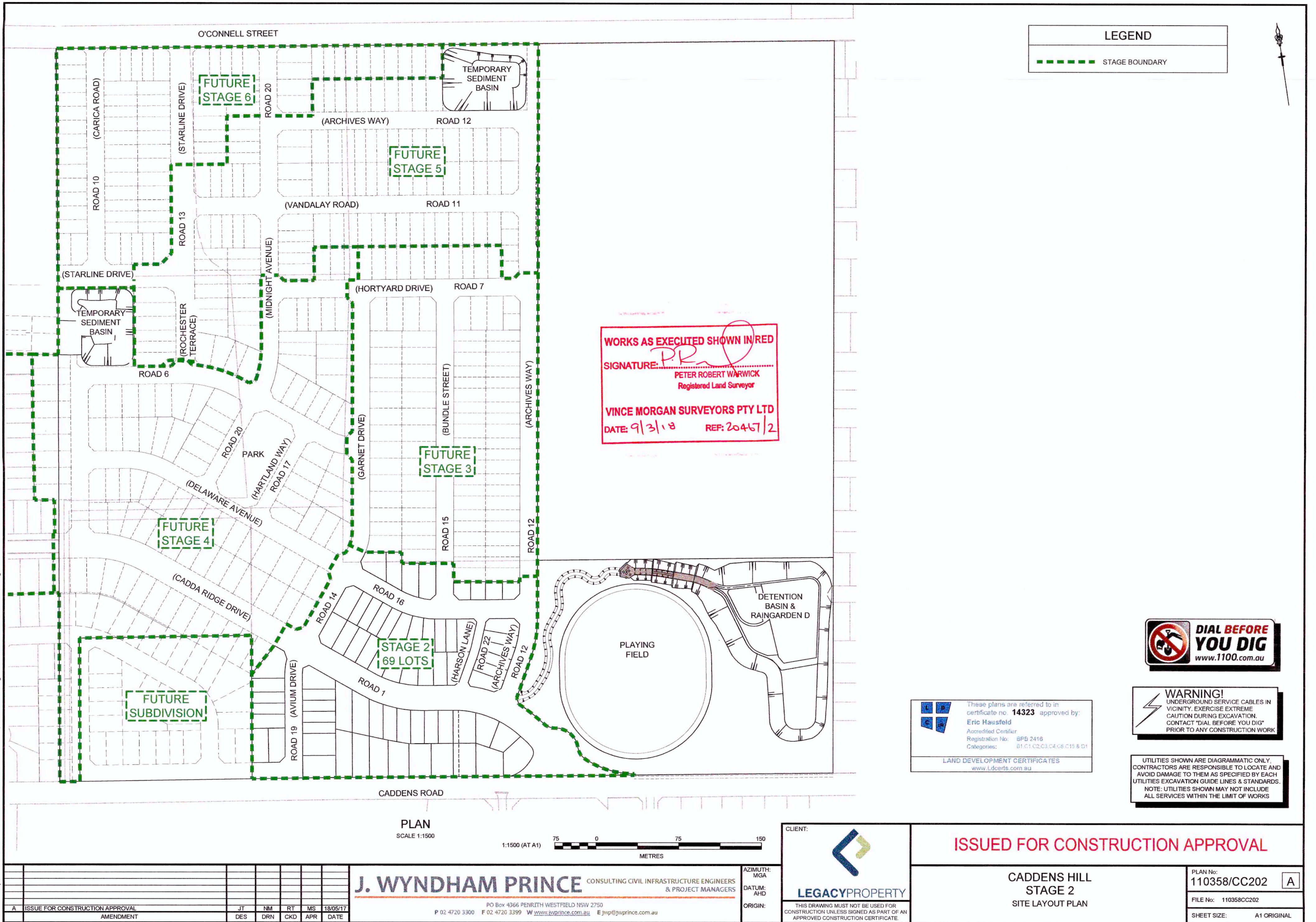
J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS
PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

CLIENT:
AZIMUTH: MGA
DATUM: AHD
ORIGIN: THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS PART OF AN APPROVED CONSTRUCTION CERTIFICATE.

**CADDENS HILL
STAGE 2**
GENERAL NOTES, INDEX & LEGEND

PLAN No: 110358/CC201 **B**
FILE No: 110358CC201
SHEET SIZE: A1 ORIGINAL

Plotted: 26 May, 2017 12:59:02 PM File Name: J:\110358 - O'Connell Lane, Caddens 03 - Stage 2\CDCCSTAGE 2\110358CC202.dwg



PLAN
SCALE 1:1500

1:1500 (AT A1)



J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

AZIMUTH:
MGA
DATUM:
AHD
ORIGIN:

CLIENT:



LEGACYPROPERTY
THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF AN
APPROVED CONSTRUCTION CERTIFICATE

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 2
SITE LAYOUT PLAN

PLAN No:
110358/CC202 **A**

FILE No: 110358CC202

SHEET SIZE: A1 ORIGINAL

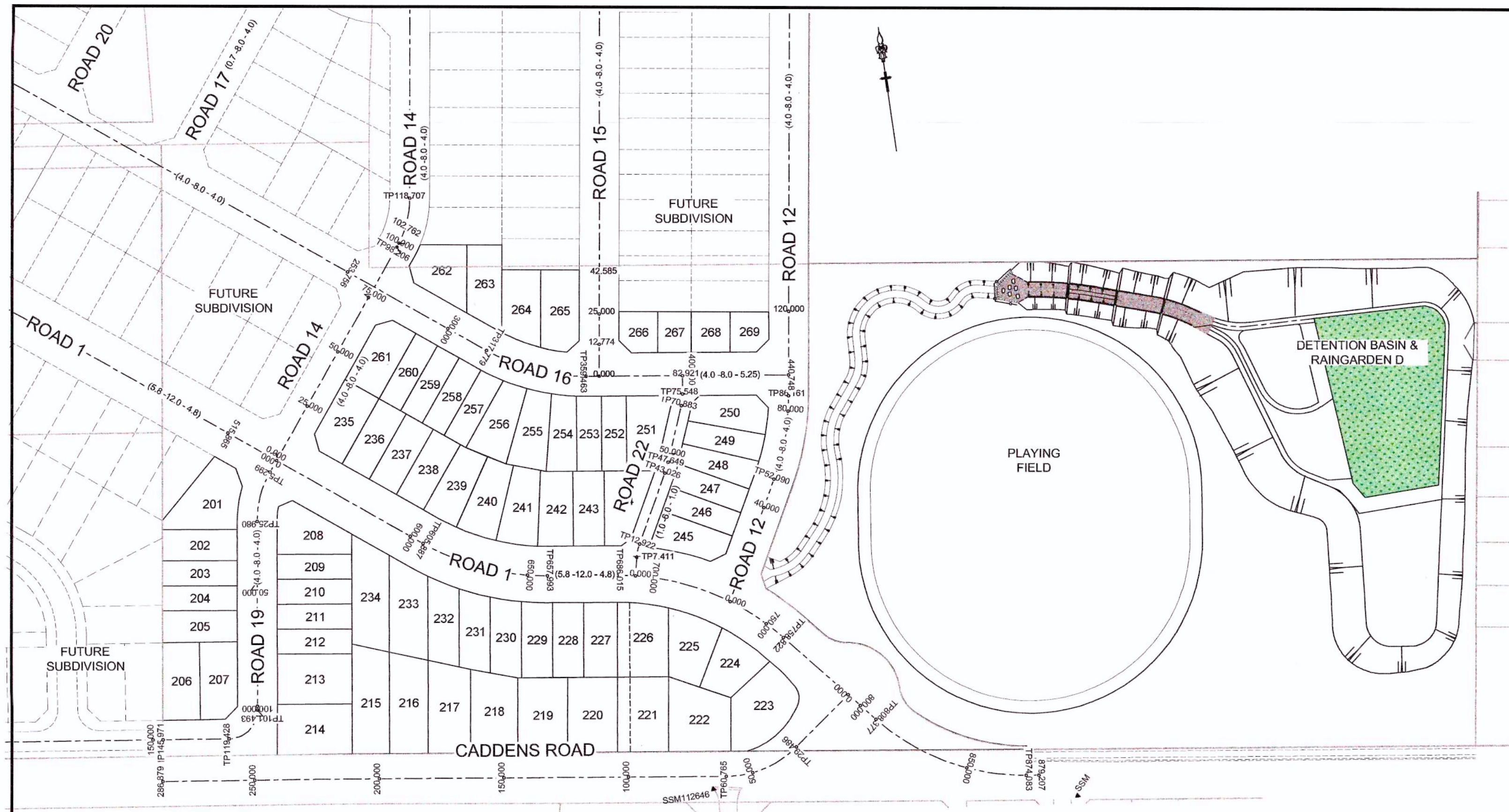


WARNING!
UNDERGROUND SERVICE CABLES IN
VICINITY. EXERCISE EXTREME
CAUTION DURING EXCAVATION.
CONTACT 'DIAL BEFORE YOU DIG'
PRIOR TO ANY CONSTRUCTION WORK

UTILITIES SHOWN ARE DIAGRAMMATIC ONLY.
CONTRACTORS ARE RESPONSIBLE TO LOCATE AND
AVOID DAMAGE TO THEM AS SPECIFIED BY EACH
UTILITIES EXCAVATION GUIDE LINES & STANDARDS.
NOTE: UTILITIES SHOWN MAY NOT INCLUDE
ALL SERVICES WITHIN THE LIMIT OF WORKS

These plans are referred to in
certificate no. **14323** approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1, C1, C2, C3, C4, C6, C15 & D1
LAND DEVELOPMENT CERTIFICATES
www.Ldcerts.com.au

Plotted: 26 May, 2017 1:00:22 PM File Name: J:\110358 - Caddens Hill, Caddens\03 - Stage 2\CD\CC\STAGE 2\110358CC203.dwg



PLAN
SCALE 1:1000



BENCH MARK LOCATION
▲ SSM112646
E 290687.2140
N 6260213.3860

WARNING!
UNDERGROUND SERVICE CABLES IN VICINITY. EXERCISE EXTREME CAUTION DURING EXCAVATION. CONTACT "DIAL BEFORE YOU DIG" PRIOR TO ANY CONSTRUCTION WORK

UTILITIES SHOWN ARE DIAGRAMMATIC ONLY. CONTRACTORS ARE RESPONSIBLE TO LOCATE AND AVOID DAMAGE TO THEM AS SPECIFIED BY EACH UTILITIES EXCAVATION GUIDE LINES & STANDARDS. NOTE: UTILITIES SHOWN MAY NOT INCLUDE ALL SERVICES WITHIN THE LIMIT OF WORKS

WORKS AS EXECUTED SHOWN IN RED

SIGNATURE:
PETER ROBERT WARWICK
Registered Land Surveyor

VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 204672

These plans are referred to in certificate no. 14323 approved by:
Eric Hausfeld
Accredited Certifier
Registration No: 8PB 2416
Categories: B1, C1, C2, C3, C4, C6, C15 & D1
LAND DEVELOPMENT CERTIFICATES
www.Ldcerts.com.au

ROAD 1					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A LENGTH
0	290035.87	6260531.65	97°42'14.87"		
324.22	290357.16	6260488.18	97°42'14.87"		
350.48	290383.81	6260484.58		100	52.53
376.75	290405.05	6260468.1	127°48'05.94"		
605.89	290586.1	6260327.65	127°48'05.94"		
631.94	290607.17	6260311.31		-100	52.11
657.99	290633.57	6260307.63	97°56'49.70"		
686.02	290661.32	6260303.75	97°56'49.70"		
722.42	290689.06	6260298.49		100	72.81
758.82	290723.72	6260289.44	139°39'44.41"		
808.38	290759.8	6260231.67	139°39'44.41"		
841.23	290778.06	6260205.45		-90	65.71
874.08	290812.13	6260200.77	97°49'58.18"		
879.21	290817.21	6260200.07	97°49'58.18"		

ROAD 12					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A LENGTH
0	290704.66	6260286.76	27°57'29.68"		
52.09	290729.09	6260332.77	27°57'29.68"		
69.13	290737.15	6260347.97		-100	34.07
86.16	290739.67	6260364.98	8°26'12.57"		
377.32	290782.39	6260652.99	8°26'12.57"		
386.22	290783.7	6260661.8		-190	17.8
396.12	290784.18	6260670.69	3°04'11.25"		
396.04	290784.23	6260671.61	3°04'11.25"		
405.38	290784.73	6260680.95		200	18.69
414.73	290786.1	6260690.2	8°25'30.32"		
526.71	290802.5	6260800.98	8°25'30.32"		
535.8	290804.21	6260812.47		-11.5	18.18
544.9	290792.69	6260814.05	277°49'33.98"		
767.56	290572.1	6260844.37	277°49'33.98"		

ROAD 14					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A LENGTH
0	290532.69	6260369.08	37°48'05.38"		
98.21	290589.89	6260446.68	37°48'05.38"		
108.46	290599.31	6260454.96		-40	20.5
118.71	290600.85	6260465.33	8°26'12.25"		
338.32	290633.07	6260682.56	8°26'12.25"		

ROAD 15					
CHAINAGE	EASTING	NORTHING	BEARING		
0	290665.58	6260383.73	8°26'12.14"		
291.64	290708.37	6260672.22	8°26'12.14"		

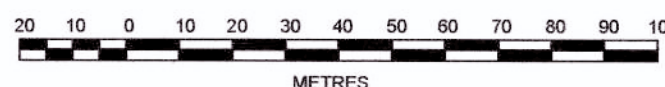
ROAD 16					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A LENGTH
0	290358.22	6260566.47	97°40'44.61"		
39.8	290397.67	6260561.15	97°40'44.61"		
60.83	290419	6260565.27		80	42.06
81.86	290436.01	6260545.08	127°48'05.88"		
317.78	290622.42	6260400.48	127°48'05.88"		
338.62	290639.27	6260387.41		-80	41.68
359.46	290660.39	6260384.46	97°56'49.87"		
440.75	290740.9	6260373.22	97°56'49.87"		

ROAD 19					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A LENGTH
0	290532.69	6260369.08	217°48'05.38"		
5.3	290529.45	6260364.9	217°48'05.38"		
15.64	290522.96	6260356.54		-40	20.68
25.98	290514.46	6260346.07	188°10'44.78"		
101.49	290510.71	6260271.33	188°10'44.78"		
110.46	290509.1	6260260.07		11.5	17.93
119.43	290497.82	6260261.56	277°32'04.02"		
289.41	290329.31	6260283.85	277°32'04.02"		
298.46	290317.87	6260285.36		11.5	18.1
307.51	290319.42	6260296.8	7°44'00.00"		
401	290332	6260389.43	7°44'00.00"		
406.76	290332.78	6260395.15		80	11.53
412.53	290334.37	6260400.71	15°59'35.71"		
421.75	290336.91	6260409.57	15°59'35.71"		

ROAD 22					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A LENGTH
0	290668.58	6260302.46	12°10'18.56"		
7.41	290670.15	6260309.71	12°10'18.56"		
10.17	290670.73	6260312.42		20	5.51
12.92	290672.03	6260314.87	27°57'29.78"		
43.03	290686.15	6260341.46	27°57'29.78"		
45.34	290687.63	6260343.5		-40	4.62
47.65	290688.07	6260345.66	21°20'10.91"		
70.88	290696.53	6260367.3	21°20'10.91"		
73.22	290697.38	6260369.48		-20	4.67
75.55	290697.7	6260371.8	7°58'19.58"		
82.92	290698.73	6260379.11	7°58'19.58"		

CADDENS ROAD					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A LENGTH
0	290746.16	6260243.02	233°08'19.54"		
29.49	290722.57	6260225.33	233°08'19.54"		
45.13	290709.38	6260215.44		40	31.28
60.76	290693.05	6260217.72	277°56'31.08"		
204.93	290550.26	6260237.64			
225.69	290529.7	6260240.46			
286.88	290469.04	6260248.49	277°31'58.00"		

1:1000 (AT A1)
1:2000 (AT A3)



J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS
PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwpr@jwprince.com.au

AZIMUTH:
MGA
DATUM:
AHD
ORIGIN:

CLIENT:



THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS PART OF AN APPROVED CONSTRUCTION CERTIFICATE

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 2
ROAD SETOUT PLAN


PLAN No:
110358/CC203

FILE No: 110358CC203

SHEET SIZE: A1 ORIGINAL

B	CERTIFIER COMMENTS
A	ISSUE FOR CONSTRUCTION APPRO
	AMEND

	JT	
	JT	
	DES	

			
T	MS	26/05/17	
T	MS	18/05/17	
KD	APR	DATE	

DHAM PRII
PO Box 4366 PENRITH
P 02 4720 3300 F 02 4720 3399 W www.dhammadownload.com

E CONSULTING CIVIL INFRASTRUCTURE
& PROJECT MANAGEMENT
D NSW 2750
www.jwp.com.au Ejwp@jwprince.com.au

ENGINEERS MANAGERS	AZIMUTH: MGA	LEG THIS DRAW CONSTRUCTION APPROVED
	DATUM: AHD	
	ORIGIN:	

PROPERTY

NOT BE USED FOR
IGNED AS PART OF AN
TION CERTIFICATE.

CADDENS HILL STAGE 2 ENGINEERING PLAN

	PLAN No:
	110358/CO
	FILE No: 110358CO
	SHEET SIZE:

B

TO B
RIAL C
AREA

SHEET SIZE: 11" x 17"

FILE No: 110358CC204

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.iwprince.com.au E iwp@iwprince.com.au

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

Plotted: 26 May , 2017 1:02:21 PM File Name: J:\110358 - OConnell Lane, Caddens\03 - Stage 2\CD\CC\STAGE 2\110358CC204.dwg

NOTE

FURTHER GEOTECHNICAL TESTING SHALL BE UNDERTAKEN UPON COMPLETION OF BULK EARTHWORKS FOR STAGE 2 TO CONFIRM CBR VALUES MEET THE DESIGN CBR AS SPECIFIED IN THE PAVEMENT DESIGN INVESTIGATION PREPARED BY GEOTCH TESTING PTY LTD. JOB No. 8011/1, DATE 11 APRIL 2017

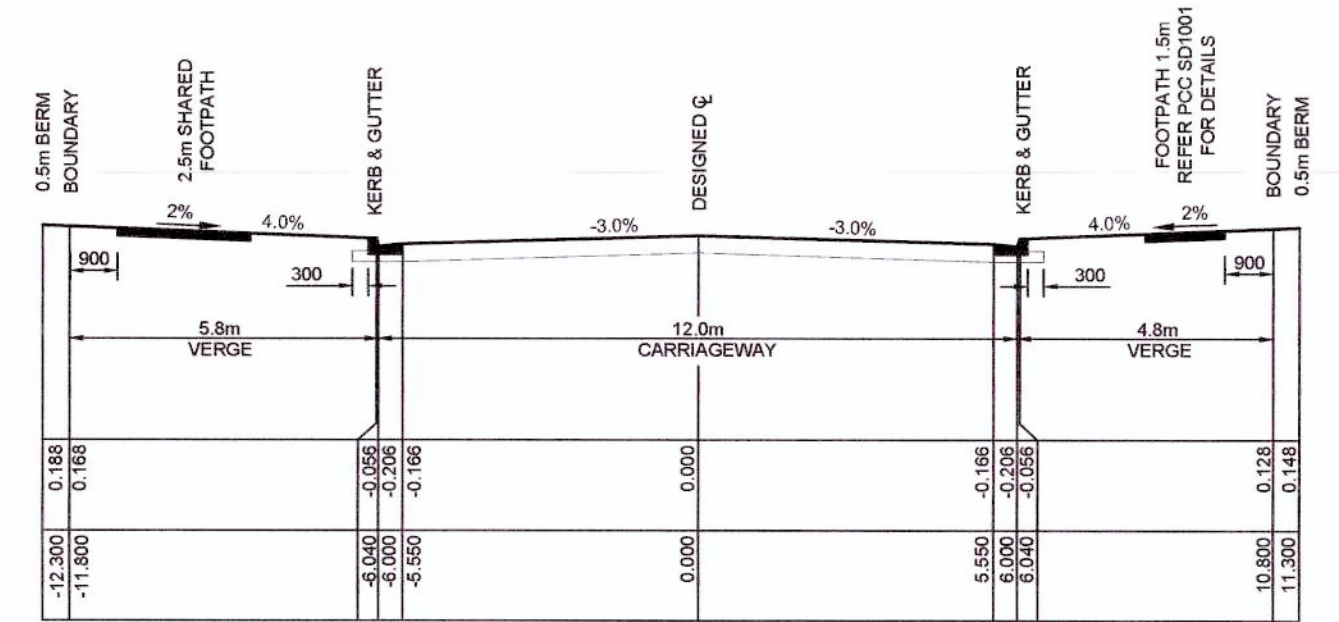
PAVEMENT NOTES ROAD No.1 (ROUNDAABOUT)

DISTRIBUTOR 1x10⁶
75mm MINIMUM THICKNESS (AC14) POLYMER-MODIFIED
SINGLE COAT FLUSH SEAL
200mm THICK DEEP LIFT (AC28)
PLACED ON A COMPACTED SUB-BASE OF SELECT FILL MATERIAL

REFER TO PCC "ENGINEERING CONSTRUCTION SPECIFICATIONS FOR CIVIL WORKS"

NOTE

EXISTING SURFACE LEVELS ARE FROM BULK EARTHWORKS PACKAGE (REFER PLANS BY J WYNDHAM PRINCE 110358BE100-124)



ROAD No.1 TYPICAL SECTION

(CADDARIDGE DRIVE)
(22.6m ROAD RESERVE)
1:100 NAT

PAVEMENT NOTES ROAD No.1

DISTRIBUTOR 1x10⁶
50mm MINIMUM THICKNESS (AC10) 2 x LAYERS 25mm (AC10)
*FINAL AC LAYER TO BE DEFERRED & BONDED
SINGLE COAT FLUSH SEAL
150mm THICK BASECOURSE (DGB20)
300mm THICK SUB BASE (DGS40)
COMPACTED SUBGRADE

REFER TO REPORT BY GEOTECH TESTING PTY LTD REF 8611/1-AA-R1

WORKS AS EXECUTED SHOWN IN RED

SIGNATURE: PETER ROBERT WARWICK
Registered Land Surveyor

VINCE MORGAN SURVEYORS PTY LTD

DATE: 9/3/18 REF: 2046712

DATUM 37.0

WAE

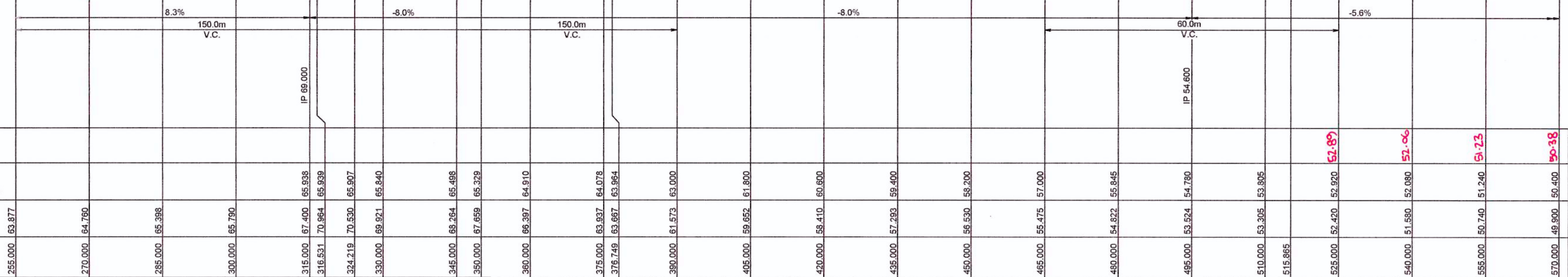
DESIGN

LINE GRADING

EXISTING

SURFACE

CHAINAGE

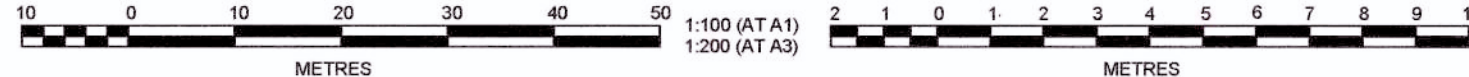


ROAD 1 LONGITUDINAL SECTION

(CADDARIDGE DRIVE)
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100

These plans are referred to in certificate no. 14323 approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPS 2416
Categories: B1, C1, C2, C3, C4, C5, C15 & D1
LAND DEVELOPMENT CERTIFICATES
www.ldcerts.com.au

1:500 (AT A1)
1:1000 (AT A3)



J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwpr@jwprince.com.au

AZIMUTH:
MGA

DATUM:
AHD

ORIGIN:

CLIENT:



THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS PART OF AN APPROVED CONSTRUCTION CERTIFICATE.

ISSUED FOR CONSTRUCTION APPROVAL

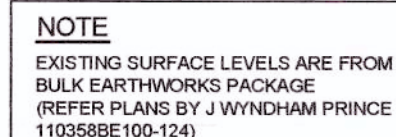
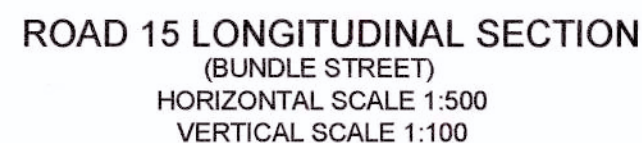
CADDENS HILL
STAGE 2

ROAD No.1 LONGITUDINAL SECTION

PLAN No:
110358/CC205

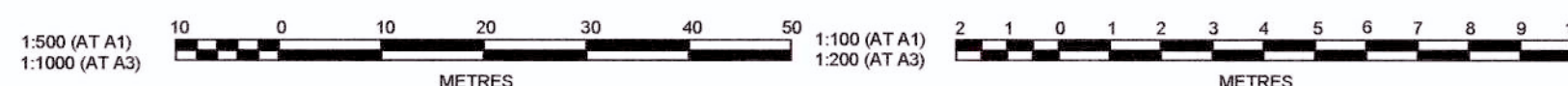
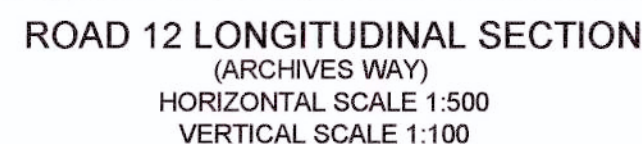
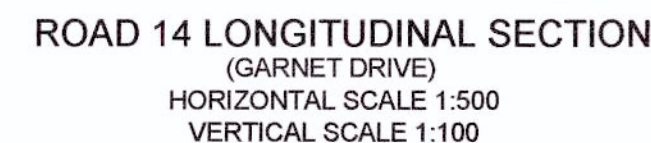
FILE No: 110358CC205

SHEET SIZE: A1 ORIGINAL




 These plans are referred to in certificate no. **14323** approved by:
Eric Hausfeld
 Accredited Certifier
 Registration No: BPB 2416
 Categories: B1, C1, C2, C3, C4, C6, C15 & D

LAND DEVELOPMENT CERTIFICATES
www.landcerts.com.au



A	ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS	18/05/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.iwprince.com.au E iwp@iwprince.com.au

AZIMUTH:
MGA

DATUM:
AHD

ORIGIN:



CLIENT

LEGACYPROPERTY

THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF
APPROVED CONSTRUCTION CERTIFICATE

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 2

ROAD No.12,14 & 15 LONGITUDINAL SECTION & TYPICAL CROSS SECTIONS

PLAN No:
110358/CC207

FILE No: 110358CC207

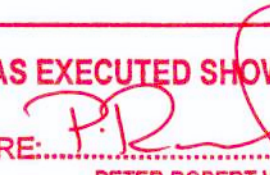
SHEET SIZE: A1 ORIGINAL

Plotted: 26 May, 2017 1:04:27 PM File Name: J:\110358 - Caddens\03 - Stage 2\CD\CC\STAGE 2\110358CC208.dwg

STAGE 4
FUTURE SUBDIVISION

LOW 249.076
EXTENT OF WORKS

CH 266.125m
CL OF ROAD 14
RL 58.592m

WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: 
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 20467/2

DATUM 40.0				
WAE	DESIGN LINE GRADING	EXISTING SURFACE	CHAINAGE	
240.000	60.969	61.489		
249.076				
253.625	59.453	59.953		
255.000	59.500	59.800		
266.125	59.052	58.562		
270.000	58.130	58.140		
278.625	56.670	57.170		
285.000	55.961	56.461		
295.000	54.848	55.348		
300.000	54.799	54.799		
315.000	52.747	53.247		
317.779	52.475	52.975		
320.000	52.261	52.761		
330.000	51.335	51.835		
345.000	50.065	50.565		
350.000	49.665	50.165		
350.968	49.558	50.088		
359.463	48.908	49.408		
360.000	48.985	49.385		
364.669	48.489	48.989		
375.000	47.965	48.165		
377.306	47.481	47.981		
380.000	46.465	46.965		
388.169	45.811	46.311		
405.000	45.265	45.765		
419.000	44.145	44.645		
420.000	44.070	44.570		
425.000	43.930	44.330		
427.738	43.795	44.295		
428.036	43.796	44.296		
428.355	43.797	44.297		
431.000	43.844	44.344		
435.000	43.954	44.464		
435.748	43.986	44.486		
440.748	44.136	44.636		

ROAD 16 LONGITUDINAL SECTION
(DELAWARE AVENUE)
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100

DATUM 43.0

WAE	DESIGN LINE GRADING	EXISTING SURFACE	CHAINAGE
52.14	52.175	51.676	0.000
51.99	52.014	51.517	5.239
51.872	51.872	51.372	10.000
51.808	51.808	51.306	12.346
51.743	51.743	51.243	15.000
51.674	51.674	51.174	18.945
51.680	51.680	51.160	20.000
51.588	51.588	51.088	25.980
51.540	51.540	51.040	30.000
51.32	51.360	50.960	45.000
51.14	51.180	50.680	60.000
50.95	51.000	50.500	75.000
50.78	50.820	50.320	90.000
50.67	50.682	50.182	101.483
50.63	50.640	50.140	105.000
50.47	50.508	50.008	118.203
50.46	50.482	49.982	119.428
50.452	50.482	49.982	120.000
50.452	50.482	49.982	120.207
50.663	50.663	50.170	131.203
50.809	50.809	50.309	135.000
51.482	51.482	50.982	146.050
51.482	51.482	50.982	146.203
			150.000
			160.000

ROAD 19 LONGITUDINAL SECTION
(AVIUM DRIVE)
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100

DATUM 37.0

WAE	DESIGN LINE GRADING	EXISTING SURFACE	CHAINAGE
44.72	44.254	43.754	0.000
44.71	44.074	43.574	6.000
44.71	44.184	43.684	7.411
44.361	44.361	43.861	10.500
44.417	44.417	43.917	11.500
44.458	44.458	43.958	12.500
44.471	44.471	43.971	12.922
44.459	44.459	44.039	15.000
44.97	45.027	44.527	30.000
45.39	45.450	44.950	43.026
45.45	45.515	45.015	45.000
45.54	45.601	45.101	47.649
45.76	46.002	45.502	60.000
46.356	46.356	45.856	70.883
46.454	46.454	45.954	73.900
46.465	46.465	45.966	74.580
46.463	46.463	45.963	74.900
46.461	46.461	45.961	75.000
46.443	46.443	45.943	75.548
46.424	46.424	45.924	75.900
46.205	46.205	45.705	79.371
46.311	46.311	45.811	82.921

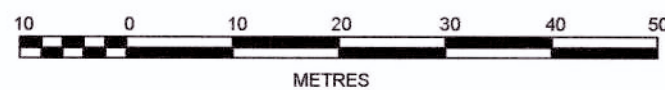
ROAD 22 LONGITUDINAL SECTION
(HARSON LANE)
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100

NOTE
EXISTING SURFACE LEVELS ARE FROM
BULK EARTHWORKS PACKAGE
(REFER PLANS BY J WYNHAM PRINCE
110358BE100-124)

These plans are referred to in
certificate no. 14323 approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1, C1, C2, C3, C4, C8, C15 & D1

LAND DEVELOPMENT CERTIFICATES
www.Ldcerts.com.au

1:500 (AT A1)
1:1000 (AT A3)



1:100 (AT A1)
1:200 (AT A3)



J. WYNHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

AZIMUTH:
MGA
DATUM:
AHD
ORIGIN:

CLIENT:



THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF AN
APPROVED CONSTRUCTION CERTIFICATE.

ISSUED FOR CONSTRUCTION APPROVAL

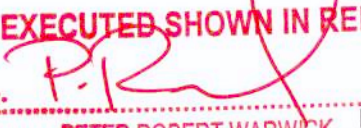
CADDENS HILL
STAGE 2

ROAD No.16,19 & 22 LONGITUDINAL SECTION

PLAN No:
110358/CC208 A

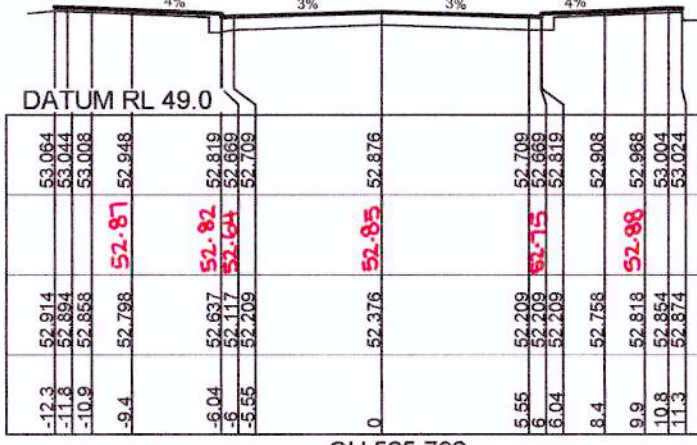
FILE No: 110358CC208

SHEET SIZE: A1 ORIGINAL

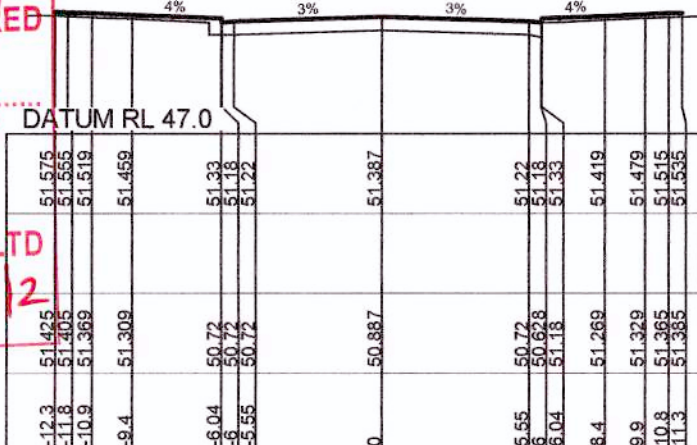
WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: 
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 204612

DESIGN SURFACE LEVEL	WAE	EXISTING SURFACE LEVEL	OFFSET
53.993		53.843	-12.3
53.973		53.823	-11.8
53.937		53.787	-10.9
53.877		53.727	-9.4
53.748		53.139	-6.04
53.658		53.139	-6
53.538		53.139	-5.55
53.805			0
53.638		53.138	5.55
53.598		53.138	6.04
53.518		53.138	8.4
53.837		53.687	9.9
53.897		53.747	10.8
53.923		53.763	10.8
53.853		53.693	11.3

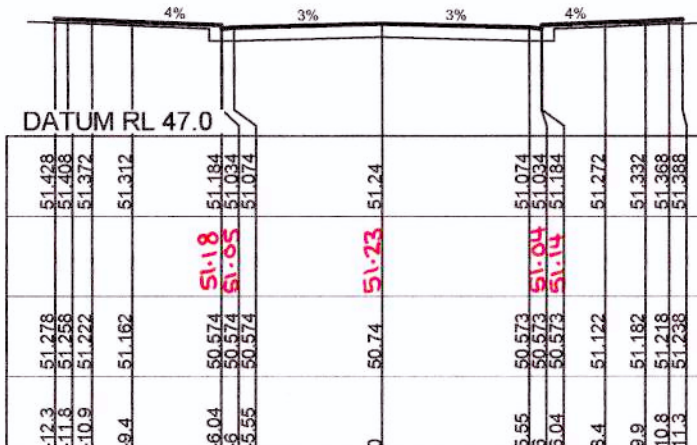
CH 510 (FUTURE)



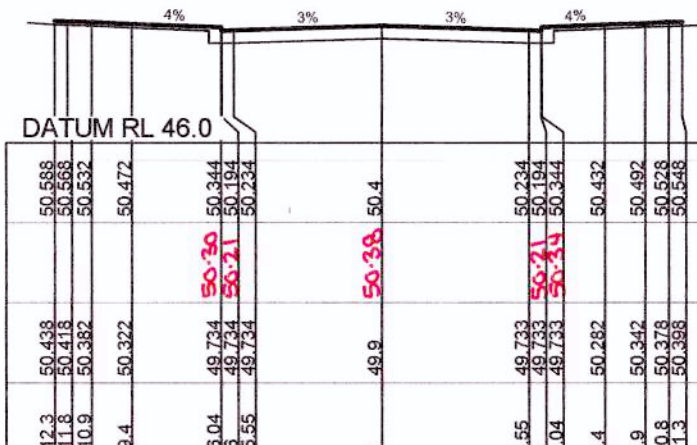
CH 525.792



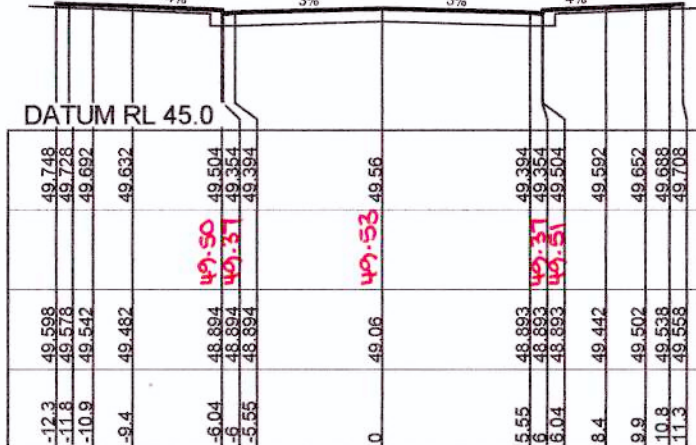
CH 552.377



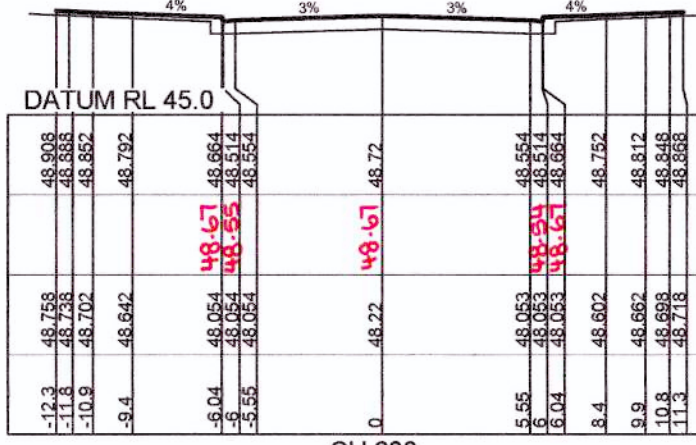
CH 555



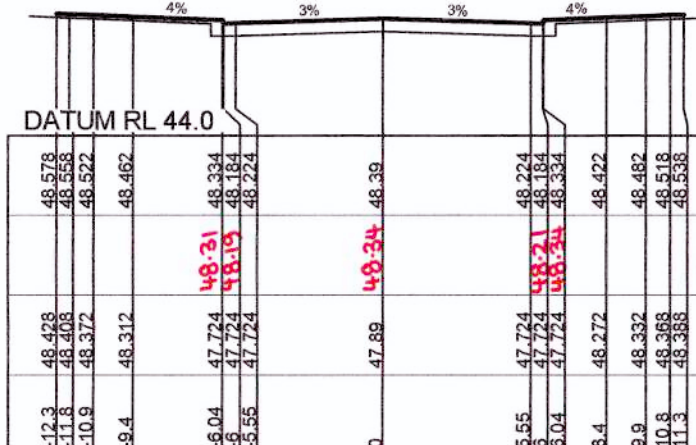
CH 570



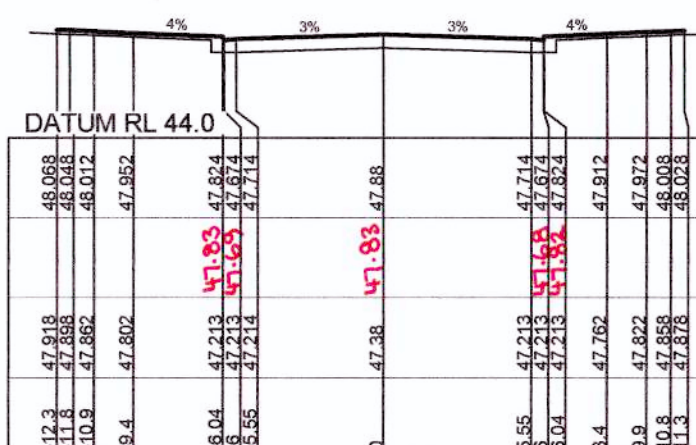
CH 585



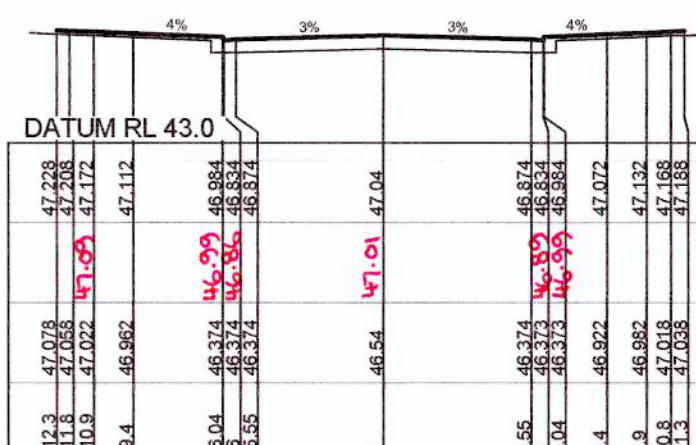
CH 600



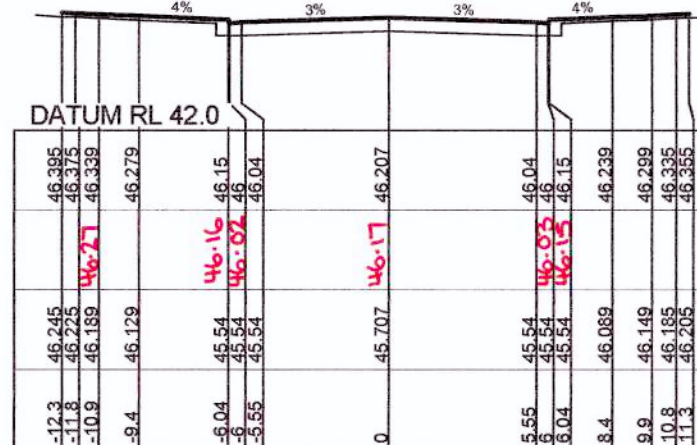
CH 605.887



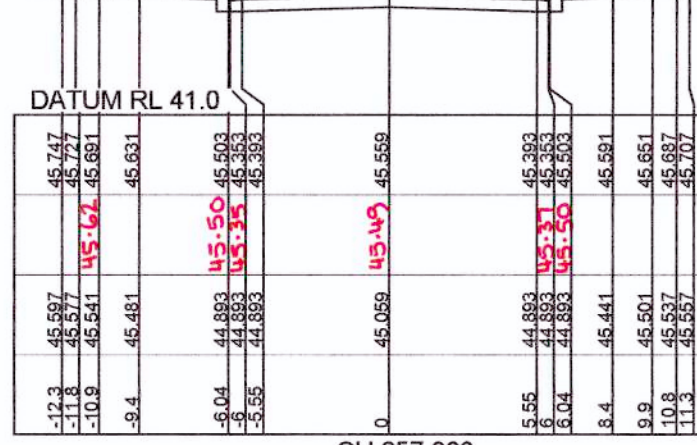
CH 615



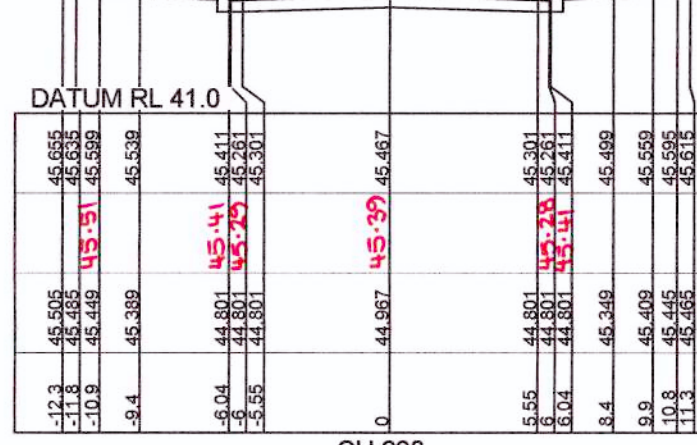
CH 630



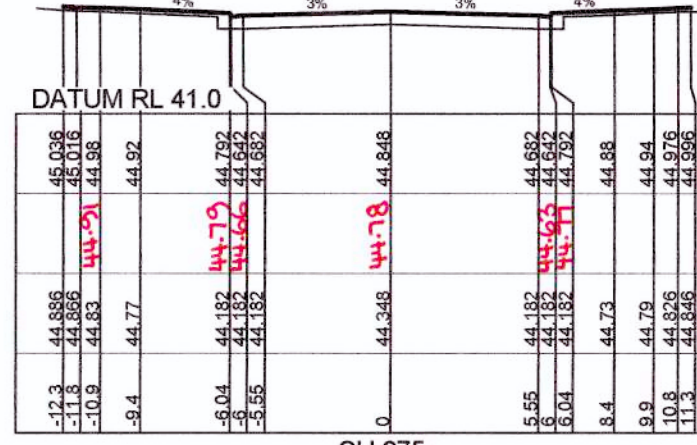
CH 645



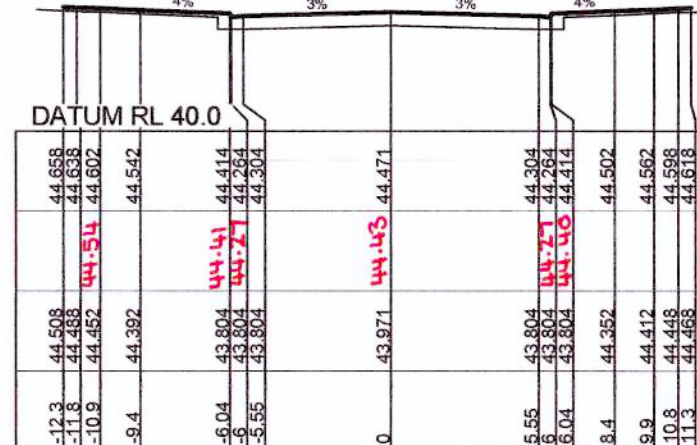
CH 657.993



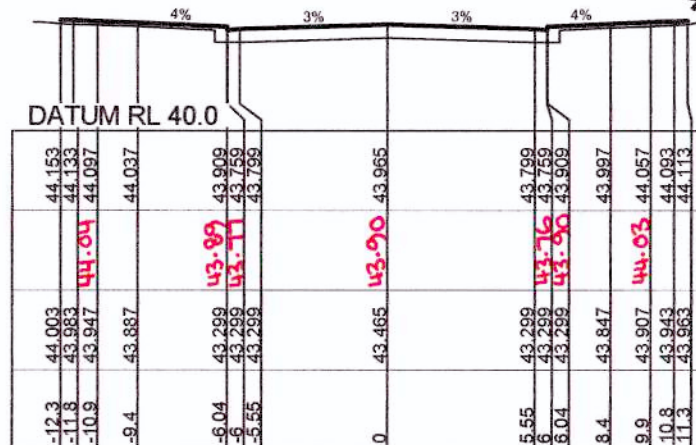
CH 660



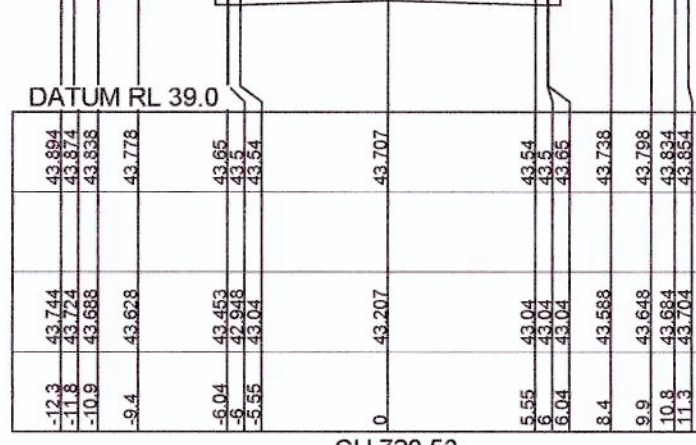
CH 675

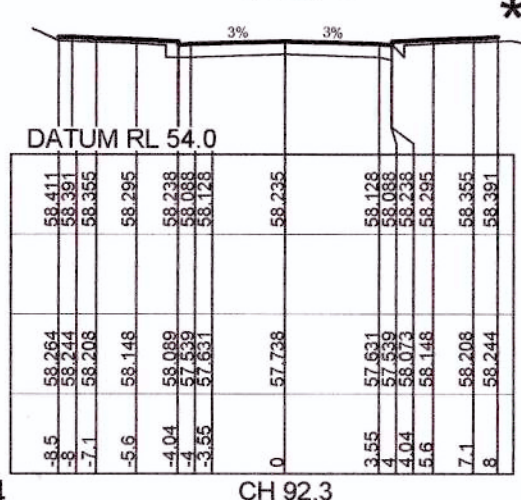
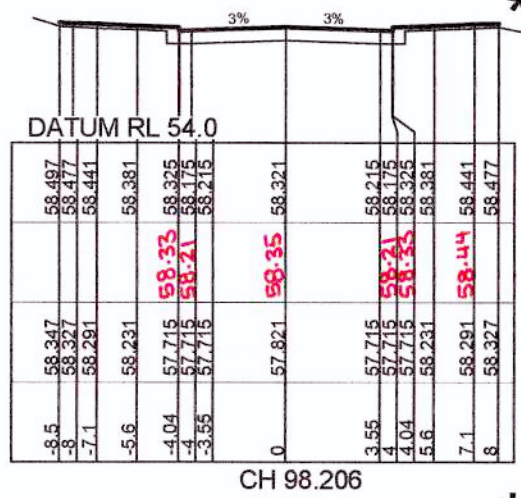
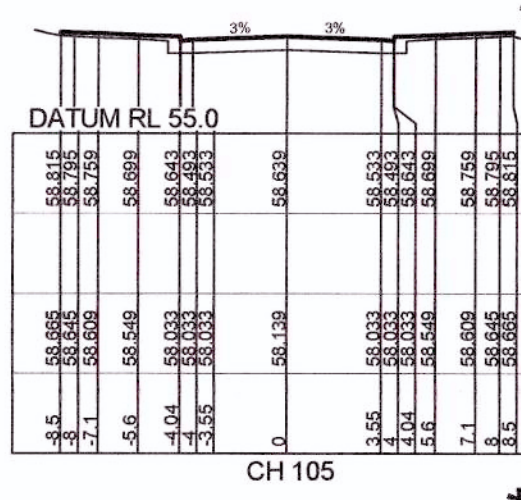
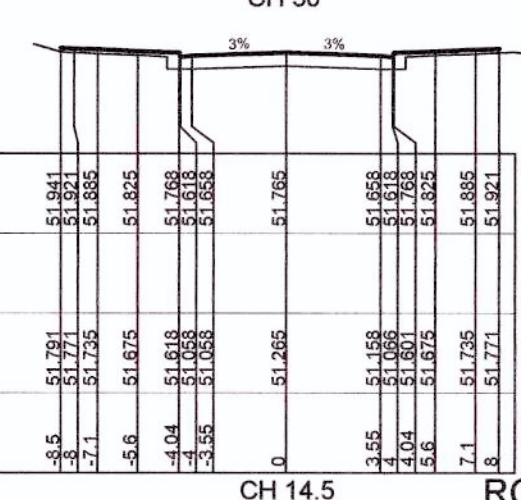
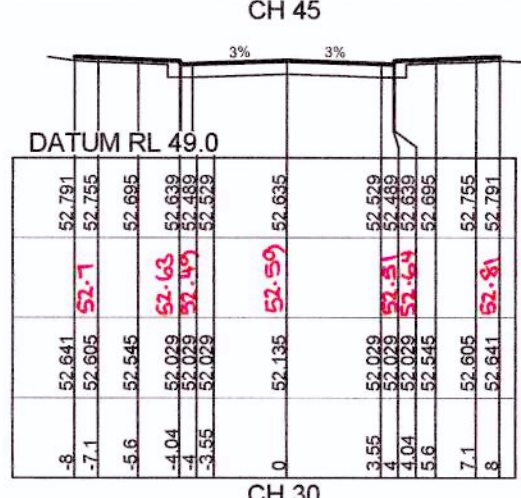
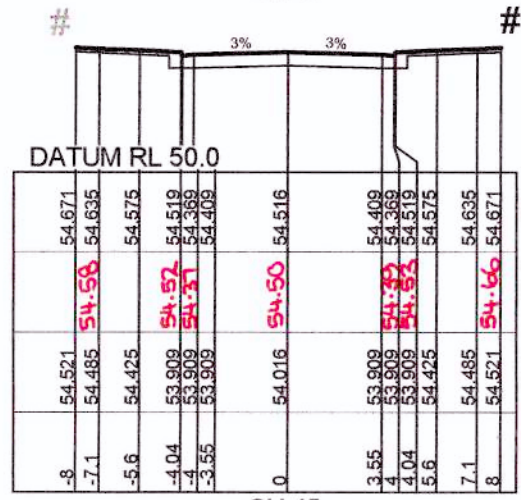
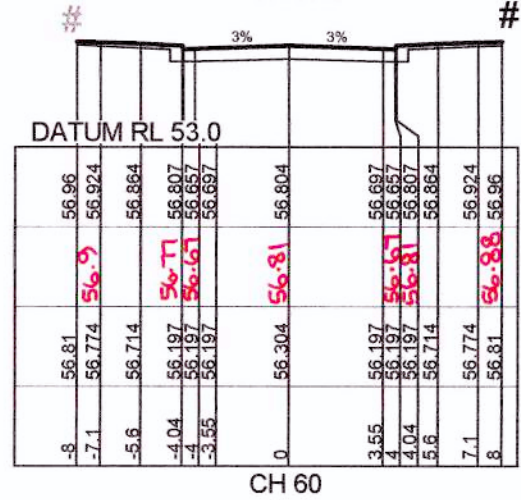
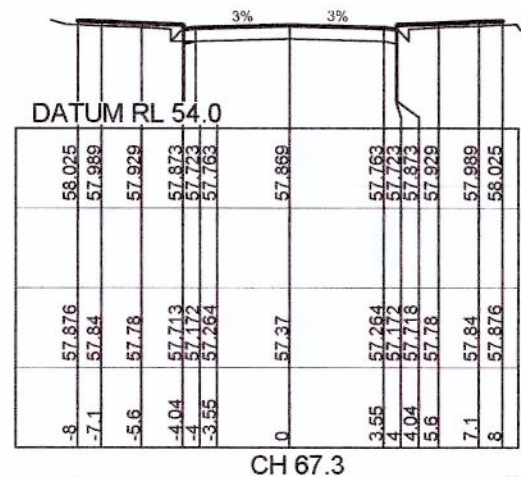


CH 686.015



CH 705



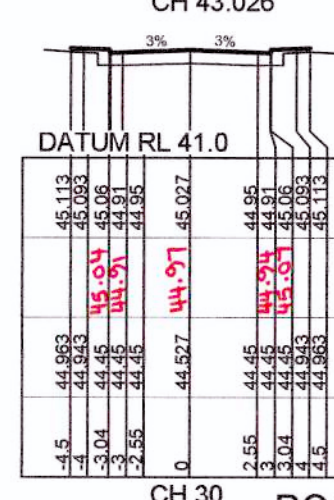
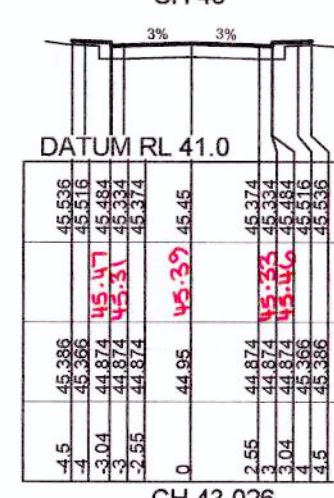
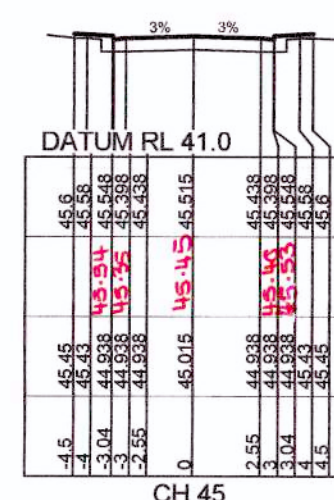
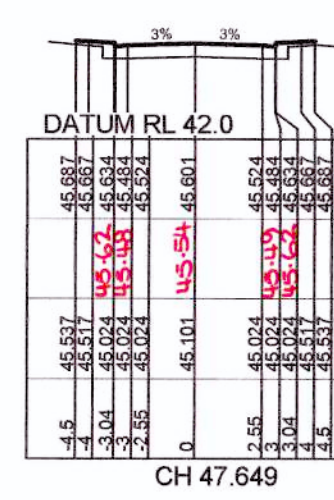
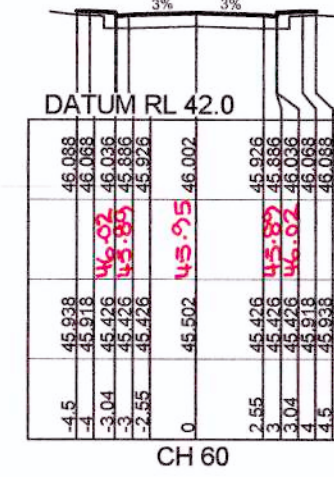
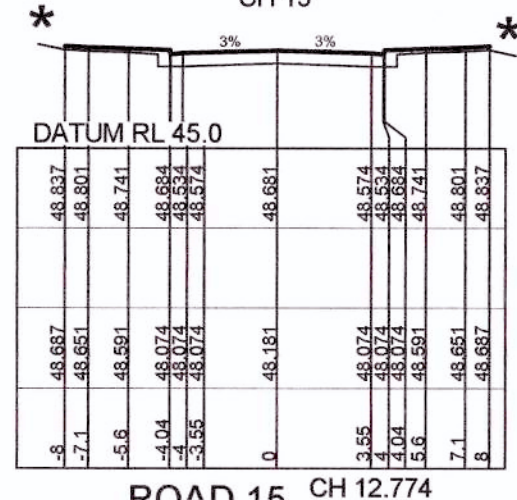
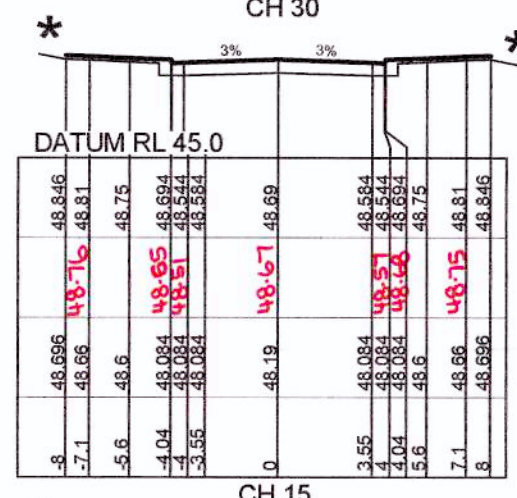
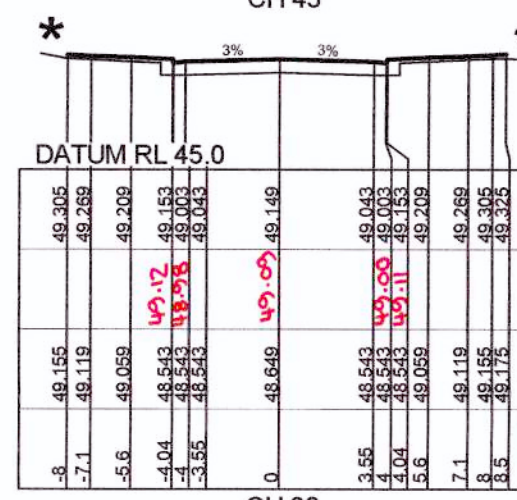
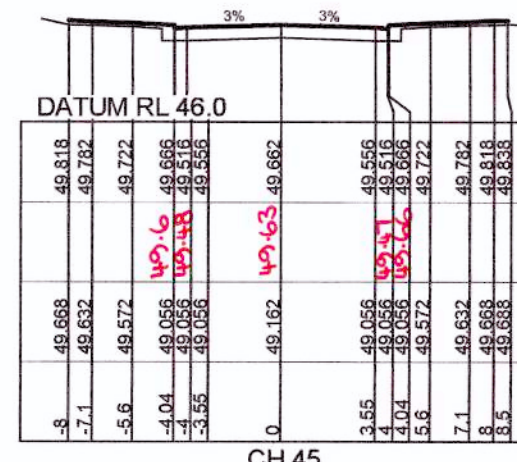


WORKS AS EXECUTED SHOWN IN RED

SIGNATURE:

PETER ROBERT WARWICK
Registered Land Surveyor

VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 20467/2



NOTE
EXISTING SURFACE LEVELS ARE FROM
BULK EARTHWORKS PACKAGE
(REFER PLANS BY J WYNHAM PRINCE
110358BE100-124)

NOTE
* FOR LOT GRADING
REFER TO PLANS CC204
REFER TO OPEN SPACE
GRADING
REFER TO RETAINING
WALL 1 PROFILE
FUTURE RETAINING
WALL

These plans are referred to in
certificate no. 14323 approved by:
Eric Hausfeld
Accredited Certifier
Registration No: SPB 2416
Categories: S1, C1, C2, C3, C4, C5, C15 & D1
LAND DEVELOPMENT CERTIFICATES
www.ldcerts.com.au



J. WYNHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwprince@jwprince.com.au

AZIMUTH:
MGA
DATUM:
AHD
ORIGIN:

CLIENT:

LEGACYPROPERTY

THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF AN
APPROVED CONSTRUCTION CERTIFICATE

ISSUED FOR CONSTRUCTION APPROVAL

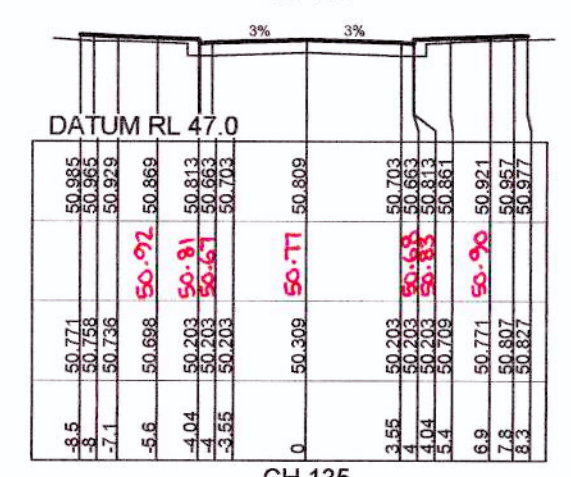
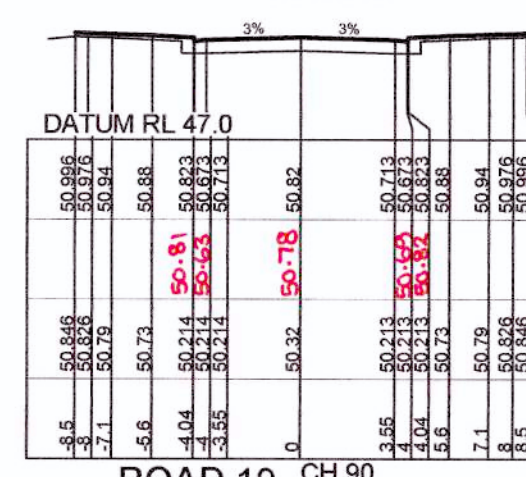
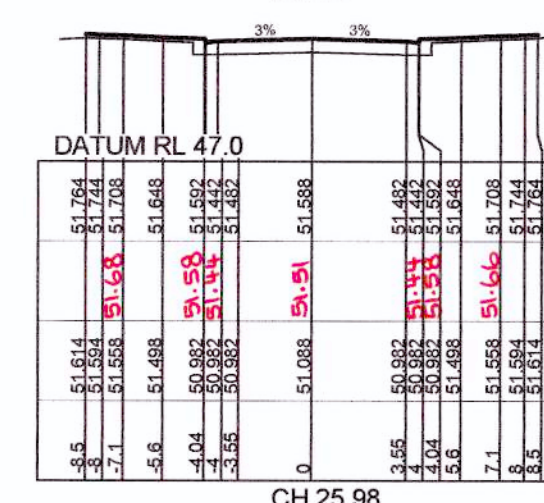
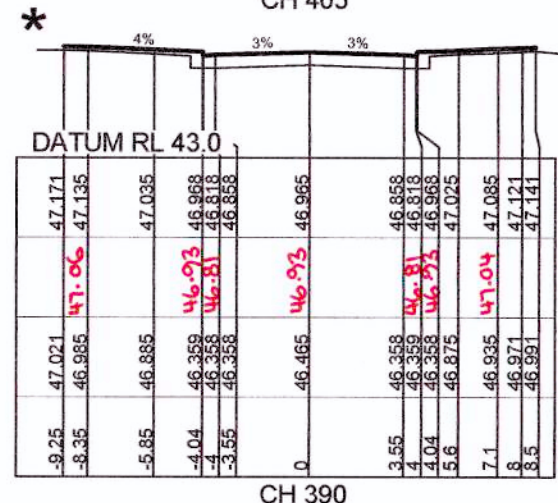
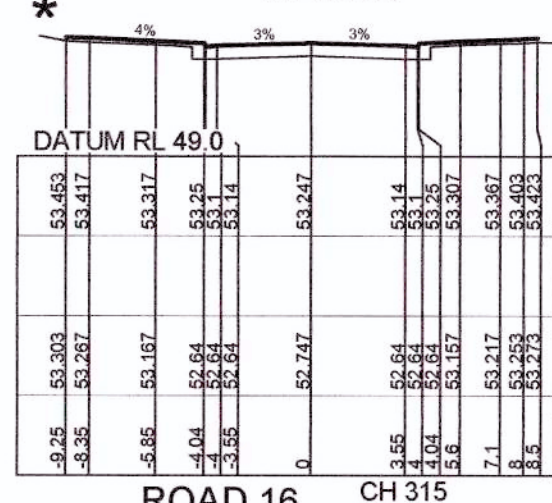
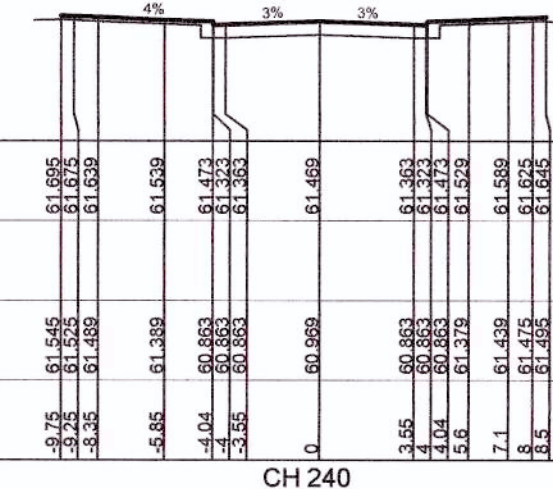
CADDENS HILL
STAGE 2
ROAD No.14,15 & 22 CROSS SECTIONS

PLAN No:
110358/CC211 **A**

FILE No: 110358CC211

SHEET SIZE: A1 ORIGINAL

A	ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS	18/05/17
	AMENDMENT	DES	DRN	CKD	APR	DATE



These plans are referred to in certificate no. **14323** approved by:

Eric Hausfeld
Accredited Certifier
Registration No: **BPB 2416**
Categories: **B1,C1,C2,C3,C4,C6,C15 & D1**

LAND DEVELOPMENT CERTIFICATES
www.Ldcerts.com.au

PLAN No:	110358/CC212	A
FILE No:	110358CC212	
SHEET SIZE:	A1 ORIGINAL	

AZIMUTH
MGA

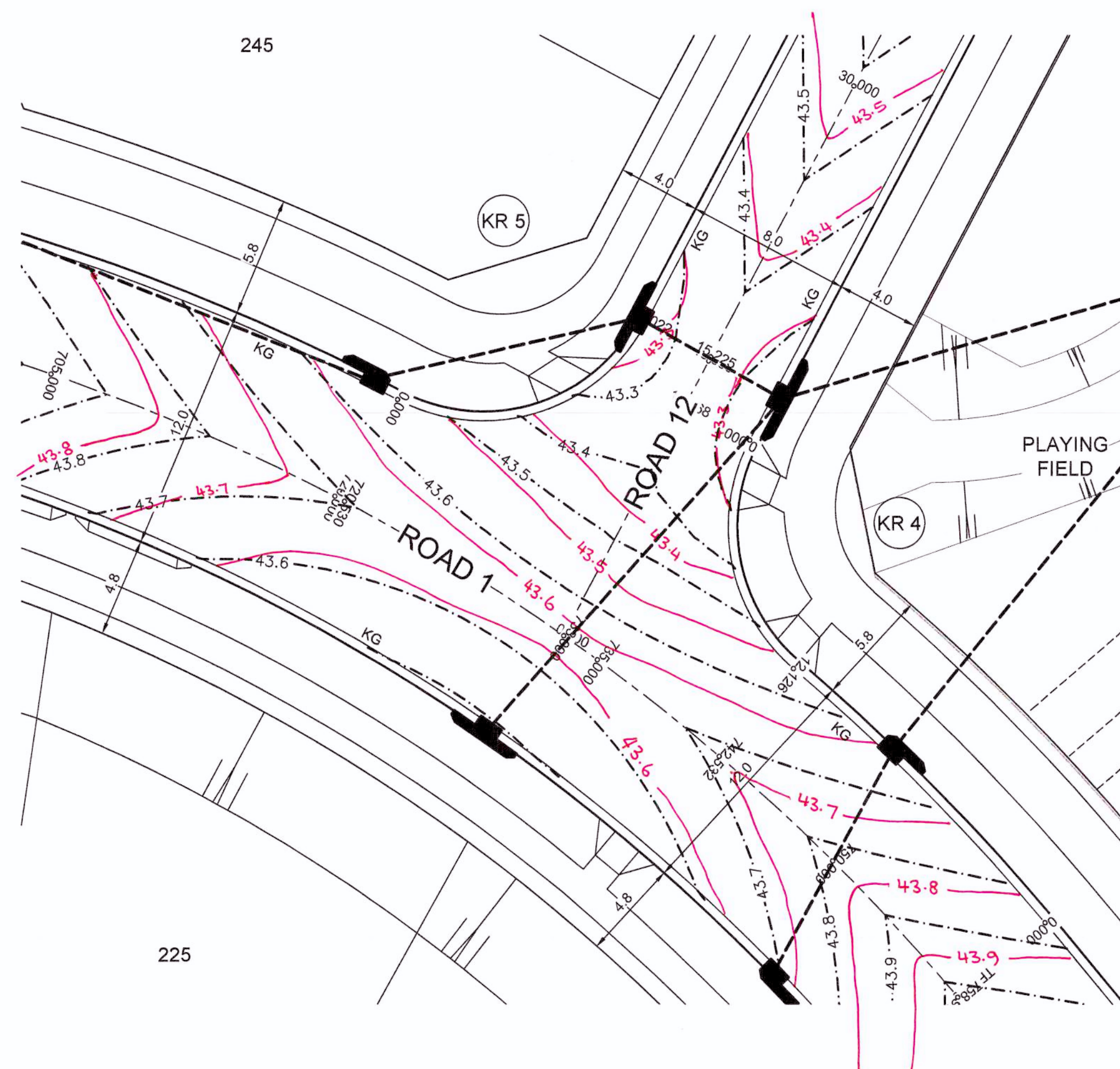
DATUM:
AHD

ORIGIN:

THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF AN
APPROVED CONSTRUCTION CERTIFICATE.

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

DESIGN LEVELS AND SETOUT
ARE TO LIP OF GUTTER



KR 4					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH
0	290713.69	6260296.2	207°57'29.68"		
6.06	290710.32	6260289.84		-8.95	12.13
12.13	290715.81	6260285.18	130°19'43.32"		

KR 5					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH
0	290696.6	6260298.15	117°43'22.15"		
7.01	290704.49	6260294		-8.95	14.02
14.02	290708.67	6260301.87	27°57'29.68"		

DESIGN GRADELINE
VERTICAL GEOMETRY

0.511% 4.29% 1.086%

6.06m V.C. 6.06m V.C.

IP 43.266 IP 43.522

	43.251	43.295	43.394	43.499	43.555
DATUM 40.0	12.568	13.032	15.063	15.095	12.128
DESIGN					
LIP GRADING					
ROAD CHAINAGE					
CHAINAGE					

KR 4
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50

WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: P.R.
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/19 REF: 204671

DESIGN GRADELINE
VERTICAL GEOMETRY

DATUM 41.0

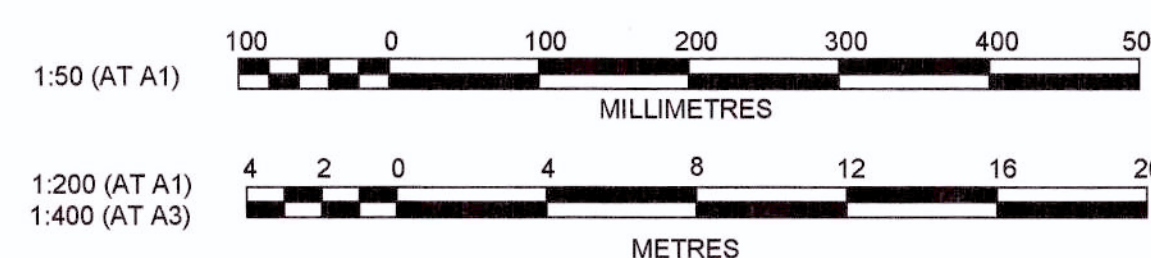
DESIGN LIP GRADING

ROAD CHAINAGE

CHAINAGE

SAG CH 13.402

KR 5
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50



A	ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS	18/05/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

J. WYNNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

AZIMUTH:
MGA

DATUM:
AHD

ORIGIN:

CLIENT:



THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF AN
APPROVED CONSTRUCTION CERTIFICATE

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL STAGE 2 KERB RETURNS

PLAN No:	110358/CC213
----------	--------------

FILE No: 110358CC213

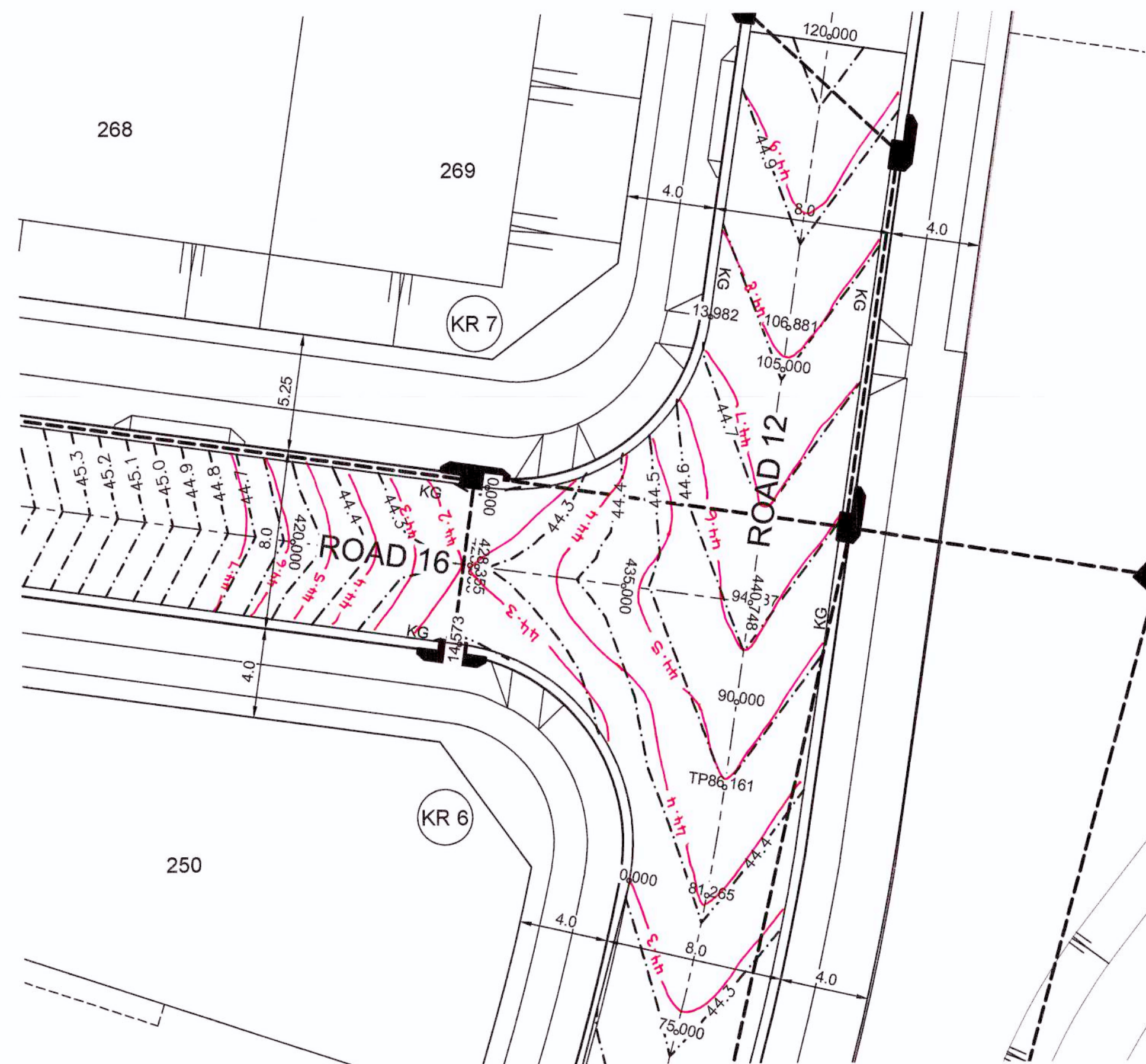
SHEET SIZE: A1 ORIGINAL

These plans are referred to in certificate no. **14323** approved by:

Eric Hausfeld
Accredited Certifier
Registration No: **BPB 2416**
Categories: **B1, C1, C2, C3, C4, C6, C15 & C16**


LAND DEVELOPMENT CERTIFICATES
.../maml/lands.com.au

Plotted: 26 May 2017 1:11:30 PM File Name: J:\110358 - O'Connell Lane, Caddens\03 - Stage 2\CDCC\STAGE 2110358CC214.dwg



PLAN
SCALE 1:200

DESIGN LEVELS AND SETOUT
ARE TO LIP OF GUTTER

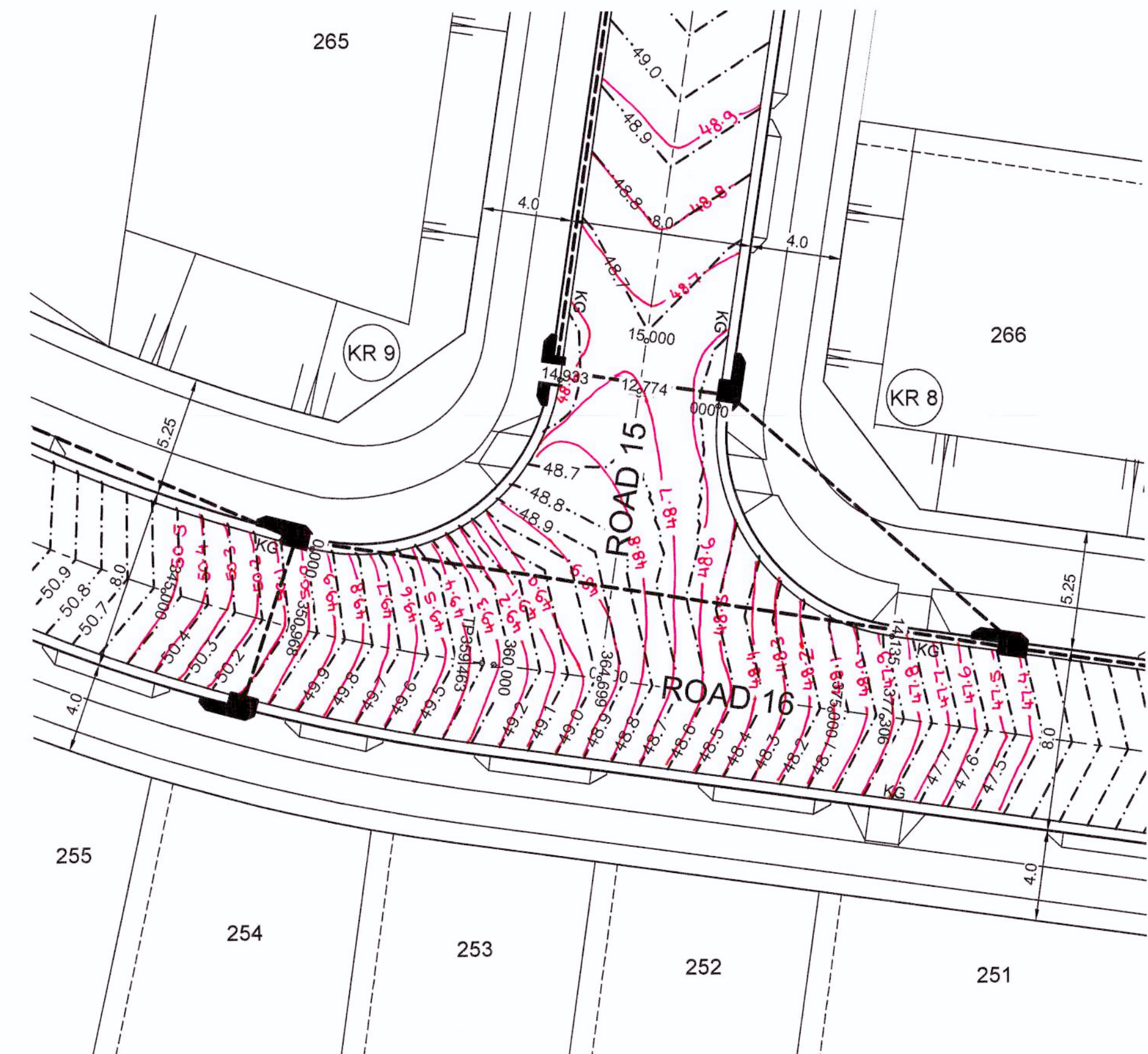
WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: 
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/19 REF: 2047/2

KR 6					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A LENGTH
0	290735.36	6260360.85	11°14'31.90"	-8.95	14.57
7.29	290737.2	6260370.15			
14.57	290727.82	6260371.46	277°56'49.87"		

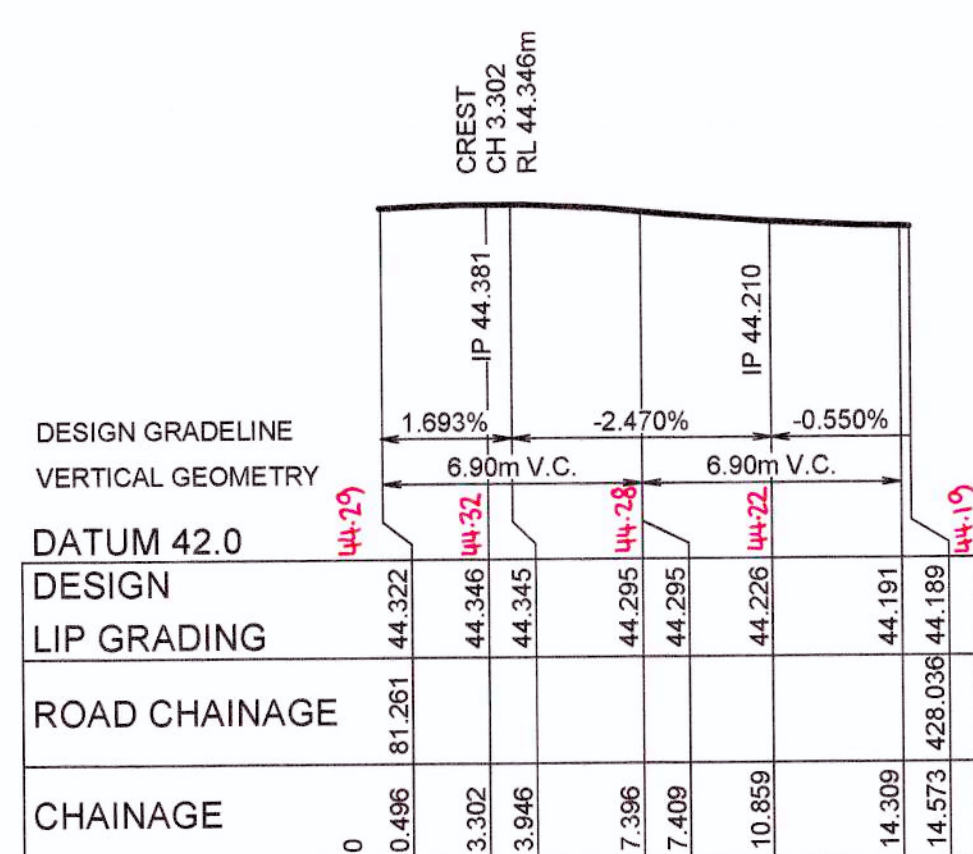
KR 7					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A LENGTH
0	290729.11	6260378.45	87°56'49.87"	-8.95	13.98
6.99	290737.9	6260377.22			
13.98	290739.2	6260386	8°26'12.57"		

KR 8					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A LENGTH
0	290670.94	6260395.68	188°26'12.14"	-8.95	14.14
7.07	290669.61	6260386.75			
14.14	290678.55	6260385.51	97°56'49.87"		

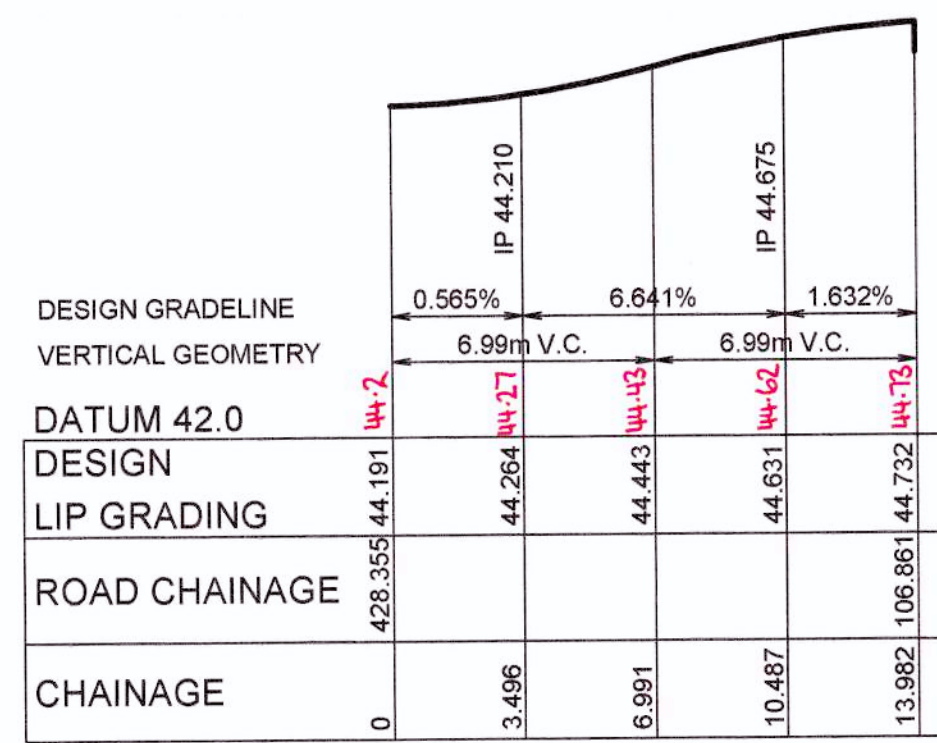
KR 9					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A LENGTH
0	290652.92	6260389.52	104°01'54.19"	-8.95	14.93
7.47	290662.49	6260387.13			
14.93	290663.94	6260396.89	8°26'12.14"		



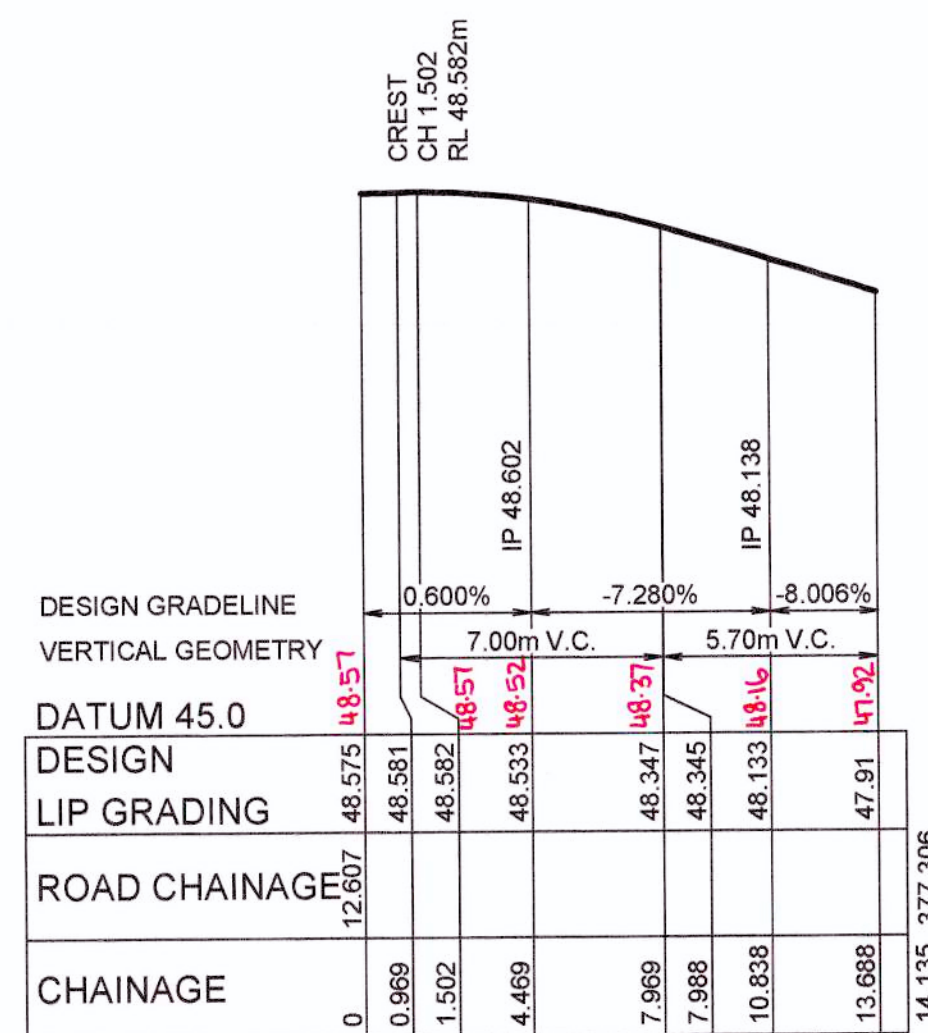
PLAN
SCALE 1:200



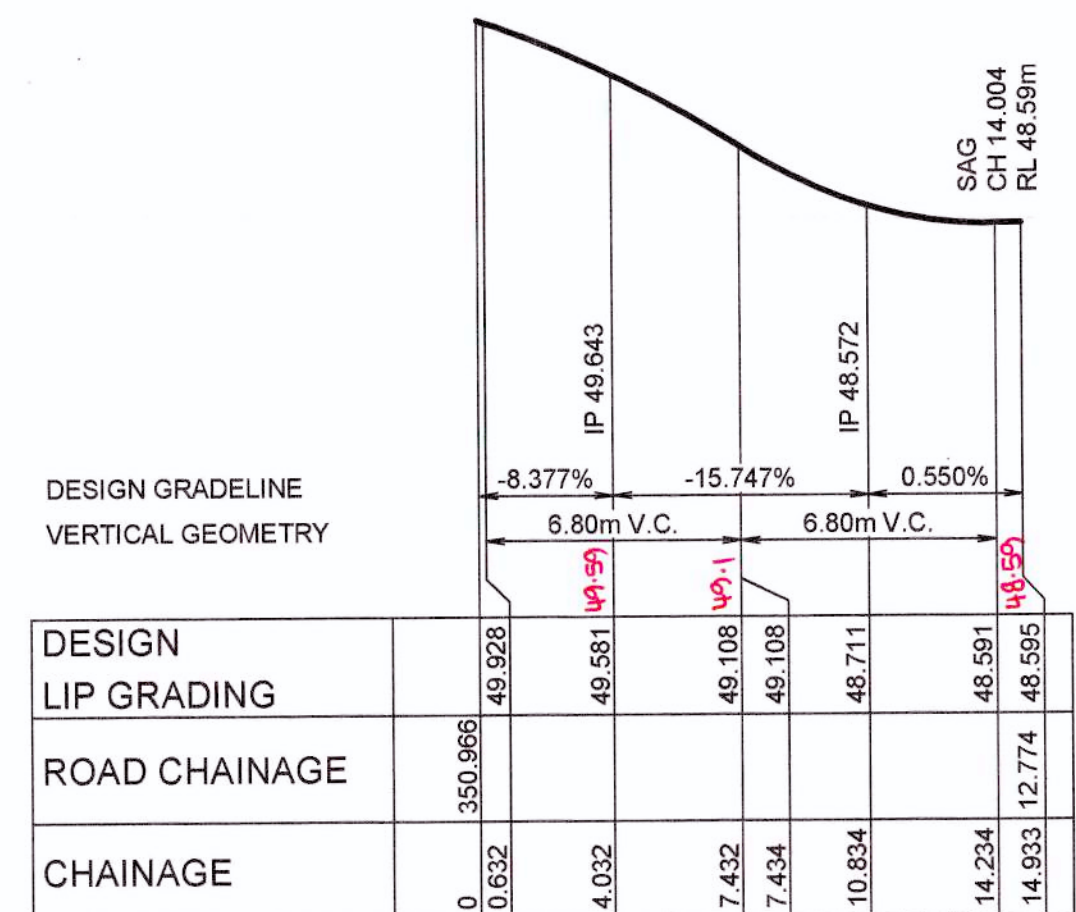
KR 6
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50



KR 7
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50

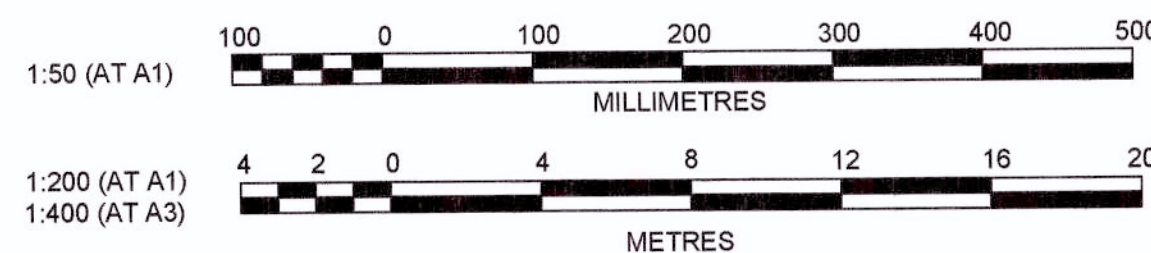


KR 8
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50



KR 9
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50

These plans are referred to in certificate no. 14323 approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPP 2416
Categories: B1, C1, C2, C3, C4, C6, C15 & D1
LAND DEVELOPMENT CERTIFICATES
www.Ldcerts.com.au



J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

AZIMUTH:
MGA
DATUM:
AHD
ORIGIN:

CLIENT:

LEGACYPROPERTY
THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF AN
APPROVED CONSTRUCTION CERTIFICATE.

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 2
KERB RETURNS

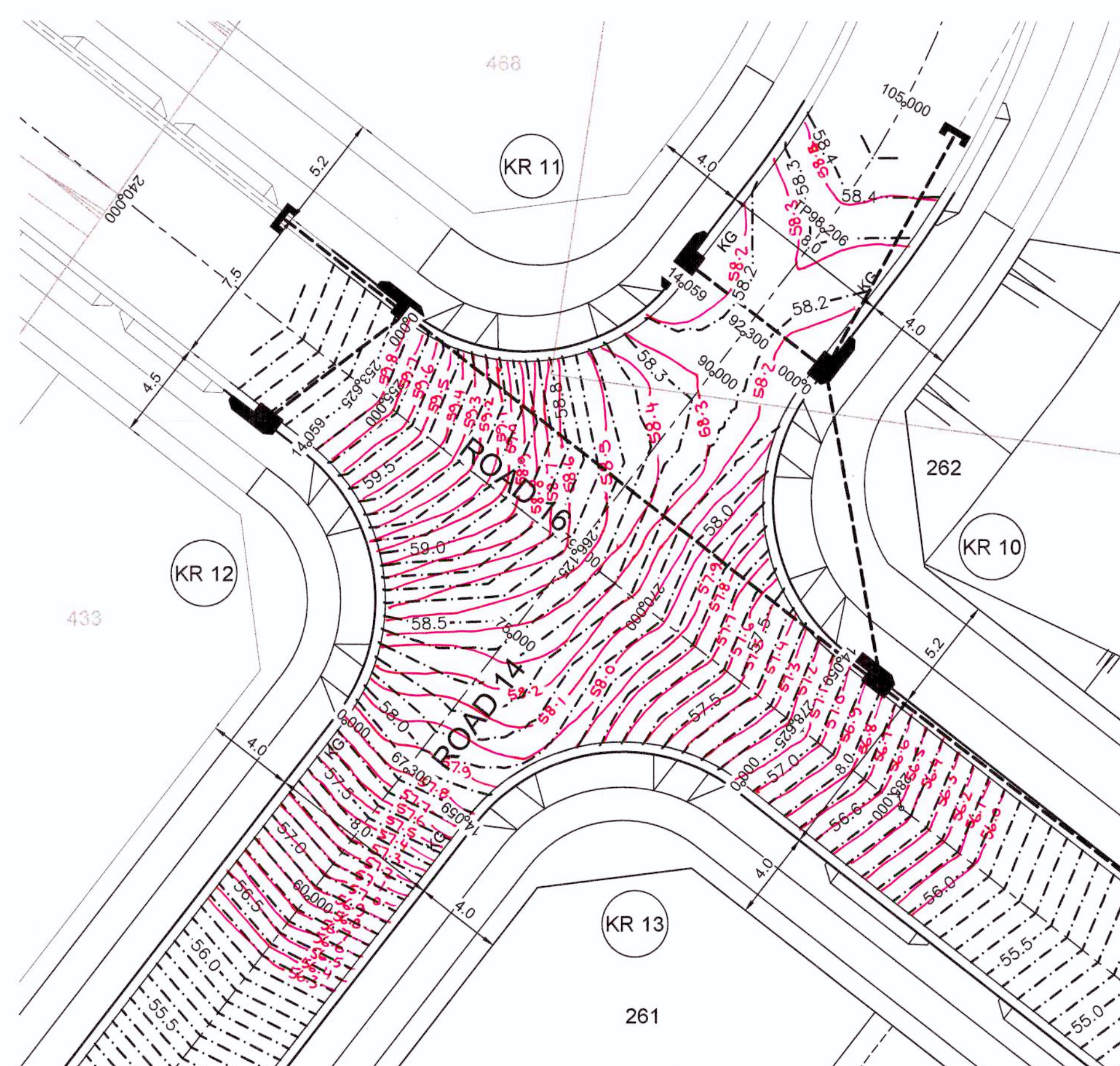
PLAN No:
110358/CC214

FILE No: 110358CC214

SHEET SIZE: A1 ORIGINAL

A	ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS	18/05/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

DESIGN LEVELS AND SETOUT
ARE TO LIP OF GUTTER



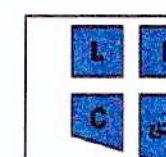
PLAN
SCALE 1:200

KR 10					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A LENG
0	290592.07	6260439.84	217°48'05.38"		
7.03	290586.59	6260432.77		-8.95	14.06
14.06	290593.66	6260427.28	127°48'05.88"		

KR 11					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A LENG
0	290573.9	6260442.6	127°48'05.88"		
7.03	290580.98	6260437.12		-8.95	14.06
14.06	290586.46	6260444.19	37°48'05.38"		

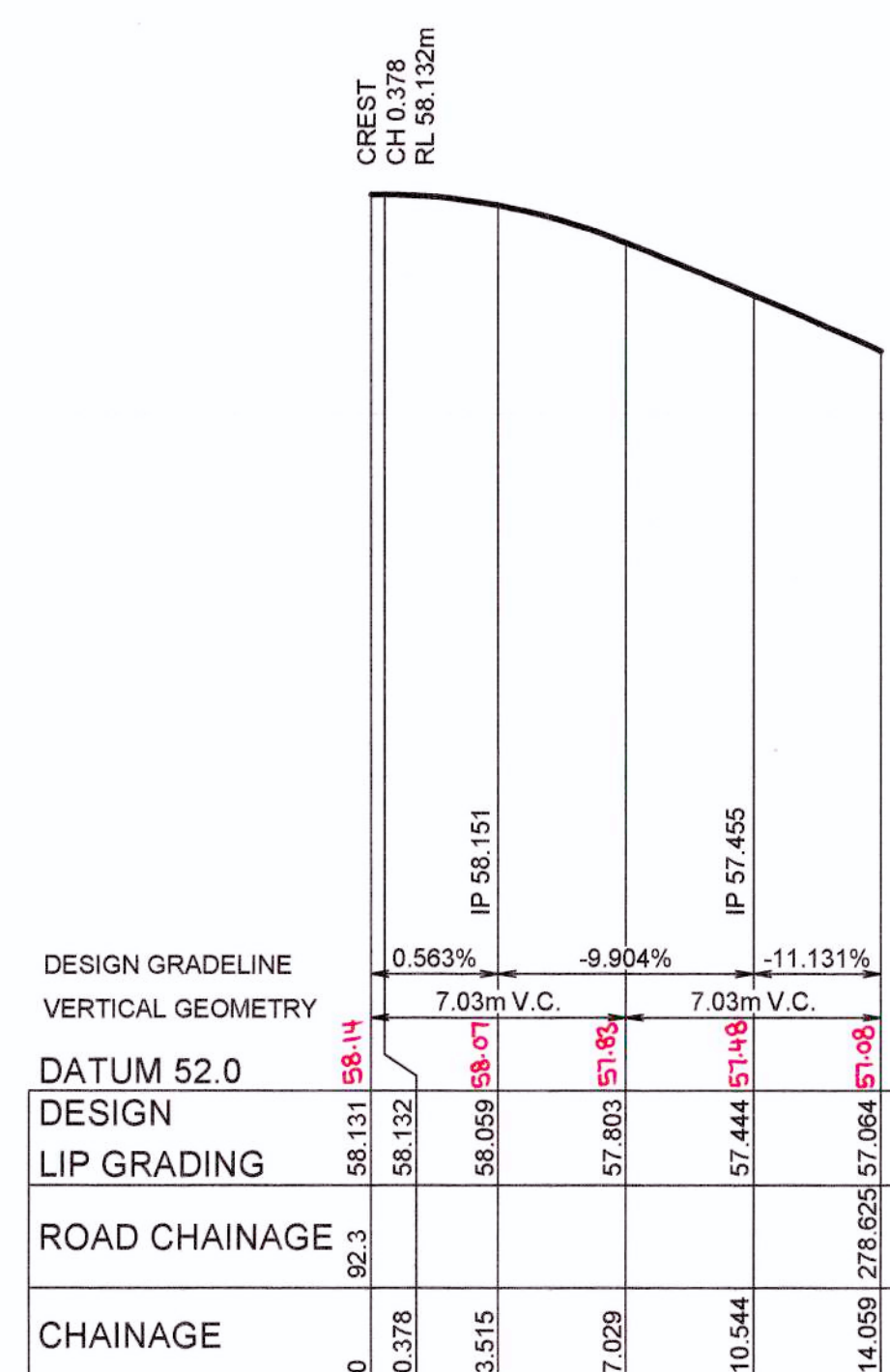
KR 12					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A LENG
0	290571.14	6260424.44	37°48'05.38"		
7.03	290576.62	6260431.51		-8.95	14.06
14.06	290569.55	6260436.99	307°48'05.88"		

KR 13					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH
0	290589.31	6260421.67	307°48'05.88"		
7.03	290582.23	6260427.16		-8.95	14.06
14.06	290576.75	6260420.08	217°48'05.38"		

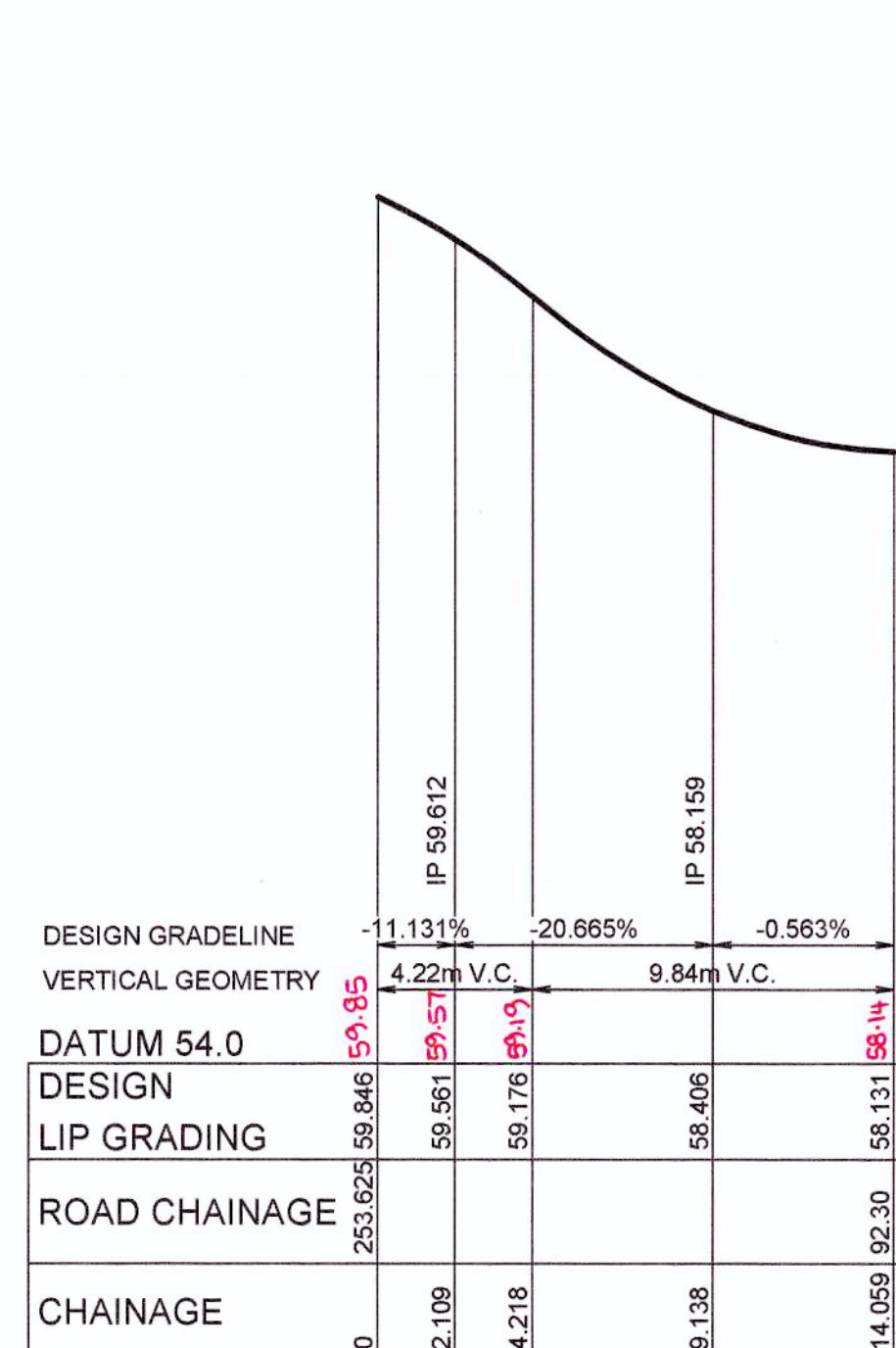


These plans are referred to in certificate no. **14323** approved by:
Eric Hausfeld
Accredited Certifier
Registration No: **BPB 2416**
Categories: **B1,C1,C2,C3,C4,C6,C15 &**

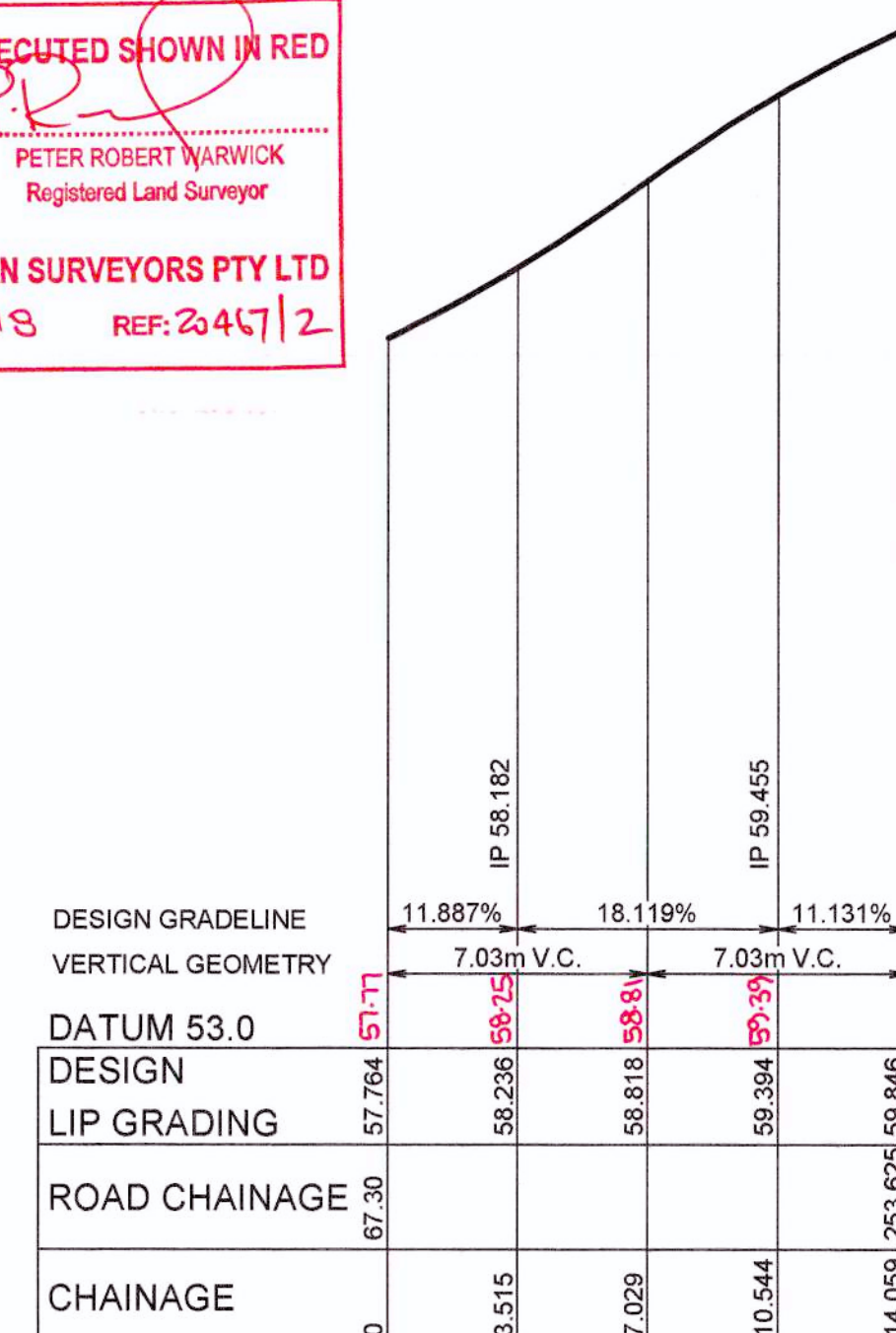
LAND DEVELOPMENT CERTIFICATES
www.ldcerts.com.au



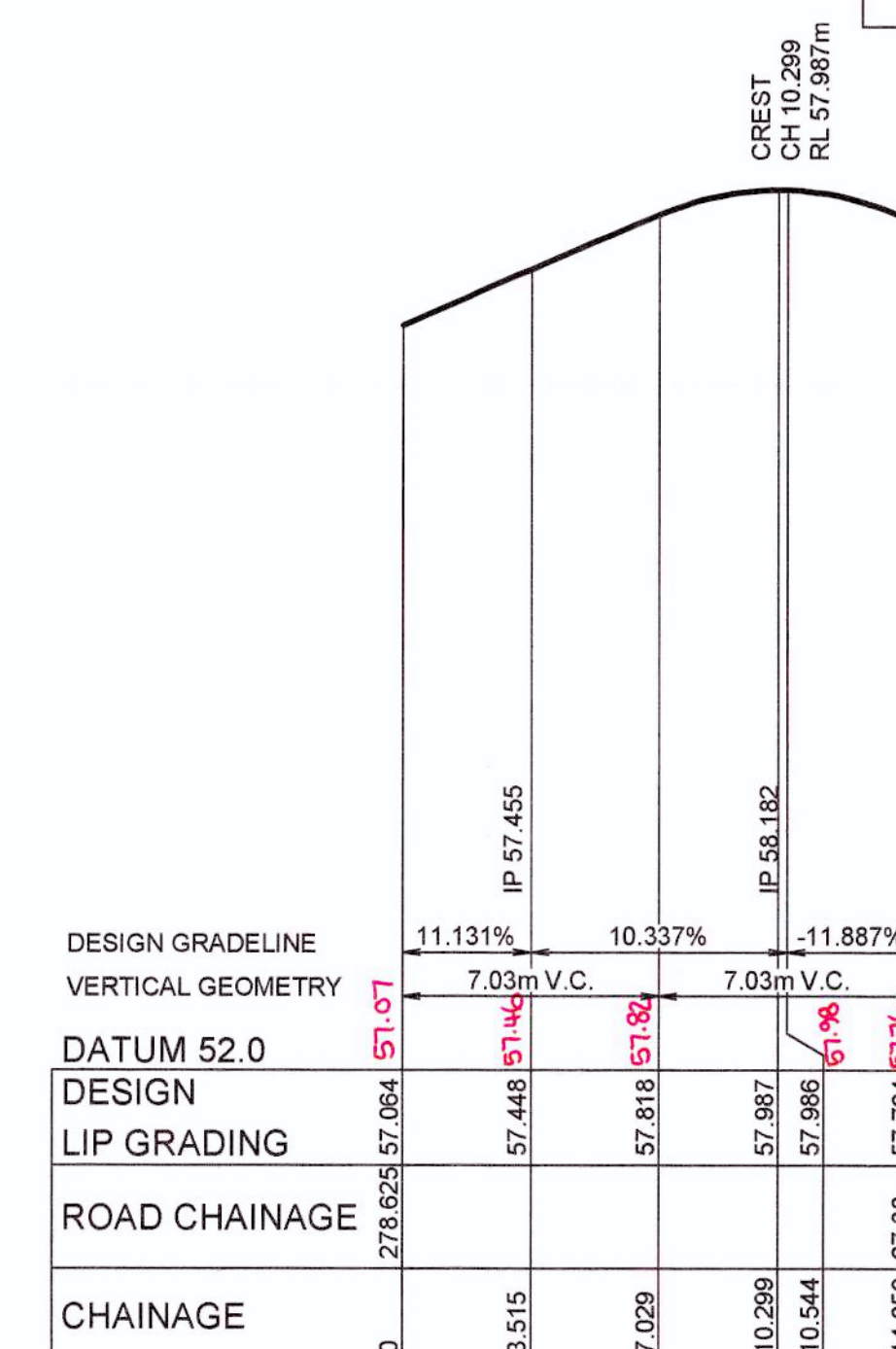
KR 10
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50



KR 11
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50

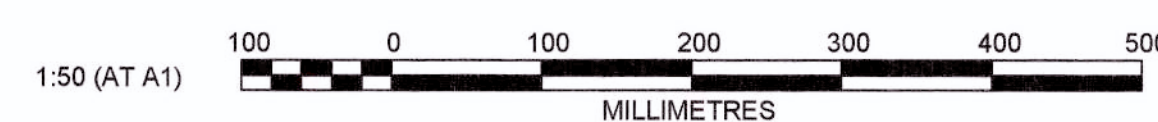


KR 12
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50



KR 13
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50

WORKS AS EXECUTED SHOWN IN RE
SIGNATURE: P.R. PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 204672



CLIENT



LEGACYPROPERTY
THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF AN
APPROVED CONSTRUCTION CERTIFICATE

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL STAGE 2 KERB RETURNS

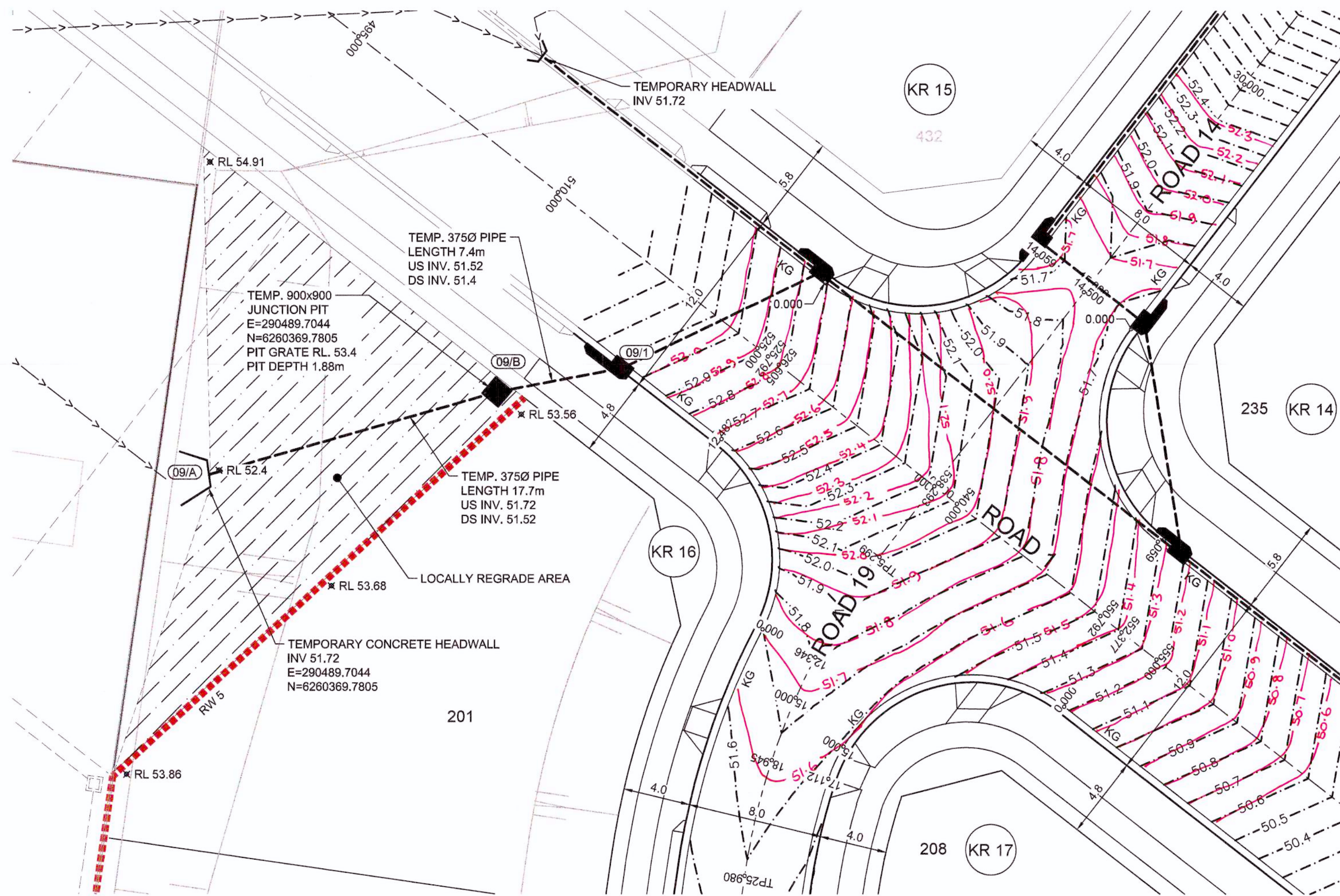
PLAN No:	110358/CC215	A
FILE No:	110358CC215	
SHEET SIZE:	A1 ORIGINAL	

J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.iwprince.com.au E iwp@iwprince.com.au

Plotted: 26 May , 2017 1:13:46 PM File Name: J:\110358 - OConnell Lane, Caddens\03 - Stage 2\CD\CC\STAGE 2\110358CC215.dwg

Plotted: 26 May, 2017 1:16:11 PM File Name: J:\110358 - O'Connell Lane, Caddens\03 - Stage 2\CD\CC\STAGE 2\110358CC216.dwg



DESIGN LEVELS AND SETOUT
ARE TO LIP OF GUTTER

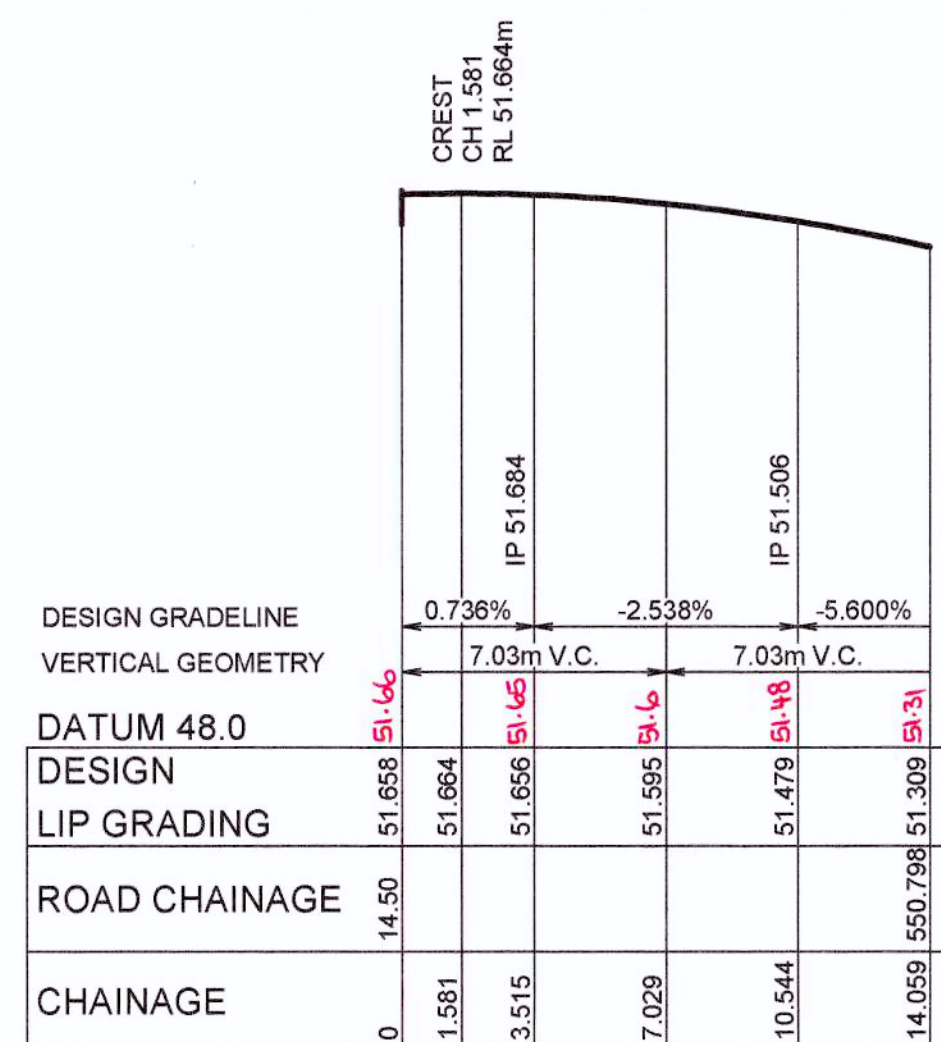
These plans are referred to in
certificate no. **14323** approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPP 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1
LAND DEVELOPMENT CERTIFICATES
www.Ldcerts.com.au

KR 14					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPRAL	A LENGTH
0	290544.39	6260378.37	217°48'05.38"	-8.95	14.06
7.03	290538.9	6260371.29			
14.06	290545.97	6260385.81	127°48'05.94"		

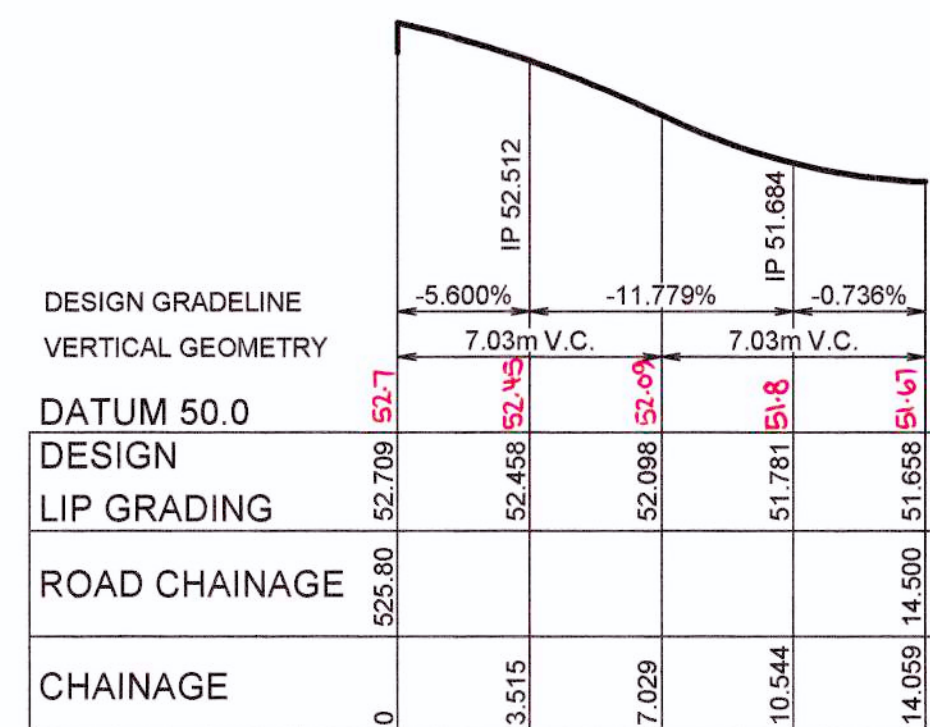
KR 15					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPRAL	A LENGTH
0	290526.22	6260381.13	127°48'05.94"	-8.95	14.06
7.03	290533.29	6260375.65			
14.06	290538.78	6260382.72	37°48'05.38"		

KR 16					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPRAL	A LENGTH
0	290522.49	6260360.63	27°42'29.76"	-8.95	12.48
6.24	290525.98	6260367.27			
12.48	290520.06	6260371.86	307°48'05.94"		

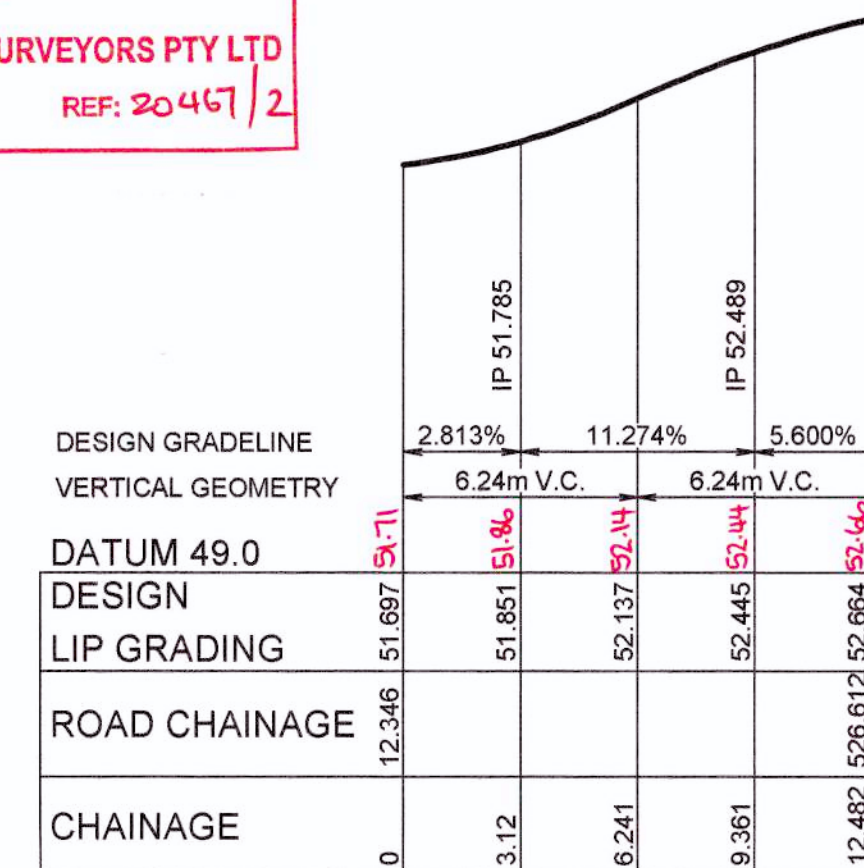
KR 17					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPRAL	A LENGTH
0	290540.42	6260356.07	307°48'05.94"	-8.95	17.11
8.56	290530.41	6260363.83			
17.11	290526.44	6260351.8	198°15'18.06"		



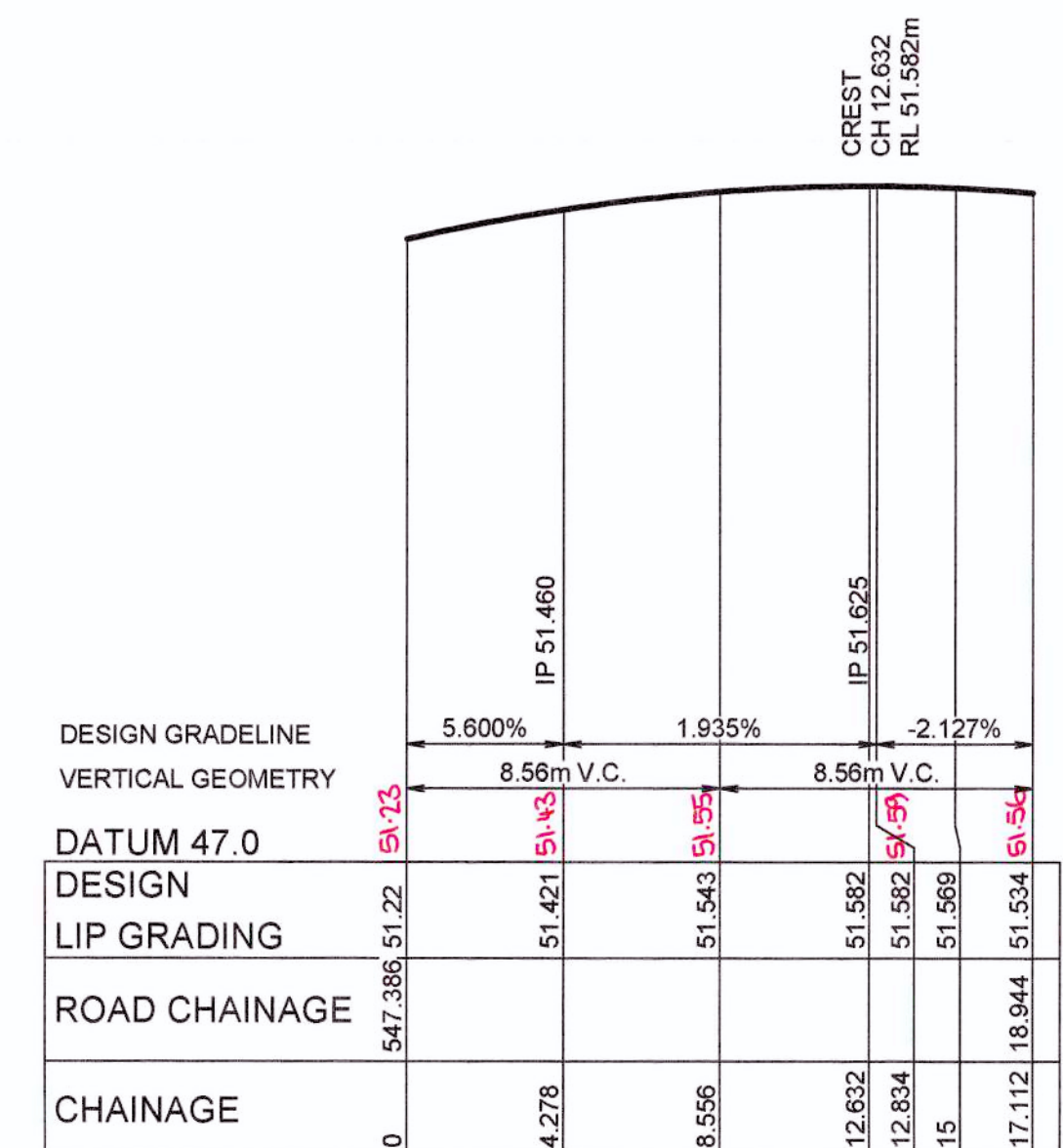
KR 14
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50



KR 15
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50



KR 16
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50



KR 17
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50

1:50 (AT A1)

100 0 100 200 300 400 500
MILLIMETRES

1:200 (AT A1)

4 2 0 4 8 12 16 20
METRES

WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: *[Signature]*
PETER ROBERT WARRICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 20467/2

CLIENT:

LEGACYPROPERTY

AZIMUTH:
MGA
DATUM:
AHD
ORIGIN:

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 2
KERB RETURNS

PLAN No:
110358/CC216

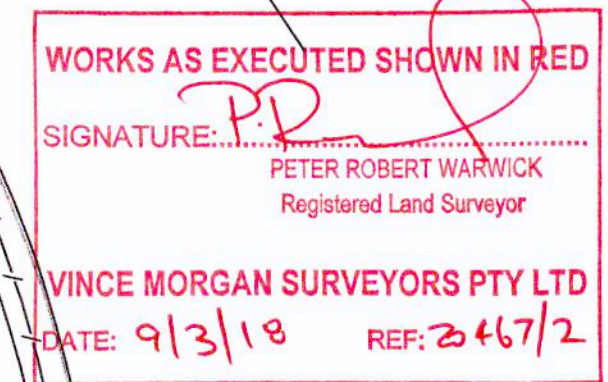
FILE No: 110358CC216

SHEET SIZE: A1 ORIGINAL

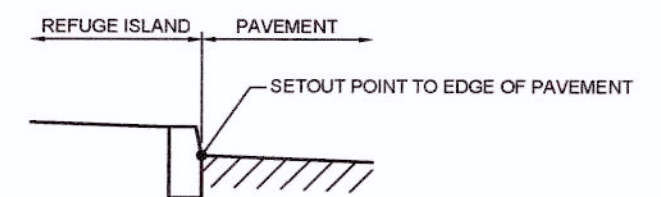
J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

B	CERTIFIER COMMENTS - TEMP. DRAINAGE DETAILS	JT	NM	RT	MS	26/05/17
A	ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS	18/05/17
	AMENDMENT	DES	DRN	CKD	APR	DATE



	<p>These plans are referred to in certificate no. 14323 approved by:</p> <p>Eric Hausfeld</p> <p>Accredited Certifier</p> <p>Registration No: BPB 2416</p> <p>Categories: B1,C1,C2,C3,C4,C6,C15 & D1</p>
<p align="center">LAND DEVELOPMENT CERTIFICATES</p> <p align="center">www.Ldcerts.com.au</p>	



REFER TO COUNCIL DRAWING SD4002
N.T.S.

* PROVIDE 0.15m ROUNDING AT CORNER OF REFUGE ISLAND

SHEET SIZE: A1 ORIGINAL

A	ISSUE FOR CONSTRUCTION APPROVAL						JT	NM	RT	MS	18/05/1
	AMENDMENT						DES	DRN	CKD	APR	DATE

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

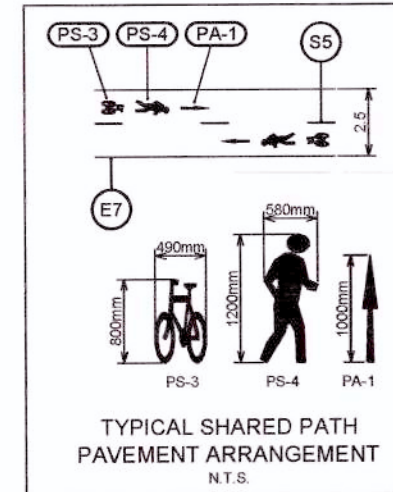
Plotted: 26 May , 2017 1:19:04 PM File Name: J:\110358 - OConnell Lane, Caddens\03 - Stage 2\CD\CS\STAGE 2\110358CC218.dwg

REFER TO DRAWING CC249 FOR CONTINUATION

WORKS AS EXECUTED SHOWN IN RED

SIGNATURE: *P.R.*
PETER ROBERT WARMICK
Registered Land Surveyor

VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 20467/2

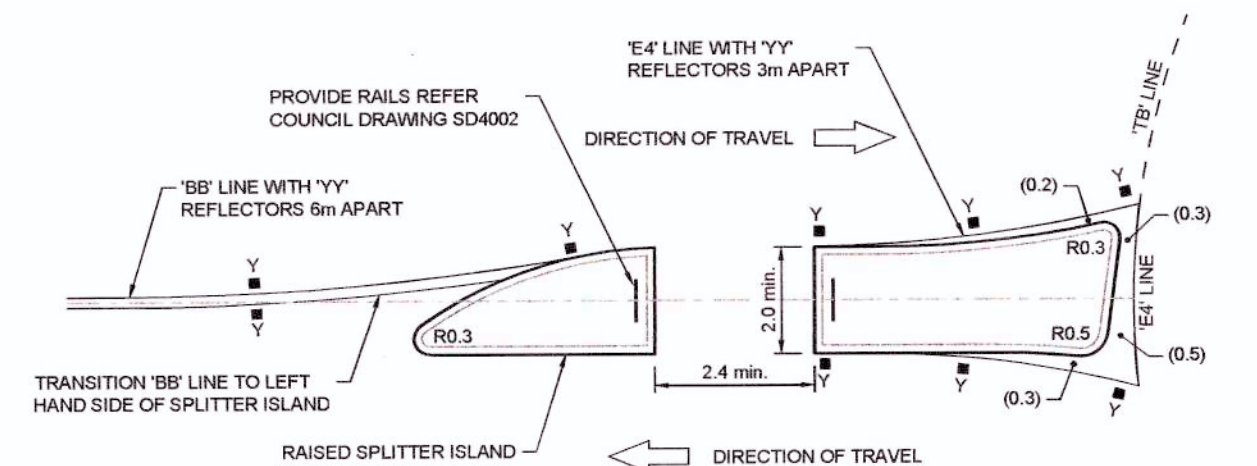
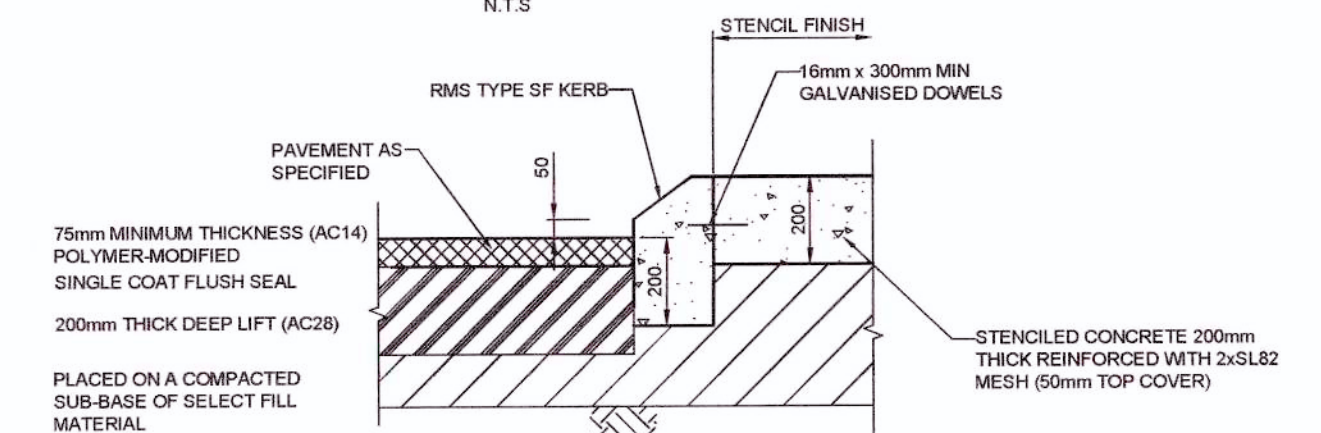
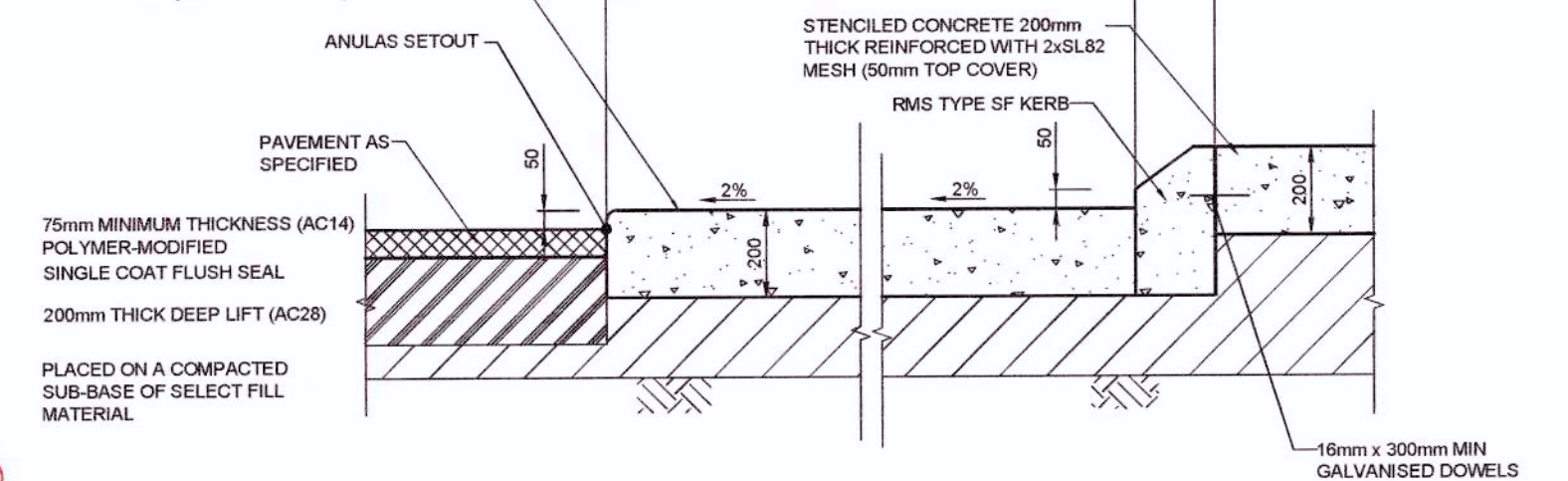


NOT APPROVED

PAVEMENT MARKING SCHEDULE

CODE	USE	STYLE	COLOUR & TYPE
TB	Give way line (Used with Signs)		Reflectorised white
TBB	Give way line on Path		Reflectorised white
E7	Bicycle edge line for off-road bike paths & shared paths		Reflectorised white
BB	Barrier line where sight is restricted in both directions or approach to median island		Reflectorised white type 'YY' pavement markers bi-directional reflective yellow
S5	Bicycle lane separation line for off-road bike path (straight sections)		Reflectorised white
C	Shared Path		Reflectorised white

PLAIN CONCRETE APRON 200mm THICK
REINFORCED WITH 2 LAYERS SL82
MESH (40mm TOP COVER)



THESE SIGNAGE AND LINEMARKING
PLANS ARE SUBJECT TO APPROVAL
BY PENRITH CITY COUNCIL TRAFFIC
COMMITTEE

PLAN
SCALE 1:200

1:200 (AT A1)
1:400 (AT A3)

METRES

J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

AZIMUTH:
MGA
DATUM:
AHD
ORIGIN:

CLIENT:

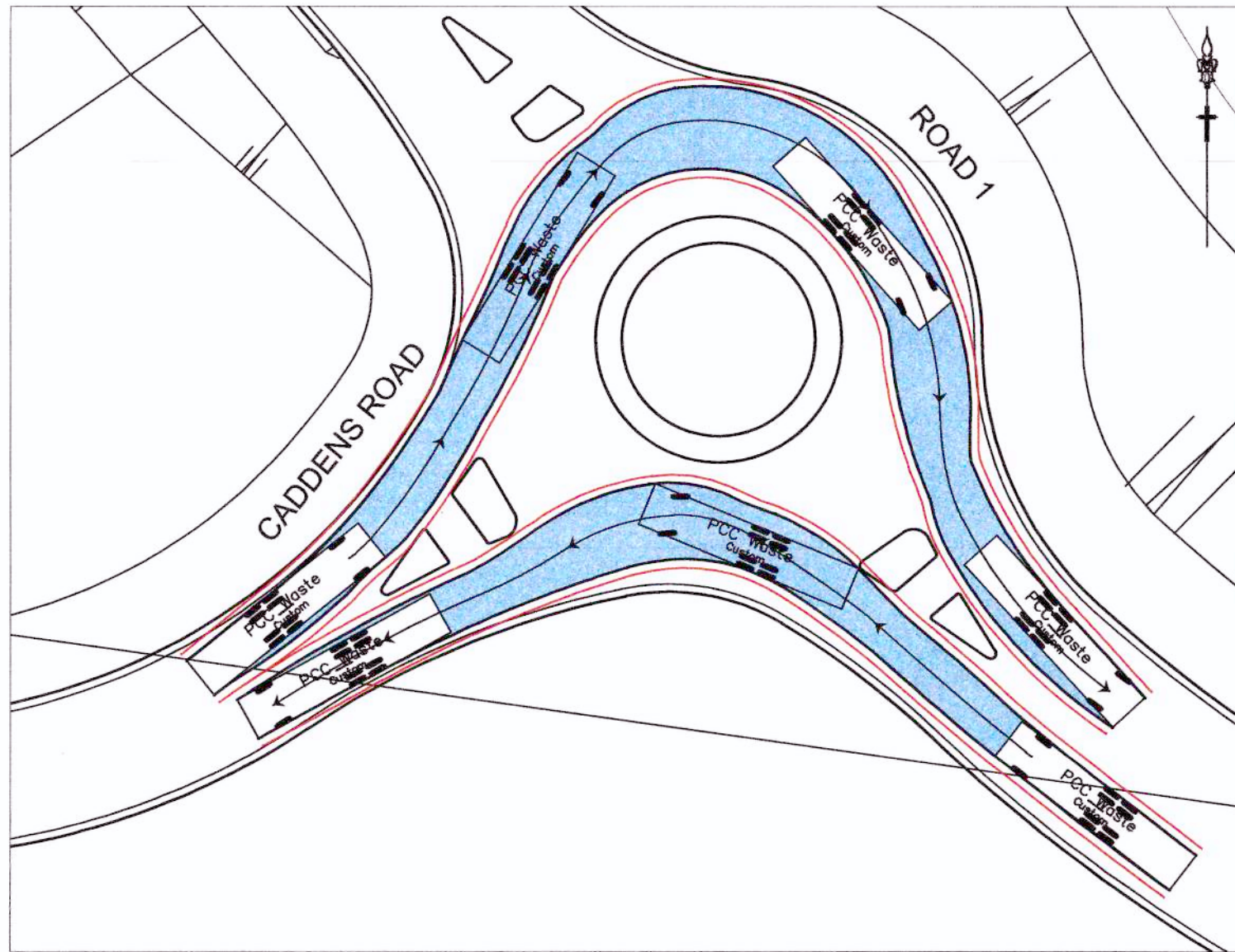


LEGACYPROPERTY
THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF AN
APPROVED CONSTRUCTION CERTIFICATE.

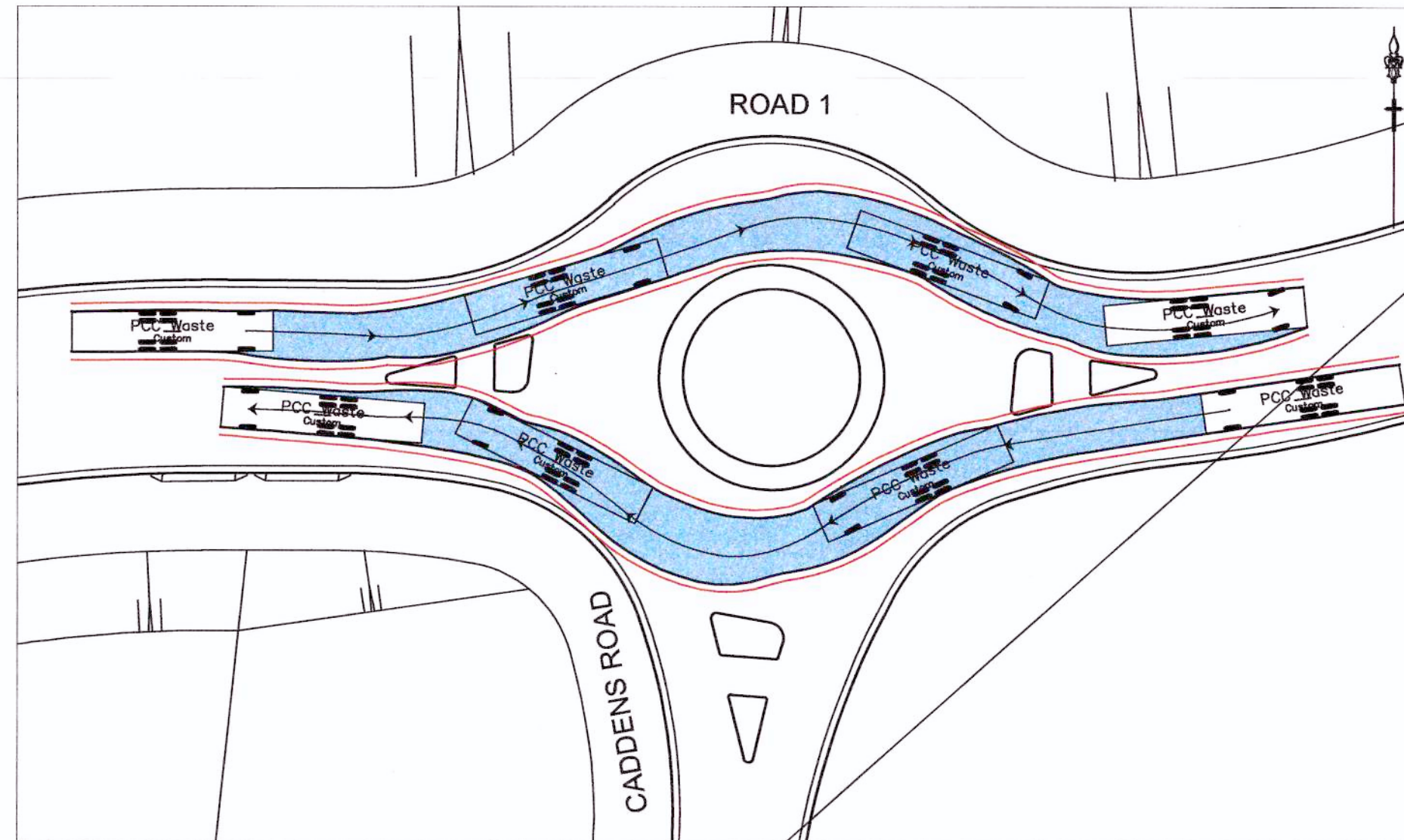
ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 2
ROUNABOUT SIGNAGE & LINEMARKING PLAN

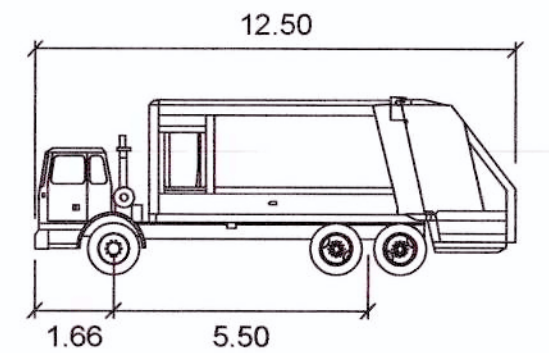
PLAN No:
110358/CC219 B
FILE No: 110358CC219
SHEET SIZE: A1 ORIGINAL



PLAN
SCALE 1:250

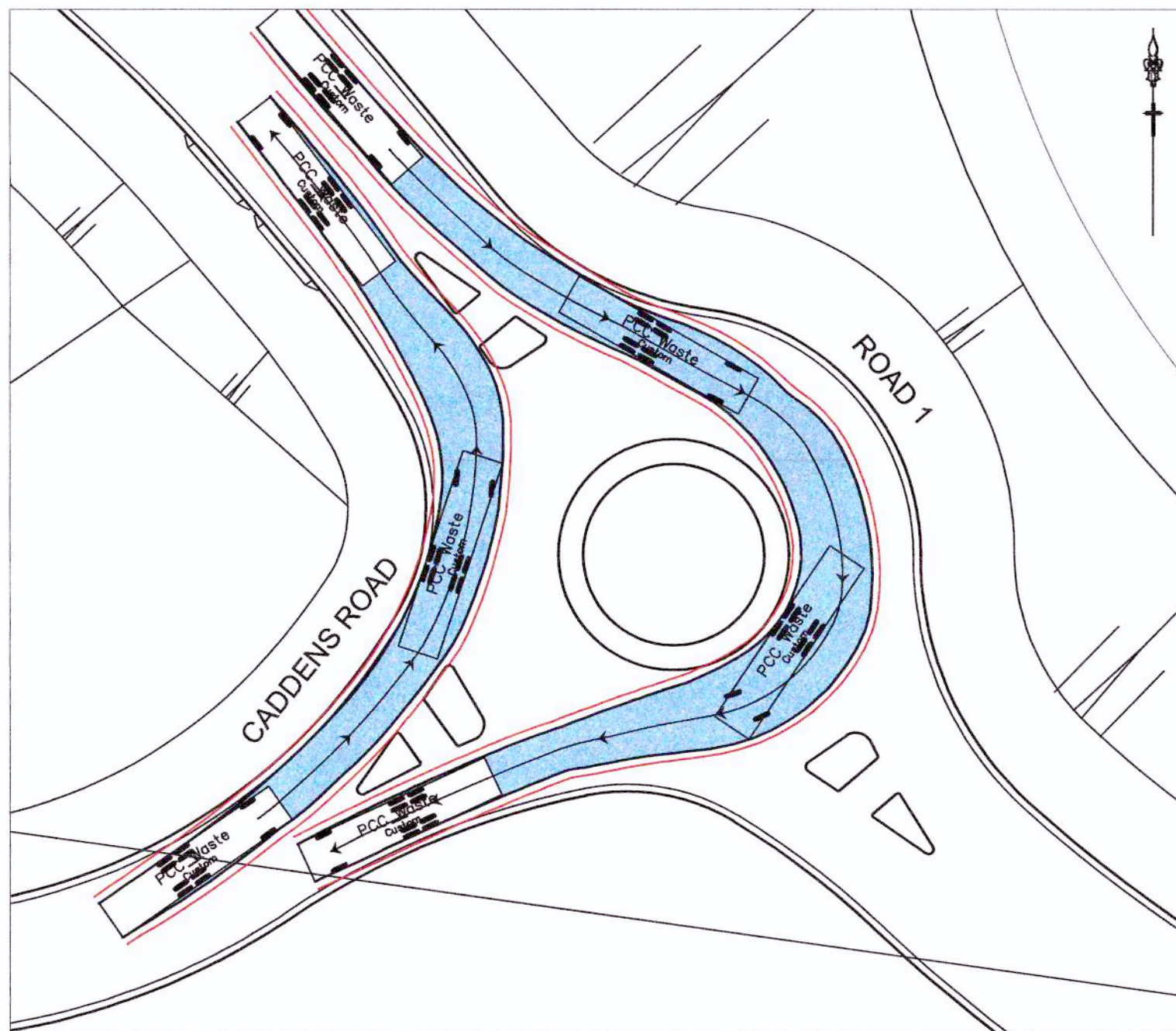


PLAN
SCALE 1:250

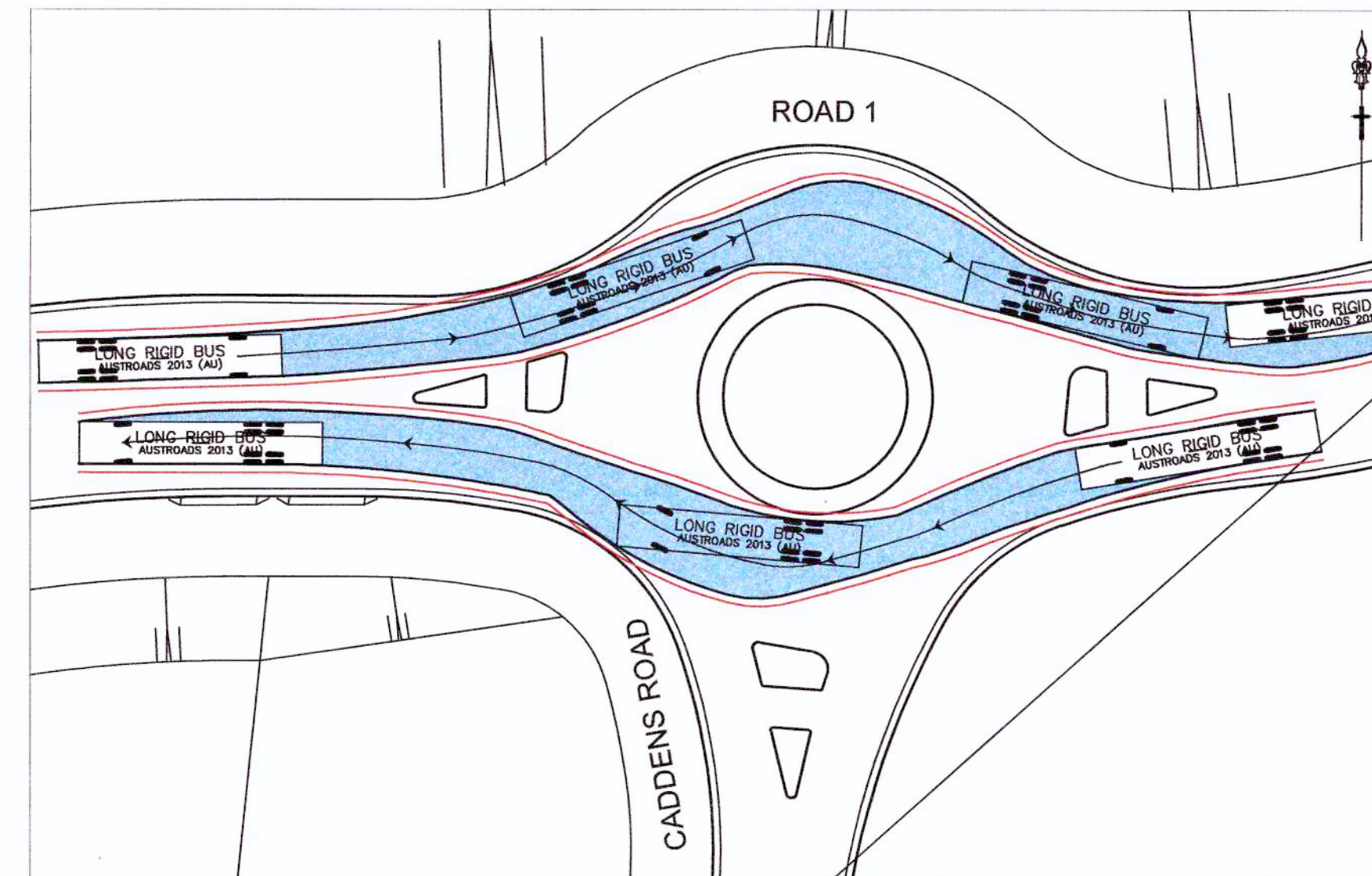


PCC Waste	
	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: *P.R.*
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 20467/2

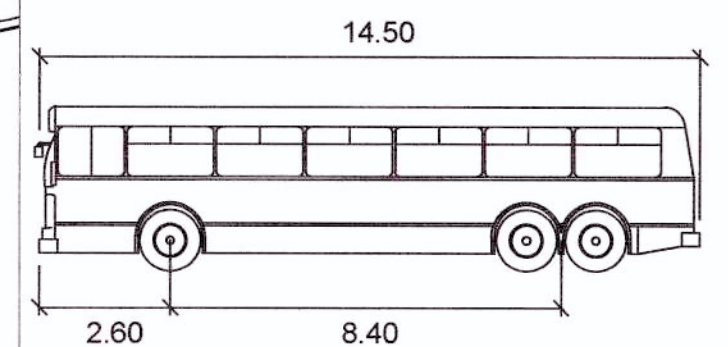


PLAN
SCALE 1:250



PLAN
SCALE 1:250

These plans are referred to in certificate no 14323 approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1
LAND DEVELOPMENT CERTIFICATES
www.Ldcerts.com.au



LONG RIGID BUS	
	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 46.4



Plotted: 26 May, 2017 1:21:36 PM File Name: J:\110358 - O'Connell Lane, Caddens\03 - Stage 2\CD\CC\STAGE 2\110358CC220.dwg

AMENDMENT	JT	NM	RT	MS	18/05/17
A	ISSUE FOR CONSTRUCTION APPROVAL				
	DES	DRN	CKD	APR	DATE

J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS
PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwpr@jwprince.com.au

AZIMUTH:
MGA:
DATUM:
AHD:
ORIGIN:

CLIENT: **LEGACYPROPERTY**
THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS PART OF AN APPROVED CONSTRUCTION CERTIFICATE

ISSUED FOR CONSTRUCTION APPROVAL

**CADDENS HILL
STAGE 2
ROUNDAABOUT TURNING PATHS**

PLAN No: 110358/CC220 **A**
FILE No: 110358CC220
SHEET SIZE: A1 ORIGINAL

Plotted: 29 May, 2017 3:51:19 PM File Name: J:\110358 - O'Connell Lane, Caddens\03 - Stage 2\CD\CC\STAGE 2\110358CC222.dwg

PIT SCHEDULE					
PIT NAME	PIT TYPE	PIT EASTING (m)	PIT NORTHING (m)	PIT DEPTH (m)	COMMENTS
01/5	1.8 m lintel	290526.114	6260381.782	1.665	
01/6	1.8 m lintel	290547.354	6260365.305	1.66	
01/7	1.8 m lintel	290567.132	6260349.963	1.739	
01/8	1.8 m lintel	290599.49	6260325.791	1.665	
01/9	1.8 m lintel	290633.121	6260313.757	1.893	
01/10	1.8 m lintel	290676.924	6260306.547	2.246	
01/11	1.8 m lintel	290695.583	6260299.179	2.254	
01/12	3.0 m lintel sag	290708.269	6260302.085	2.166	
01/13	3.6 m lintel sag	290715.256	6260298.184	2.452	
03/1	1.8 m lintel	290556.279	6260406.016	1.955	
03/2	2.4 m lintel sag	290538.888	6260383.596	1.77	
03/3	1.8 m lintel	290545.192	6260378.671	1.9	
04/1	1.8 m lintel	290722.919	6260329.686	1.45	
04/2	1.8 m lintel	290736.838	6260339.851	1.92	
05/1	1.8 m lintel	290683.959	6260343.77	1.498	
05/2	1.8 m lintel	290685.322	6260333.509	1.55	
05/3	1.8 m lintel	290675.185	6260314.412	1.565	
06/1	2.4 m lintel sag	290743.194	6260228.454	1.446	
09/1	2.4 m lintel	290514.02	6260375.976	1.639	
10/1	1.8 m lintel	290589.185	6260318.081	1.475	
11/1	2.4 m lintel	290663.92	6260297.268	1.939	
12/1	3.0 m lintel sag	290700.848	6260282.106	1.431	
13/4	1.8 m lintel	290574.118	6260443.008	1.667	
13/5	1.8 m lintel	290595.548	6260426.384	1.734	
13/6	1.8 m lintel	290631.046	6260399.32	1.566	
13/7	1.8 m lintel	290652.258	6260390.152	1.736	
13/8	1.8 m lintel	290683.919	6260385.179	1.989	
13/9	2.4 m lintel sag	290728.564	6260378.979	1.883	
13/10	1.8 m lintel	290745.429	6260376.517	2.946	
15/1	1.8 m lintel	290567.507	6260438.011	1.484	
16/1	1.8 m lintel	290649.735	6260382.545	1.455	
17/1	2.4 m lintel sag	290727.458	6260371.056	1.438	
18/7	1.8 m lintel	290603.325	6260458.224	1.666	
18/8	1.8 m lintel	290593.052	6260440.368	1.659	
19/1	2.4 m lintel sag	290586.709	6260445.244	1.438	
22/8	1.8 m lintel	290667.721	6260425.455	1.686	
22/9	2.4 m lintel sag	290663.546	6260397.306	1.686	
22/10	1.8 m lintel	290671.462	6260396.144	1.816	
25/10	1.8 m lintel	290743.529	6260418.231	1.764	
25/11	1.8 m lintel	290740.789	6260399.759	1.774	
25/12	1.8 m lintel	290747.89	6260393.108	1.831	
30/1	2.4 m lintel	290514.74	6260327.447	1.528	
30/2	1.8 m lintel	290510.248	6260296.196	1.525	
30/3	1.8 m lintel	290506.953	6260273.268	1.545	
30/4	2.4 m lintel sag	290497.551	6260265.632	2.016	
30/5	2.4 m lintel sag	290496.497	6260257.701	2.126	
30/6	1.8 m lintel	290495.609	6260251.024	1.998	
30/7	1.8 m lintel	290548.928	6260243.878	1.915	
30/8	2.4 m lintel	290577.527	6260239.893	1.797	
30/9	2.4 m lintel	290598.917	6260236.909	1.937	
30/10	1.8 m lintel sag	290638.567	6260231.378	1.957	
30/11	3.6 m lintel sag	290652.951	6260229.371	2.101	
30/12	JP	290653.899	6260234.443	2.214	
30/13	JP	290657.977	6260262.236	1.92	
30/14	GSIP 900x900	290662.188	6260291.822	2.162	
31/1	NODE	290626.287	6260221.634	1.988	HEADWALL INLET
31/2	GSIP 1200x3600 SAG	290651.226	6260218.155	2.375	
31/3	JP	290720.535	6260208.484	4.401	
31/4	1.8 m lintel	290730.965	6260243.356	3.46	
31/5	JP	290748.624	6260278.59	2.525	
31/6	GSIP 1200x1200	290749.434	6260317.617	2.045	
31/7	JP	290773.727	6260371.704	2.598	
31/8	H.W.	290832.001	6260390.856	0.9	HEADWALL OUTLET
32/1	GSIP 1200x1200	290740.349	6260305.524	2.069	
32/2	JP	290759.252	6260374.26	3.611	
32/3	GSIP 1200x1200	290790.925	6260398.396	2.117	
32/4	GPT	290804.468	6260396.936	2.629	HUMEGARD HG45A-M
32/5	H.W.	290829.005	6260394.487	1.35	HEADWALL OUTLET
42/1	1.8 m lintel	290676.218	6260428.211	1.469	
43/1	1.8 m lintel	290516.239	6260281.643	1.471	
44/1	CAPPED STUB	290471.405	6260269.09	1.981	
45/1	NODE	290469.166	6260254.898	1.592	GSIP 900x900
47/1	1.8 m lintel	290714.781	6260270.355	1.456	
47/2	1.8 m lintel	290720.718	6260281.36	1.8	
A/1	GSIP 600x600 IAD			0.758	
A/2	GSIP 600x600 IAD			0.777	
A/3	GSIP 600x600 IAD			0.784	
A/4	GSIP 600x600 IAD			0.77	
A/5	GSIP 600x900 IAD			0.996	
A/6	GSIP 600x900 IAD			0.934	
A/7	GSIP 600x900 IAD			0.915	
A/8	GSIP 600x900 IAD			0.917	
A/9	GSIP 600x900 IAD			0.939	
A/10	GSIP 600x900 IAD			0.943	
A/11	JP			1.013	SEALED LID 900x600
A/12	GSIP 600x900 IAD			0.924	
A/13	GSIP 600x900 IAD			0.964	
B/1	GSIP 600x600 IAD			0.74	

PIT SCHEDULE					
C/1	GSIP 600x600 IAD			0.75	
C/2	GSIP 600x900 IAD			0.917	
D/1	GSIP 600x600 IAD			0.795	
D/2	GSIP 600x600 IAD			0.825	
D/3	GSIP 600x600 IAD			0.794	
D/4	GSIP 600x600 IAD			0.789	
D/5	GSIP 600x600 IAD			0.783	
D/6	GSIP 600x600 IAD			0.783	
D/7	GSIP 600x600 IAD			0.869	
D/8	GSIP 600x600 IAD			0.862	
D/9	GSIP 600x600 IAD			0.862	
D/10	GSIP 600x600 IAD			0.871	
D/11	JP			1.612	SEALED LID 900x900
E/8	GSIP 900x900 IAD			3.4	DROP UNDER PIT
F/9	GSIP 900x900 IAD			3.929	DROP UNDER PIT
F/11	JP			1.525	SEALED LID 900x900
J/6	JP			1.428	SEALED LID 900x900
J/7	JP			2.014	DROP UNDER PIT
J/8	JP			2.142	DROP UNDER PIT
J/9	JP			1.65	SEALED LID 900x900
V/4	GSIP 600x600 IAD			0.851	
V/5	JP			2.363	DROP UNDER PIT
V/7	JP			1.577	SEALED LID 900x900

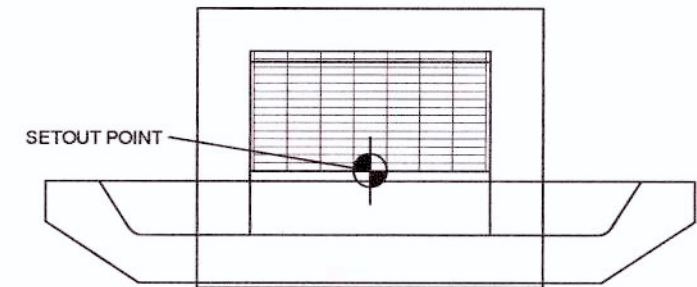
WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: *P.R.*
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 2047/2

NOTES:
ALL GRATED PIT COVERS IN ROADS ARE TO BE BICYCLE SAFE.

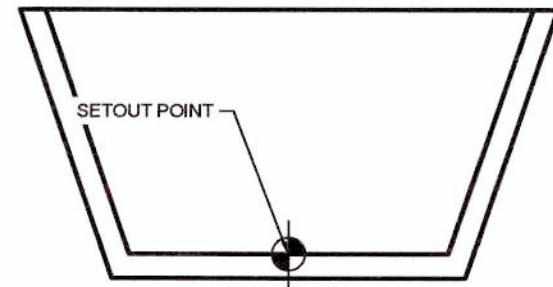
ALL SAG PITS TO HAVE WELDLICK GGSB 94 5D GRATES

FOR ALL PITS <2m DEEP REFER TO PENRITH CITY COUNCIL STANDARD PIT DRAWINGS SD 2002.

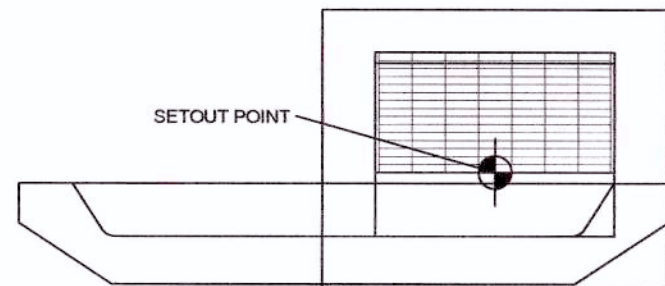
ANY INTER-ALLOTMENT PIT GREATER THAN 900mm DEEP SHALL HAVE A CONCRETE LID REFER PCC CONSTRUCTION SPEC SECTION 6.7.



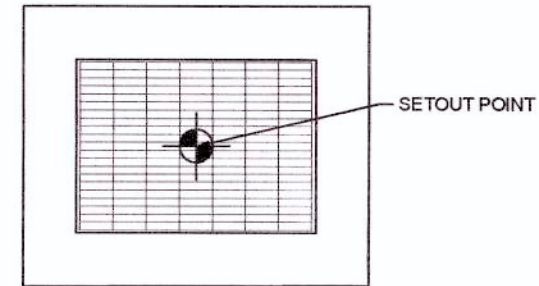
SETOUT DETAIL KERB INLET PIT (SAG)
(LINTEL CENTERED UNLESS NOTED ON PLAN)
SCALE 1:20



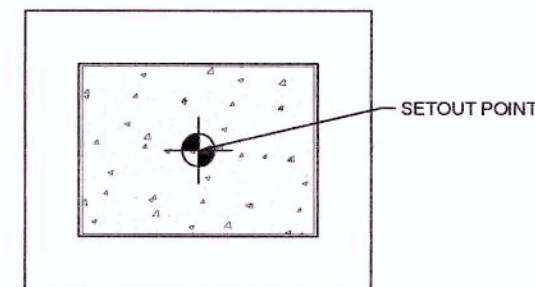
SETOUT DETAIL HEADWALL
SCALE 1:20



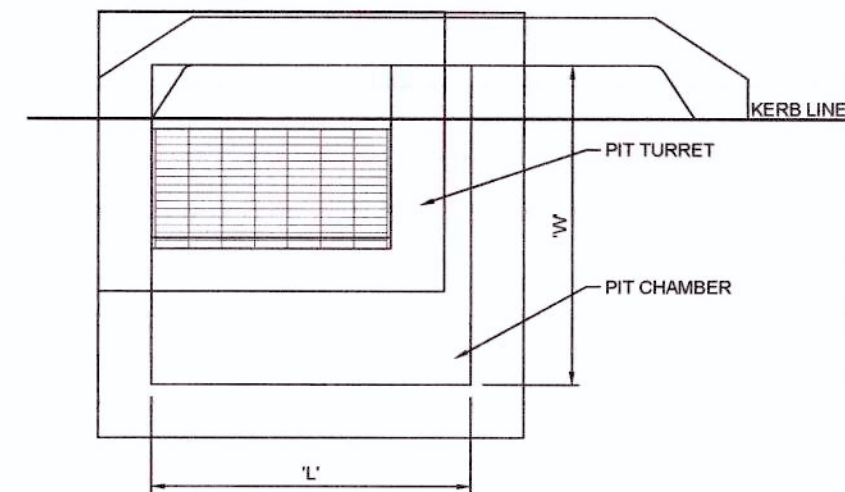
SETOUT DETAIL KERB INLET PIT (LINTEL)
SCALE 1:20



GRATED SURFACE INLET PIT (GSIP)
SCALE 1:20



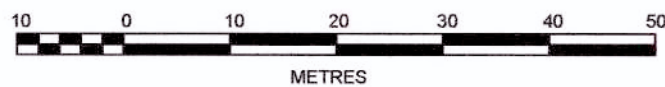
IAD - JUNCTION PIT (JP)
SCALE 1:20



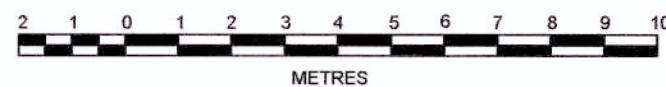
PIT CHAMBER DIMENSION (TYPICAL)
SCALE 1:20

These plans are referred to in certificate no. 14323 approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C6,C16 & D1
LAND DEVELOPMENT CERTIFICATES
www.Ldcerts.com.au

1:500 (AT A1)
1:1000 (AT A3)



1:100 (AT A1)
1:200 (AT A3)



J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwprince@jwprince.com.au

AZIMUTH:
MGA:
DATUM:
AHD
ORIGIN:

LEGACYPROPERTY

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS PART OF AN APPROVED CONSTRUCTION CERTIFICATE.

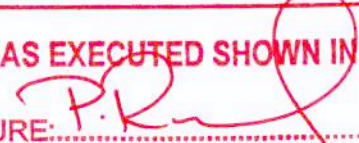
ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 2
PIT DETAILS & PIT SCHEDULE

PLAN No:
110358/CC222

FILE No: 110358CC222

SHEET SIZE: A1 ORIGINAL

WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: 
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 20467/2

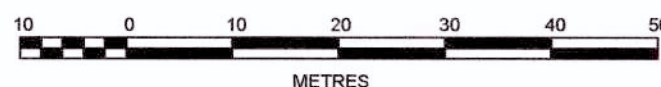
These plans are referred to in
certificate no 14323 approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1
LAND DEVELOPMENT CERTIFICATES
www.ldcerts.com.au

DATUM (m)	36.00																			
PEAK FLOW (L/s)	492		604		717		751		806		871		2193		2215		2210		2327	
PIPE SIZE (mm)	375		450		450		450		600		600		1050		1050		1050		1050	
PIPE CLASS	RRJ2		RRJ2		RRJ2		RRJ2		RRJ2		RRJ2		RRJ2		RRJ2		RRJ2		RRJ2	
PIPE GRADE (%)	6.0		5.1 x 5.9		5.1		5.4		5.4		3.3		1.6 x 2.3		1.0		1.0		1.0	
PIPE COVER MINIMUM	1.10		1.10		1.10		1.26		1.10		1.10		1.10		1.19		1.11		0.89	
FULL PIPE VELOCITY (m/s)	4.46		4.31		4.52		4.73		5.00		4.22		2.98		2.56		2.59		2.77	
HGL GRADE (%)	7.7		4.51		5.9		6.98		5.6		1.78		1.39		1.54		2.81		1.22	
WAE			51.16		51.03		49.62		49.5		48.75		48.05		45.85		45.81		43.78	
HYDRAULIC GRADE LINE			51.177		51.031		49.664		49.531		48.689		48.619		46.189		45.883		44.19	
INVERT LEVEL	53.923		53.707		55.049		55.049		55.049		55.049		55.049		55.049		55.049		55.049	
DESIGN SURFACE LEVEL	53.923		53.707		55.049		55.049		55.049		55.049		55.049		55.049		55.049		55.049	
ROAD CHAINAGE	483.48		525.31		52.696		51.191		49.769		47.484		43.875		43.514		41.08		40.97	
PIPE CHAINAGE	127.632		149.5		169.46		186.342		201.374		211.763		221.482		231.875		241.935		251.952	

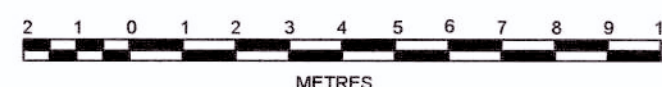
DRAINAGE PIPE SYSTEM Caters FOR 5YR ARI UNLESS OTHERWISE NOTED

LINE 01

1:500 (AT A1)
1:1000 (AT A3)



1:100 (AT A1)
1:200 (AT A3)



J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwpr@jwprince.com.au

AZIMUTH:
MGA
DATUM:
AHD
ORIGIN:

CLIENT:



THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF AN
APPROVED CONSTRUCTION CERTIFICATE

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 2
DRAINAGE LONG SECTIONS

PLAN No:
110358/CC223

FILE No: 110358CC223

SHEET SIZE: A1 ORIGINAL

DRAINAGE PIPE SYSTEM CATERERS FOR 5YR ARI UNLESS OTHERWISE NOTED

WORKS AS EXECUTED SHOWN IN RED

SIGNATURE: 

PETER ROBERT WARWICK
Registered Land Surveyor

VINCE MORGAN SURVEYORS PTY LTD

DATE: 9/3/18 REF: 20467/2



These plans are referred to in certificate no 14323 approved by:

Eric Hausfeld

Accredited Certifier

Registration No: BPB 2416

Categories: B1,C1,C2,C3,C4,C6,C15 & D1

LAND DEVELOPMENT CERTIFICATES

www.ldcerts.com.au

DATUM (m)
PEAK FLOW (L/s)
PIPE SIZE (mm)
PIPE CLASS
PIPE GRADE (%)
PIPE COVER MINIMUM
FULL PIPE VELOCITY (m/s)
HGL GRADE (%)

WAE	52.14	49.85	49.83	49.77	49.74	49.53
HYDRAULIC GRADE LINE	52.34	50.922	50.761	50.761	50.616	50.616
INVERT LEVEL	52.218	49.857	49.846	49.766	49.716	49.581
DESIGN SURFACE LEVEL	54.173	51.616	51.616	51.616	51.191	51.191
ROAD CHAINAGE	43.64	15.26	15.24	15.24	552.19	552.19
PIPE CHAINAGE	0	28.375	38.375	49.914	552.19	552.19

LINE 03

LINE 04

LINE 05

LINE 06

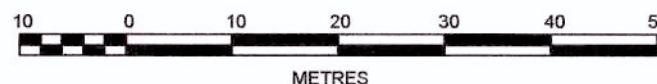
LINE 09

LINE 10

LINE 11

LINE 12

1:500 (AT A1)
1:1000 (AT A3)



1:100 (AT A1)
1:200 (AT A3)



J. WYNDHAM PRINCE

CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

AZIMUTH:

MGA

DATUM:

AHD

ORIGIN:

CLIENT:



LEGACYPROPERTY

THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF AN
APPROVED CONSTRUCTION CERTIFICATE.

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 2
DRAINAGE LONG SECTIONS

PLAN No:
110358/CC224

A

FILE No: 110358CC224

SHEET SIZE: A1 ORIGINAL



PLAN No:	110358/CC225	B
FILE No:	110358CC225	
SHEET SIZE:	A1 ORIGINAL	

B	CERTIFIER COMMENTS - DRAINAGE LINE AMENDED	JT	NM	RT	MS	26/05/17
A	ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS	18/05/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

Plotted: 26 May 2017 1:25:52 PM File Name: J:\110358 - Caddens Hill Stage 2\CD\CC\STAGE 2\110358CC226.dwg

DATUM (m)
PEAK FLOW (L/s)
PIPE SIZE (mm)
PIPE CLASS
PIPE GRADE (%)
PIPE COVER MINIMUM
FULL PIPE VELOCITY (m/s)
HGL GRADE (%)

WAE	58.47	58.44	57.90
HYDRAULIC GRADE LINE	58.672	58.466	58.289
INVERT LEVEL	58.572	58.402	58.145
DESIGN SURFACE LEVEL	60.056	59.815	
ROAD CHAINAGE	251.39	253.55	253.55
PIPE CHAINAGE	0	8.287	

LINE 15

DATUM (m)
PEAK FLOW (L/s)
PIPE SIZE (mm)
PIPE CLASS
PIPE GRADE (%)
PIPE COVER MINIMUM
FULL PIPE VELOCITY (m/s)
HGL GRADE (%)

WAE	48.56	48.42	48.21
HYDRAULIC GRADE LINE	48.732	48.515	48.272
INVERT LEVEL	48.595	48.515	48.272
DESIGN SURFACE LEVEL	50.051	50.008	
ROAD CHAINAGE	349.54	350.13	350.13
PIPE CHAINAGE	0	8.015	

LINE 16

DATUM (m)
PEAK FLOW (L/s)
PIPE SIZE (mm)
PIPE CLASS
PIPE GRADE (%)
PIPE COVER MINIMUM
FULL PIPE VELOCITY (m/s)
HGL GRADE (%)

WAE	42.74	42.71	42.62
HYDRAULIC GRADE LINE	42.711	42.608	42.56
INVERT LEVEL	42.711	42.608	42.56
DESIGN SURFACE LEVEL	44.149	44.149	
ROAD CHAINAGE	427.74	44.149	
PIPE CHAINAGE	0	8	

LINE 17

DATUM (m)
PEAK FLOW (L/s)
PIPE SIZE (mm)
PIPE CLASS
PIPE GRADE (%)
PIPE COVER MINIMUM
FULL PIPE VELOCITY (m/s)
HGL GRADE (%)

WAE	57.04	56.40	55.41
HYDRAULIC GRADE LINE	57.206	56.429	55.729
INVERT LEVEL	57.206	56.429	55.729
DESIGN SURFACE LEVEL	58.872	58.088	57.996
ROAD CHAINAGE	112.82	83.32	280.67
PIPE CHAINAGE	185.563	205.182	223.367

LINE 18

DATUM (m)
PEAK FLOW (L/s)
PIPE SIZE (mm)
PIPE CLASS
PIPE GRADE (%)
PIPE COVER MINIMUM
FULL PIPE VELOCITY (m/s)
HGL GRADE (%)

WAE	56.57	56.44	56.36
HYDRAULIC GRADE LINE	56.967	56.57	56.429
INVERT LEVEL	56.85	56.57	56.429
DESIGN SURFACE LEVEL	58.088	58.088	
ROAD CHAINAGE	93.28	93.32	93.32
PIPE CHAINAGE	0	8	

LINE 19

DATUM (m)
PEAK FLOW (L/s)
PIPE SIZE (mm)
PIPE CLASS
PIPE GRADE (%)
PIPE COVER MINIMUM
FULL PIPE VELOCITY (m/s)
HGL GRADE (%)

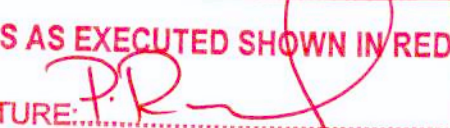
WAE	49.02	47.84	47.65
HYDRAULIC GRADE LINE	49.064	47.931	47.713
INVERT LEVEL	49.064	47.931	47.713
DESIGN SURFACE LEVEL	50.618	48.399	
ROAD CHAINAGE	77.23	41.56	48.399
PIPE CHAINAGE	172.652	205.298	236.755

LINE 22

DATUM (m)
PEAK FLOW (L/s)
PIPE SIZE (mm)
PIPE CLASS
PIPE GRADE (%)
PIPE COVER MINIMUM
FULL PIPE VELOCITY (m/s)
HGL GRADE (%)

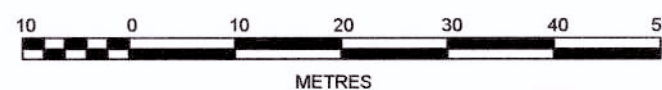
WAE	46.87	46.80	46.70
HYDRAULIC GRADE LINE	46.898	46.848	46.768
INVERT LEVEL	46.898	46.848	46.768
DESIGN SURFACE LEVEL	48.534	48.534	
ROAD CHAINAGE	13.13	13.14	13.14
PIPE CHAINAGE	236.755	244.755	

DRAINAGE PIPE SYSTEM Caters FOR 5YR ARI UNLESS OTHERWISE NOTED

WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: 
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 20467/2

These plans are referred to in
certificate no. 14323 approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPP 2416
Categories: B1,C1,C2,C3,C4,C5,C15 & D1
LAND DEVELOPMENT CERTIFICATES
www.Ldcerts.com.au

1:500 (AT A1)
1:1000 (AT A3)



1:100 (AT A1)
1:200 (AT A3)



J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

AZIMUTH:
MGA
DATUM:
AHD
ORIGIN:

CLIENT:

LEGACYPROPERTY
THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF AN
APPROVED CONSTRUCTION CERTIFICATE.

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 2
DRAINAGE LONG SECTIONS

PLAN No:
110358/CC226
FILE No: 110358CC226
SHEET SIZE: A1 ORIGINAL

Plotted: 26 May, 2017 2:29:09 PM File Name: J:\110358 - Caddens\03 - Stage 2\CD\CC229.dwg

✓
GSP 1200x1200
LINE 01
LINE 47

WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: *P.R.*
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 20467/2

These plans are referred to in
certificate no. **14323** approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1
LAND DEVELOPMENT CERTIFICATES
www.ldcerts.com.au

✓
JP
LINE 13

✓
GSP 1200x1200

✓
GPT
NO ACCESS

✓
H.W.

✓
1.8 m Intel

✓
1.8 m Intel

✓
1.8 m Intel

✓
1.8 m Intel

✓
CAPPED STUB

✓
2.4 m Intel sag

✓
LINE 30

✓
GSP 900x900

DRAINAGE PIPE SYSTEM CATERES FOR 5YR ARI UNLESS OTHERWISE NOTED

✓
1.8 m Intel

✓
LINE 30

✓
1.8 m Intel

✓
GSP 1200x1200

✓
LINE 32

DATUM (m)
PEAK FLOW (L/s)
PIPE SIZE (mm)
PIPE CLASS
PIPE GRADE (%)
PIPE COVER MINIMUM
FULL PIPE VELOCITY (m/s)
HGL GRADE (%)

WAE	40.44	39.71	39.66	39.30	39.25	39.88
HYDRAULIC GRADE LINE	42.116	41.82	40.898	40.822	38.819	39.715
INVERT LEVEL	40.443	39.73	39.68	39.282	39.232	38.819
DESIGN SURFACE LEVEL	42.512	43.291	41.349	41.695	41.695	40.169
ROAD CHAINAGE						
PIPE CHAINAGE	0	71.289	111.11	124.731	149.39	

42.00
34
375
RRJ2
1.1
1.10
0.80
0.01

0	45.56	49.535	48.825	47.987	47.713	48.827
8.932	41.58	49.399	47.713	48.827		

LINE 42

44.00
28
375
RRJ2
1.0
1.10
0.69
0.07

0	90.49	50.668	49.196	49.605	49.071	49.796
12.505	100.11	50.552	48.007	49.796		

LINE 43

44.00
614
600
RRJ2
3.9
1.10
2.17
4.91

0	146.61	51.379	49.398	50.943	48.369	49.848
26.374	120.23	50.335	48.319	49.848		

LINE 44

44.00
59
375
RRJ2
6.1 x 5.1
1.10
2.54
6.15

0	286.88	51.862	50.27	50.377	48.645	48.734
26.725	260.87	50.078	48.08	48.659		

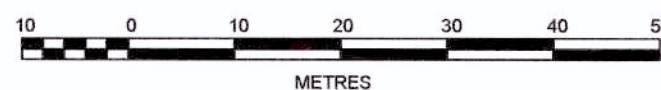
LINE 45

36.00
30
75
375
RRJ2
1.0
1.10
0.75
1.75

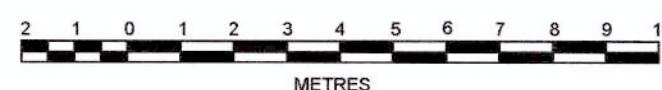
0	751.92	43.658	42.202	42.388	42.077	42.177
12.504	748.40	43.596	41.796	42.072	41.799	42.072

LINE 47

1:500 (AT A1)
1:1000 (AT A3)



1:100 (AT A1)
1:200 (AT A3)



J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

AZIMUTH:
MGA
DATUM:
AHD
ORIGIN:

CLIENT:



THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF AN
APPROVED CONSTRUCTION CERTIFICATE

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 2
DRAINAGE LONG SECTIONS

PLAN No:
110358/CC229 **B**

FILE No: 110358CC229

SHEET SIZE: A1 ORIGINAL

AMENDMENT	DES	DRN	CKD	APR	DATE
B CERTIFIER COMMENTS - DRAINAGE LINE 32 AMENDED & 45/2 REMOVED	JT	NM	RT	MS	26/05/17
A ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS	18/05/17

DRAINAGE PIPE SYSTEM CATERS FOR 5YR ARI UNLESS OTHERWISE NOTED

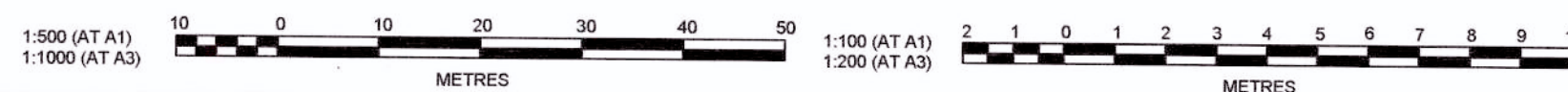
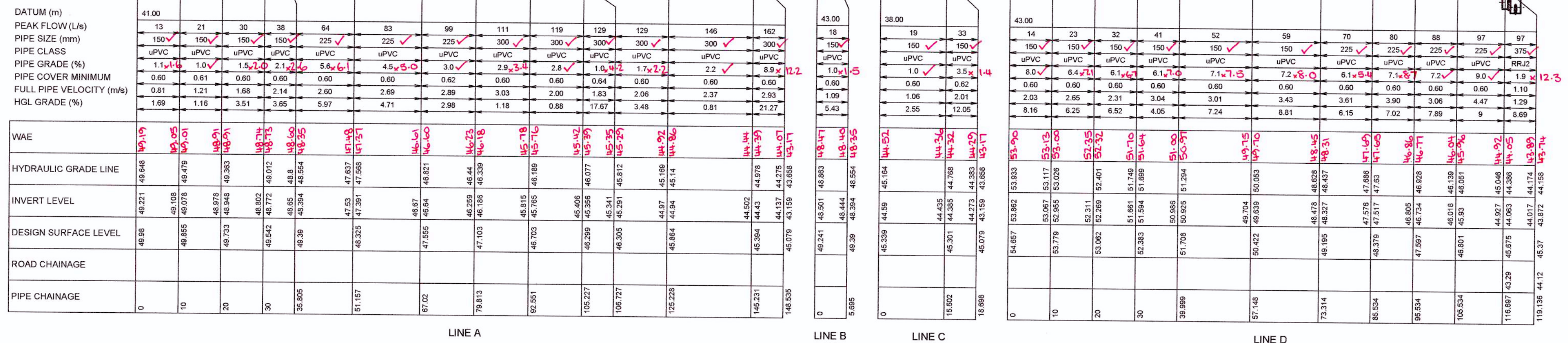
WORKS AS EXECUTED SHOWN IN RED

SIGNATURE: 
PETER ROBERT WARWICK
Registered Land Surveyor

VINCE MORGAN SURVEYORS PTY LTD

DATE: 9/3/18 REF: 20467/2

	<p>These plans are referred to in certificate no. 14323 approved by:</p> <p>Eric Hausfeld</p> <p>Accredited Certifier</p> <p>Registration No: EPB 2416</p> <p>Categories: B1, C1, C2, C3, C4, C6, C15 & D1</p>
	<p>LAND DEVELOPMENT CERTIFICATES</p> <p>www.ldcerts.com.au</p>



J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

AZIMUTH:
MGA

DATUM:
AHD

ORIGIN:

CLIENT:



LEGACYPROPERTY

THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF AN
APPROVED CONSTRUCTION CERTIFICATE.

ISSUED FOR CONSTRUCTION APPROVAL

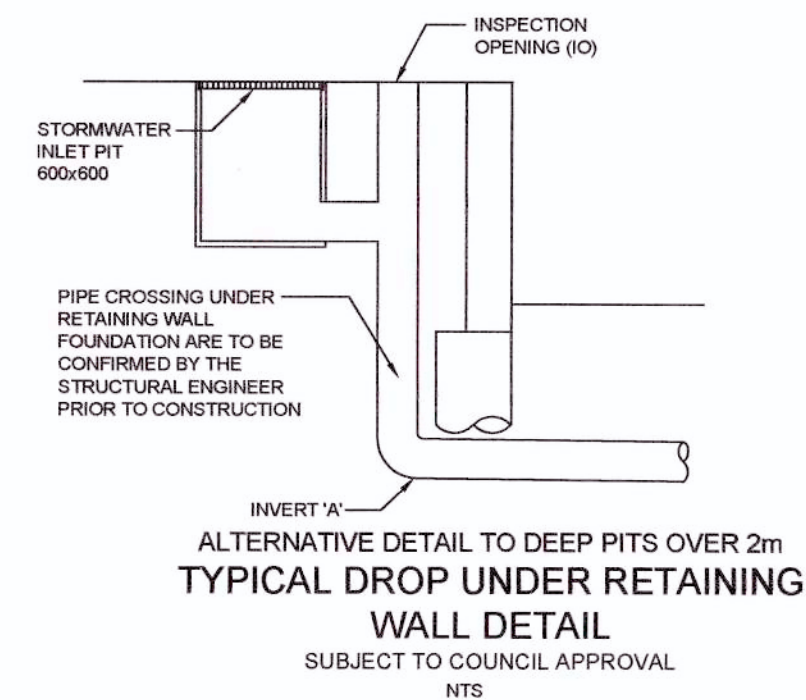
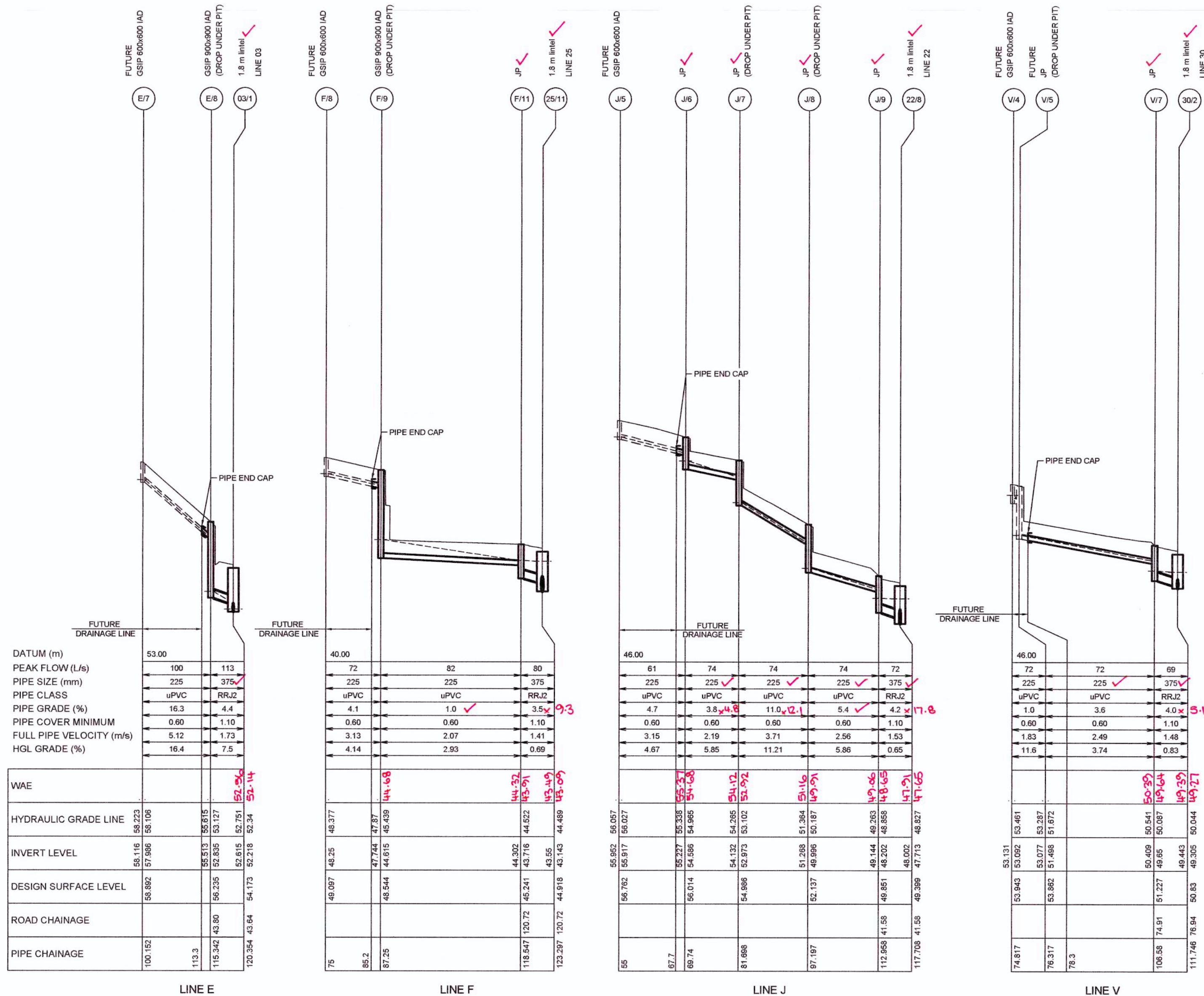
CADDENS HILL
STAGE 2
DRAINAGE LONG SECTIONS

PLAN No: 110358/CC230 A

FILE No: 110358CC230

SHEET SIZE: A1 ORIGINAL

Plotted: 28 May, 2017 1:28:56 PM File Name: J:\110958 - O'Connell Lane, Caddens\03 - Stage 2\CD\CC\STAGE 2\110358CC231.dwg



DRAINAGE PIPE SYSTEM CATER FOR 5YR ARI UNLESS OTHERWISE NOTED

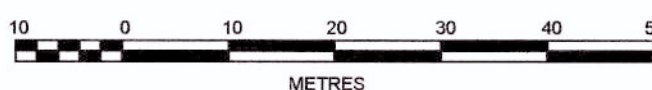
WORKS AS EXECUTED SHOWN IN RED

SIGNATURE: *Peter Robert Warwick*
PETER ROBERT WARWICK
Registered Land Surveyor

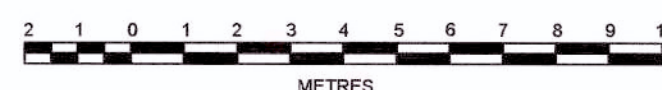
VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 20467/2

These plans are referred to in certificate no. **14323** approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1, C1, C2, C3, C4, C6, C15 & D1
LAND DEVELOPMENT CERTIFICATES
www.Ldcerts.com.au

1:500 (AT A1)
1:1000 (AT A3)



1:100 (AT A1)
1:200 (AT A3)



J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

AZIMUTH:
MGA
DATUM:
AHD
ORIGIN:



LEGACYPROPERTY

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS PART OF AN APPROVED CONSTRUCTION CERTIFICATE.

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 2
DRAINAGE LONG SECTIONS

PLAN No:
110358/CC231

FILE No: 110358CC231

SHEET SIZE: A1 ORIGINAL

Printed: 26 May, 2017 1:25:33 PM File Name: J:\110358 - OConnell Lane, Caddens\03 - Stage 2\CD\CC\STAGE 2\110358CC232.dwg

DESIGN STORM 1:5yr ARI HYDROLOGIC RESULTS

PIT NAME	PIT TYPE	CATCHMENT AREA	PERCENT IMPERVIOUS	Tc IMP	Tc PERV	CRITICAL STORM	APPROACH FLOW	CAPTURED FLOW	UNCAPTURED FLOW	GRATE DEPTH	ROAD GRADE	ROAD CROSSFALL	BYPASS PIT	BYPASS CHANNEL FLOW	U/S FLOW WIDTH	U/S Vx/D	D/S FLOW WIDTH	D/S Vx/D	COMMENTS
(-)	(-)	(Ha)	(%)	(min)	(min)		(L/s)	(L/s)	(L/s)	(mm)	(%)	(%)	(-)	(L/s)	(m)	(m/s^2)	(m)	(m/s^2)	(-)
01/5	1.8 m lintel	0.155	85	6	6	25	55	50	6	45	5.7	3	03/2	15	0.62	0.06	0.62	0.06	
01/6	1.8 m lintel	0.019	85	6	6	25	6	6	0	62	5.6	3	01/7	35	1.22	0.08	1.48	0.06	
01/7	1.8 m lintel	0.113	85	6	6	25	35	33	2	70	5.6	3	01/8	52	1.48	0.09	1.48	0.09	
01/8	1.8 m lintel	0.164	85	6	6	25	52	45	7	67	6	2.9	01/9	46	1.39	0.09	1.39	0.09	
01/9	1.8 m lintel	0.128	85	6	6	25	46	41	5	65	5.1	3	01/10	31	1.3	0.06	1.45	0.06	
01/10	1.8 m lintel	0.191	85	6	6	25	62	52	10	69	2.3	3	01/11	28	1.45	0.05	1.45	0.05	
01/11	1.8 m lintel	0.063	85	6	6	25	28	27	1	53	1.1	3	01/12	11	0.89	0.03	0.89	0.03	
01/12	3.0 m lintel sag	0.108	85	6	6	15	33	35	0	39	0.3	2.6	01/13	0					
01/13	3.6 m lintel sag	0.067	95	6	6		16	14	0	18	1.1	3	32/1	0					
03/1	1.8 m lintel	0.037	95	6	6	25	12	12	0	47	14.3	3	03/2	19	0.69	0.06	0.69	0.07	
03/2	2.4 m lintel sag	0.093	85	6	6		33	33	0	44	2.2	3	03/3	0					
03/3	1.8 m lintel		0	6	6	15	15	15	0	36	2.2	3	01/6	6	0.45	0.03	1.21	0.01	
04/1	1.8 m lintel	0.094	85	6	6	25	0	0	0	66	1.6	3	01/12	22	1.35	0.04	1.35	0.04	
04/2	1.8 m lintel	0.032	85	6	6	15	9	9	0	51	1.6	3	01/13	10	0.86	0.03	0.86	0.03	
05/1	1.8 m lintel	0.057	85	6	6	25	18	18	0	62	3.5	2.9	01/10	26	1.2	0.06	1.44	0.05	
05/2	1.8 m lintel	0.015	85	6	6	25	5	5	0	26	3.3	3	05/3	3	0.31	0.02	0.34	0.02	
05/3	1.8 m lintel	0.009	85	6	6	15	3	3	0	29	3.3	3	01/10	5	0.34	0.03	1.44	0.01	
06/1	2.4 m lintel sag	0.07	95	6	6	25	22	32	0	43	1.1	1.9	31/4	0					
09/1	2.4 m lintel	0.2	85	6	6	25	65	57	8	75	5.9	3	30/1	52	1.67	0.08	1.85	0.07	
10/1	1.8 m lintel		0	6	6	25	23	23	0	74	5.3	3	11/1	57	1.62	0.09	1.85	0.08	
11/1	2.4 m lintel	0.2	85	6	6	25	61	54	7	81	3.2	3	12/1	47	1.85	0.07	1.85	0.07	
12/1	3.0 m lintel sag	0.202	85	6	6	15	69	73	0	60	0.3	3	01/13	0					
13/4	1.8 m lintel	0.152	85	6	6	25	53	48	5	40	11.1	3	19/1	15	0.5	0.06	0.7	0.05	
13/5	1.8 m lintel	0.018	95	6	6	25	5	5	0	59	11.1	3	13/6	40	1.1	0.1	1.1	0.1	
13/6	1.8 m lintel	0.13	85	6	6	25	40	38	2	50	9.8	2.8	13/7	21	0.8	0.07	0.8	0.07	
13/7	1.8 m lintel	0.064	85	6	6	25	21	21	0	35	8.4	2.9	22/9	10	0.42	0.05	0.65	0.04	
13/8	1.8 m lintel	0.02	95	6	6	25	6	6	0	58	8	3	13/9	32	1.07	0.08	1.07	0.08	
13/9	2.4 m lintel sag	0.167	85	6	6	15	52	55	0	57	1.3	3	17/1	0					
13/10	1.8 m lintel	0.014	95	6	6	25	4	4	0	50	1.6	3	04/2	9	0.83	0.03	0.84	0.03	
15/1	1.8 m lintel	0.056	95	6	6	25	17	17	0	35	11.1	3	03/1	12	0.41	0.06	0.69	0.04	
16/1	1.8 m lintel		0	6	6	25	20	20	0	58	7.6	3.1	17/1	32	1.07	0.08	1.13	0.08	
17/1	2.4 m lintel sag	0.114	85	6	6	25	32	59	0	60	1.3	3	04/1	0					
18/7	1.8 m lintel	0.056	95	6	6	15	17	17	0	30	4.5	3.1	18/8	4	0.34	0.02	0.34	0.02	
18/8	1.8 m lintel	0.017	95	6	6	15	4	4	0	29	0.6	3	13/5	5	0.34	0.03	1.1	0.01	
19/1	2.4 m lintel sag	0.091	85	6	6	10	37	38	0	47	0.6	3	18/8	0					
22/8	1.8 m lintel	0.146	85	6	6	25	47	40	7	62	3.4	3	22/9	25	1.19	0.06	1.19	0.06	
22/9	2.4 m lintel sag	0.093	85	6	6	25	34	36	0	45	0.5	3	22/10	0					
22/10	1.8 m lintel	0.025	95	6	6	25	6	6	0	33	0.5	3	13/8	6	0.39	0.03	1.07	0.02	
25/10	1.8 m lintel	0.088	85	6	6	25	32	31	1	69	1.6	3	25/11	27	1.47	0.05	1.47	0.05	
25/11	1.8 m lintel	0.086	85	6	6	25	27	26	1	59	1.6	3	13/9	21	1.11	0.05	1.11	0.05	
25/12	1.8 m lintel	0.042	95	6	6	25	13	13	0	36	1.6	3	13/10	4	0.44	0.02	0.81	0.01	
30/1	2.4 m lintel	0.151	85	6	6	25	52	50	2	81	1.2	3	30/2	39	1.84	0.06	1.84	0.06	
30/2	1.8 m lintel	0.123	85	6	6	15	39	36	3	51	1.2	3	30/3	9	0.85	0.03	1.72	0.01	
30/3	1.8 m lintel	0.02	95	6	6	25	9	9	0	77	1.2	3	30/4	38	1.72	0.06	1.72	0.06	
30/4	2.4 m lintel sag	0.124	85	6	6	10	38	41	0	49	0.7	3	30/5	0					
30/5	2.4 m lintel sag	0.055	95	6	6	10	14	15	0	26	0.7	3	30/6	0					
30/6	1.8 m lintel	0.021	95	6	6	25	5	5	0	63	6	3	30/7	34	1.23	0.07	1.64	0.06	
30/7	1.8 m lintel	0.115	85	6	6	25	34	32	2	76	3.3	3	30/8	48	1.64	0.08	1.64	0.08	
30/8	2.4 m lintel	0.154	85	6	6	25	48	46	3	68	2.3	3	30/9	27	1.4	0.05	1.66	0.04	
30/9	2.4 m lintel	0.081	85	6	6	25	27	27	0	76	1.5	3	30/10	30	1.66	0.05	1.66	0.05	
30/10	1.8 m lintel sag	0.099	85	6	6	15	30	36	0	53	0.7	3	30/11	4	0.9	0.01	0.5	0.02	
30/11	3.6 m lintel sag	0.061	95	6	6		4	4	0	7	0.1	3	30/12	0					
30/12	JP		0	6	6		0	0	0	0	0.1		30/13	0					
30/13	JP		0	6	6	15	0	0	0	49			30/14	10	0.78	0.03	0.78	0.03	
30/14	GSIP 900x900	0.033	85	6	6	15	10	10	0	28	3.2		11/1	4	0.32	0.03	1.84	0.01	
31/1	NODE	8.743	15	6	10.4	120	1843	1843	0	0		12.9	31/2	0	0.78		0.78		
31/2	GSIP 1200x3600 SAG		0	6	6	25	0	8	0	3		1.8	30/11	0					
31/3	JP		0	6	6		0	0	0	0									
31/4	1.8 m lintel	0.033	85	6	6	25	0	0	0	68	2.7	5.7	47/1	33	1.41	0.06	1.43	0.06	
31/5	JP		0	6	6		0	0	0	0									
31/6	GSIP 1200x1200		0	6	6		0	0	0	0			32/3	0					
31/7	JP		0	6	6		0	0	0	0									
31/8	H.W.						0	0	0	0									
32/1	GSIP 1200x1200		0	6	6		0	0	0	0			31/6	0					
32/2	JP		0	6	6		0	0	0	0									
32/3	GSIP 1200x1200		0	6	6		0	0	0	0			LOST	0					
32/4	GPT		0	6	6		0	0	0	0									
32/5	H.W.						0	0	0	0									
42/1	1.8 m lintel	0.026	95	6	6	25	8	8	0	37	3.4	3	22/10	6	0.45	0.03	0.45	0.03	
43/1	1.8 m lintel		0	6	6	15	22	21	0	62	1.2	3	30/5	14	1.22	0.03	1.22	0.03	
44/1	CAPPED STUB	1.982	85	6	6	25	617	617	0	0									
45/1	NODE	0.189	85	6	6	25	59	59	0	30	6	-20.1	30/6	5	0.35	0.03	1.23	0.01	GSIP 900x900
47/1	1.8 m lintel	0.113	85	6	6	25	33	30	3	68	2.2	3	12/1	21	1.43	0.04	1.43	0.04	
47/2	1.8 m lintel		0	6	6	25	33	31	2	40	1.6	3	01/13	6	0.49	0.02	0.49	0.02	
A/1	GSIP 600x600 IAD	0.048	75	6	6	25	15	15	0	0									
A/2	GSIP 600x600 IAD	0.03	75	6	6	25	9	9	0	0									
A/3	GSIP 600x600 IAD	0.03	75	6	6	25	9	9	0	0									
A/4	GSIP 600x600 IAD	0.03	75	6	6	25	9	9	0	0									
A/5	GSIP 600x900 IAD	0.03	75	6	6	25	9	9	0	0									
A/6	GSIP 600x900 IAD	0.062	75	6	6	25	19	19	0	0									
A/7	GSIP 600x900 IAD	0.056	75	6	6	25	17	17	0	0									
A/8	GSIP 600x900 IAD	0.04	75	6	6	25	12	12	0	0									
A/9	GSIP 600x900 IAD	0.039	75	6	6	25	12	12	0	0									
A/10	GSIP 600x900 IAD	0.038	75	6	6														


Plotted: 26 May 2017 1:30:05 PM File Name: J:\110358 - O'Connell Lane, Caddens\03 - Stage 2\CD\CC\STAGE 2\110358CC233.dwg

DESIGN STORM 1:5yr ARI HYDROLOGIC RESULTS

PIT NAME	PIT TYPE	CATCHMENT AREA	PERCENT IMPERVIOUS	Tc IMP	Tc PERV	CRITICAL STORM	APPROACH FLOW	CAPTURED FLOW	UNCAPTURED FLOW	GRATE DEPTH	ROAD GRADE	ROAD CROSSFALL	BYPASS PIT	BYPASS CHANNEL FLOW	U/S FLOW WIDTH	U/S VxD	D/S FLOW WIDTH	D/S VxD	COMMENTS
(-)	(-)	(Ha)	(%)	(min)	(min)	(min)	(L/s)	(L/s)	(L/s)	(mm)	(%)	(%)	(-)	(L/s)	(m)	(m/s²)	(m)	(m/s²)	(-)
A/13	GSIP 600x900 IAD	0.061	75	6	6	25	18	18	0	0									
B/1	GSIP 600x600 IAD	0.06	75	6	6	25	18	18	0	0									
BP1/1	BYPASS NODE	0.103	95	6	6	25	33	0	0	71	2.6	3.1	47/2	33	1.52	0.06	1.52	0.06	
BP1/2	BYPASS NODE						0	0	0	0									
BP3/1	BYPASS NODE	0.07	85	6	6	25	22	0	0	68	1.2	3	43/1	22	1.42	0.04	1.42	0.04	
BP3/2	BYPASS NODE						0	0	0	0									
BP4/1	BYPASS NODE	0.074	85	6	6	25	23	0	0	55	5.6	3	10/1	23	1	0.06	1.61	0.04	
BP4/2	BYPASS NODE						0	0	0	0									
BP5/1	BYPASS NODE	0.048	85	6	6	25	15	0	0	50	8	3	03/3	15	0.83	0.05	0.83	0.05	
BP5/2	BYPASS NODE						0	0	0	0									
BP6/1	BYPASS NODE	0.064	85	6	6	25	20	0	0	50	8	3.1	16/1	20	0.8	0.06	1.07	0.05	
BP6/2	BYPASS NODE						0	0	0	0									
C/1	GSIP 600x600 IAD	0.065	75	6	6	25	20	20	0	0									
C/2	GSIP 600x900 IAD	0.047	75	6	6	25	14	14	0	0									
D/1	GSIP 600x600 IAD	0.046	75	6	6	25	14	14	0	0									
D/2	GSIP 600x600 IAD	0.03	75	6	6	25	9	9	0	0									
D/3	GSIP 600x600 IAD	0.03	75	6	6	25	9	9	0	0									
D/4	GSIP 600x600 IAD	0.03	75	6	6	25	9	9	0	0									
D/5	GSIP 600x600 IAD	0.03	75	6	6	15	9	9	0	0									
D/6	GSIP 600x600 IAD	0.043	75	6	6	25	13	13	0	0									
D/7	GSIP 600x600 IAD	0.041	75	6	6	25	12	12	0	0									
D/8	GSIP 600x600 IAD	0.034	75	6	6	15	10	10	0	0									
D/9	GSIP 600x600 IAD	0.03	75	6	6	25	9	9	0	0									
D/10	GSIP 600x600 IAD	0.03	75	6	6	25	9	9	0	0									
D/11	JP		0	6	6		0	0	0	0									
E/8	GSIP 900x900 IAD	0.044	75	6	6	25	13	13	0	0									
F/9	GSIP 900x900 IAD	0.036	75	6	6	25	11	11	0	0									
F/11	JP		0	6	6		0	0	0	0									
J/6	JP	0.046	75	6	6	25	14	14	0	0									
J/7	JP		0	6	6		0	0	0	0									
J/8	JP		0	6	6		0	0	0	0									
J/9	JP		0	6	6		0	0	0	0									
V/4	GSIP 600x600 IAD	0.047	75	6	6	25	14	14	0	0									
V/5	JP		0	6	6		0	0	0	0									
V/7	JP		0	6	6		0	0	0	0									

- HYDROLOGY NOTES:
1. STORMWATER SYSTEM DESIGNED USING 12D DYNAMIC (ILSAX) SYSTEM.
 2. BP LINES ARE DUMMY PITS AND ARE USED TO MORE ACCURATELY DETERMINE APPROACH FLOWS AT UPSTREAM PITS AND SAG LOCATIONS. RESULTS ON THESE DUMMY LINES MAY NOT BE VALID/RELEVANT.
 3. MAXIMUM FLOW WIDTHS OF 2m IN GUTTERS HAVE GENERALLY BEEN ADOPTED HOWEVER EXTENDED TO 2.2m IN SOME LOCATIONS TO REDUCE THE NUMBER OF PITS REQUIRED DUE TO FLAT ROAD GRADES.

WORKS AS EXECUTED SHOWN IN RED

SIGNATURE: 
PETER ROBERT WARWICK
Registered Land Surveyor

VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 20467/2

These plans are referred to in certificate no. **14323** approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1 C1 C2 C3 C4 C6 C15 & D1

LAND DEVELOPMENT CERTIFICATES
www.ldcerts.com.au

B	CERTIFIER COMMENTS - DRAINAGE CALCULATIONS REVISED	JT	NM	RT	MS	26/05/17
A	ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS	18/05/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

AZIMUTH:
MGA
DATUM:
AHD
ORIGIN:

CLIENT: 
LEGACYPROPERTY
THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS PART OF AN APPROVED CONSTRUCTION CERTIFICATE.

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 2
DRAINAGE CALCULATIONS - 5 YR HYDROLOGIC

PLAN No: **110358/CC233** **B**
FILE No: 110358CC233
SHEET SIZE: A1 ORIGINAL

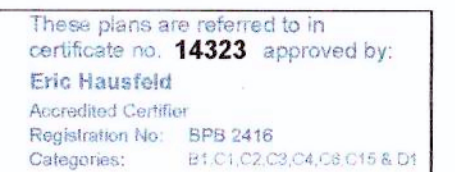
DESIGN STORM 1:5yr ARI HYDRAULIC RESULTS

PIPE NAME	PIPE DIAMET ER	PIPE TYPE	PIPE LENGTH	PIPE GRADE	CRITICA L STORM	PEAK FLOW	CAPACITY RATIO	PEAK VELOCITY	PIPE U/S IL	PIPE D/S IL	PIPE D/S DROP	U/S PIT Ku	D/S PIT Kw	PIT LOSS (Ku.V/head)	WSE LOSS (Ku.V/head)	U/S PIPE HGL	D/S PIPE HGL	HGL GRADE	MINIMU M COVER	MINIMUM FREEBOAR D	COMMENTS
(-)	(mm)	(-)	(m)	(%)	(min)	(L/s)	(-)	(m/s)	(m)	(m)	(m)	(-)	(-)	(m)	(m)	(m)	(m)	(%)	(m)	(m)	
01/5 to 01/6	450	RRJ2	26.88	5.09	120	604	0.87	4.31	51.031	49.664	0.133	7	7	0.56	0.56	51.829	50.616	4.51	1.1	0.867	
01/6 to 01/7	450	RRJ2	25.03	5.06	25	717	1.03	4.52	49.531	48.265	0.215	0.28	0.28	0.27	0.27	50.616	49.14	5.9	1.1	0.575	
01/7 to 01/8	450	RRJ2	40.39	5.4	25	751	1.05	4.73	48.05	45.869	0.05	6.99	6.99	0.62	0.62	49.14	46.319	6.98	1.26	0.649	
01/8 to 01/9	600	RRJ2	35.72	5.42	25	806	0.52	5	45.819	43.883	0.36	0.53	0.53	0.62	0.62	46.189	44.19	5.6	1.1	1.295	
01/9 to 01/10	600	RRJ2	44.39	3.26	15	871	0.73	4.22	43.523	42.076	0.447	0.5	0.5	0.41	0.41	43.928	43.139	1.78	1.1	1.489	
01/10 to 01/11	1050	RRJ2	20.06	1.59	25	2193	0.59	2.98	41.629	41.311	0.05	0.64	0.64	0.27	0.27	43.139	42.86	1.39	1.1	0.736	
01/11 to 01/12	1050	RRJ2	13.02	1	25	2215	0.75	2.56	41.261	41.13	0.05	0.5	0.5	0.16	0.16	42.86	42.66	1.54	1.19	0.654	
01/12 to 01/13	1050	RRJ2	8	1	25	2210	0.75	2.59	41.08	41	0.242	0.63	0.63	0.21	0.21	42.66	42.435	2.81	1.11	0.587	
01/13 to 32/1	1050	RRJ2	26.14	1	25	2327	0.79	2.77	40.768	40.497	0.053	0.64	0.64	0.25	0.25	42.435	42.116	1.22	0.89	0.776	
03/1 to 03/2	375	RRJ2	28.37	8.29	25	124	0.23	2.39	52.218	49.867	0.021	2.12	2.66	0.61	0.77	52.34	50.922	5	1	1.834	
03/2 to 03/3	375	RRJ2	8	1	25	146	0.77	1.32	49.846	49.766	0.05	2.18	2.65	0.16	0.19	50.922	50.761	2.01	1.43	0.694	
03/3 to 01/6	375	RRJ2	13.54	1	25	191	1	1.73	49.716	49.581	0.05	9.7	9.7	0.13	0.13	50.761	50.616	1.07	1.43	0.854	
04/1 to 04/2	375	RRJ2	17.24	1	25	69	0.37	0.74	42.256	42.084	0.05	0.2	0.2	0.01	0.01	43.118	43.123	-0.03	1.1	0.588	
04/2 to 13/10	375	RRJ2	37.66	1	25	83	0.44	0.75	42.034	41.657	0.05	7	7	0.03	0.04	43.123	43.124	0	1.54	0.831	
05/1 to 05/2	375	RRJ2	10.35	2.02	25	113	0.42	1.62	43.872	43.663	0.119	1.85	2.14	0.24	0.28	44.158	43.832	3.15	1.1	1.212	
05/2 to 05/3	375	RRJ2	21.62	2.89	25	122	0.38	2.49	43.543	42.919	0.094	0.66	0.66	0.2	0.2	43.72	43.168	2.55	1.1	1.373	
05/3 to 01/10	375	RRJ2	8.05	4.55	25	164	0.4	2.99	42.825	42.458	0.83	0.63	0.63	0.27	0.27	43.168	43.139	0.36	1.1	1.222	
06/1 to 31/4	375	RRJ2	19.28	0.76	25	31	0.19	0.87	43.238	43.091	1.986	4.5	4.5	0.17	0.17	43.4	43.202	1.03	0.99	1.285	
09/1 to 01/5	375	RRJ2	13.42	1	25	67	0.35	1	51.4	51.266	0.235	4.5	4.5	0.23	0.23	51.881	51.829	0.39	1.11	1.158	
10/1 to 01/8	375	RRJ2	12.87	1.65	25	23	0.09	1.01	46.274	46.062	0.243	4.5	4.5	0.23	0.23	46.384	46.189	1.52	1.1	1.365	
11/1 to 01/10	900	RRJ2	15.98	1.47	25	1248	0.52	2.57	42.213	41.978	0.349	0.71	0.71	0.24	0.24	43.305	43.139	1.04	1	0.847	
12/1 to 01/13	375	RRJ2	21.59	1.31	25	75	0.35	1.26	42.021	41.738	0.98	4.5	4.5	0.36	0.36	42.471	42.435	0.17	1.1	0.981	
13/4 to 13/5	375	RRJ2	27.12	10.11	25	148	0.24	4.2	58.148	55.407	0.345	1.65	1.65	1.48	1.48	58.289	55.533	10.16	1.1	1.526	
13/5 to 13/6	450	RRJ2	44.64	9.75	25	678	0.7	5.8	55.062	50.709	0.197	1.35	1.42	1.88	1.98	55.372	51.218	9.31	1.1	1.425	
13/6 to 13/7	450	RRJ2	23.11	8.02	25	665	0.75	4.91	50.512	48.659	0.388	7	7	0.95	0.95	51.218	48.949	9.82	1.1	0.86	
13/7 to 13/8	450	RRJ2	32.05	7.96	25	782	0.9	5.44	48.272	45.721	0.282	0.63	0.63	0.85	0.85	48.664	46.956	5.33	1.1	1.343	
13/8 to 13/9	525	RRJ2	45.07	6.97	120	1189	0.96	5.59	45.439	42.296	0.03	0.56	0.56	0.86	0.86	46.956	43.56	7.53	1.1	0.452	
13/9 to 13/10	675	RRJ2	17.04	3.5	25	1362	0.8	3.81	42.266	41.67	0.062	7	7	0.4	0.4	43.56	43.124	2.56	1.18	0.589	
13/10 to 32/2	900	RRJ2	14.01	4	25	2280	0.58	3.88	41.607	41.047	1.367	1.46	2.66	1.05	1.15	43.124	41.82	9.31	1.42	1.43	
15/1 to 13/4	375	RRJ2	8.29	2.05	15	17	0.06	0.97	58.572	58.402	0.254	4.5	4.5	0.21	0.21	58.672	58.466	2.49	1.1	1.384	
16/1 to 13/7	375	RRJ2	8.02	1	25	21	0.11	0.77	48.595	48.515	0.243	4.5	4.5	0.14	0.14	48.732	48.664	0.85	1.1	1.318	
17/1 to 13/9	375	RRJ2	8	1	120	-127	-0.67	1.15	42.711	42.631	0.365	4.5	4.5	0.2	0.2	43.608	43.56	0.6	1.1	0.541	
18/7 to 18/8	450	RRJ2	20.6	3.53	25	437	0.75	2.86	57.206	56.479	0.05	1.57	1.7	0.55	0.59	57.849	56.94	4.41	1.1	1.023	
18/8 to 13/5	450	RRJ2	14.21	6.68	25	473	0.59	3.67	56.429	55.48	0.417	0.57	0.57	0.39	0.39	56.94	55.729	8.53	1.1	1.148	
19/1 to 18/8	375	RRJ2	8	1	25	34	0.18	0.73	56.65	56.57	0.141	4.5	4.5	0.12	0.12	56.967	56.94	0.34	1.1	1.121	
22/8 to 22/9	450	RRJ2	28.46	2.87	25	440	0.84	2.76	47.713	46.898	0.05	7	7	0.34	0.34	48.827	48.063	2.68	1.1	0.572	
22/9 to 22/10	450	RRJ2	8	1	25	468	1.51	2.94	46.848	46.768	0.05	1.53	1.9	0.66	0.83	48.063	47.218	10.56	1.27	0.471	
22/10 to 13/8	525	RRJ2	16.6	4.4	25	574	0.59	4.32	46.718	45.988	0.549	9.7	9.7	0.15	0.15	47.032	46.956	0.46	1.1	1.502	
25/10 to 25/11	600	RRJ2	18.67	1.42	25	697	0.88	2.47	43.459	43.193	0.05	7	7	0.16	0.16	44.789	44.489	1.61	1.1	0.433	
25/11 to 25/12	600	RRJ2	9.73	1	25	779	1.17	2.76	43.143	43.046	0.05	0.93	0.95	0.34	0.36	44.489	44.013	4.89	1.18	0.429	
25/12 to 13/10	600	RRJ2	16.77	1	25	790	1.19	2.83	42.996	42.828	1.221	0.97	1	0.39	0.4	44.013	43.382	3.76	1.1	0.814	
30/1 to 30/2	375	RRJ2	31.57	1.1	25	62	0.31	0.75	49.681	49.335	0.03	4.5	4.5	0.13	0.13	50.107	50.044	0.2	1.1	1.102	
30/2 to 30/3	375	RRJ2	23.16	1.07	25	158	0.8	1.43	49.305	49.057	0.05	1.65	1.65	0.17	0.17	50.044	49.796	1.07	1.1	0.786	
30/3 to 30/4	375	RRJ2	12.11	1	25	203	1.07	1.84	49.007	48.886	0.566	0.63	0.63	0.1	0.1	49.796	49.648	1.22	1.23	0.756	
30/4 to 30/5	600	RRJ2	8	1	25	780	1.17	2.76	48.319	48.239	0.03	1.7	1.9	0.6	0.72	49.648	48.934	8.92	1.44	0.688	
30/5 to 30/6	600	RRJ2	6.74	1	25	795	1.19	2.85	48.209	48.142	0.062	0.29	0.29	0.12	0.12	48.934	48.696	3.53	1.53	1.402	
30/6 to 30/7	600	RRJ2	53.8	4.63	25	873	0.61	4.15	48.08	45.588	0.03	1.97	2.41	1.63	1.97	48.459	46.481	3.68	1.1	1.619	
30/7 to 30/8	600	RRJ2	28.88	2.26	25	875	0.88	3.18	45.558	44.906	0.063	0.38	0.38	0.18	0.18	46.481	45.822	2.28	1.13	0.991	
30/8 to 30/9	600	RRJ2	21.6	1.64	25	920	1.08	3.27	44.843	44.488	0.196	0.43	0.43	0.22	0.22	45.822	45.215	2.81	1.1	0.819	
30/9 to 30/10	750	RRJ2	40.03	1	25	934	0.77	2.68	44.29	43.89	0.03	7	7	0.08	0.08	45.215	44.975	0.6	1.1	1.012	
30/10 to 30/11	750	RRJ2	14.52	1	25	967	0.8	2.19	43.86	43.715	0.05	7	7	0.1	0.1	44.975	44.795	1.24	1.15	0.842	
30/11 to 30/12	750	RRJ2	5.16	1	25	970	0.8	2.42	43.665	43.613	0.05	1.98	2.41	0.56	0.65	44.795	44.147	12.56	1.38	0.971	
30/12 to 30/13	750	RRJ2	28.09	1.33	25	968	0.7	2.95	43.563	43.189	0.03	0.21	0.21	0.09	0.09	44.147	43.658	1.74	1.1	1.63	
30/13 to 30/14	825	RRJ2	29.88	2.5	25	1442	0.59	4.04	43.159	42.412	0.05	2.09	2.66	0.44	0.56	43.658	43.383	0.92	1.03	1.421	
30/14 to 11/1	900	RRJ2	5.71	1.17	25	1332	0.63	2.87	42.362	42.295	0.082	0.49	0.49	0.01	0.01	43.383	43.305	1.37	1.1	1.141	
31/1 to 31/2	1200	RRJ2	25.18	1.08	120	1839	0.42	3.22	43.972	43.7	0.03	0	0	0	0	44.64	44.242	1.58	0.6	1.319	
31/2 to 31/3	1200	RRJ2	69.98	1	120	1836	0.43	3.6	43.67	42.97	0.905	2.17	2.17	0	0	44.224	43.524	1	1.1	1.821	
31/3 to 31/4	1200	RRJ2	36.4	2.5	120	1846	0.28	3.09	42.065	41.155	0.05	1.89	2.29	0.92	1.11	42.796	41.704	3	2.02	3.67	
31/4 to 31/5	1200	RRJ2	39.41	1	120	1830	0.43	3.35	41.105	40.711	-0.045										

PIPE NAME	PIPE DIAMETER (mm)	PIPE TYPE	PIPE LENGTH (m)	PIPE GRADE (%)	CRITICAL STORM (min)	PEAK FLOW (L/s)	CAPACITY RATIO	PEAK VELOCITY (m/s)	PIPE U/S IL (m)	PIPE D/S IL (m)	PIPE D/S DROP (m)	U/S PIT Ku	D/S PIT Kw	PIT LOSS (Ku.V/head)	WSE LOSS (Kw.V/head)	U/S PIPE HGL	D/S PIPE HGL	HGL GRADE (%)	MINIMUM COVER	MINIMUM FREEBOARD (m)	COMMENTS	
BP6/1 to BP6/2	2	No Flow	5.03	1	10	0	0	0	49.877	49.827	0	(-)	(-)	(m)	(m)	0	49.877	49.827	0.99	1.1	0.949	
C/1 to C/2	150	uPVC	15.5	1	25	19	0.95	1.06	44.59	44.435	0.05	4.5	4.5	0.26	0.26	45.164	44.768	2.55	0.6	0.176		
C/2 to 30/13	150	uPVC	3.2	3.48	25	33	0.89	2.01	44.385	44.273	1.114	1.29	1.29	0.24	0.24	44.768	44.383	12.05	0.62	0.534		
D/1 to D/2	150	uPVC	10	7.95	25	14	0.25	2.03	53.862	53.067	0.112	4.5	4.5	0.95	0.95	53.933	53.117	8.16	0.6	0.724		
D/2 to D/3	150	uPVC	10	6.44	25	23	0.46	2.65	52.955	52.311	0.042	0	0	0	0	53.026	52.401	6.25	0.6	0.754		
D/3 to D/4	150	uPVC	10	6.08	25	32	0.65	2.31	52.269	51.661	0.067	1.45	1.45	0.36	0.36	52.401	51.749	6.52	0.6	0.661		
D/4 to D/5	150	uPVC	10	6.08	25	41	0.84	3.04	51.594	50.986	0.061	0	0	0	0	51.699	51.294	4.05	0.6	0.684		
D/5 to D/6	150	uPVC	17.15	7.12	25	52	0.99	3.01	50.925	49.704	0.066	9.7	9.7	0.43	0.43	51.294	50.053	7.24	0.6	0.414		
D/6 to D/7	150	uPVC	16.17	7.18	25	59	1.11	3.43	49.639	48.478	0.151	0	0	0	0	50.053	48.628	8.81	0.6	0.369		
D/7 to D/8	225	uPVC	12.22	6.14	25	70	0.48	3.61	48.327	47.576	0.059	7	7	0.28	0.28	48.437	47.686	6.15	0.6	0.758		
D/8 to D/9	225	uPVC	10	7.12	25	80	0.51	3.9	47.517	46.805	0.07	0	0	0	0	47.63	46.928	7.02	0.6	0.749		
D/9 to D/10	225	uPVC	10	7.17	25	88	0.56	3.06	46.734	46.018	0.088	0.69	0.69	0.32	0.32	46.928	46.139	7.89	0.6	0.668		
D/10 to D/11	225	uPVC	11.16	8.99	25	97	0.55	4.47	45.93	44.927	0.864	0	0	0	0	46.051	45.046	9	0.6	0.75		
D/11 to 05/1	375	RRJ2	2.44	1.91	25	97	0.37	1.29	44.063	44.017	0.144	2.09	3.24	0.18	0.28	44.386	44.174	8.69	1.1	1.288		
E/8 to 03/1	375	RRJ2	5.01	4.4	25	113	0.28	1.73	52.835	52.615	0.396	2.15	3.17	0.33	0.48	53.127	52.751	7.5	1.1	3.108		
F/9 to F/11	225	uPVC	31.3	1	25	82	1.4	2.07	44.615	44.302	0.586	1.6	1.94	0.32	0.4	45.439	44.522	2.93	0.6	3.105		
F/11 to 25/11	375	RRJ2	4.75	3.5	15	80	0.22	1.41	43.716	43.55	0.406	2.09	3.24	0.21	0.33	44.522	44.489	0.69	1.1	0.72		
J/6 to J/7	225	uPVC	11.96	3.8	25	74	0.85	2.19	54.586	54.132	1.159	2.19	2.66	0.41	0.5	54.965	54.265	5.85	0.6	1.049		
J/7 to J/8	225	uPVC	15.5	11	25	74	0.38	3.71	52.973	51.268	1.273	2.04	2.53	1.35	1.64	53.102	51.364	11.21	0.6	1.884		
J/8 to J/9	225	uPVC	15.76	5.4	25	74	0.54	2.56	49.996	49.144	0.943	2.05</										

SIGNATURE: 
PETER ROBERT WARWICK
Registered Land Surveyor

DATE: 9/3/18 REF: 20467/2



LAND DEVELOPMENT CERTIFICATES
www.Ldcerts.com.au

B	CERTIFIER COMMENTS - DRAINAGE CALCULATIONS REVISED	JT	NM	RT	MS				26/05/17
A	ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS				18/05/17
	AMENDMENT	DES	DRN	GKD	APR				DATE

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

CLIENT:



LEGACYPROPERTY

THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF A
APPROVED CONSTRUCTION CERTIFICATE

CADDENS HILL
STAGE 2
DRAINAGE CALCULATIONS - 5 YR HYDRAULICS

PLAN No: 110358/CC235		B
FILE No: 110358CC235		
SHEET SIZE:		A1 ORIGINAL

Plotted: 28 May 2017 3:42:30 PM File Name: J:\110358 - O'Connell Lane, Caddens\03 - Stage 2\CD\CC\STAGE 2\110358CC236.dwg

DESIGN STORM 1:100yr ARI HYDROLOGIC RESULTS

PIT NAME	PIT TYPE	CATCHMENT AREA (Ha)	PERCENT IMPERVIOUS (%)	Tc IMP (min)	Tc PERV (min)	CRITICAL STORM (min)	APPROACH FLOW (L/s)	CAPTURED FLOW (L/s)	UNCAPTURED FLOW (L/s)	GRATE DEPTH (mm)	ROAD GRADE (%)	ROAD CROSSFALL (%)	BYPASS PIT	BYPASS CHANNEL FLOW (L/s)	U/S FLOW WIDTH (m)	U/S VxD (m/s ²)	D/S FLOW WIDTH (m)	D/S VxD (m/s ²)	COMMENTS
(-)	(-)	(Ha)	(%)	(min)	(min)	(min)	(L/s)	(L/s)	(L/s)	(mm)	(%)	(%)	(-)	(L/s)	(m)	(m/s ²)	(m)	(m/s ²)	(-)
01/5	1.8 m lintel	0.155	85	6	6	15	386	141	209	118	5.7	3	03/2	342	3.1	0.27	8.15	0.1	
01/6	1.8 m lintel	0.019	85	6	6	15	396	6	555	147	5.6	3	01/7	612	4.09	0.36	4.08	0.36	
01/7	1.8 m lintel	0.113	85	6	6	15	612	170	442	139	5.6	3	01/8	514	3.8	0.32	3.8	0.32	
01/8	1.8 m lintel	0.164	85	6	6	15	514	153	361	130	6	2.9	01/9	417	3.5	0.29	3.52	0.29	
01/9	1.8 m lintel	0.128	85	6	6	15	417	135	281	131	5.1	3	01/10	331	3.52	0.23	6.56	0.14	
01/10	1.8 m lintel	0.191	85	6	6	15	382	73	691	188	2.3	3	01/11	722	6.56	0.29	7.52	0.25	
01/11	1.8 m lintel	0.063	85	6	6	15	722	52	879	205	1.1	3	01/12	958	7.53	0.33	7.92	0.33	
01/12	3.0 m lintel sag	0.108	85	6	6	5	1626	185	1142	219	0.3	2.6	01/13	1795	16.49	0.17	27.09	0.11	
01/13	3.6 m lintel sag	0.067	95	6	6		1876	373	1436	226	1.1	3	32/1	1436	9.24	0.26	11.78	0.2	
03/1	1.8 m lintel	0.037	95	6	6	15	25	20	5	58	14.3	3	03/2	36	1.09	0.09	6.16	0.05	
03/2	2.4 m lintel sag	0.093	85	6	6		377	139	0	228	2.2	3	03/3	471	8.15	0.1	11.78	0.07	
03/3	1.8 m lintel		0	6	6	15	493	106	181	144	2.2	3	01/6	396	3.98	0.24	4.08	0.23	
04/1	1.8 m lintel	0.094	85	6	6	15	872	142	305	190	1.6	3	01/12	710	5.21	0.3	5.93	0.25	
04/2	1.8 m lintel	0.032	85	6	6	15	19	15	4	64	1.6	3	01/13	20	1.26	0.04	6.09	0.04	
05/1	1.8 m lintel	0.057	85	6	6	15	30	23	7	75	3.5	2.9	01/10	51	1.64	0.08	5.15	0.06	
05/2	1.8 m lintel	0.015	85	6	6	15	8	6	2	36	3.3	3	05/3	6	0.44	0.03	0.45	0.03	
05/3	1.8 m lintel	0.009	85	6	6	10	6	5	1	38	3.3	3	01/10	9	0.45	0.04	5.15	0.01	
06/1	2.4 m lintel sag	0.07	95	6	6	15	36	53	0	84	1.1	1.9	31/4	0					
09/1	2.4 m lintel	0.2	85	6	6	15	155	81	74	103	5.9	3	30/1	149	2.58	0.15	2.92	0.13	
10/1	1.8 m lintel		0	6	6	15	38	29	9	88	5.3	3	11/1	104	2.1	0.13	3.28	0.1	
11/1	2.4 m lintel	0.2	85	6	6	15	114	64	313	123	3.2	3	12/1	195	3.28	0.14	8.04	0.08	
12/1	3.0 m lintel sag	0.202	85	6	6	15	239	169	8	224	0.3	3	01/13	61	12.28	0.01	42.87		
13/4	1.8 m lintel	0.152	85	6	6	15	121	67	54	69	11.1	3	19/1	71	1.44	0.13	5.46	0.05	
13/5	1.8 m lintel	0.018	95	6	6	15	177	83	84	85	11.1	3	13/6	140	1.99	0.18	2.43	0.15	
13/6	1.8 m lintel	0.13	85	6	6	15	140	46	190	98	9.8	2.8	13/7	208	2.43	0.22	2.7	0.19	
13/7	1.8 m lintel	0.064	85	6	6	15	208	35	188	106	8.4	2.9	22/9	283	2.71	0.26	6.04	0.1	
13/8	1.8 m lintel	0.02	95	6	6	15	494	6	763	154	8	3	13/9	806	4.29	0.44	8	0.27	
13/9	2.4 m lintel sag	0.167	85	6	6	5	1114	459	632	399	1.3	3	17/1	1044	17.32	0.13	22	0.09	
13/10	1.8 m lintel	0.014	95	6	6	15	17	13	3	62	1.6	3	04/2	19	1.22	0.04	1.26	0.04	
15/1	1.8 m lintel	0.056	95	6	6	15	34	27	7	48	11.1	3	03/1	25	0.74	0.09	1.09	0.06	
16/1	1.8 m lintel		0	6	6	15	33	25	95	72	7.6	3.1	17/1	68	1.59	0.12	8	0.07	
17/1	2.4 m lintel sag	0.114	85	6	6	15	1094	171	0	374	1.3	3	04/1	872	7.1	0.32	7.09	0.32	
18/7	1.8 m lintel	0.056	95	6	6	15	94	58	36	69	4.5	3.1	18/8	41	1.45	0.08	2.34	0.07	
18/8	1.8 m lintel	0.017	95	6	6	5	309	135	160	96	0.6	3	13/5	177	2.34	0.19	2.34	0.19	
19/1	2.4 m lintel sag	0.091	85	6	6	5	345	184	104	201	0.6	3	18/8	269	7.7	0.05	10.83	0.04	
22/8	1.8 m lintel	0.146	85	6	6	15	316	74	87	142	3.4	3	22/9	405	3.92	0.25	6.04	0.14	
22/9	2.4 m lintel sag	0.093	85	6	6	5	616	109	129	223	0.5	3	22/10	654	10.34	0.1	14.62	0.07	
22/10	1.8 m lintel	0.025	95	6	6	15	692	203	489	137	0.5	3	13/8	494	3.75	0.32	4.29	0.27	
25/10	1.8 m lintel	0.088	85	6	6	15	431	75	62	159	1.6	3	25/11	427	4.42	0.22	4.42	0.22	
25/11	1.8 m lintel	0.086	85	6	6	15	427	138	289	133	1.6	3	13/9	311	3.61	0.21	8	0.1	
25/12	1.8 m lintel	0.042	95	6	6	5	43	29	14	60	1.6	3	13/10	17	1.15	0.04	1.22	0.04	
30/1	2.4 m lintel	0.151	85	6	6	15	149	89	60	113	1.2	3	30/2	121	2.93	0.1	3.44	0.1	
30/2	1.8 m lintel	0.123	85	6	6	15	121	65	48	128	1.2	3	30/3	182	3.44	0.13	3.86	0.12	
30/3	1.8 m lintel	0.02	95	6	6	15	182	60	41	141	1.2	3	30/4	277	3.86	0.17	4.95	0.13	
30/4	2.4 m lintel sag	0.124	85	6	6	5	277	179	92	180	0.7	3	30/5	139	9.08	0.02	24.42	0.01	
30/5	2.4 m lintel sag	0.055	95	6	6	5	167	139	0	149	0.7	3	30/6	0					
30/6	1.8 m lintel	0.021	95	6	6	15	28	22	6	76	6	3	30/7	64	1.65	0.1	2.25	0.07	
30/7	1.8 m lintel	0.115	85	6	6	15	64	40	24	94	3.3	3	30/8	102	2.25	0.12	2.89	0.12	
30/8	2.4 m lintel	0.154	85	6	6	15	102	66	35	114	2.3	3	30/9	154	2.89	0.13	2.89	0.13	
30/9	2.4 m lintel	0.081	85	6	6	15	154	81	73	113	1.5	3	30/10	111	2.87	0.1	2.87	0.1	
30/10	1.8 m lintel sag	0.099	85	6	6	15	111	67	43	110	0.7	3	30/11	56	2.77	0.05	2.35	0.06	
30/11	3.6 m lintel sag	0.061	95	6	6		56	44	0	60	0.1	3	30/12	0					
30/12	JP		0	6	6		0	0	0	0	0.1		30/13	0					
30/13	JP		0	6	6		0	0	0	0			30/14	17	1.1	0.04	1.1	0.04	
30/14	GSIP 900x900	0.033	85	6	6	15	17	13	3	39	3.2		11/1	10	0.47	0.04	3.28	0.01	
31/1	NODE	8.743	15	6	8	20	4041	3233	808	350		12.9	31/2	805	6.15	0.37	5.51	0.11	
31/2	GSIP 1200x3600 SAG		0	6	6	15	805	816	0	215		1.8	30/11	0					
31/3	JP		0	6	6		0	0	0	0									
31/4	1.8 m lintel	0.033	85	6	6	15	0	0	0	79	2.7	5.7	47/1	55	1.82	0.08	2.1	0.07	
31/5	JP		0	6	6		0	0	0	0									
31/6	GSIP 1200x1200		0	6	6		1411	0	1873	239			32/3	2060	4.91	0.52	4.91	0.52	
31/7	JP		0	6	6		0	0	0	0									
31/8	H.W.						0	0	0	0									
32/1	GSIP 1200x1200		0	6	6		1436	0	289	194			31/6	1411	4.55	0.38	4.91	0.37	
32/2	JP		0	6	6		0	0	0	0									
32/3	GSIP 1200x1200		0	6	6		2060	324	1277	214			LOST	1701	4.71	0.44	4.71	0.44	
32/4	GPT		0	6	6		0	0	0	0									
32/5	H.W.						0	0	0	0									
42/1	1.8 m lintel	0.026	95	6	6	15	85	49	36	73	3.4	3	22/10	45	1.59	0.08	3.74	0.06	
43/1	1.8 m lintel		0	6	6	15	36	26	10	80	1.2	3	30/5	34	1.82	0.05	4.15	0.05	
44/1	CAPPED STUB	1.982	85	6	6	15	1031	1031	0	0									
45/1	NODE	0.189	85	6	6	15	98	79	20	57	6	-20.1	30/6	28	1.02	0.07	1.65	0.05	GSIP 900x900
47/1	1.8 m lintel	0.113	85	6	6	15	55	36	19	88	2.2	3	12/1	51	2.09	0.06	6.05	0.04	
47/2	1.8 m lintel		0	6	6	5	54	37	17	65	1.6	3	01/13	24	1.31	0.05	6.09	0.05	

- HYDROLOGY NOTES:
1. STORMWATER SYSTEM DESIGNED USING 12D DYNAMIC (ILSAX) SYSTEM.
 2. BP LINES ARE DUMMY PITS AND ARE USED TO MORE ACCURATELY DETERMINE APPROACH FLOWS AT UPSTREAM PITS AND SAG LOCATIONS. RESULTS ON THESE DUMMY LINES MAY NOT BE VALID/RELEVANT.
 3. MAXIMUM FLOW WIDTHS OF 2m IN GUTTERS HAVE GENERALLY BEEN ADOPTED HOWEVER EXTENDED TO 2.2m IN SOME LOCATIONS TO REDUCE THE NUMBER OF PITS REQUIRED DUE TO FLAT ROAD GRADES.

WORKS AS EXECUTED SHOWN IN RED

SIGNATURE: 
PETER ROBERT WARWICK
Registered Land Surveyor

VINCE MORGAN SURVEYORS PTY LTD

DATE: 9/3/18 REF: 20467/2



These plans are referred to in certificate no. **14323** approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1, C1, C2, C3, C4, C6, C15 & D1

LAND DEVELOPMENT CERTIFICATES
www.Ldcerts.com.au

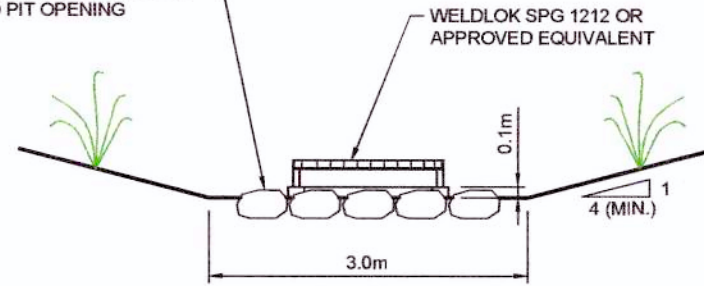
Plotted: 26 May, 2017 3:43:13 PM File Name: J:\110358 - O'Connell Lane, Caddens\03 - Stage 2\CD\CC\STAGE 2\110358CC237.dwg

DESIGN STORM 1:100yr ARI HYDRAULIC RESULTS																					
PIPE NAME	PIPE DIAMETER	PIPE TYPE	PIPE LENGTH	PIPE GRADE	CRITICAL STORM	PEAK FLOW	CAPACITY RATIO	PEAK VELOCITY	PIPE US IL	PIPE DIS IL	PIPE DIS DROP	US PIT Ku	DIS PIT Kw	PIT LOSS (Ku Vhead)	WSE LOSS (Kw Vhead)	US PIPE HGL	DIS PIPE HGL	HGL GRADE	MINIMUM COVER	MINIMUM FREEBOARD	COMMENTS
(-)	(mm)	(-)	(m)	(%)	(min)	(L/s)	(-)	(m/s)	(m)	(m)	(m)	(-)	(-)	(m)	(m)	(m)	(m)	(%)	(m)	(m)	
01/5 to 01/6	450	RRJ2	26.88	5.09	25	614	0.88	4.25	51.031	49.664	0.133	6.96	6.96	0.61	0.61	52.814	51.338	5.49	1.1	-0.118	
01/6 to 01/7	450	RRJ2	25.03	5.06	5	769	1.11	4.83	49.531	48.285	0.215	0.84	0.84	0.65	0.65	51.338	49.885	5.8	1.1	-0.147	
01/7 to 01/8	450	RRJ2	40.39	5.4	5	802	1.12	5.04	48.05	45.889	0.05	6.96	6.96	0.89	0.89	49.885	46.684	7.93	1.26	0.003	
01/8 to 01/9	600	RRJ2	35.72	5.42	20	1116	0.72	5.25	45.819	43.883	0.36	7	7	0.77	0.77	46.684	45.548	3.18	1.1	0.8	
01/9 to 01/10	600	RRJ2	44.39	3.26	20	1044	0.87	4.21	43.523	42.076	0.447	7	7	0.52	0.52	45.548	44.063	3.35	1.1	-0.131	
01/10 to 01/11	1050	RRJ2	20.06	1.59	60	2375	0.64	2.98	41.629	41.311	0.05	0.67	0.67	0.3	0.3	44.063	43.719	1.71	1.1	-0.188	
01/11 to 01/12	1050	RRJ2	13.02	1	120	2402	0.81	2.77	41.261	41.13	0.05	0.79	0.79	0.22	0.22	43.719	43.466	1.94	1.19	-0.205	
01/12 to 01/13	1050	RRJ2	8	1	45	2459	0.83	2.95	41.08	41	0.242	0.82	0.82	0.31	0.31	43.466	43.218	3.1	1.11	-0.219	
01/13 to 32/1	1050	RRJ2	26.14	1	60	2545	0.86	2.94	40.758	40.497	0.053	1.06	1.06	0.37	0.37	43.218	42.706	1.96	0.89	0.009	
03/1 to 03/2	375	RRJ2	28.37	8.29	15	188	0.34	2.72	52.218	49.867	0.021	2.13	2.66	0.79	1	52.481	51.844	2.24	1	1.693	
03/2 to 03/3	375	RRJ2	8	1	5	236	1.24	2.14	49.846	49.766	0.05	2.21	2.66	0.33	0.39	51.844	51.76	1.05	1.43	-0.228	
03/3 to 01/6	375	RRJ2	13.54	1	5	302	1.59	2.73	49.716	49.581	0.05	1.87	1.87	0.29	0.29	51.76	51.338	3.12	1.43	-0.144	
04/1 to 04/2	375	RRJ2	17.24	1	15	132	0.69	1.19	42.256	42.084	0.05	3.79	3.79	0.17	0.17	43.896	43.668	1.32	1.1	-0.19	
04/2 to 13/10	375	RRJ2	37.66	1	20	137	0.72	1.24	42.034	41.657	0.05	7	7	0.07	0.08	43.668	43.419	0.66	1.54	0.286	
05/1 to 05/2	375	RRJ2	10.35	2.02	15	166	0.61	1.71	43.872	43.663	0.119	1.84	2.12	0.27	0.31	44.584	44.374	2.03	1.1	0.786	
05/2 to 05/3	375	RRJ2	21.62	2.89	20	194	0.6	2.64	43.543	42.919	0.094	0.65	0.65	0.22	0.22	44.374	44.176	0.92	1.1	0.719	
05/3 to 01/10	375	RRJ2	8.05	4.55	5	264	0.65	2.98	42.825	42.458	0.83	0.64	0.64	0.28	0.28	44.176	44.063	1.4	1.1	0.214	
06/1 to 31/4	375	RRJ2	19.28	0.76	15	77	0.46	0.95	43.238	43.091	1.986	4.5	4.5	0.21	0.21	43.793	43.742	0.26	0.99	0.891	
09/1 to 01/5	375	RRJ2	13.42	1	5	124	0.65	1.28	51.4	51.266	0.235	4.5	4.5	0.38	0.38	52.955	52.814	1.05	1.11	0.084	
10/1 to 01/8	375	RRJ2	12.87	1.65	20	-36	-0.15	1.06	46.274	46.062	0.243	4.5	4.5	0.26	0.26	46.698	46.684	0.11	1.1	1.05	
11/1 to 01/10	900	RRJ2	15.98	1.47	30	1456	0.61	2.6	42.213	41.978	0.349	9.65	9.65	0.26	0.26	44.275	44.063	1.33	1	-0.123	
12/1 to 01/13	375	RRJ2	21.59	1.31	15	150	0.69	1.35	42.021	41.738	0.98	4.5	4.5	0.42	0.42	43.677	43.218	2.13	1.1	-0.224	
13/4 to 13/5	375	RRJ2	27.12	10.11	15	224	0.37	4.47	58.148	55.407	0.345	1.75	1.75	1.62	1.62	58.319	56.881	5.3	1.1	1.497	
13/5 to 13/6	450	RRJ2	44.64	9.75	20	830	0.86	5.86	55.062	50.709	0.197	1.48	1.73	2.13	2.34	56.881	52.176	10.54	1.1	-0.085	
13/6 to 13/7	450	RRJ2	23.11	8.02	10	872	1	5.57	50.512	48.659	0.388	7	7	1.03	1.03	52.176	50.114	8.92	1.1	-0.098	
13/7 to 13/8	450	RRJ2	32.05	7.96	25	790	0.91	5.41	48.272	45.721	0.282	0.77	0.77	0.94	0.94	50.114	47.562	7.96	1.1	-0.106	
13/8 to 13/9	525	RRJ2	45.07	6.97	5	1235	1	5.71	45.439	42.296	0.03	0.86	0.86	1.07	1.09	47.562	44.548	6.69	1.1	-0.154	
13/9 to 13/10	675	RRJ2	17.04	3.5	15	1560	0.92	4.36	42.266	41.67	0.062	7	7	0.76	0.76	44.548	43.419	6.62	1.18	-0.399	
13/10 to 32/2	900	RRJ2	14.01	4	60	2482	0.63	3.97	41.607	41.047	1.367	1.65	2.63	1.06	1.12	43.419	42.23	8.49	1.42	1.135	
15/1 to 13/4	375	RRJ2	8.29	2.05	15	26	0.1	1.04	58.572	58.402	0.254	4.5	4.5	0.25	0.25	58.703	58.481	2.68	1.1	1.352	
16/1 to 13/7	375	RRJ2	8.02	1	45	-101	-0.53	0.92	48.595	48.515	0.243	4.5	4.5	0.16	0.16	50.123	50.114	0.11	1.1	-0.072	
17/1 to 13/9	375	RRJ2	8	1	15	211	1.11	1.93	42.711	42.631	0.365	4.5	4.5	0.85	0.85	44.523	44.548	-0.31	1.1	-0.374	
18/7 to 18/8	450	RRJ2	20.6	3.53	120	528	0.91	3.32	57.206	56.479	0.05	1.58	1.71	0.69	0.71	58.904	58.184	3.5	1.1	0.005	
18/8 to 13/5	450	RRJ2	14.21	6.68	60	753	0.94	4.75	56.429	55.48	0.417	1.1	1.1	0.78	0.78	58.184	56.881	9.17	1.1	-0.096	
19/1 to 18/8	375	RRJ2	8	1	30	160	0.84	1.45	56.65	56.57	0.141	4.5	4.5	0.48	0.48	58.289	58.184	1.31	1.1	-0.201	
22/8 to 22/9	450	RRJ2	28.46	2.87	90	463	0.88	2.91	47.713	46.898	0.05	1.56	1.56	0.38	0.38	49.541	48.758	2.75	1.1	-0.142	
22/9 to 22/10	450	RRJ2	8	1	10	537	1.74	3.38	46.848	46.768	0.05	1.69	1.99	0.86	1.05	48.758	48.2	6.97	1.27	-0.223	
22/10 to 13/8	525	RRJ2	16.6	4.4	5	682	0.7	4.35	46.718	45.988	0.549	9.7	9.7	0.4	0.4	48.2	47.562	3.84	1.1	0.334	
25/10 to 25/11	600	RRJ2	18.67	1.42	10	814	1.03	2.88	43.459	43.193	0.05	7	7	0.22	0.22	45.382	44.981	2.15	1.1	-0.159	
25/11 to 25/12	600	RRJ2	9.73	1	15	925	1.39	3.27	43.143	43.046	0.05	1.07	1.09	0.56	0.56	44.981	44.26	7.41	1.18	0.005	
25/12 to 13/10	600	RRJ2	16.77	1	15	941	1.41	3.35	42.996	42.828	1.221	1.04	1.09	0.52	0.55	44.26	43.419	5.01	1.1	0.568	
30/1 to 30/2	375	RRJ2	31.57	1.1	5	99	0.5	0.89	49.681	49.335	0.03	4.5	4.5	0.18	0.18	51.166	50.958	0.66	1.1	0.043	
30/2 to 30/3	375	RRJ2	23.16	1.07	5	221	1.12	2	49.305	49.057	0.05	1.61	1.61	0.2	0.2	50.958	50.693	1.14	1.1	-0.128	
30/3 to 30/4	375	RRJ2	12.11	1	5	315	1.66	2.85	49.007	48.886	0.566	1.32	1.32	0.26	0.26	50.693	50.516	1.46	1.23	-0.141	
30/4 to 30/5	600	RRJ2	8	1	5	896	1.35	3.17	48.319	48.239	0.03	1.92	2.3	0.74	0.9	50.516	49.912	7.55	1.44	-0.18	
30/5 to 30/6	600	RRJ2	6.74	1	5	918	1.38	3.26	48.209	48.142	0.062	0.63	0.63	0.31	0.31	49.912	49.5	6.12	1.53	0.424	
30/6 to 30/7	600	RRJ2	53.8	4.63	5	1011	0.71	4.17	48.08	45.588	0.03	1.98	2.46	1.64	1.98	49.5	47.567	3.59	1.1	0.578	
30/7 to 30/8	600	RRJ2	28.88	2.26	10	989	0.99	3.5	45.558	44.906	0.063	0.35	0.35	0.2	0.2	47.567	46.754	2.82	1.13	-0.094	
30/8 to 30/9	600	RRJ2	21.6	1.64	15	1041	1.22	3.68	44.843	44.488	0.198	0.42	0.42	0.27	0.27	46.754	46.096	3.05	1.1	-0.114	
30/9 to 30/10	750	RRJ2	40.03	1	15	1081	0.9	2.73	44.29	43.89	0.03	7	7	0.1	0.1	46.096	45.803	0.73	1.1	0.132	
30/10 to 30/11	750	RRJ2	14.52	1	15	1131	0.94	2.56	43.86	43.715	0.05	0.39	0.39	0.13	0.13	45.803	45.561	1.67			

LOW FLOW CHANNEL AND TRICKLE FLOW V-DRAIN TO BE TURFED WITH 75mm TOPSOIL

100 YEAR OVERLAND FLOW PATH CHANNEL TO BE TURFED WITH 75mm TOPSOIL
ULTIMATE FINISH TO BE IN ACCORDANCE WITH LANDSCAPE PLANS (SUBJECT TO SEPARATE CC APPROVAL)

SURCHARGE PIT AS PER PCC SD2002.
PLACE D₅₀=200-300mm ROCKS AROUND PIT OPENING



SURCHARGE PIT DETAIL
100YR OVERLAND FLOW PATH
NOT TO SCALE

NOTE:
CONTOURS SHOWN ARE BULK EARTHWORKS CONTOUR UNDER A SEPARATE CONSTRUCTION CERTIFICATE

ON SITE DETENTION CONSTRUCTION TOLERANCES

THE OPERATION OF THE ON SITE DETENTION SYSTEM IS HIGHLY SENSITIVE TO THE FOLLOWING ELEMENTS WITHIN EACH OF THE BASINS. THE CONTRACTOR IS TO ENSURE THAT:

	TOLERANCE
ORIFICE DIAMETER	±1mm
ORIFICE LEVEL	+0mm, -25mm
WEIR LEVELS	+25mm, -0mm
WEIR LENGTHS	±50mm
PIT LEVELS	±15mm
PIPE LEVELS AND GRADES	±15mm, ±0.2%
FINISHED FLOOR LEVELS	+25mm, -0mm

A REGISTERED SURVEYOR SHALL BE USED TO SET OUT THE CONSTRUCTION OF THESE ELEMENTS FOR BOTH LINE AND LEVEL AND IS REQUIRED TO PROVIDE A DETAILED WORK AS EXECUTED SURVEY IN ORDER TO CONFIRM THAT THE CRITICAL ELEMENTS COMPLY WITH THE INTENT OF THE DESIGN.

DEVELOPMENT STAGES OF RAINGARDEN & DETENTION BASIN

STAGE 1: DURING CIVIL WORKS CONSTRUCTION, RETAIN EXISTING FORMED SEDIMENT BASIN. MEDIA BED & SUBSOIL DRAINAGE ARE NOT INSTALLED AT THIS STAGE.

STAGE 2: AT END OF PRACTICAL COMPLETION SEDIMENT BASIN BOTTOM SHALL BE DEWATERED & DESILTED BUT SHALL REMAIN TO OPERATE AS A SEDIMENT BASIN. BASIN BATTERS SHALL BE TURFED UNLESS DIRECTED OTHERWISE. BASIN BASE CAN BE LINED WITH A SACRIFICIAL TURF FOR AESTHETICS. THE DETENTION FUNCTION OF THE BASIN SHOULD BE OPERATIONAL. MEDIA BED AND SUBSOIL DRAINAGE ARE NOT INSTALLED AT THIS STAGE. CONSTRUCTION OF LOW FLOW CHANNEL, TRICKLE FLOW AND V-DRAIN WILL BE UNDER THIS STAGE. GPT TO BE CLEANED PRIOR TO ISSUE OF SUBDIVISION CERTIFICATE.

STAGE 3: WHEN UPSTREAM HOUSE BUILDING ACTIVITIES HAVE BEEN SUBSTANTIALLY COMPLETED (APPROX. 90%), THE SEDIMENT BASIN SHALL BE DECOMMISSIONED AND THE BIO-RETENTION BASIN SHALL BE COMPLETED. (SILT REMOVED, MEDIA BED, SUBSOIL DRAINAGE AND FINAL BASIN BASE PLANTING INSTALLED). THE BIO-RETENTION BASIN IS TO BE MAINTAINED FOR 3 YEARS PRIOR TO HANDOVER.

BASIN PERFORMANCE TABLE

AEP	PEAK INFLOW MAX FLOW (m³/sec)	PEAK OUTFLOW MAX FLOW (m³/sec)	DETENTION BASIN STORAGE USED (m³)	TWL (m)
50%	5.03	2.32	3126	36.22
20%	7.06	3.45	4238	36.36
1%	12.58	7.74	6904	36.67

RETAINING WALL LOCATIONS ARE FOR INFORMATION ONLY AND ARE SUBJECT TO A SEPARATE APPROVAL

REFER TO DRAWING CC204 FOR CONTINUATION

PROPOSED MAINTENANCE ACCESS WITH 2% MIN. CROSSFALL. 150 THICK 32MPa CONCRETE WITH SL82 MESH ON 30mm COMPACTED GRANULAR SUBGRADE

PROVIDE MONOWILLS BALUSTRADE OR APPROVED EQUIVALENT

OPEN SPACE CHANNEL. SEE PLAN CC241 FOR DETAILS

PROVIDE LOCKABLE GATE

100 YEAR OVERLAND FLOW PATH. REFER TO DETAIL IN PLAN CC241

FUTURE PLAYING FIELD

NOTE

EXISTING SURFACE LEVELS ARE FROM BULK EARTHWORKS PACKAGE (REFER PLANS BY J WYNDHAM PRINCE 110358BE100-124)

WORKS AS EXECUTED SHOWN IN RED

SIGNATURE: *Peter Robert Warwick*

PETER ROBERT WARWICK
Registered Land Surveyor

VINCE MORGAN SURVEYORS PTY LTD

DATE: 9/3/18

REF: 2467/2

These plans are referred to in certificate no. 14323, approved by:
Eric Hausfeld
Accredited Certifier
Registration No. BPB 2416
Categories: S1, C1, C2, C3, C4, C5, C15, S, S1
LAND DEVELOPMENT CERTIFICATES
www.Ldcerts.com.au

FOR MAINTENANCE TO BASIN THAT IS NOT TEMPORARY. PROVIDE MIN. 150mm THICK 32MPa CONCRETE WITH SL82 MESH ON 30mm COMPACTED SUBGRADE

TEMPORARY MAINTENANCE ACCESS WITH 2% MIN. CROSSFALL. 200 THICK COMPACTED DGS40
FUTURE PERMANENT ACCESS TO BE INCORPORATED INTO PLAYING FIELD DESIGN & CAR PARK



FLOODWAY WARNING
RAIN MAY CAUSE FLOODWATERS TO RISE
KEEP OFF THIS AREA DURING HEAVY RAIN

FLOODWAY WARNING SIGN



J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

AZIMUTH:
MGA
DATUM:
AHD
ORIGIN:

CLIENT:



LEGACYPROPERTY

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS PART OF AN APPROVED CONSTRUCTION CERTIFICATE.

ISSUED FOR CONSTRUCTION APPROVAL

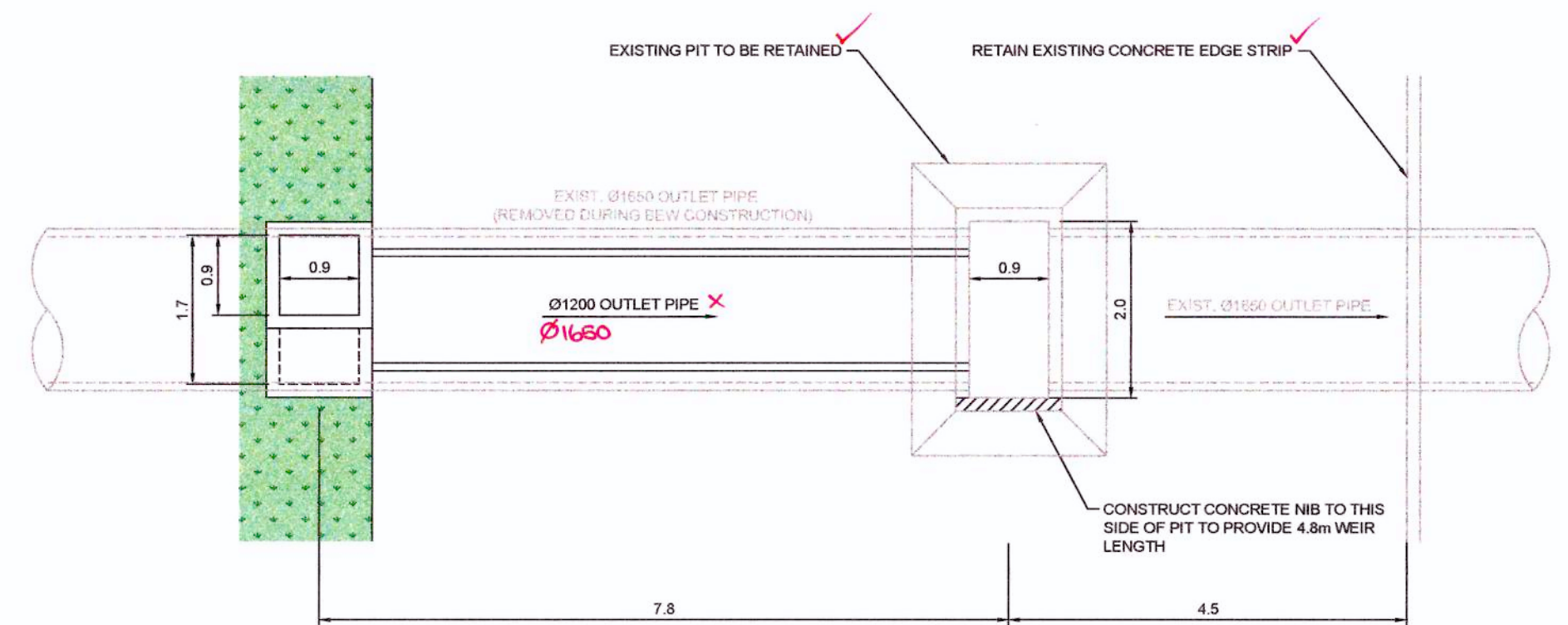
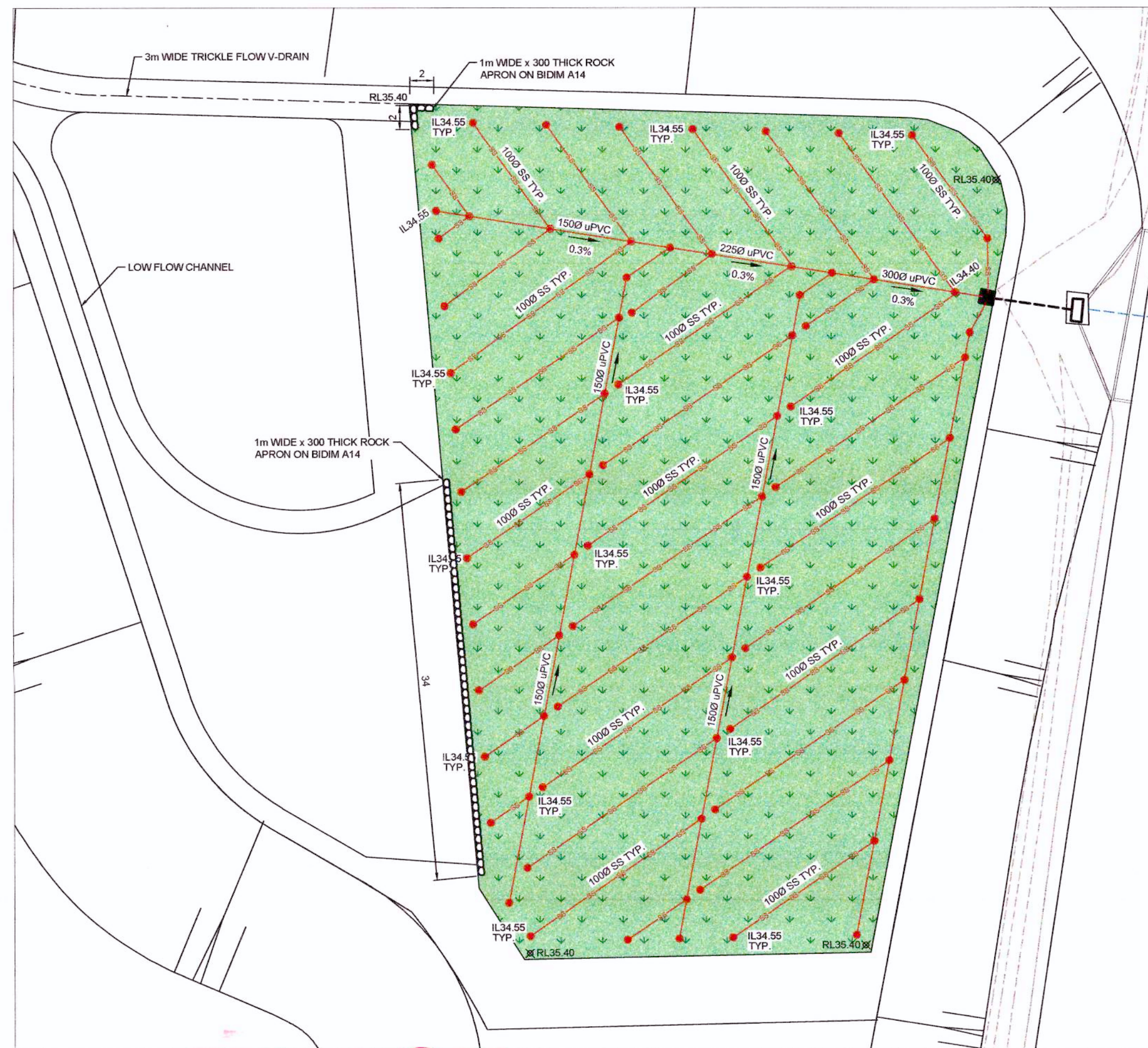
CADDENS HILL
STAGE 2
PLAYING FIELD BASIN PLAN

PLAN No:
110358/CC238

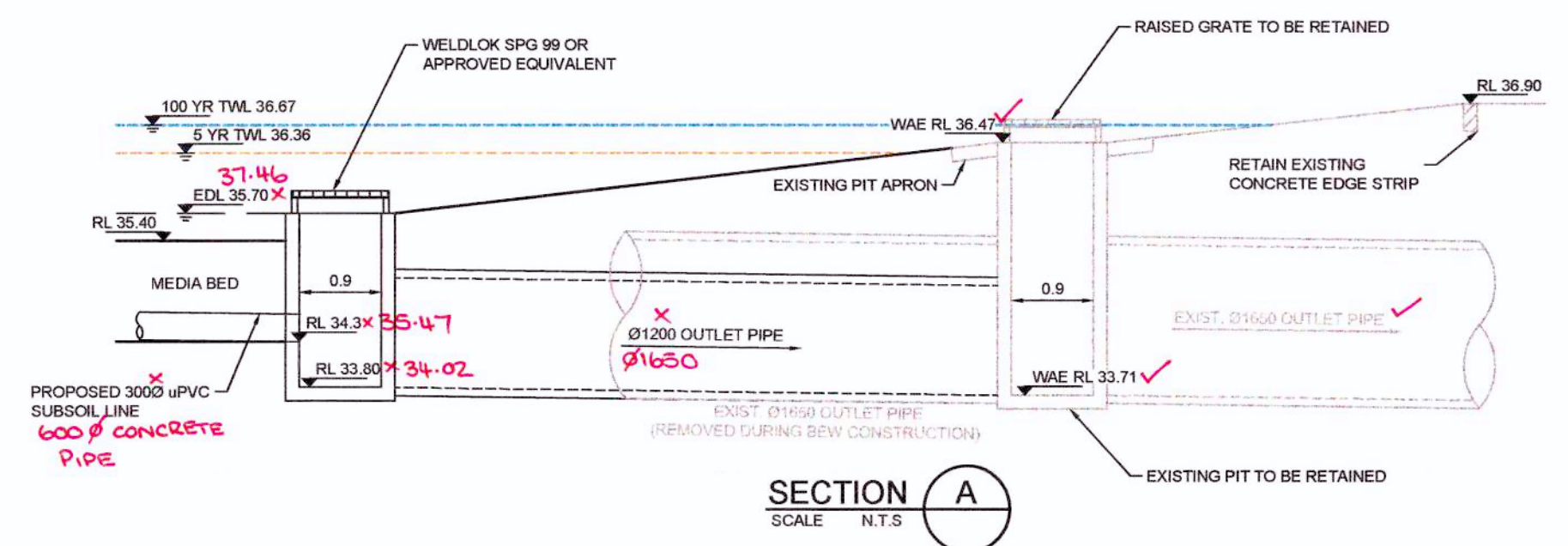
FILE No: 110358CC238

SHEET SIZE: A1 ORIGINAL

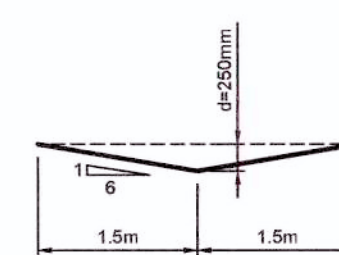
SUBJECT TO STRUCTURAL PLANS & CERTIFICATIONS



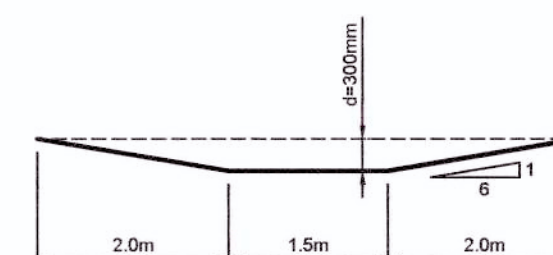
OUTLET CONTROL PIT DETAIL
SCALE 1:50



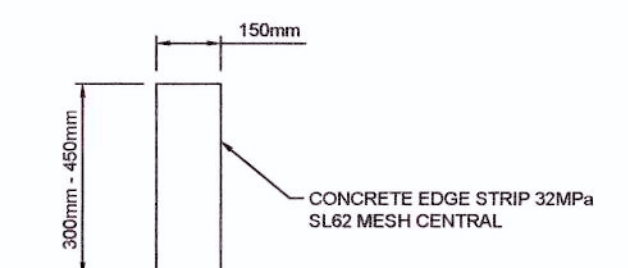
SECTION A
SCALE N.T.S.



TYPICAL TRICKLE
FLOW V-DRAIN
NOT TO SCALE



LOW FLOW CHANNEL
NOT TO SCALE



TYPICAL EDGE STRIP DETAIL
N.T.S.

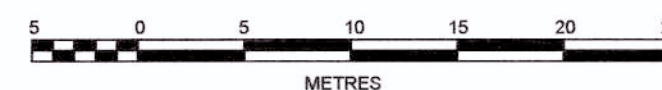
LOW FLOW CHANNEL AND TRICKLE FLOW
V-DRAIN TO BE TURFED WITH 75mm TOPSOIL

WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: *P. R.*
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 20467/2

PLAN
SCALE 1:250

These plans are referred to in
certificate no. 14323 approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1, C1, C2, C3, C4, C5, C15 & D1
LAND DEVELOPMENT CERTIFICATES
www.Ldcerts.com.au

1:50 (AT A1)
1:100 (AT A3)



J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jw@jwprince.com.au

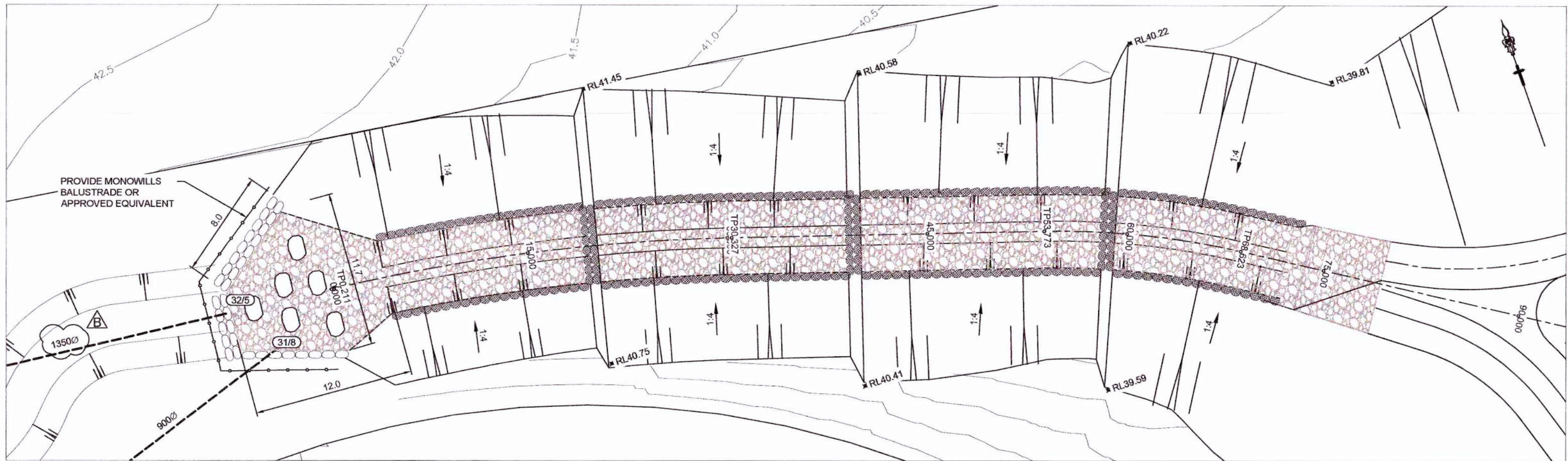
AZIMUTH:
MGA
DATUM:
AHD
ORIGIN:

CLIENT:
LEGACYPROPERTY
THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF AN
APPROVED CONSTRUCTION CERTIFICATE.

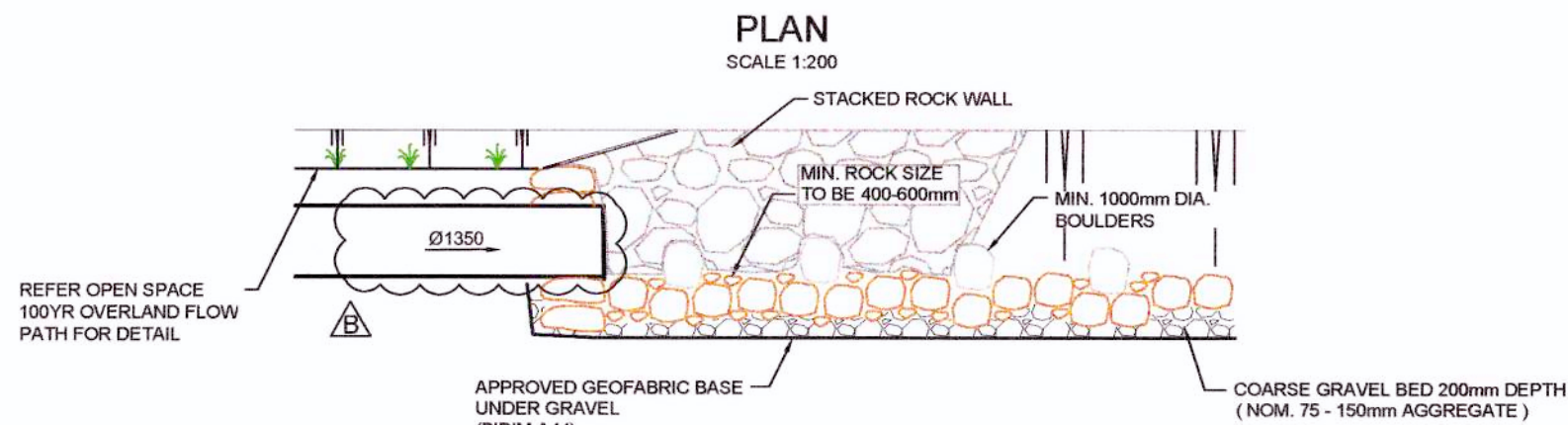
ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 2
OUTLET PLAN & DETAILS

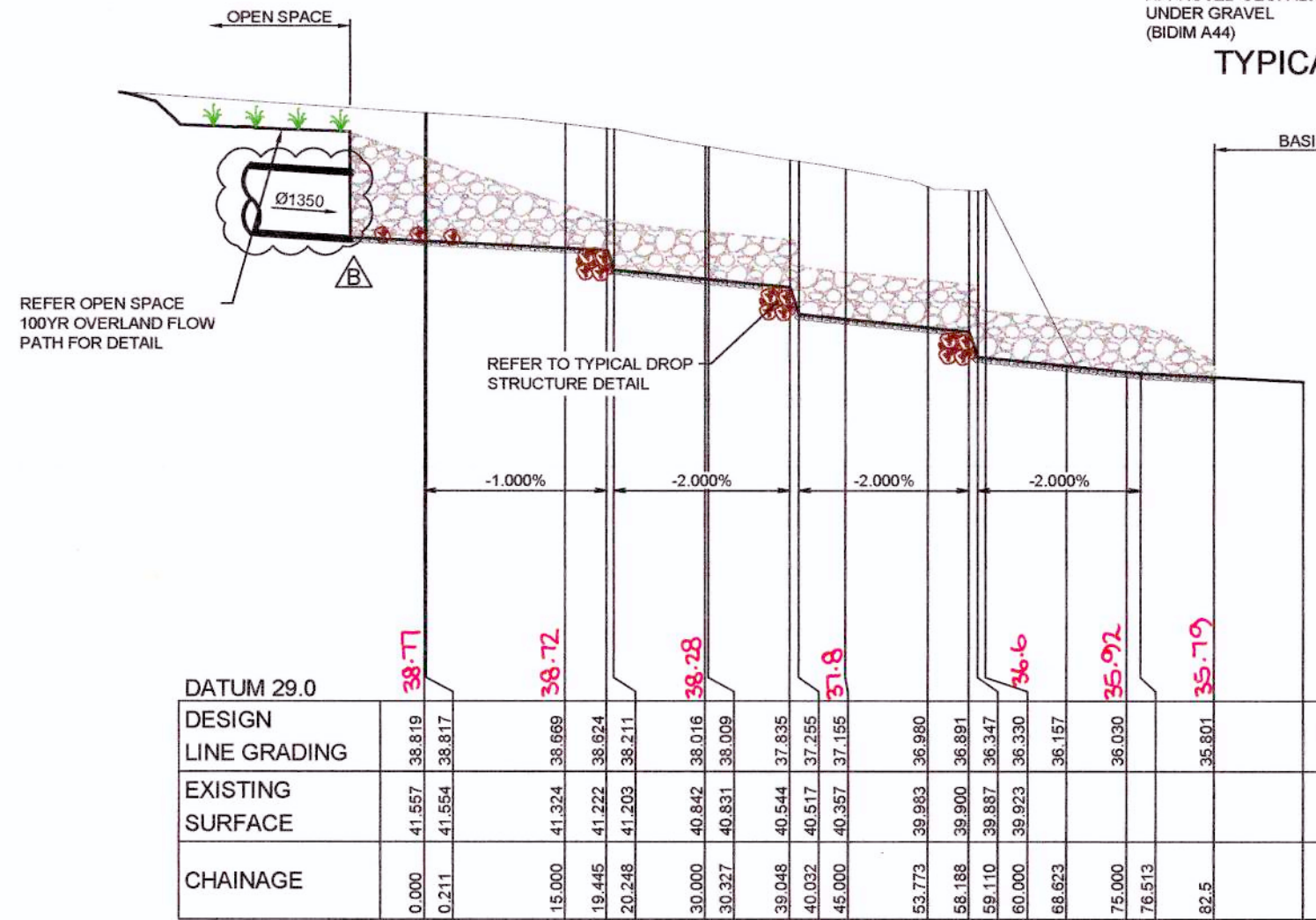
PLAN No:
110358/CC239
FILE No: 110358CC239
SHEET SIZE: A1 ORIGINAL



CHANNEL SETOUT						
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A LENGTH	
0	290837.01	6260393.65	95°39'19.80"			
0.21	290837.22	6260393.63	101°37'22.45"			
15	290851.83	6260391.41	101°37'22.45"			
15.27	290852.26	6260392.14		142	30.12	
30	290866.34	6260387.62	107°40'30.98"			
30.33	290866.65	6260387.52	107°48'25.63"			
45	290880.62	6260383.03	107°48'25.63"			
53.77	290888.97	6260380.35	107°48'25.63"			
60	290894.79	6260378.14	113°45'12.07"			
61.2	290896.08	6260378.06		60	14.85	
68.62	290902.41	6260374.11	121°59'14.75"			
75	290907.81	6260370.73	121°59'14.75"			
90	290920.54	6260362.79	121°59'14.75"			
93.88	290923.83	6260360.73	121°59'14.75"			

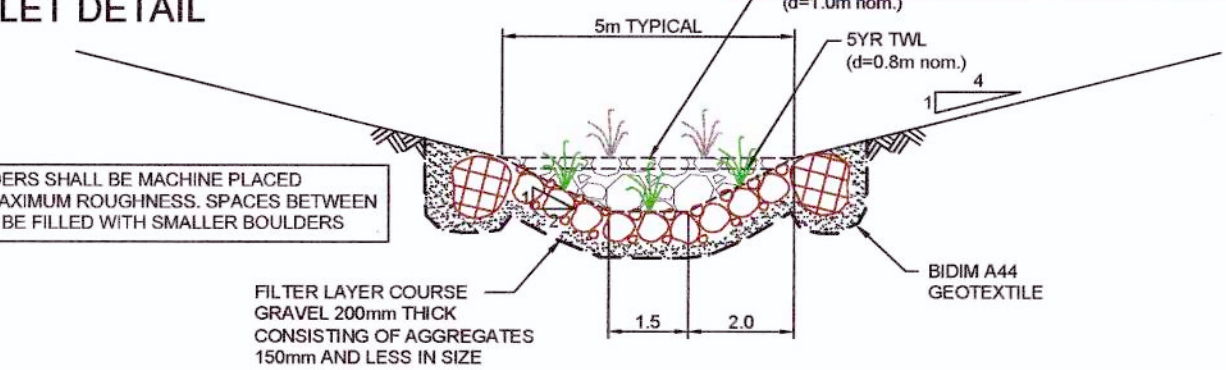


TYPICAL HEADWALL OUTLET DETAIL
NOT TO SCALE

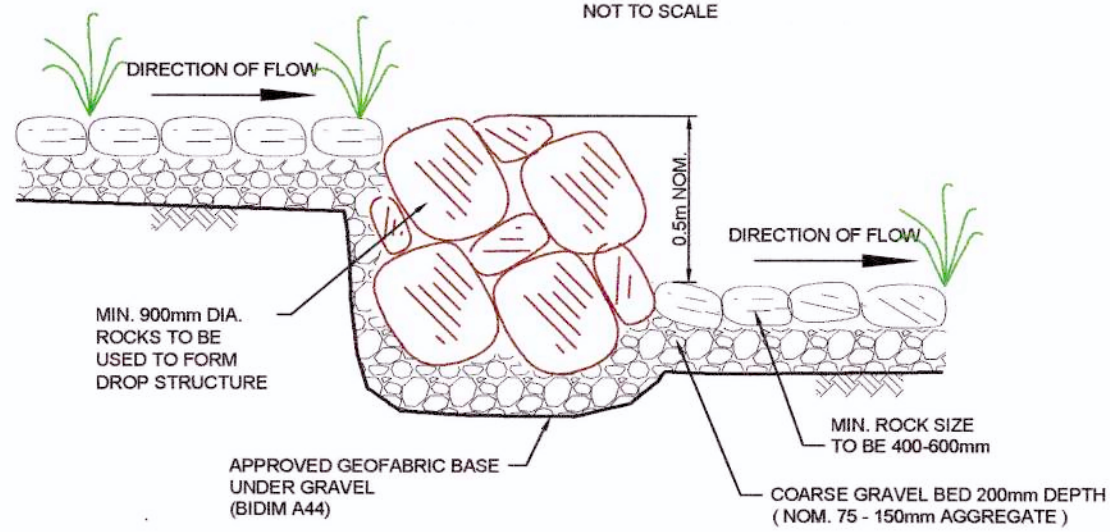


OPEN SPACE - CHANNEL PROFILE
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100

BOULDERS SHALL BE MACHINE PLACED FOR MAXIMUM ROUGHNESS. SPACES BETWEEN SHALL BE FILLED WITH SMALLER BOULDERS



TYPICAL CHANNEL SECTION
NOT TO SCALE



TYPICAL DROP STRUCTURE DETAIL
NOT TO SCALE

CONSTRUCTION SPECIFICATION FOR ROCK DROP STRUCTURES

ROCK QUALITY AND SIZE

ROCK SHOULD BE HARD, TOUGH AND DURABLE. IT SHOULD HAVE A CRUSHING STRENGTH OF 25MPa. THE ROCK SHOULD BE FREE OF DEFINED CLEAVAGE PLANES AND SHOULD NOT BE ADVERSELY AFFECTED BY REPEATED WETTING AND DRYING. ROCK SHOULD PREFERABLY BE PREDOMINANTLY ANGULAR IN SHAPE WITH NOT MORE THAN 25% OF ROCKS, DISTRIBUTED THROUGH THE GRADATION, HAVING A LENGTH MORE THAN TWICE THE BREADTH OR THICKNESS. NO ROCK SHOULD HAVE A LENGTH EXCEEDING 2.5 TIMES ITS BREADTH OR THICKNESS.

ROCK GRADATION

ROCK SHOULD NOT BE SINGLE SIZED, BUT SHOULD BE A WELL GRADED MIXTURE DESIGNED TO ENSURE THAT ALL INTERICES BETWEEN ROCKS ARE FILLED WITH ROCK OF PROGRESSIVELY SMALLER SIZE. THIS HAS THE COMBINED EFFECT OF:

- ENSURING THAT NO SIGNIFICANT VOIDS OCCUR IN THE ROCK BLANKET THROUGH WHICH UNDERLYING MATERIAL COULD BE WASHED OUT
- CREATING AN INTERLOCKING MASS OF ROCK IN WHICH NO INDIVIDUAL ROCK IS FREE TO MOVE BY ITSELF; AND
- CREATING A SHIELD EFFECT ON THE SURFACE OF THE ROCK WHICH AVOIDS HIGH DRAG FORCES WHICH OCCUR WHEN INDIVIDUAL ROCKS PROTRUDE INTO THE FLOW.

CONSTRUCTION

RAMP SURFACE MATERIAL: THE RAMP SURFACE BE CONSTRUCTED OF LARGE UPRIGHT POSITIONED, HARD ROCKTYPE BOULDERS WHICH ARE MACHINE PLACED AND LOCKED IN. THE BOULDERS ARE POSITIONED SO THAT MAXIMUM HEIGHT DIFFERENCE IS ACHIEVED BETWEEN NEIGHBOURING BOULDERS FOR THE BOULDER SIZE USED AND SO THAT WATER FLOWING BETWEEN TWO BOULDERS IS BLOCKED IMMEDIATELY DOWNSTREAM BY A THIRD BOULDER. IN THIS WAY MAXIMUM ROUGHNESS IS ACHIEVED ON THE RAMP.

HOLES BETWEEN THE BOULDERS ARE FILLED BY DROPPING STONES INTO THEM AND LOCKING THEM IN WITH A CROW BAR. DO NOT USE CONCRETE ANYWHERE ON THE RAMP BECAUSE OF THE DANGER OF UNEVEN SETTLEMENT. THE BOULDERS ARE TO BE MACHINE PLACED ONLY AND THE RAMP IS NOT TO BE CONSTRUCTED BY ROCKFILL AS THIS EFFECTS THE STABILITY AND ROUGHNESS OF THE RAMP.

ROCK GRADATION SUMMARY

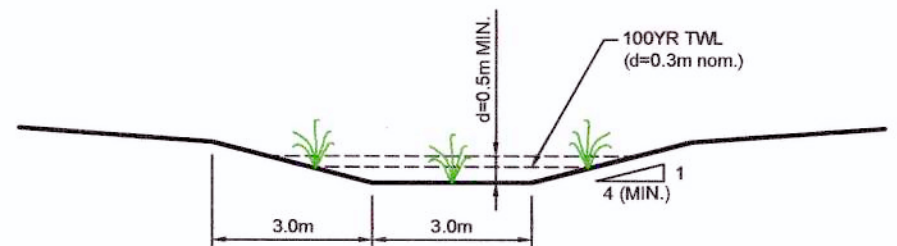
EQUIVALENT SPHERICAL DIAMETER *	PERCENT (BY WEIGHT) OF ROCK OF SMALLER SIZE
1.5 - 2.0 TIMES D50**	100%
D50	50%
0.3D50	10 - 20%

* THE DIAMETER OF A SPHERE WITH AN EQUIVALENT VOLUME TO THE INDIVIDUAL ROCK.

** D50 IS THE MEAN RIPRAP DIAMETER OF THE ROCK MIX

CHANNEL SIZING PARAMETERS

$S_{min} = 1.0\%$
 $n = 0.03$
 $Q_{100} = 1.5m^3/s$ depth $d_{100} = 0.3m$ vel = 1.25m/s



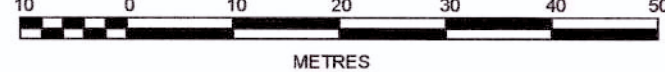
OPEN SPACE
100YR OVERLAND FLOW PATH
NOT TO SCALE

These plans are referred to in certificate no. 14323 approved by: Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C5,C15 & D1
LAND DEVELOPMENT CERTIFICATES
www.ldcerts.com.au

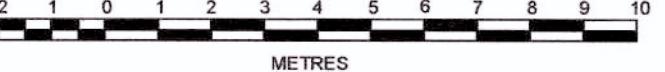
1:200 (AT A1)
1:400 (AT A3)



H 1:500 (AT A1)



V 1:100 (AT A1)



J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

AZIMUTH:
MGA
DATUM:
AHD
ORIGIN:

CLIENT:
LEGACYPROPERTY
THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS PART OF AN APPROVED CONSTRUCTION CERTIFICATE.

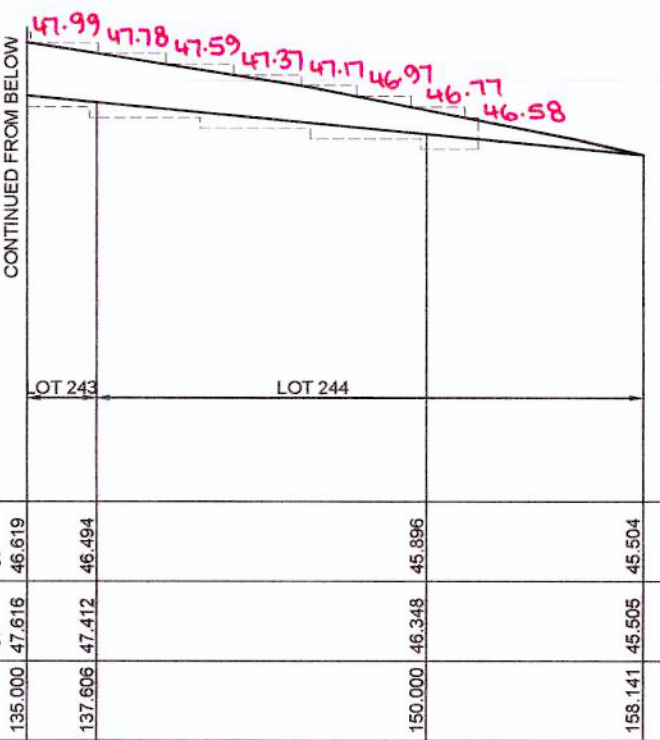
ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 2
DROP STRUCTURE PLAN & SECTION

PLAN No:
110358/CC241
FILE No: 110358CC241
SHEET SIZE: A1 ORIGINAL

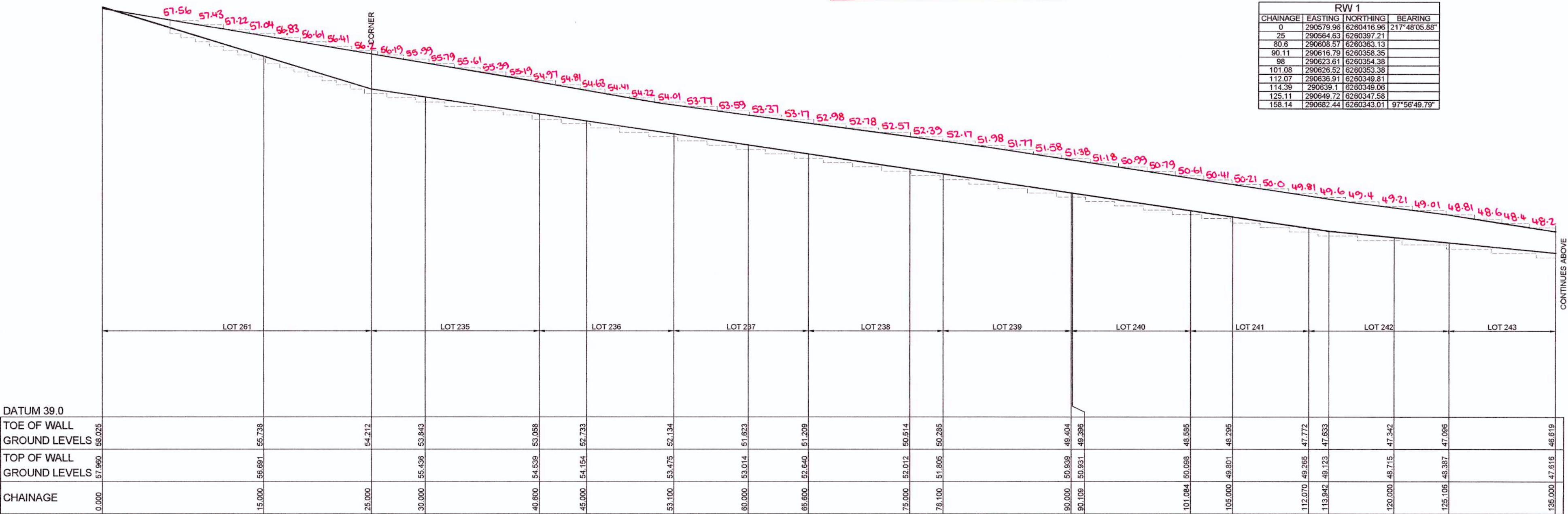
RETAINING WALL PROFILES SHOWN ARE INDICATIVE ONLY.
REFER TO DESIGN & CONSTRUCT CONTRACT BY OTHERS.
SUBJECT TO SEPARATE STRUCTURAL PLANS & CERTIFICATIONS

WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: *P.R.*
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 20467/2



LONGITUDINAL SECTION - RETAINING WALL 1
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

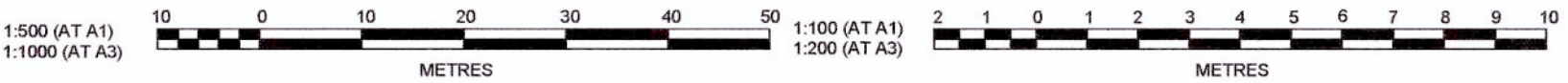
RW 1			
CHAINAGE	EASTING	NORTHING	BEARING
0	290579.96	6260416.96	121°48'05.88"
25	290564.63	6260397.21	
80.6	290608.57	6260363.13	
90.11	290616.79	6260358.35	
98	290623.61	6260354.38	
101.08	290626.52	6260353.38	
112.07	290636.91	6260349.81	
114.39	290639.1	6260349.06	
125.11	290649.72	6260347.58	
158.14	290662.44	6260343.01	97°56'49.79"



LONGITUDINAL SECTION - RETAINING WALL 1
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

NOT APPROVED

Plotted: 26 May 2017 1:38:33 PM File Name: J:\110358 - Caddens Hill - Stage 2\CD\CC\STAGE 2\110358CC243.dwg

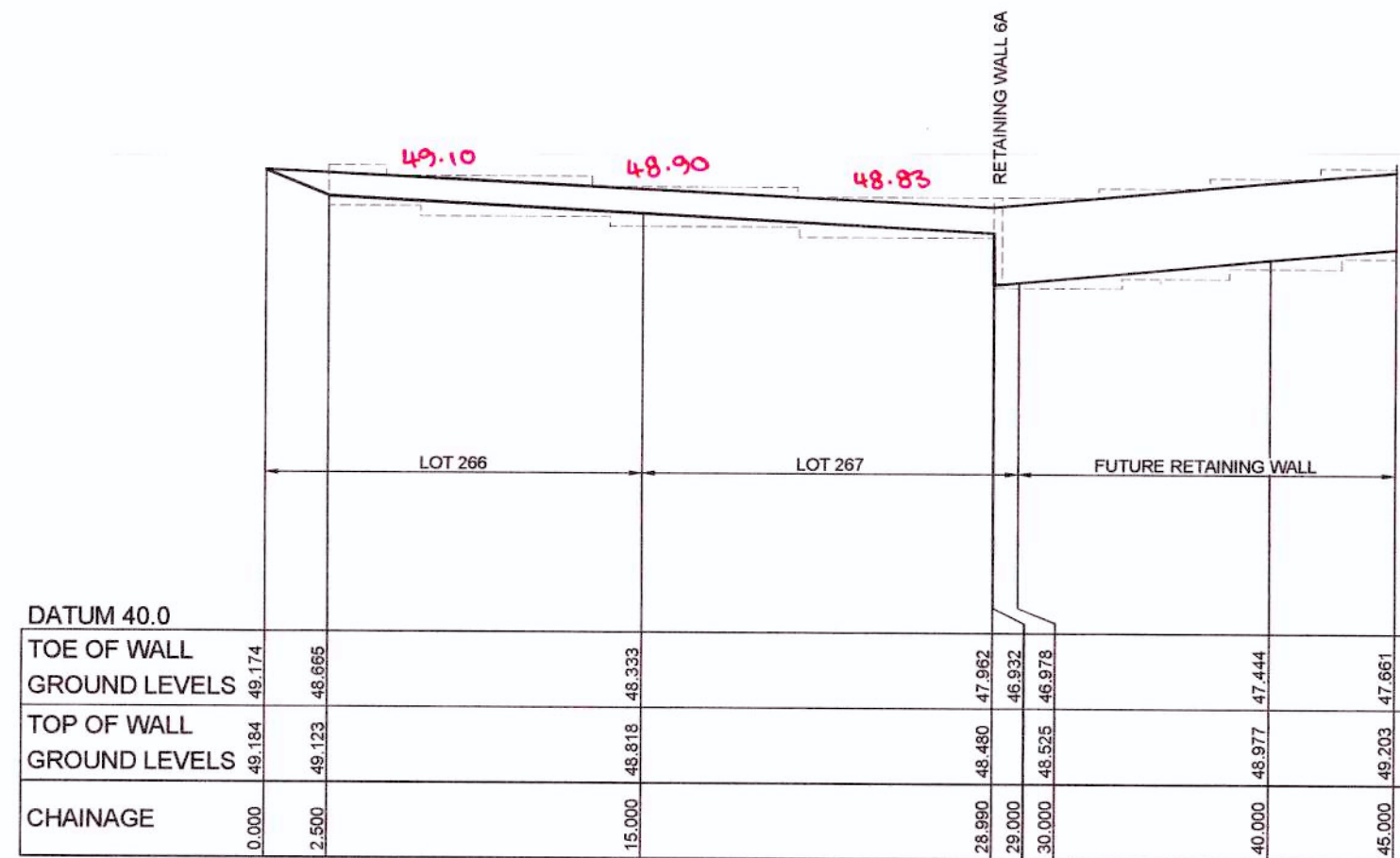


J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS
PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

LEGACYPROPERTY
AZIMUTH: MGA
DATUM: AHD
ORIGIN: THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS PART OF AN APPROVED CONSTRUCTION CERTIFICATE.

ISSUED FOR CONSTRUCTION APPROVAL
CADDENS HILL
STAGE 2
RETAINING WALL SECTION
PLAN No: 110358/CC243
FILE No: 110358CC243
SHEET SIZE: A1 ORIGINAL

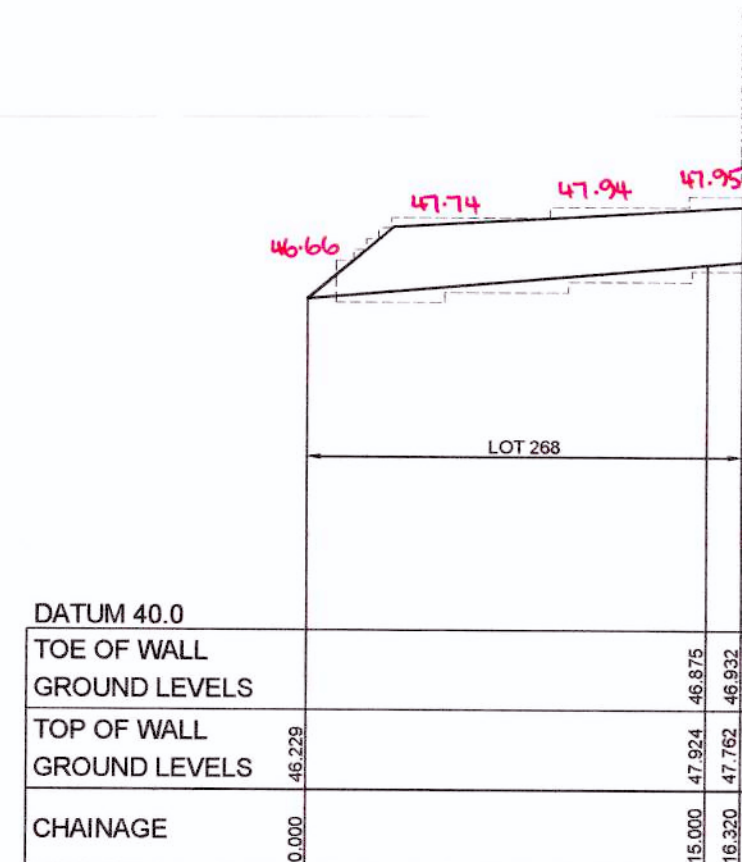
AMENDMENT	DES	DRN	CKD	APR	DATE
A	JT	NM	RT	MS	18/05/17
ISSUE FOR CONSTRUCTION APPROVAL					



DATUM 40.0			
TOE OF WALL			
GROUND LEVELS	49.174	48.865	48.333
TOP OF WALL			
GROUND LEVELS	49.184	49.123	48.818
CHAINAGE	0.000	2.500	15.000
			28.990
			29.000
			30.000
			40.000
			45.000

LONGITUDINAL SECTION - RETAINING WALL 6
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

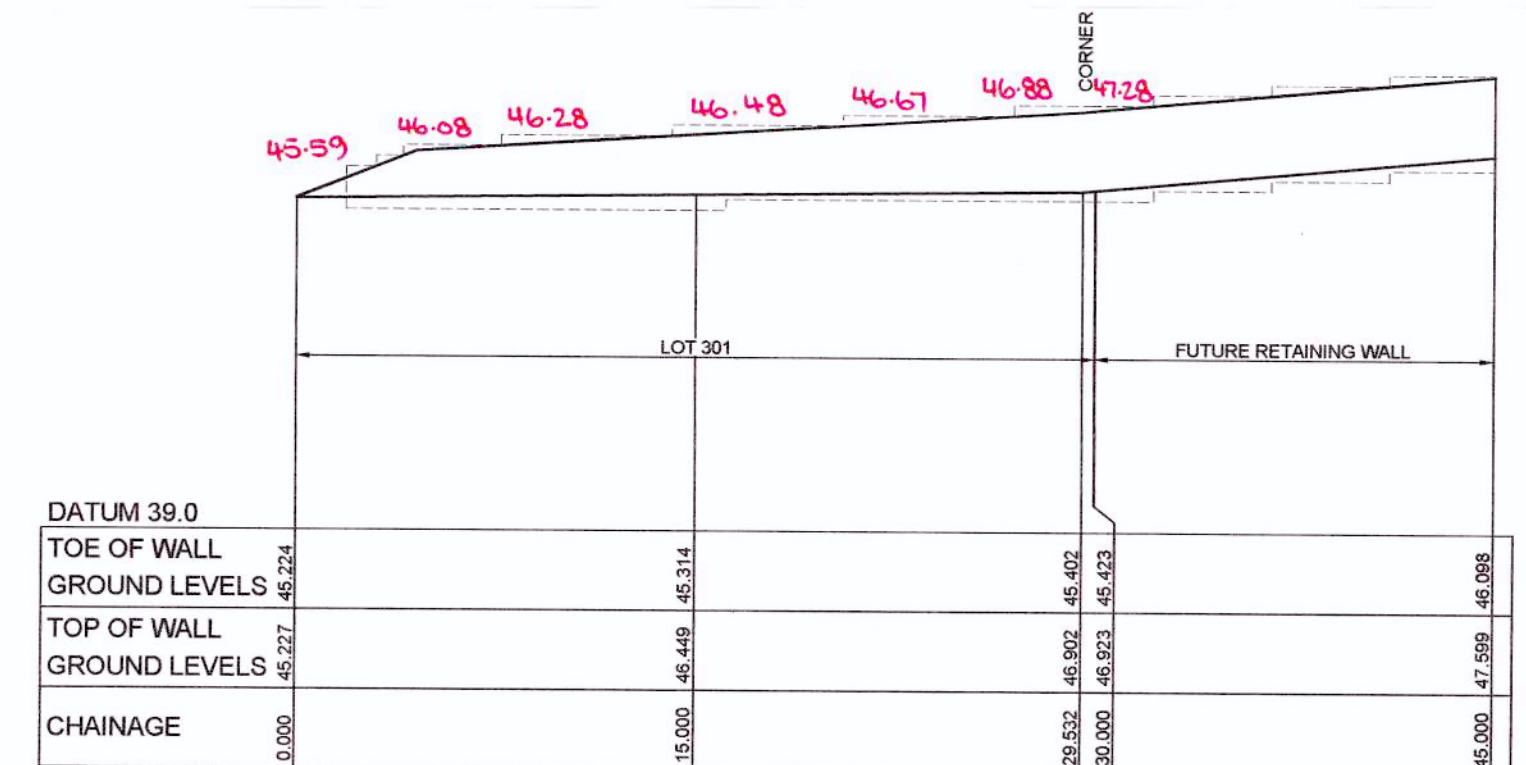
RW 6			
CHAINAGE	EASTING	NORTHING	BEARING
0	290677.29	6260408.17	98°26'12.28"
29	290705.97	6260403.91	
256.5	290739.35	6260628.95	
270.1	290725.9	6260630.94	278°26'12.28"



DATUM 40.0			
TOE OF WALL			
GROUND LEVELS			
TOP OF WALL			
GROUND LEVELS	46.229	47.924	46.875
CHAINAGE	0.000	15.000	16.320
			47.762
			46.932

LONGITUDINAL SECTION - RETAINING WALL 6A
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

RW 6A			
CHAINAGE	EASTING	NORTHING	BEARING
0	290703.58	6260387.77	8°26'12.24"
16.32	290705.97	6260403.91	8°26'12.24"



DATUM 39.0			
TOE OF WALL			
GROUND LEVELS	45.224	45.314	45.402
TOP OF WALL			
GROUND LEVELS	45.227	46.449	46.902
CHAINAGE	0.000	15.000	29.532
			30.000
			45.423
			47.599
			46.098

LONGITUDINAL SECTION - RETAINING WALL 7
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

RW 7			
CHAINAGE	EASTING	NORTHING	BEARING
0	290736.18	6260399.43	278°26'11.95"
29.53	290706.96	6260403.76	
257.03	290740.34	6260628.8	
271.78	290754.93	6260626.64	98°26'12.05"

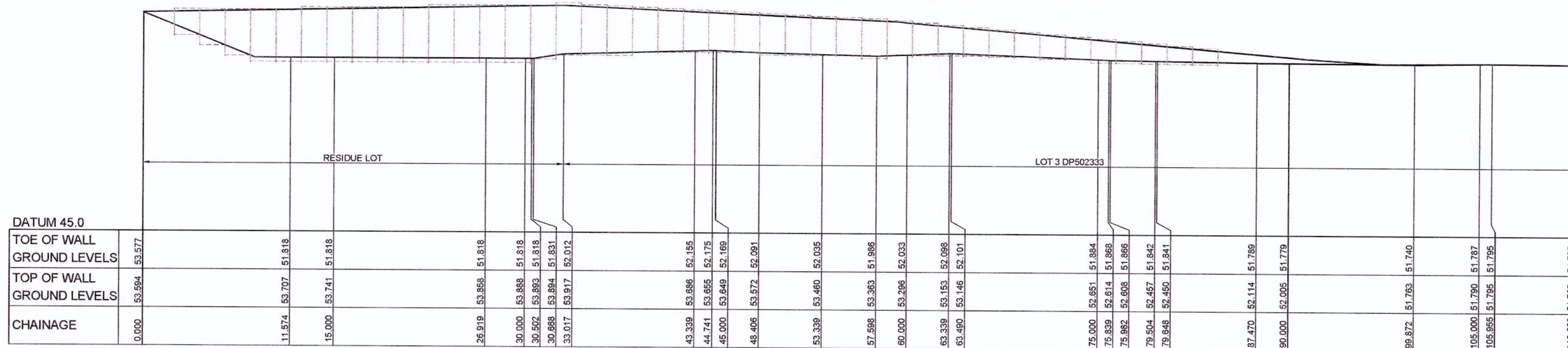
TEMP RW 5			
CHAINAGE	EASTING	NORTHING	BEARING
0	290508.35	6260374.3	227°34'01.08"
33.11	290483.91	6260351.96	
112.61	290472.6	6260273.27	188°10'44.62"

WORKS AS EXECUTED SHOWN IN RED

SIGNATURE: *P. Morgan*
PETER ROBERT WARWICK
Registered Land Surveyor

VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 20467/2

RETAINING WALL PROFILES SHOWN ARE INDICATIVE ONLY.
REFER TO DESIGN & CONSTRUCT CONTRACT BY OTHERS.
SUBJECT TO SEPARATE STRUCTURAL PLANS & CERTIFICATIONS



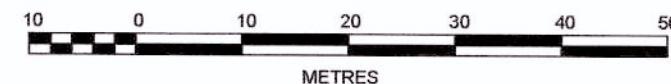
DATUM 45.0			
TOE OF WALL			
GROUND LEVELS	53.577	51.818	51.818
TOP OF WALL			
GROUND LEVELS	53.594	53.707	53.741
CHAINAGE	0.000	11.574	15.000
			25.919
			30.000
			30.502
			30.688
			35.017
			43.339
			44.741
			46.000
			46.406
			53.339
			57.598
			60.000
			63.339
			63.490
			75.000
			75.839
			75.952
			79.504
			79.648
			87.470
			90.000
			99.872
			105.000
			105.955
			112.609

LONGITUDINAL SECTION - RETAINING WALL 5 (TEMPORARY CONCRIB WALL)
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

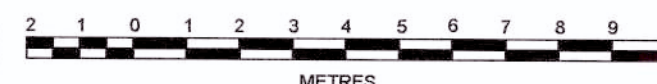
NOT BUILT

NOT APPROVED

1:500 (AT A1)
1:1000 (AT A3)



1:100 (AT A1)
1:200 (AT A3)



J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

AZIMUTH:
MGA
DATUM:
AHD
ORIGIN:

CLIENT:



THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF AN
APPROVED CONSTRUCTION CERTIFICATE

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 2
RETAINING WALL SECTION

PLAN No:
110358/CC244 A

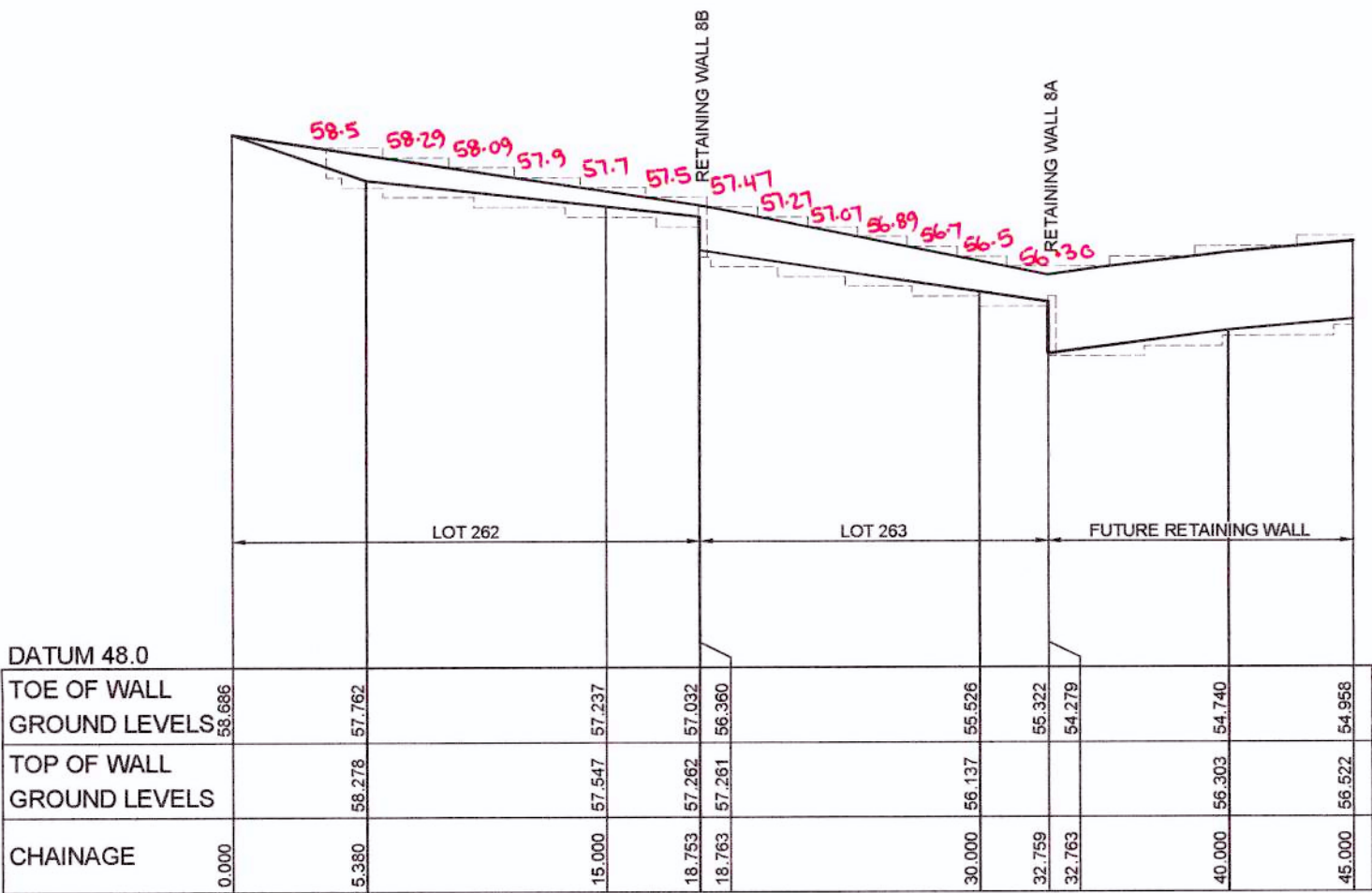
FILE No: 110358CC244

SHEET SIZE: A1 ORIGINAL

WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: P.R.
PETER ROBERT WARWICK
Registered Land Surveyor

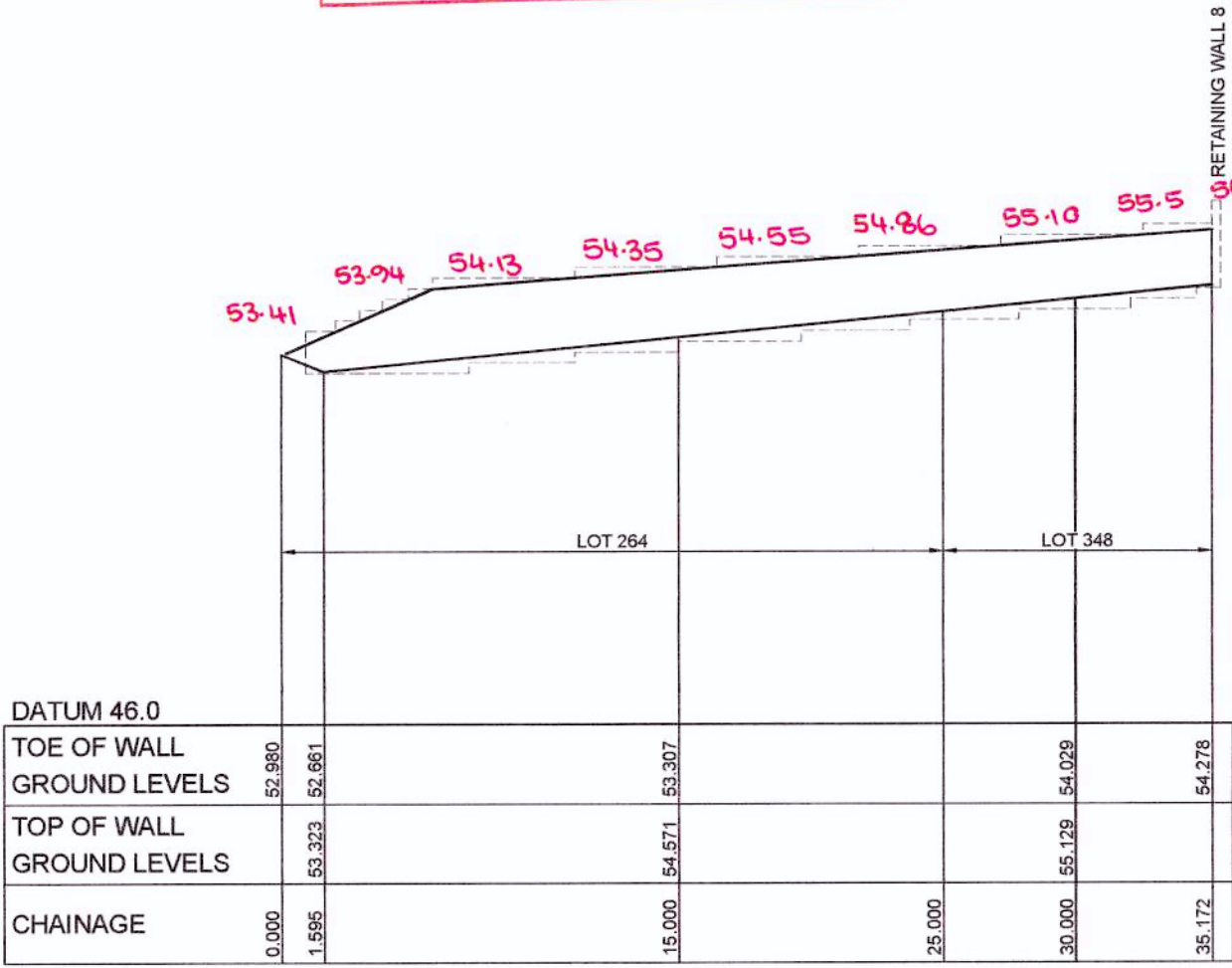
VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 20467/2

RETAINING WALL PROFILES SHOWN ARE INDICATIVE ONLY.
REFER TO DESIGN & CONSTRUCT CONTRACT BY OTHERS.
SUBJECT TO SEPARATE STRUCTURAL PLANS & CERTIFICATIONS



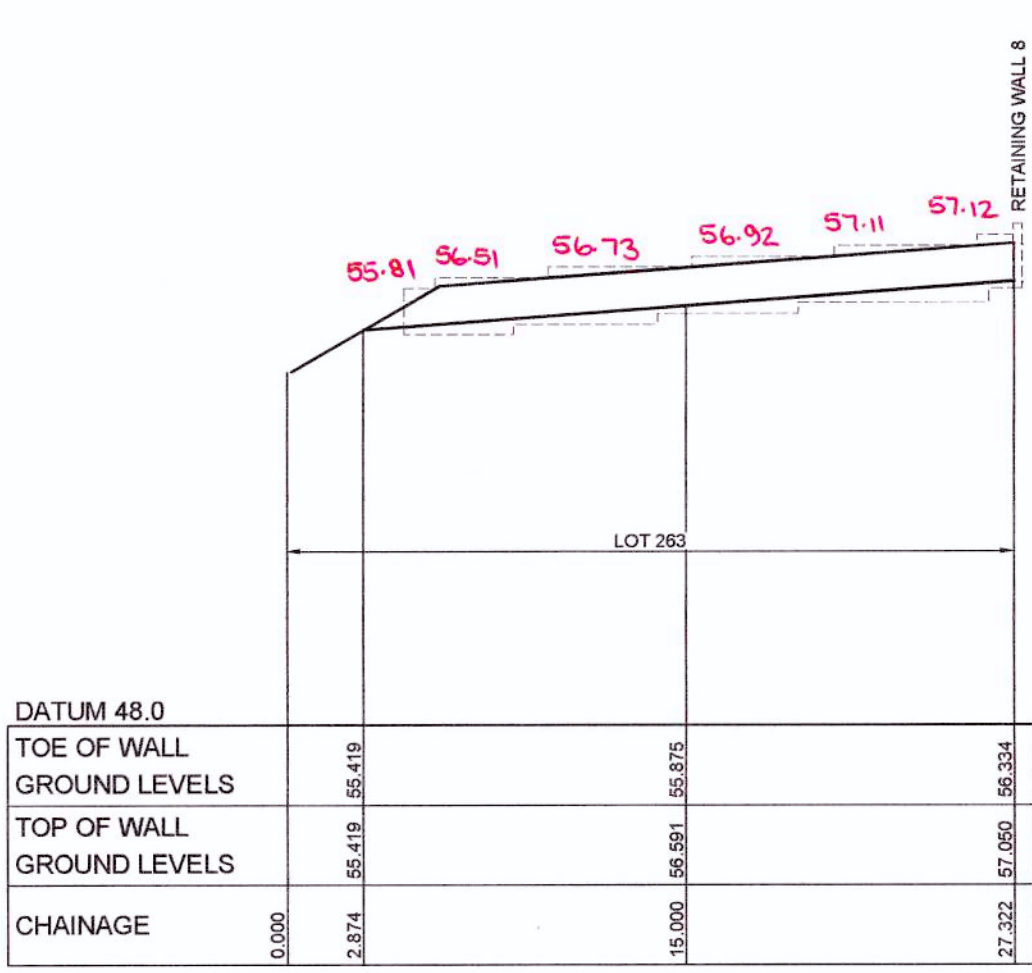
LONGITUDINAL SECTION - RETAINING WALL 8
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

RW 8			
CHAINAGE	EASTING	NORTHING	BEARING
0	290602.31	6260446.28	98°26'12.22"
32.76	290634.71	6260441.47	
232.76	290684.06	6260639.31	
246.36	290650.61	6260641.3	278°25'55.16"



LONGITUDINAL SECTION - RETAINING WALL 8A
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

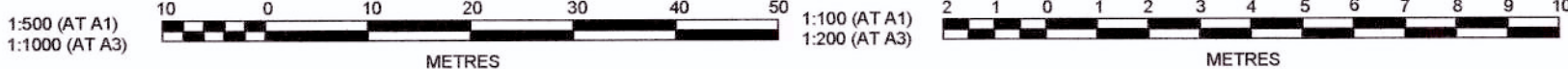
RW 8A			
CHAINAGE	EASTING	NORTHING	BEARING
0	290629.55	6260406.68	8°26'12.23"
35.17	290634.71	6260441.47	8°26'12.23"



LONGITUDINAL SECTION - RETAINING WALL 8B
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

RW 8B			
CHAINAGE	EASTING	NORTHING	BEARING
0	290616.86	6260416.5	8°26'10.36"
27.32	290620.87	6260443.52	8°26'10.36"

NOT APPROVED



J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS
PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

CLIENT:
LEGACYPROPERTY
THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS PART OF AN APPROVED CONSTRUCTION CERTIFICATE.

ISSUED FOR CONSTRUCTION APPROVAL

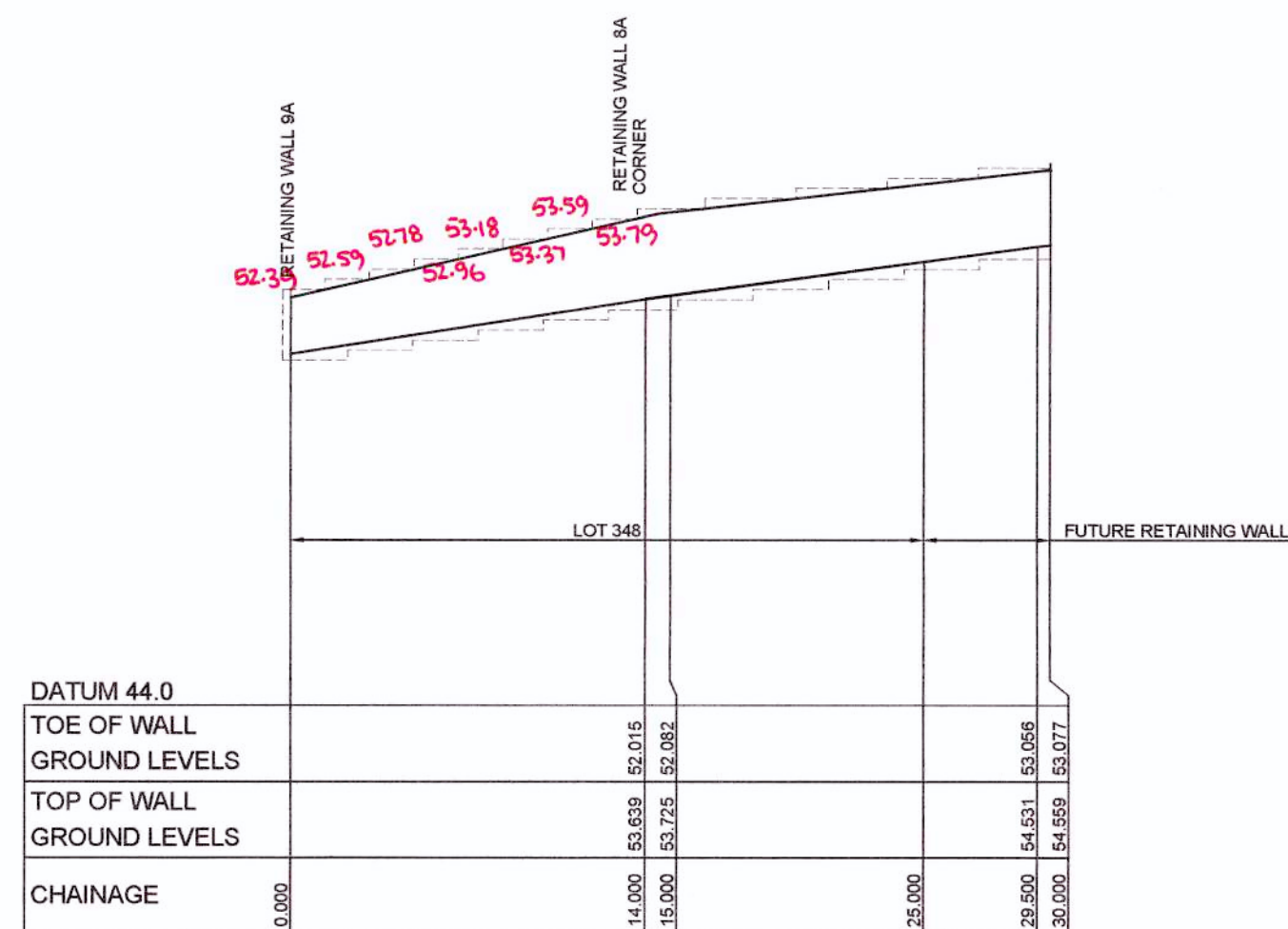
CADDENS HILL
STAGE 2
RETAINING WALL SECTION

PLAN No:	110358/CC245	A
FILE No:	110358CC245	
SHEET SIZE:	A1 ORIGINAL	

RETAINING WALL PROFILES SHOWN ARE INDICATIVE ONLY.
REFER TO DESIGN & CONSTRUCT CONTRACT BY OTHERS.
SUBJECT TO SEPARATE STRUCTURAL PLANS & CERTIFICATIONS

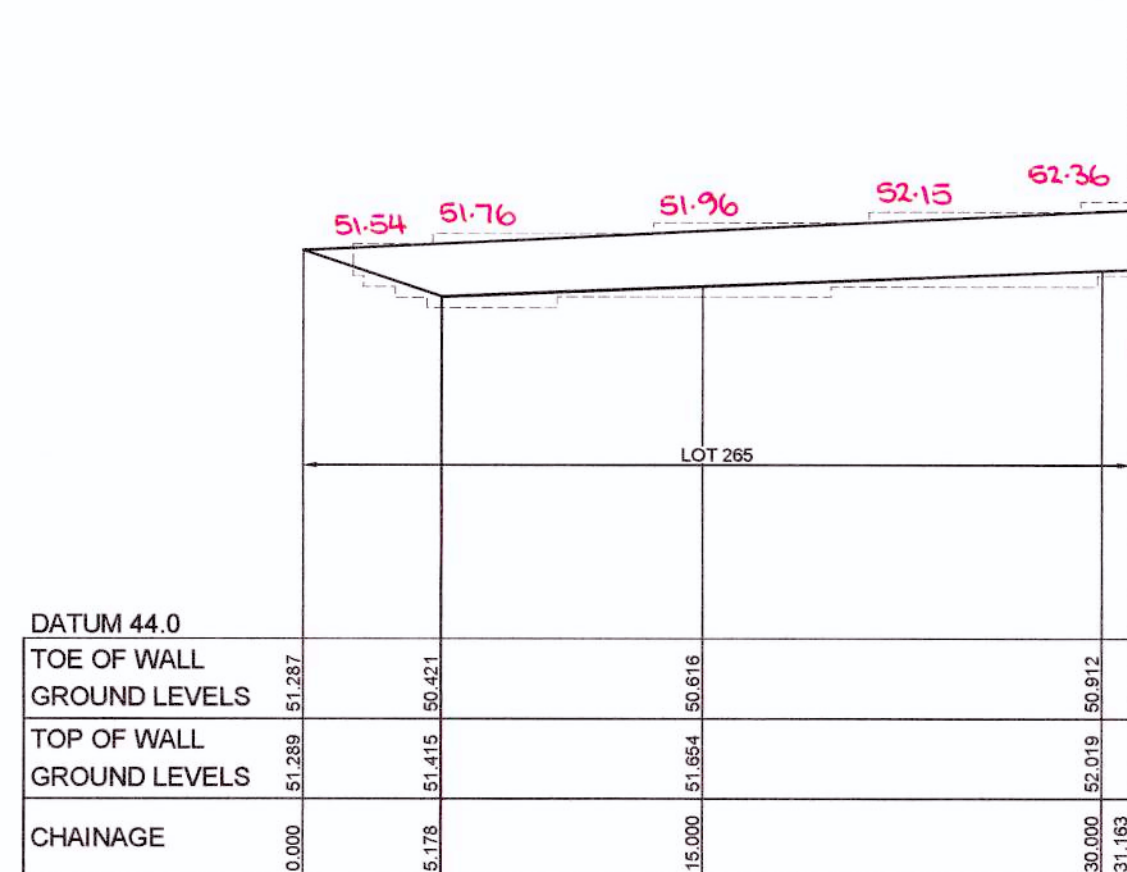
WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: *P.R.*
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 20447/2

EXTENT & TYPE OF RETAINING WALL 14 TO BE CONFIRMED
PRIOR TO CONSTRUCTION



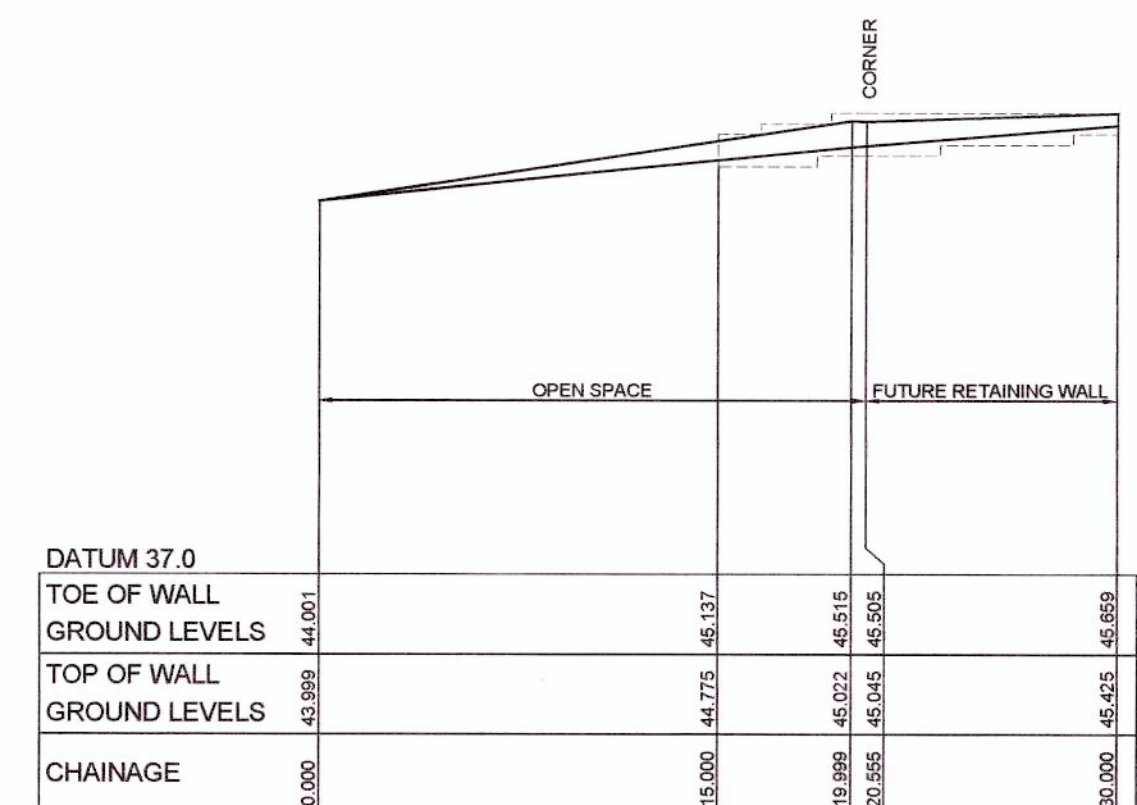
LONGITUDINAL SECTION - RETAINING WALL 9
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

RW 9			
CHAINAGE	EASTING	NORTHING	BEARING
0	290648.58	6260429.3	278°26'12.27"
14.5	290634.24	6260431.43	
224.5	290685.05	6260639.16	
239.1	290679.49	6260637.02	98°26'12.24"



LONGITUDINAL SECTION - RETAINING WALL 9A
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

RW 9A			
CHAINAGE	EASTING	NORTHING	BEARING
0	290644.01	6260398.48	8°26'02.17"
31.16	290648.58	6260429.31	8°26'02.17"



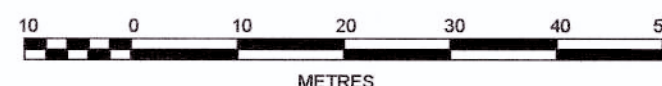
LONGITUDINAL SECTION - RETAINING WALL 14
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

RW 14			
CHAINAGE	EASTING	NORTHING	BEARING
0	290775.12	6260413.15	277°49'55.63"
20.34	290754.97	6260415.93	
286.64	290794.09	6260679.34	8°26'49.04"

NOT BUILT

NOT APPROVED

1:500 (AT A1)
1:1000 (AT A3)



1:100 (AT A1)
1:200 (AT A3)



J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

AZIMUTH:
MGA
DATUM:
AHD
ORIGIN:

CLIENT:

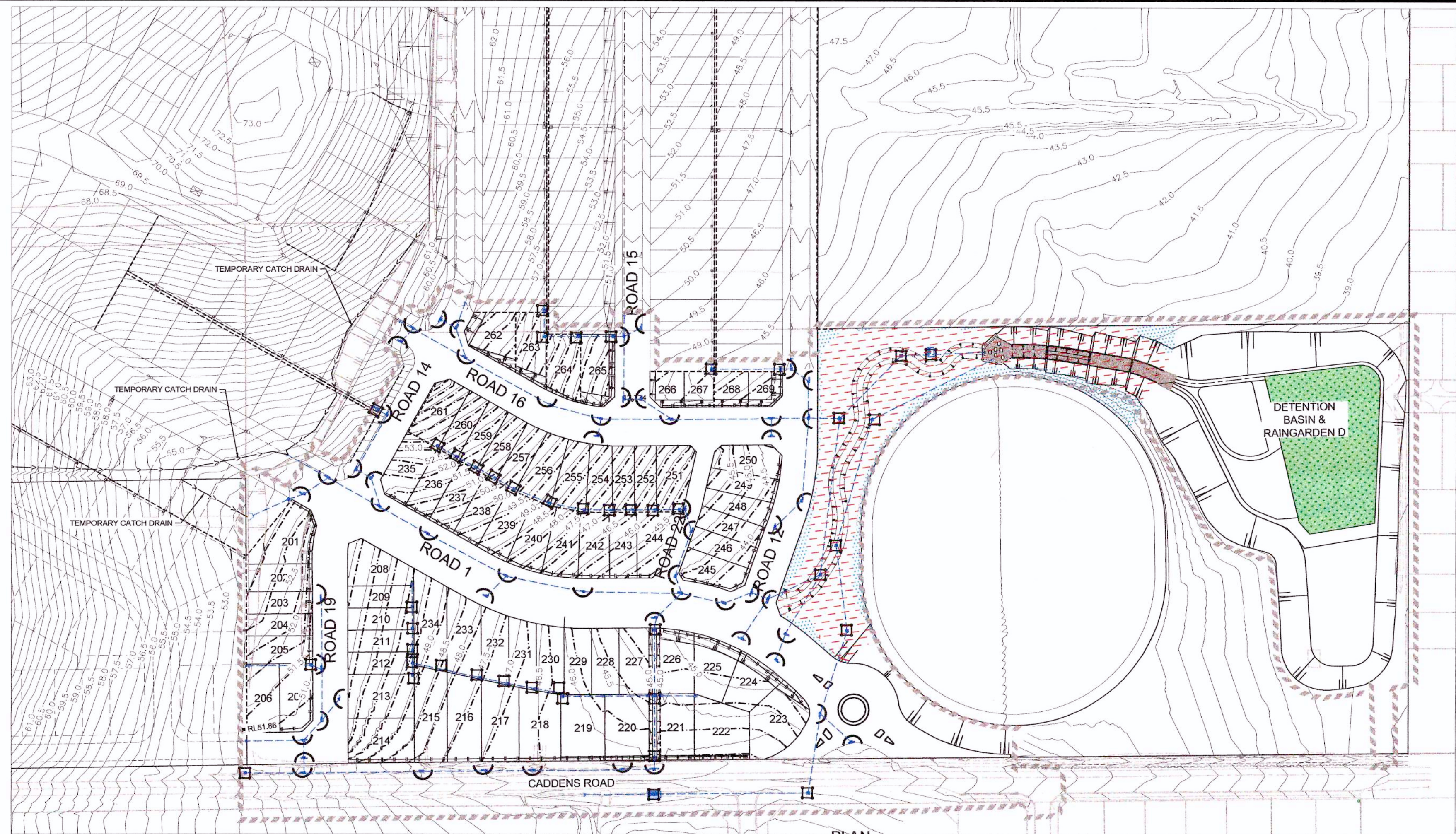


THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF AN
APPROVED CONSTRUCTION CERTIFICATE.

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 2
RETAINING WALL SECTION

PLAN No:
110358/CC246
FILE No: 110358CC246
SHEET SIZE: A1 ORIGINAL



WORKS AS EXECUTED SHOWN IN RED

SIGNATURE: 
PETER ROBERT WARWICK
Registered Land Surveyor

VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 20467/2



LAND DEVELOPMENT CERTIFICATES
www.Ldcerts.com.au

LEGEND

STABILISED SITE ACCESS
(AS PER BEW CONSTRUCTION)

SEDIMENT FENCE

MESH AND GRAVEL INLET FILTER

GEOTEXTILE INLET FILTER

EXTENT OF FILL

EXTENT OF CUT

1:1000 (AT A1)
1:2000 (AT A3)



CLIENT:



DATUM:

ORIGIN:

THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF AN
APPROVED CONSTRUCTION CERTIFICATE

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 2
SOIL AND WATER MANAGEMENT PLAN

PLAN No:
110358/CC247

FILE No: 110358CC247

SHEET SIZE: A1 ORIGINAL

[illegible]

GENERAL NOTES:

- | LAND USE | LIMITATION | COMMENTS |
|--------------------|---|--|
| CONSTRUCTION AREAS | DISTURBANCE TO BE NO FURTHER THAN 5m (PREF. 2m) FROM THE EDGE OF ANY ESSENTIAL ENGINEERING ACTIVITY AS SHOWN ON THESE PLANS | ALL SITE WORKERS WILL CLEARLY RECOGNISE THESE ZONES - WHERE APPROPRIATE THE CONSTRUCTION AREAS ARE TO BE IDENTIFIED WITH BARRIER FENCING (DOWNSLOPE) OR SIMILAR MATERIAL. |
| ACCESS AREAS | LIMITED TO A MAXIMUM WIDTH OF 10m | THE SITE MANAGER SHALL DETERMINE AND MARK THE LOCATION OF THESE ZONES ONSITE. THEY CAN VARY IN POSITION TO BEST CONSERVE THE EXISTING VEGETATION AND PROTECT DOWNSTREAM AREAS WHILE BEING CONSIDERATE OF THE NEEDS OF EFFICIENT WORKS ACTIVITIES. ALL SITE WORKERS SHALL CLEARLY RECOGNISE THEIR BOUNDARIES. WHERE APPROPRIATE THE ACCESS AREAS ARE TO BE MARKED WITH BARRIER MESH, SEDIMENT FENCING OR SIMILAR MATERIALS. |
| REMAINING LANDS | ENTRY PROHIBITED EXCEPT FOR ESSENTIAL THINNING OF PLANT GROWTH | THINNING OF GROWTH MAY BE REQUIRED FOR FIRE HAZARD REDUCTION. |

14. WORKS ARE TO BE UNDERTAKEN IN THE FOLLOWING SEQUENCE. EACH SUBSEQUENT STAGE IS NOT TO COMMENCE UNTIL THE PREVIOUS ONE IS COMPLETE:-
 - a. INSTALL ALL BARRIER AND SEDIMENT FENCING WHERE SHOWN ON THE PLAN AND TO DETAIL (SD) 6-8.
 - b. CONSTRUCT STABILISED SITE ACCESS AS SHOWN ON THE PLAN AND TO DETAIL (SD) 6-14.
 - c. CONSTRUCT LOW FLOW EARTH BANKS WHERE SHOWN ON THE PLAN AND TO DETAIL (SD) 5-5.
 - d. PROVIDE TEMP. ACCESS TO THE SEDIMENT BASIN(S) AND PROTECT THIS WITH SEDIMENT FENCING (SD) 6-8 OR BARRIER FENCING AND EARTH BANKS (SD) 5-5.
 - e. PLACE SEDIMENT FENCING (SD) 6-8 DOWNSLOPE OF LANDS TO BE DISTURBED FOR CONSTRUCTION OF THE SEDIMENT BASINS.
 - f. CONSTRUCT SEDIMENT BASIN(S) GENERALLY IN ACCORDANCE WITH (SD) 6-4
 - g. STABILISE LAND SURFACES DISTURBED BY CONSTRUCTION OF THE SEDIMENT BASIN(S) AS SOON AS FINAL LEVELS ARE ESTABLISHED
 - h. CLEAR THE SITE AND STRIP AND STOCKPILE THE TOPSOIL IN THE LOCATIONS SHOWN ON THE PLAN OR AS DIRECTED BY THE SITE SUPERINTENDENT TO DETAIL (SD) 4-1.
 - i. UNDERTAKE ALL ESSENTIAL CONSTRUCTION WORKS.
 - j. GRADE LOT AREAS TO FINAL GRADES AND APPLY PERMANENT STABILISATION (LANDSCAPING) WITHIN 14 DAYS OF COMPLETION OF CONSTRUCTION WORKS.
 - k. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER THE PERMANENT LANDSCAPING HAS BEEN COMPLETED.
15. CLEARLY VISIBLE BARRIER FENCING SHALL BE INSTALLED WHERE DIRECTED BY THE SITE SUPERINTENDENT TO CONTROL AND PROHIBIT UNNECESSARY SITE DISTURBANCE
16. EARTH BATTERS SHALL BE CONSTRUCTED WITH AS LOW A GRADIENT AS PRACTICABLE BUT NO STEEPER THAN:-
 - a. 2(h) - 1(v) WHERE SLOPE LENGTH IS LESS THAN 7m
 - b. 2.5(h) - 1(v) WHERE SLOPE LENGTH IS BETWEEN 7m AND 10m
 - c. 3(h) - 1(v) WHERE SLOPE LENGTH IS BETWEEN 10m AND 12m
 - d. 4(h) - 1(v) WHERE SLOPE LENGTH IS BETWEEN 12m AND 18m
 - e. 5(h) - 1(v) WHERE SLOPE LENGTH IS BETWEEN 18m AND 27m
 - f. 6(h) - 1(v) WHERE SLOPE LENGTH IS GREATER THAN 27m

SLOPE LENGTHS CAN BE SHORTENED BY USING LOW FLOW EARTH BANKS AS CATCH DRAINS ABOVE THE EARTH BATTER AREA.

- STOCKPILE NOTES:

1. SPOIL AND TOPSOIL STOCKPILES SHALL BE LOCATED AWAY FROM DRAINAGE LINES AND AREAS WHERE WATER MAY CONCENTRATE.
2. IF STOCKPILES ARE TO BE IN PLACE FOR LONGER THAN 14 DAYS THEN THEY SHALL BE STABILIZED BY COVERING WITH A MULCH OR WITH TEMPORARY VEGETATION.
3. FOLLOWING CONSTRUCTION, TOPSOIL SHALL BE RESPREAD TO A MINIMUM DEPTH OF 100mm ON THE BARE SOIL SURFACES AND REVEGETATED.

1. ALL STRAW BALES SHALL BE BOUND WITH WIRE. STRAW BALES SHALL BE PLACED END TO END IN A SINGLE ROW AND EMBEDDED INTO THE SOIL TO A DEPTH OF 100mm. EACH BALE SHALL BE SECURELY ANCHORED WITH TWO STEEL STAKES DRIVEN 600mm INTO THE GROUND AND LOCKED ON THE BALE CENTRELINE.
2. SILT FENCES SHALL BE CONSTRUCTED BY STRETCHING A FILTER FABRIC (PROPEX OR SIMILAR) BETWEEN POSTS AT 2.5m CENTRES. FABRIC SHALL BE BURIED 150mm ALONG ITS LOWER EDGE.
3. PROVIDE STRIP OF TURF MIN. 300mm WIDE BEHIND KERB + 1m WIDE AROUND ALL SURFACE INLET PITS

12. LITTER, DEBRIS AND COARSE SEDIMENT SHALL BE REMOVED FROM THE GROSS POLLUTANT TRAPS AND TRASH RACKS AS REQUIRED.

These plans are referred to in certificate no. **14323** approved by:

Eric Hausfeld
Accredited Certifier
Registration No: **BPB 2416**
Categories: **B1,C1,C2,C3,C4,C5,C15 & D1**

LAND DEVELOPMENT CERTIFICATES
www.Ldcerts.com.au

SHEET SIZE: A1 ORIGINAL

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

Plotted: 28 May 2017 1:43:17 PM File Name: J:\110358 - O'Connell Lane, Caddens\03 - Stage 2\CD\CC\STAGE 2\110358CC249.dwg

