BLACKTOWN CITY COUNCIL

182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB
DEVELOPMENT APPLICATION

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS

LOCALITY
NOT TO SCALE

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Prepared for: THE BATHLA GROUP

Revision H
Date 30/08/2021
Project No. SY190192-01

A1

GENERAL NOTES

1. ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH BLACKTOWN CITY COUNCIL'S WORKS SPECIFICATION AND/OR AS DIRECTED BY THEIR REPRESENTATIVE, TO THE BUILDING CODE OF AUSTRALIA, NSW CODE OF PRACTICE AND THE RELEVANT SERVICE CODES AS APPLICABLE.
2. ALL WORKS SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE WORK HEALTH & SAFETY ACT 2011 AND ALL RELEVANT OCCUPATIONAL HEALTH & SAFETY POLICIES AND REGULATIONS.
3. DIMENSIONS SHALL NOT BE SCALED FROM THE PLANS. CLARIFICATION OF DIMENSIONS SHALL BE SOUGHT FROM THE SUPERINTENDENT OR REFERRED TO THE DESIGNER.
4. ALL LEVELS AND DIMENSIONS ARE TO BE CHECKED PRIOR TO THE COMMENCEMENT OF WORKS.
5. EXISTING SURFACE, CONTOURS AND LEVELS, STRUCTURES, BENCH MARKS AND BOUNDARIES HAVE BEEN COMPILED FROM DATA SUPPLIED BY THE SURVEYOR.
6. SURVEY MARKS SHOWN THUS ▲ SHALL BE MAINTAINED AT ALL TIMES. WHERE RETENTION IS NOT POSSIBLE THE ENGINEER SHALL BE NOTIFIED AND CONSENT RECIEVED PRIOR TO THEIR REMOVAL.
7. ALL NEW WORK IS TO MAKE A SMOOTH JUNCTION WITH EXISTING CONDITIONS.
8. THE CONTRACTOR IS NOT TO ENTER UPON NOR DO ANY WORK WITHIN OR ON ADJACENT LANDS WITHOUT THE PRIOR APPROVAL OF THE SUPERINTENDENT AND THE WRITTEN PERMISSION OF THE OWNERS.
9. SEDIMENT MEASURES SHALL BE IMPLEMENTED PRIOR TO SOIL DISTURBANCE IN KEEPING WITH THE 4th EDITION OF LANDCOMS "SOILS AND CONSTRUCTION - MANAGING URBAN STORMWATER" MARCH 2004 TO THE SATISFACTION OF COUNCIL'S REPRESENTATIVE AND AS SHOWN IN THESE DRAWINGS.
10. VEHICLE ACCESS AND ALL SERVICES ADJOINING PROPERTIES AFFECTED BY CONSTRUCTION WORKS SHALL BE MAINTAINED AT ALL TIMES.

UTILITY NOTES

1. THE CONTRACTOR IS TO IDENTIFY, LOCATE AND LEVEL ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION WORKS AND WHERE NECESSARY MAKE ARRANGEMENTS WITH THE RELEVANT AUTHORITY TO RELOCATE OR ADJUST WHERE NECESSARY.
2. BARKER RYAN STEWART DOES NOT ACCEPT ANY LIABILITY FOR INACCURACIES IN THE SERVICE INFORMATION AS SHOWN.
3. CONDUITS SHALL BE LAID AFTER POSITIONS HAVE BEEN DETERMINED BY THE RELEVANT AUTHORITIES AND BEFORE FINAL A.C. IS LAID
4. THE CONTRACTOR SHALL MAINTAIN SERVICES AND ALL WEATHER ACCESS AT ALL TIMES TO THE ADJOINING PROPERTIES.
5. CARE SHALL BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. MECHANICAL EXCAVATION SHOULD BE AVOIDED OVER TELSTRA, GAS OR ELECTRICAL SERVICES, EXCAVATE WITH HAND TOOLS IN THESE AREAS.

EARTHWORKS NOTES

1. UNSOUND MATERIALS AS DETERMINED BY COUNCIL'S REPRESENTATIVE SHALL BE REMOVED FROM ROADS PRIOR TO ANY FILLING.
2. ALL SITE REGRADING AREAS SHALL BE GRADED TO THE SATISFACTION OF COUNCIL'S REPRESENTATIVE. THE CONTRACTOR SHALL TAKE LEVELS ON THE EXISTING SURFACE AFTER STRIPPING TOPSOIL AND PRIOR TO COMMENCING ANY FILL OPERATIONS.
3. SURPLUS EXCAVATED MATERIAL SHALL BE PLACED OR DISPOSED OF IN ACCORDANCE WITH THE CONTRACT, OR AS DIRECTED BY THE SUPERINTENDENT.
4. ALL SITE FILLING SHALL BE PLACED IN LAYERS NOT EXCEEDING 300mm AND COMPACTED IN ACCORDANCE WITH COUNCIL'S SPECIFICATION AND BE TESTED AT THE REQUIRED INTERVALS BY AN APPROVED N.A.T.A. GEOTECHNICAL LABORATORY.
5. TOPSOIL SHALL BE SPREAD ON ALL FOOTPATHS, BERMS, BATTERS AND SITE REGRADING AREAS. EXCESS TOPSOIL SHALL BE DISPOSED OF AS DIRECTED BY THE SUPERINTENDENT.
6. THE CONTRACTOR SHALL MAINTAIN DUST CONTROL THROUGHOUT THE DURATION OF THE PROJECT.

DRAINAGE NOTES

1. ALL DRAINAGE LINES ON HIGH SIDE AND UNDER ROADS SHALL BE BACKFILLED WITH SHARP SAND AND HAVE AGRICULTURAL LINE WRAPPED IN AN APPROVED FILTER FABRIC FOR THE FULL LENGTH OF PIPELINE, DISCHARGING INTO THE DOWNSTREAM PIT.
2. SUBSOIL DRAINS SHALL BE CONSTRUCTED TO THE SATISFACTION OF COUNCIL'S REPRESENTATIVE.
3. ON COMPLETION OF PIPE INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL CONDITION INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AREAS, GRASSED AREAS AND ROAD PAVEMENTS.
4. TRENCH WIDTHS ARE TO BE KEPT TO A MINIMUM CONSISTENT WITH THE LAYING AND BEDDING OF THE RELEVANT SERVICE AND CONSTRUCTION OF PERSONNEL ACCESS WAYS AND PITS. REFER TO AUTHORITIES STANDARDS FOR MINIMUM TRENCH WIDTHS. STANDARD TRENCH WIDTHS ARE THE DIMENSIONS OF UNSUPPORTED TRENCHES. SUPPORT EXCAVATIONS TO THE REQUIREMENTS OF THE CONSTRUCTION SAFETY REGULATIONS 1950 UNDER THE CONSTRUCTION SAFETY ACT 1912 (AS AMENDED) APPLY.
5. BACKFILL SERVICE TRENCHES TO REQUIREMENTS WITHOUT DELAY FOR THE SECTION OF PIPE THAT HAS BEEN COMPLETED AND APPROVED, IF POSSIBLE ON THE SAME WORKING DAY.

ROADWORKS NOTES

1. PROVIDE VEHICULAR ENTRIES IN KERB AND GUTTER WHERE SHOWN OR WHERE DIRECTED BY THE SUPERINTENDANT TO MCC STANDARD DRAWING SD011.
2. ALL DELINEATION IS TO BE IN ACCORDANCE WITH COUNCILS STANDARDS.
3. DRIVEWAYS TO BE CONSTRUCTED TO MCC STANDARD DRAWING SD008 OR TO PROFILES SHOWN IN THIS PLAN SET.
4. NEW PAVEMENT TO JOIN EXISTING PAVEMENT TO MCC STANDARD DRAWING SD032.
5. ALL EXISTING SIGNAGE TO REMAIN OR BE RELOCATED AS REQUIRED.
6. TRAFFIC CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE RMS DOCUMENT "TRAFFIC CONTROL AT WORK SITES".

LEGEND

- PROPOSED DRAINAGE LINE
- EXISTING DRAINAGE LINE
- 79.2 — NATURAL SURFACE CONTOUR
- 79.2 — DESIGN SURFACE CONTOUR
- BOUNDARY
- TABLE DRAIN
- EXISTING HEADWALL
- PROPOSED HEADWALL
- LIMIT OF CONSTRUCTION — LIMIT OF WORKS
- PIT 1/2 — PIT NUMBER
- SUBSOIL DRAINAGE LINE
- GRATED SURFACE INLET PIT
- SEALED PIT
- KERB INLET PIT
- OG — OCEAN GUARD 200 MICRON PIT INSERT

EXISTING SERVICES

- EX. FENCE LINE
- EX. COMMS MAIN
- EX. TELEPHONE LINE
- EX. UNDERGROUND OPTICAL FIBRE
- EX. OVERHEAD ELECTRICITY
- EX. UNDERGROUND ELECTRICTY
- EX. GAS MAIN
- EX. SEWER MAIN
- EX. WATER MAIN

REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
E	JOINT REPORT AMENDMENTS	RW	18/06/21
F	JOINT REPORT AMENDMENTS	RW	15/07/21
G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
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Client: THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

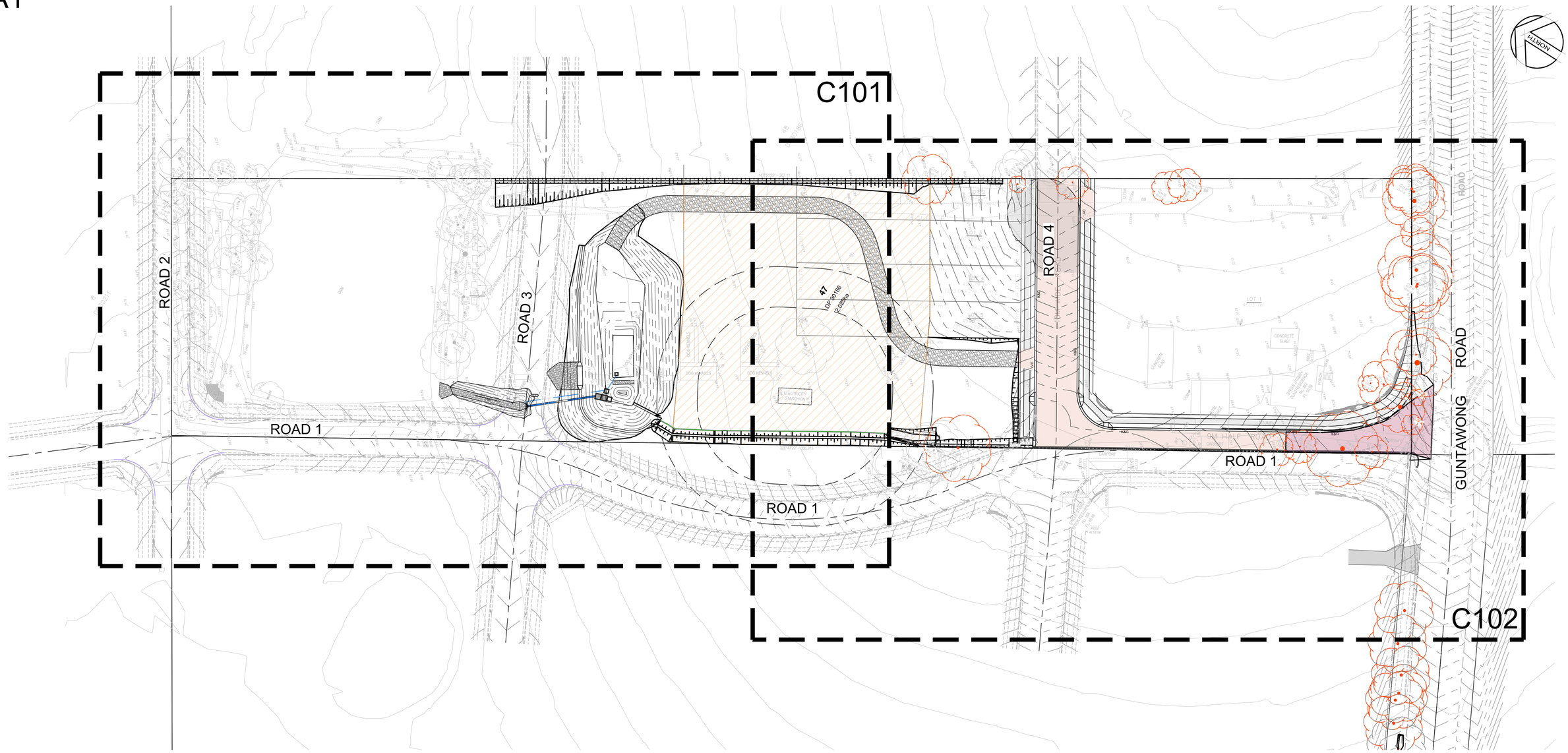
GENERAL NOTES

Designed: RW/GL
Drawn: RW
Checked: GJ

Scales: Plan -, Horiz. -, Vert. -, X-Sect. -
Datum: A.H.D.

Plan No. SY190192-01-011
File Ref. SY190192
REV. H

A1



GENERAL ARRANGEMENT PLAN
SCALE 1:500

20 0 20 40 60 80 100
METRES
1:1000

REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
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182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

GENERAL ARRANGEMENT PLAN

Designed: RW/GL
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Checked: GJ

Scales: Plan 1:500
Horiz. -
Vert. -
X-Sect. -

Datum: A.H.D.

Plan No.
SY190192-01-021
File Ref. SY190192
REV. H

A1

CH 120.00

58° 08' 57" 25.809

CH 105.00

SWALE TO BE DIRECTED TO EXISTING DAM.

PROVIDE TEMPORARY CATCH DRAIN ALONG BOUNDARY TO DIRECT OVERLAND FLOWS TO EXISTING DAM REFER TO SWALE 2 SIZING SHEET 502.

UPON CONSTRUCTION OF FUTURE ROAD, PIT 31/1 IS TO BE REMOVED. INTERALLOTMENT DRAINAGE LINE IS TO EXTEND FROM PIT 31/2 TO BOUNDARY PIT BEFORE DRAINING TO FUTURE DRAINAGE SYSTEM ALONG THE FUTURE ROAD.

TEMPORARY MAINTENANCE ACCESS TO BASIN AT EXISTING LEVELS, TO BE REMOVED ONCE THROUGH ROADS ARE CONSTRUCTED.

Δ 4° 48' 02" R100.000

A8.375

CH 90.00

147°51'25" 307.11

57° 48' 52" 93.654

CH 75.00

EXISTING DAM TO BE MAINTAINED

LOT 6 1534.55 m²

62° 56' 59" 60.750

CH 60.00

DIRECT TAIL OUT INTO EXISTING DAM. PROVIDE SCOUR PROTECTION IN TAILOUT DRAIN AND INTO THE DAM.

TEMPORARY OSD AND BIORETENTION BASIN A

31/1 300mmØ 1.0% 31/2 225mmØ 7.1%

31/5 225mmØ 1.3% 31/4 225mmØ 3.3% 31/3 150mmØ 6.3% 32/1 32/2 150mmØ 3.3% 32/3

47 DP30186 2.025ha

TRANSMISSION EASEMENT

CH 45.00

EXTENT OF FLOW IN SWALE 3 FOR 370L/s

ELECTRICITY STANCHION

SWALE 3

CH 30.00

Δ 0° 49' 18" R100.000

A0.862

A45.345 R110.000 Δ 23° 37' 08"

328°43'20" 306.375

CONSTRUCT TEMPORARY LOW EARTH MOUND TO DIRECT FLOWS IN TRANSMISSION EASEMENT TO BASIN. REFER TO SWALE 3 SHEET 502.

PROVIDE SCOUR PROTECTION ALONG TEMPORARY CATCH DRAIN

LIMIT OF WORKS ON THE BOUNDARY

ENSURE NO WATER IS DIRECTED TO OR IS ABLE TO POND AROUND ELECTRICITY STANCHION.

20m NO EXCAVATION ZONE

20 30

CH 330.00 CH 315.00 CH 300.00 CH 285.00 CH 270.00 CH 255.00 CH 240.00 CH 225.00 CH 210.00 CH 195.00 CH 180.00 CH 150

58° 06' 43" 30.238

CH 15.00

FUTURE ALIGNMENT OF ROADS TO BE CONSTRUCTED UPON DEVELOPMENT OF ADJOINING PROPERTIES

A90.690 R110.000 Δ 47° 14' 16"

30m ZONE

62° 37' 41" 49.789

CH 0.00

FOR CONTINUATION REFER SHEET 102

PLAN
SCALE 1:250

5 0 5 10 15 20 25 METRES 1:250

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182 GUNTAWONG ROAD RIVERSTONE
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ENGINEERING PLAN SHEET 1 OF 2

Designed: RW/GL
Drawn: RW
Checked: GJ

Scales: Plan 1:250, Horiz., Vert., X-Sect. -

Datum: A.H.D.

Plan No. SY190192-01-101
File Ref. SY190192
REV. H

A1

CONSTRUCT TEMPORARY MASONARY/SANDSTONE BLOCK RETAINING WALL ALONG BOUNDARY IF PERMISSION IS NOT GIVEN BY NEIGHBOUR FOR TEMPORARY BATTER AND CATCH DRAIN.

CONSTRUCT TEMPORARY SWALE ALONG BOUNDARY TO DIRECT UPSTREAM FLOWS TO EXISTING DAM

SWALE 2

LIMIT OF WORKS ON THE BOUNDARY

DIRECT CHANNEL TO PIT 16/2. REFER TO SHEET 502 FOR CALCULATIONS.

DIRECT CHANNEL TO PIT 15/1. REFER TO SHEET 502 FOR CALCULATIONS.

SEE SHEET C103 FOR CHANNEL DETAILS

CONSTRUCT TEMPORARY TURNING HEAD RADIUS 9m

SEE SHEET C103 FOR DETAILS OF LOT 1 DRAINAGE.

PROVIDE TEMPORARY ROLL KERB AND GUTTER FOR LENGTH SHOWN IN GREEN. TEMPORARY ROLL KERB AND GUTTER TO BE REPLACED WITH 150mm KERB AND GUTTER UPON COMPLETION OF FULL WIDTH OF ROAD 1. WORKS TO BE BONDED WITH COUNCIL.

PROVIDE TEMPORARY TRANSITION OF ROAD 1 FROM PIT 10/5 TO EXISTING EDGE OF BITUMEN ON GUNTAWONG ROAD TO ENSURE PONDING AT PIT 10/4 DOES NOT EXCEED 200mm. KERB AND GUTTER AND PRAM RAMP TO BE CONSTRUCTED UPON COMPLETION OF FULL WIDTH OF ROAD 1. WORKS TO BE BONDED WITH COUNCIL.

TEMPORARY MAINTENANCE ACCESS TO BASIN AT EXISTING LEVELS, TO BE REMOVED ONCE THROUGH ROADS ARE CONSTRUCTED.

TRANSMISSION EASEMENT

BATTER 1:6 TO EXISTING

PROVIDE TEMPORARY TAILOUT TO EXISTING AT 0.5%.

PROVIDE TEMPORARY 1.5m WIDE OPENING IN KERB IN LIEU OF PIT 14/2 TO ALLOW OVERLAND FLOW TO DRAIN ALONG BOUNDARY.

LINE TO BE CAPPED AT BOTH ENDS IN THE TEMPORARY CASE

CONSTRUCT TEMPORARY CONCRETE CROSSING TO MATCH INTO GUNTAWONG ROAD.

FUTURE ROUNDABOUT LAYOUT PROVIDED BY COUNCIL

FUTURE GUNTAWONG ROAD LEVELS PROVIDED BY COUNCIL

EXTENT OF FLOW IN SWALE 3 FOR 370L/s

CONSTRUCT TEMPORARY SWALE 3 ALONG BOUNDARY TO DIRECT FLOWS TO BASIN

CONSTRUCT TEMPORARY LINE TO DRAIN STORMWATER ACROSS TRANSMISSION EASEMENT

LINE 14 DRAINS DOWN ROAD 1 IN THE ULTIMATE SCENARIO. CAP AND BURY STUB FOR FUTURE CONNECTION.

CONSTRUCT TEMPORARY MASONARY/ SANDSTONE BLOCK RETAINING WALL ALONG BOUNDARY. WALL TO BE EXTENDED TO BOUNDARY OF RESIDUE LOT AND ROAD RESERVE

LIMIT OF WORKS ON THE BOUNDARY

OVERLAND FLOWS TO BE DIRECTED INTO SWALE ALONG BOUNDARY FROM END OF TEMPORARY KERB. NO WATER IS TO PASS INTO ADJOINING PROPERTY. FOOTPATH TO BE SHAPED TO ENSURE THIS.

CONSTRUCT TEMPORARY MASONARY/SANDSTONE BLOCK RETAINING WALL ALONG BOUNDARY IF PERMISSION IS NOT GIVEN BY NEIGHBOUR FOR TEMPORARY BATTER.

FUTURE PIT 11/1

CAP AND BURY PIPE AT BOUNDARY.

APPROXIMATE LOCATION OF DRIVEWAY OF ADJOINING PROPERTY 184 GUNTAWONG ROAD

2m LENGTH OF HALF CUT PIPE AT END OF PIPE LINE TO TRANSITION TO EXISTING

APPROXIMATE LOCATION OF ADJOINING PROPERTY'S BOUNDARY

TEMPORARY LINE BETWEEN 10/1a AND 10/2 TO DRAIN TO EXISTING.

PROVIDE TEMPORARY TAILOUT TO EXISTING CATCH DRAIN AT 0.5%.

TAILOUT CONSTRUCTION TO BE LIMITED WITHIN THE ROAD RESERVE

FUTURE ALIGNMENT OF ROADS TO BE CONSTRUCTED UPON DEVELOPMENT OF ADJOINING PROPERTIES

EXTEND A 200mm HOB ALONG BOUNDARY TO TRANSMISSION EASEMENT. EARTH MOUND OF SWALE 3 IS TO EXTEND TO MEET THIS LOW HOB TO ENSURE THAT ALL FLOWS TO 1% AEP ARE DIRECTED TO SWALE 3 AND INTO BASIN A.

CONTINUED ADJACENT

CONTINUED ADJACENT

FOR CONTINUATION REFER SHEET 101

5 0 5 10 15 20 25 METRES 1:250

NOTE: 200 MICRON OCEANGUARD PIT INSERTS TO BE INSTALLED IN ALL PITS DENOTED WITH OG

PLAN
SCALE 1:250

REV	AMENDMENT	ISSUED	DATE
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Client: THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

ENGINEERING PLAN SHEET 2 OF 2

Designed: RW/GL
Drawn: RW
Checked: GJ
Scales: Plan 1:250, Horiz., Vert., X-Sect. -
Datum: A.H.D.

Plan No. SY190192-01-102
File Ref. SY190192
REV. H

A1

DRIVEWAY AREA 201m² DRAINS TO 300mm WIDE GRATED TRENCH DRAIN AT BOTTOM OF RAMP. 300mm WIDE GRATED TRENCH DRAIN TO BE DIRECTED TO PIT WITH OCEANGUARD PIT INSERT PRIOR TO DISCHARGE INTO BASEMENT WET WELL. RISING MAIN TO BE CONNECTED TO STORMFILTER CHAMBER.

CONSTRUCT CONCRETE CHANNEL BETWEEN RETAINING WALL AND BOUNDARY TO COLLECT UPSTREAM FLOWS

HIGH POINT IN CHANNEL 1. CHANNEL FALLS AWAY AT MIN. 2%

CONSTRUCT RETAINING WALL TO MATCH EXISTING LEVELS.

CONSTRUCT NEW LAYBACK AND DRIVEWAY CROSSING IN ACCORDANCE WITH BCC COUNCIL STANDARDS AND REQUIREMENTS.

REFER TO ARCHITECTURAL FOR RAMP AND INTERNAL BASEMENT DETAILS.

50% OF THE NON-TRAFFICABLE ROOF TO DRAIN TO RAINWATER 10kL RE-USE TANK. REMAINING 50% OF NON-TRAFFICABLE ROOF TO DRAIN TO PIT P26

OVERFLOW FROM RAINWATER TANK TO SPLITTER PIT Ø225 @ 1%

SPLITTER PIT TO DIVERT LOW FLOWS TO JELLYFISH FILTER. SEE SHEET 712 FOR DETAILS.

JF1200-2-1 JELLYFISH FILTER

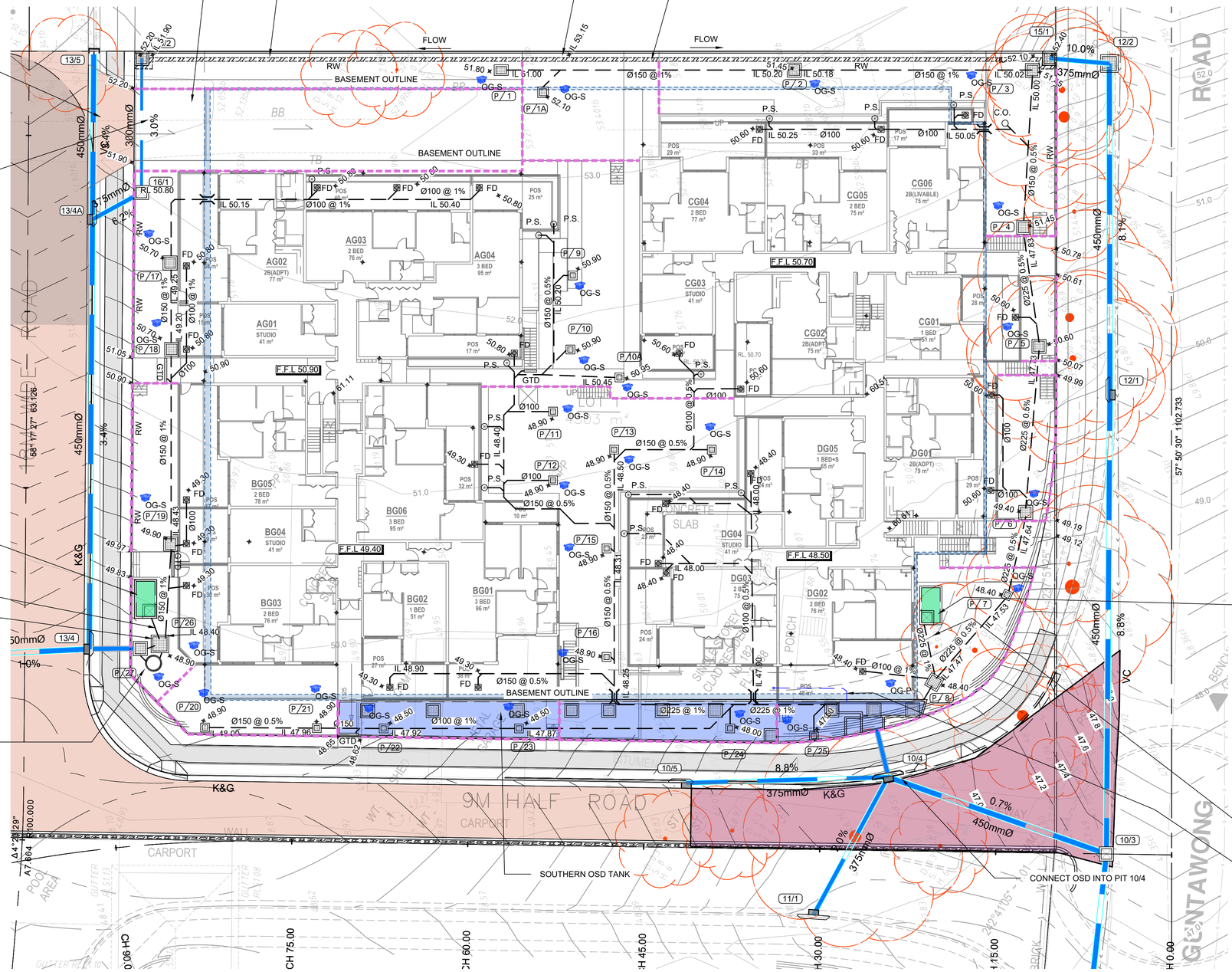
SOUTHERN OSD TANK

50% OF THE NON-TRAFFICABLE ROOF TO DRAIN TO RAINWATER 10kL RE-USE TANK. REMAINING 50% OF NON-TRAFFICABLE ROOF TO DRAIN TO PIT P8

OVERFLOW FROM RAINWATER TANK TO PIT P/8

SWRM FROM BASEMENT WET WELL

CONNECT OSD INTO PIT 10/4



LEGEND

- P.S. — PLANTER SUMP
- RWO — RAIN WATER OUTLET (450mm X 450mm)
- FD — FLOOR DRAIN
- GTD — GRATED TRENCH DRAIN (150mm WIDE)
- OG — OCEAN GUARD 200 MICRON PIT INSERT OG-S - SURFACE FLOW, OG-P - PIPE FLOW
- DWARF WALL/RETAINING WALL

NOTE:
1. ALL PITS WITHIN THE SITE AND DRAINAGE SYSTEM TO HAVE CHILD PROOF LOCKS.
2. BUILDING ROOF STORMWATER DRAINAGE BY OTHERS TO BE CONNECTED TO EXTERNAL TRUNK DRAINAGE SHOWN.
3. ALL STORMWATER RETICULATION SHOWN WITHIN BASEMENT AREA TO BE SUSPENDED UNDERSIDE OF GROUND FLOOR SLAB AND ENSURE 2.4m MINIMUM HEIGHT THROUGHOUT FOR LIGHT VEHICLES. A MINIMUM OF 4.5m HEIGHT CLEARANCE IS TO BE PROVIDED FOR WASTE VEHICLE MANOEUVRING IN DESIGNATED AREAS AS PER THE ARCHITECTURAL PLANS.
4. 100 YEAR ARI FLOWS TO BE DIRECTED TO THE RESPECTIVE OSDS. DWARF WALLS AND RETAINING WALLS TO BE PROVIDED ALONG BOUNDARY TO DIRECT AREAS TO THE OSD.
5. CATCHMENT FROM ACCESS DRIVEWAY TO BASEMENT TO BE RETICULATED AND PUMPED FROM THE WET-WELL PIT (DESIGN BY OTHERS) TO DRAINAGE LINE ENTERING THE STORMFILTER CHAMBER FOR TREATMENT.

PLAN
SCALE 1:200

4 0 4 8 12 16 20 METRES 1:200

REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
E	JOINT REPORT AMENDMENTS	RW	18/06/21
F	JOINT REPORT AMENDMENTS	RW	15/07/21
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182 GUNTAWONG ROAD RIVERSTONE
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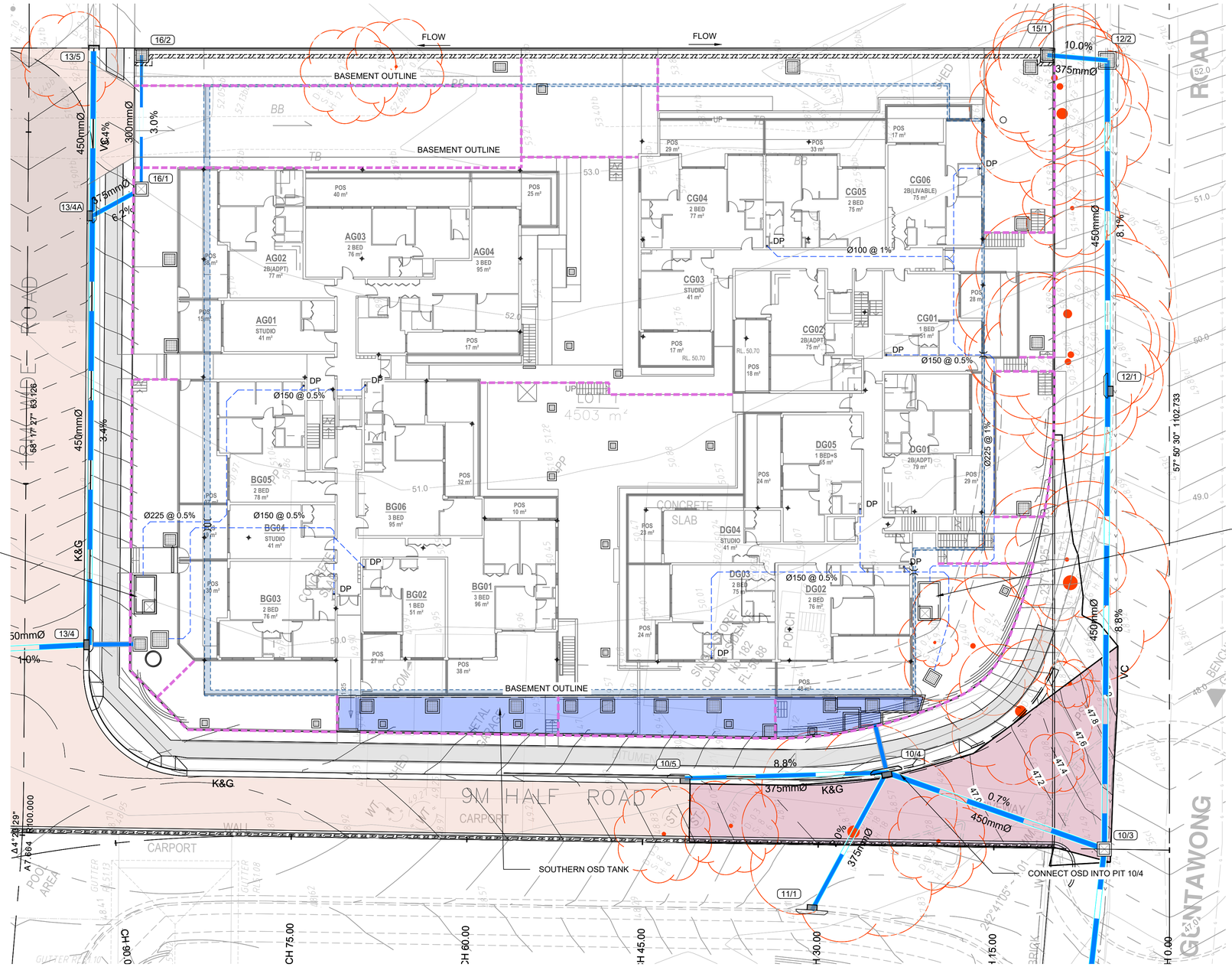
LOT 1 ENGINEERING PLAN

Designed: RW/GL
Drawn: RW
Checked: GJ
Scales: Plan 1:200, Horiz. -, Vert. -, X-Sect. -
Datum: A.H.D.

Plan No. SY190192-01-103
File Ref. SY190192
REV. H

A1



LEGEND

- P.S. — PLANTER SUMP
- RWO — RAIN WATER OUTLET (450mm X 450mm)
- FD — FLOOR DRAIN
- GTD — GRATED TRENCH DRAIN (150mm WIDE)
- OG — OCEAN GUARD 200 MICRON PIT INSERT OG-S - SURFACE FLOW, OG-P - PIPE FLOW

NOTE:

ROOF WATER DRAINAGE DESIGN HAS BEEN SHOWN INDICATIVELY AND IS SUBJECT TO DESIGN BY THE BUILDING HYDRAULIC ENGINEER.

4 0 4 8 12 16 20 METRES 1:200

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mail@brs.com.au
ABN: 26 134 067 842

Client: THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

LOT 1 ROOF DRAINAGE PLAN

Designed: RW/GL
Drawn: RW
Checked: GJ

Scales: Plan 1:200, Horiz. -, Vert. -, X-Sect. -

Datum: A.H.D.

Plan No. SY190192-01-104
File Ref. SY190192
REV. H

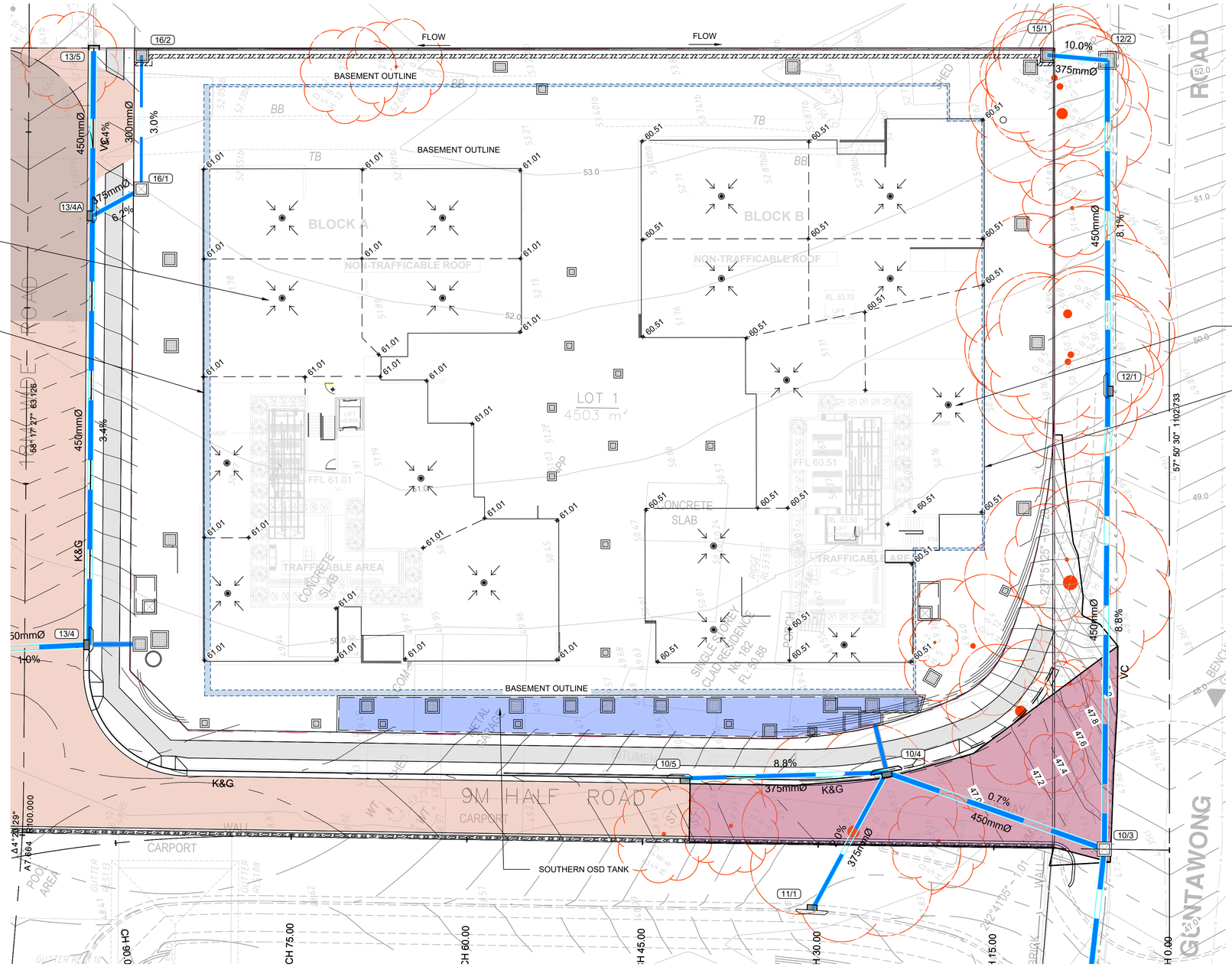
A1

PROVIDE SPS SUPERFLOW 100mm RWO TO BLOCK A ROOF @ RL 60.91 MIN. 1% FALL TO OUTLET.

PROVIDE EMERGENCY OVERFLOW FROM ROOF @ RL 61.01

PROVIDE SPS SUPERFLOW 100mm RWO TO BLOCK B ROOF @ RL 60.41 MIN. 1% FALL TO OUTLET.

PROVIDE EMERGENCY OVERFLOW FROM ROOF @ RL 60.51



NOTE:

ROOF WATER DRAINAGE DESIGN HAS BEEN SHOWN INDICATIVELY AND IS SUBJECT TO DESIGN BY THE BUILDING HYDRAULIC ENGINEER.

4 0 4 8 12 16 20
METRES
1:200

REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
E	JOINT REPORT AMENDMENTS	RW	18/06/21
F	JOINT REPORT AMENDMENTS	RW	15/07/21
G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION

SYDNEY P: 02 9659 0005
CENTRAL COAST P: 02 4325 5255
HUNTER P: 02 4966 8388
S.E. QLD P: 07 5582 6555

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Client:

THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

LOT 1 ROOF PLAN

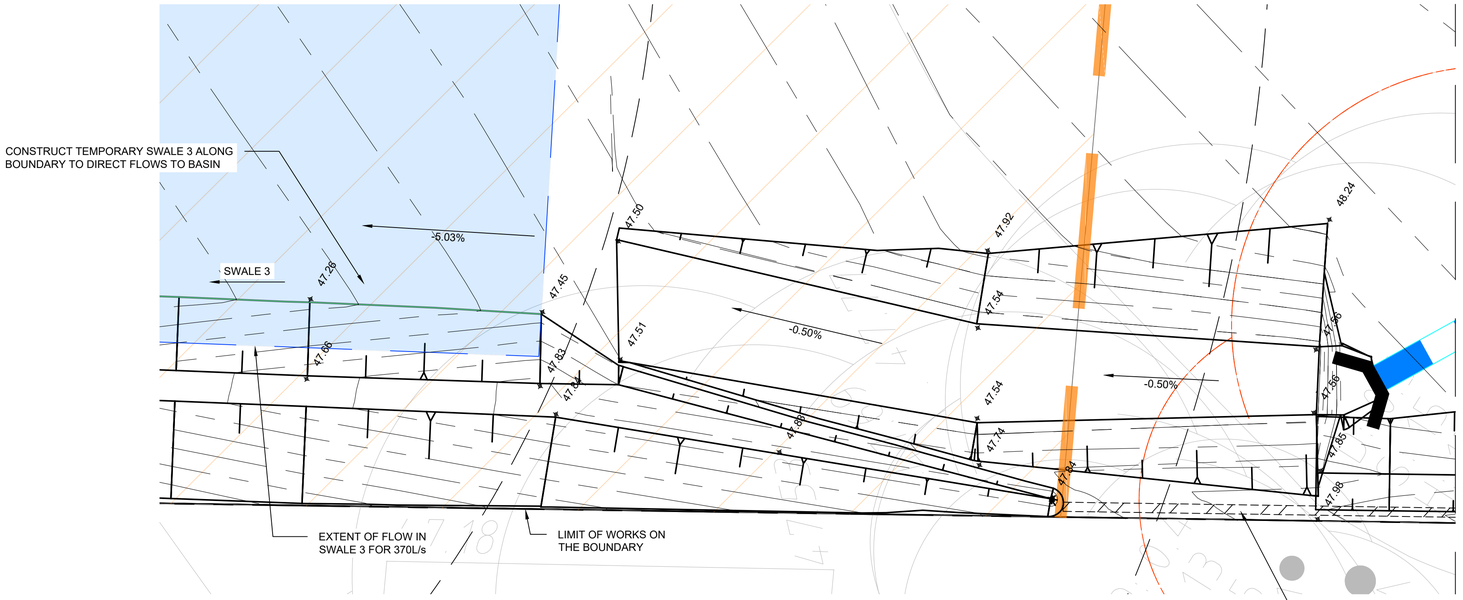
Designed: RW/GL
Drawn: RW
Checked: GJ

Scales: Plan
Horiz.
Vert.
X-Sect.

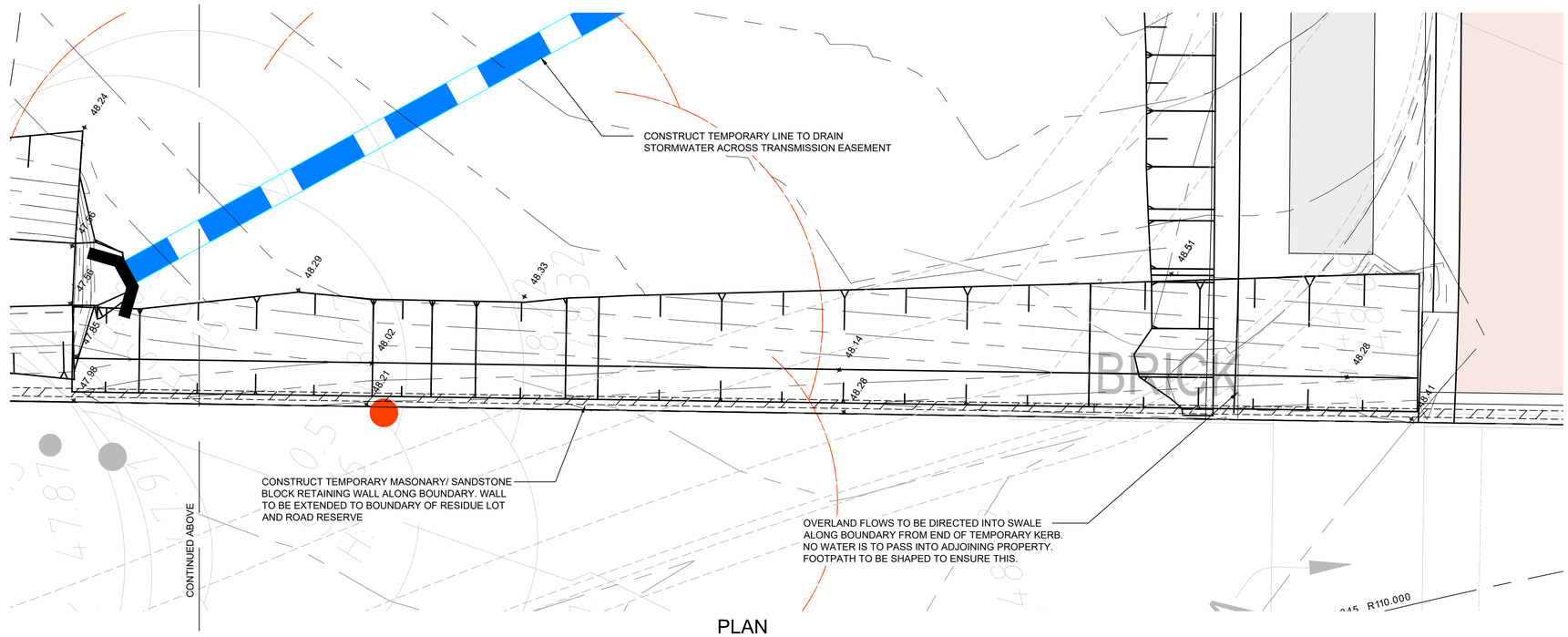
Datum: A.H.D.

Plan No.
SY190192-01-105
File Ref.
SY190192
REV.
H

A1



PLAN
SCALE 1:50



PLAN
SCALE 1:50

1 0 1 2 3 4 5
METRES
1:50

REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
E	JOINT REPORT AMENDMENTS	RW	18/06/21
F	JOINT REPORT AMENDMENTS	RW	15/07/21
G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION
SYDNEY P: 02 9659 0005
CENTRAL COAST P: 02 4325 5255
HUNTER P: 02 4966 8388
S.E. QLD P: 07 5582 6555
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mail@brs.com.au
ABN: 26 134 067 842

Client: THE BATHLA GROUP

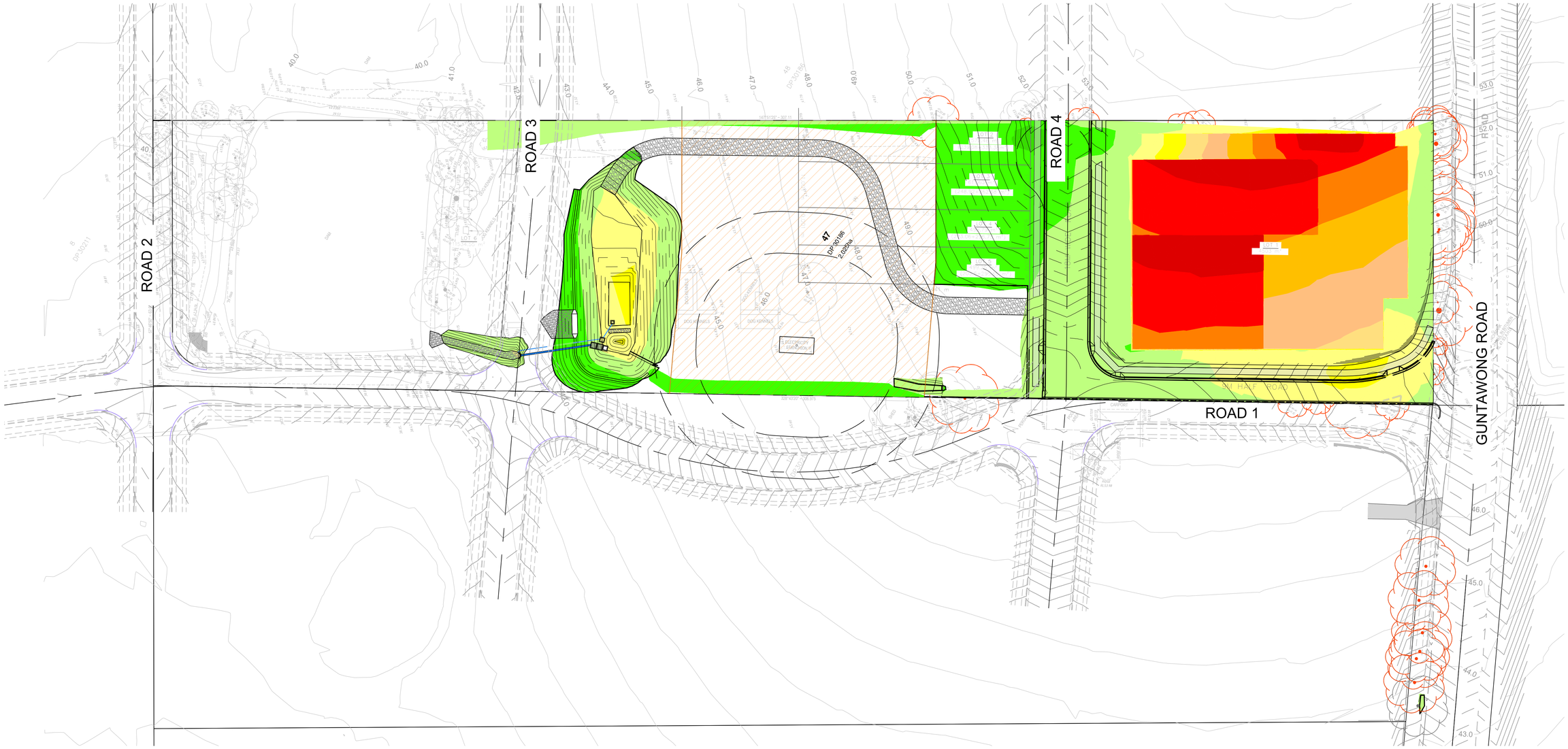
182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

HEADWALL OUTLET DETAIL

Designed: RW/GL
Drawn: RW
Checked: GJ
Scales: Plan
Horiz.
Vert.
X-Sect.
Datum: A.H.D.

Plan No.
SY190192-01-106
File Ref. SY190192
REV. H

A1



BULK EARTHWORKS PLAN

SCALE 1:500

10 0 10 20 30 40 50 METRES 1:500

REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
E	JOINT REPORT AMENDMENTS	RW	18/06/21
F	JOINT REPORT AMENDMENTS	RW	15/07/21
G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION

SYDNEY P: 02 9659 0005
CENTRAL COAST P: 02 4325 5255
HUNTER P: 02 4966 8388
S.E. QLD P: 07 5582 6555

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ABN: 26 134 067 842

Client: THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

BULK EARTHWORKS PLAN

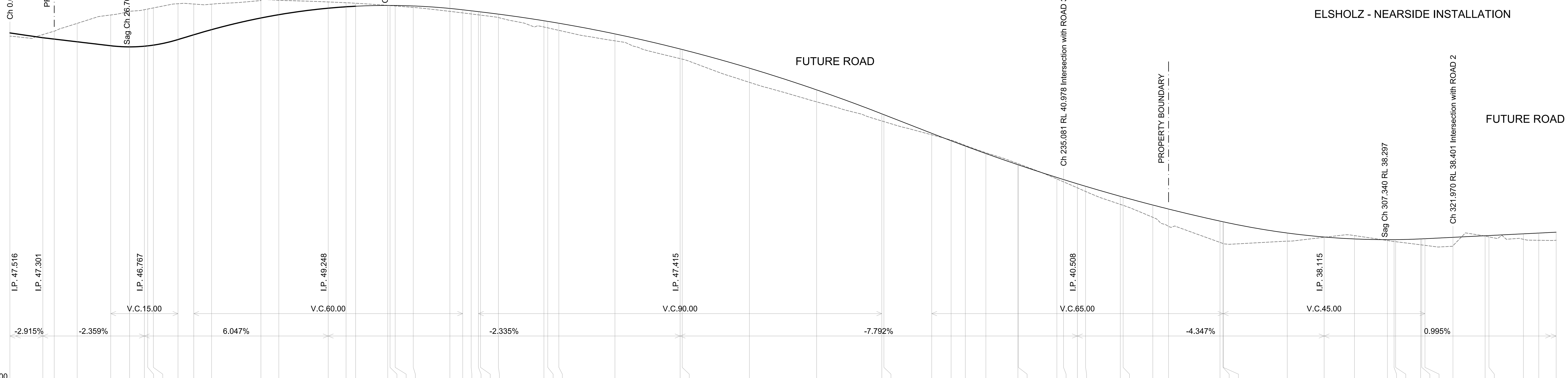
Designed: RW/GL
Drawn: RW
Checked: GJ

Scales: Plan 1:500
Horiz. -
Vert. -
X-Sect. -

Datum: A.H.D.

Plan No. SY190192-01-120
File Ref. SY190192
REV. H

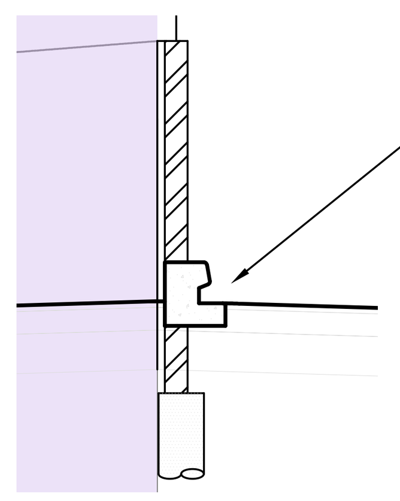
A1



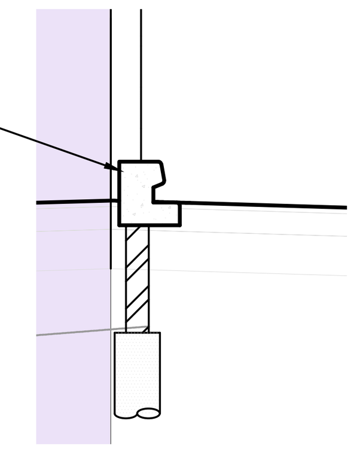
R.L. 32.000

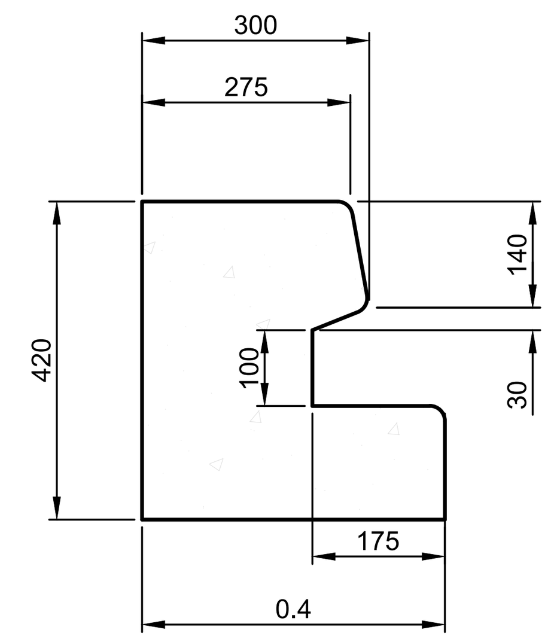
CHAINAGE	DESIGN SURFACE	EXISTING SURFACE
0.000	47.516	47.37
7.347	47.301	47.44
9.896	47.241	47.60
15.000	47.121	47.94
22.500	46.944	48.32
26.709	46.894	48.47
30.000	46.925	48.55
30.751	46.940	48.58
32.014	46.973	48.63
37.500	47.221	48.82
41.020	47.434	48.80
45.000	47.663	48.80
56.000	48.183	48.97
60.000	48.330	48.97
71.020	48.619	48.90
75.000	48.682	48.86
77.135	48.706	48.84
84.308	48.742	48.74
84.815	48.742	48.74
85.969	48.740	48.72
90.000	48.720	48.65
98.162	48.608	48.48
101.020	48.547	48.41
102.917	48.503	48.36
104.534	48.465	48.32
105.000	48.454	48.31
108.994	48.355	48.20
119.158	48.059	47.78
120.000	48.032	47.74
122.480	47.949	47.63
135.000	47.473	47.16
149.534	46.801	46.37
150.000	46.777	46.35
165.000	45.945	45.31
180.000	44.977	44.44
194.534	43.908	43.59
195.000	43.872	43.56
205.673	43.040	42.97
210.000	42.708	42.74
213.170	42.471	42.50
217.762	42.137	42.17
224.903	41.640	41.69
225.000	41.633	41.68
233.602	41.071	41.00
235.081	40.978	40.88
238.173	40.788	40.61
240.000	40.678	40.45
247.750	40.231	39.87
248.382	40.196	39.83
255.000	39.842	39.29
258.515	39.663	38.89
270.000	39.125	38.17
270.673	39.095	38.13
270.720	39.093	38.12
285.000	38.594	38.23
293.220	38.416	38.40
300.000	38.329	38.48
307.340	38.297	38.26
308.827	38.299	38.22
309.178	38.299	38.21
314.765	38.330	38.07
315.000	38.332	38.06
315.720	38.339	38.04
321.970	38.401	38.03
329.143	38.473	38.45
330.000	38.481	38.42
337.693	38.558	38.31
341.109	38.592	38.27
345.000	38.630	38.27

LONGITUDINAL SECTION
ROAD1 Ch 0.000 to Ch 345.000
HOR 1:500 VERT 1:100



INSET 'A'
1:50

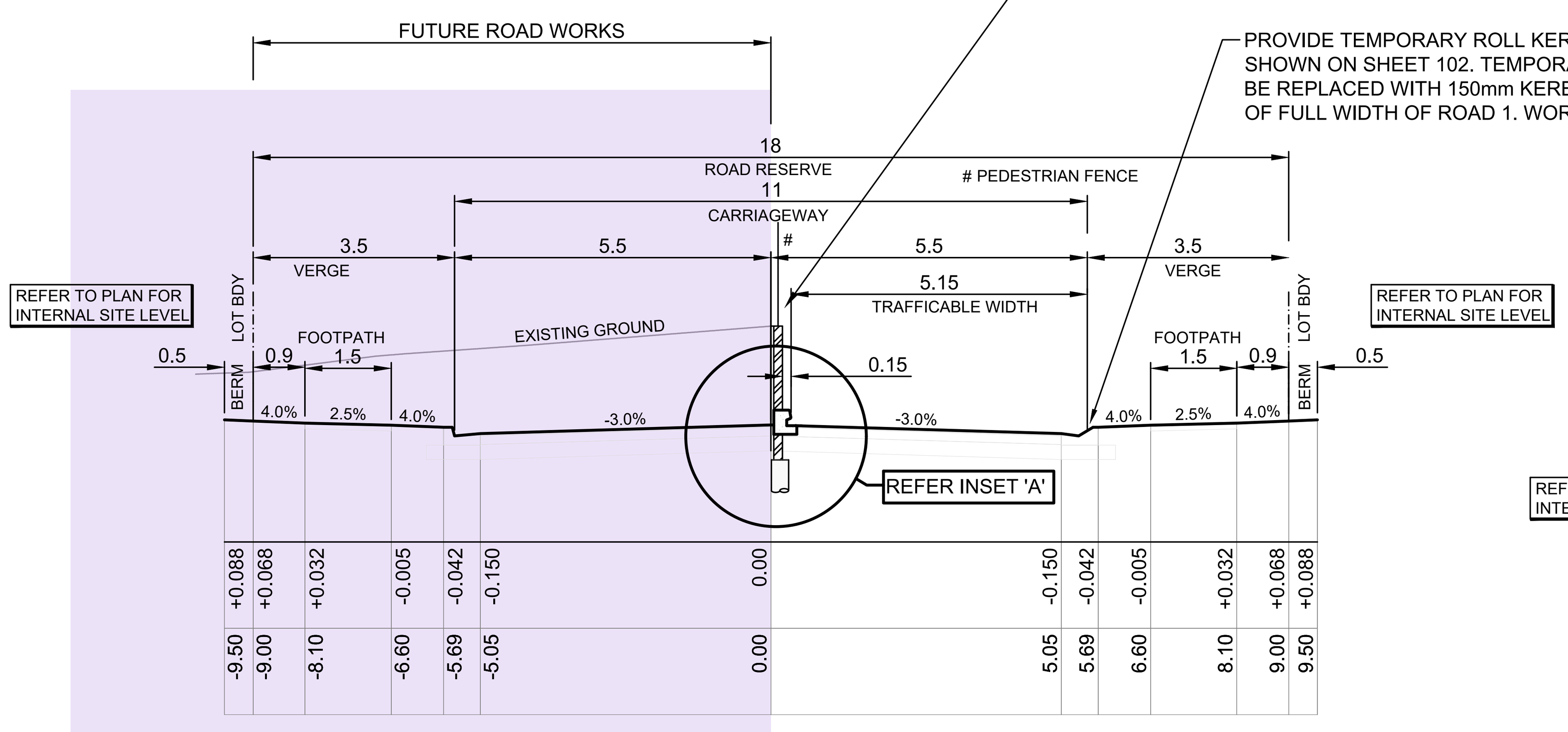

INSET 'B'
1:50



ELSHOLZ - NEARSIDE INSTALLATION

CONSTRUCT PEDESTRIAN SAFETY FENCE OR 1.8m HIGH PRIVACY FENCE ALONG TOP OF WALL IN ACCORDANCE WITH NEIGHBOURS PREFERENCE.

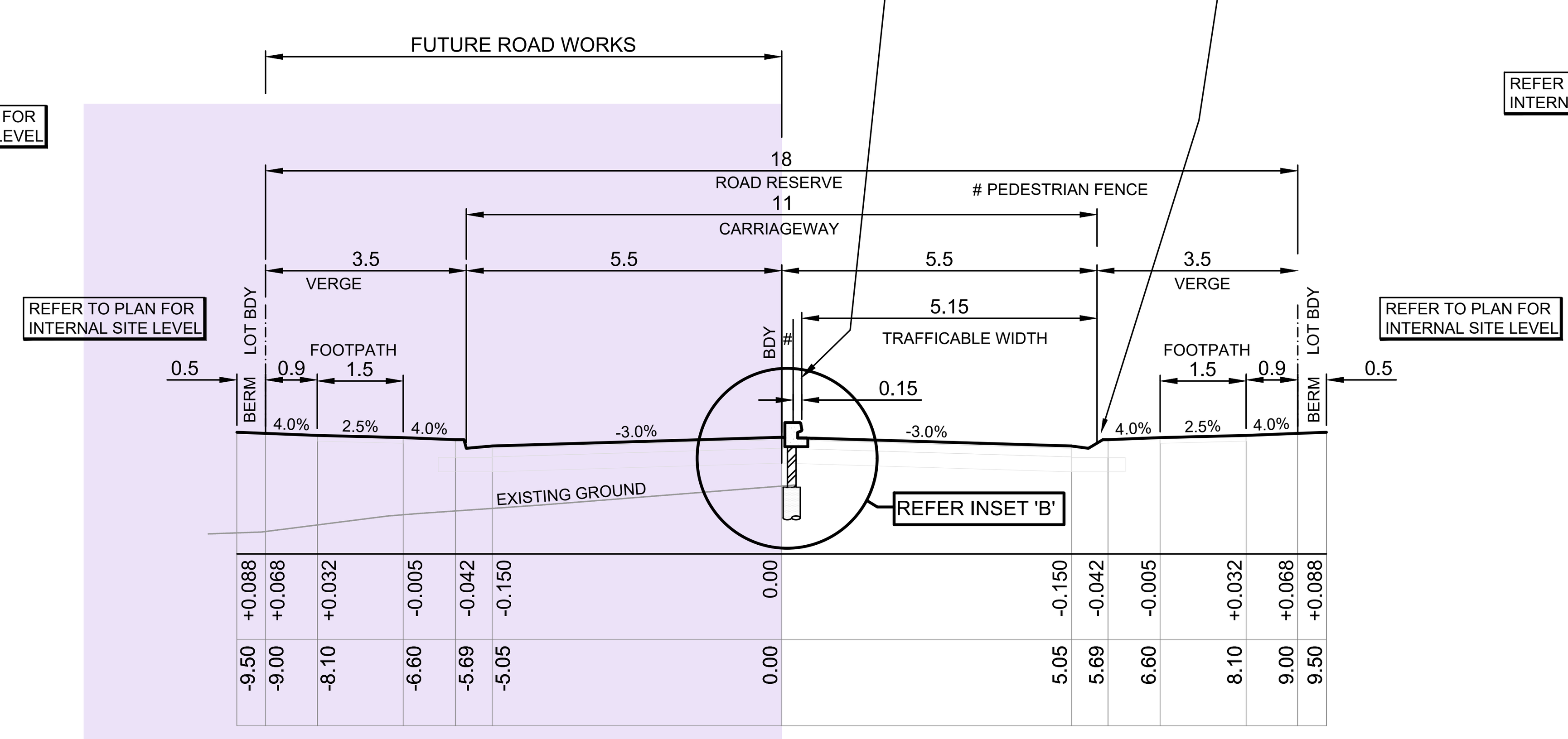
PROVIDE TEMPORARY ROLL KERB AND GUTTER FOR LENGTH SHOWN ON SHEET 102. TEMPORARY ROLL KERB AND GUTTER TO BE REPLACED WITH 150mm KERB AND GUTTER UPON COMPLETION OF FULL WIDTH OF ROAD 1. WORKS TO BE BONDED WITH COUNCIL.



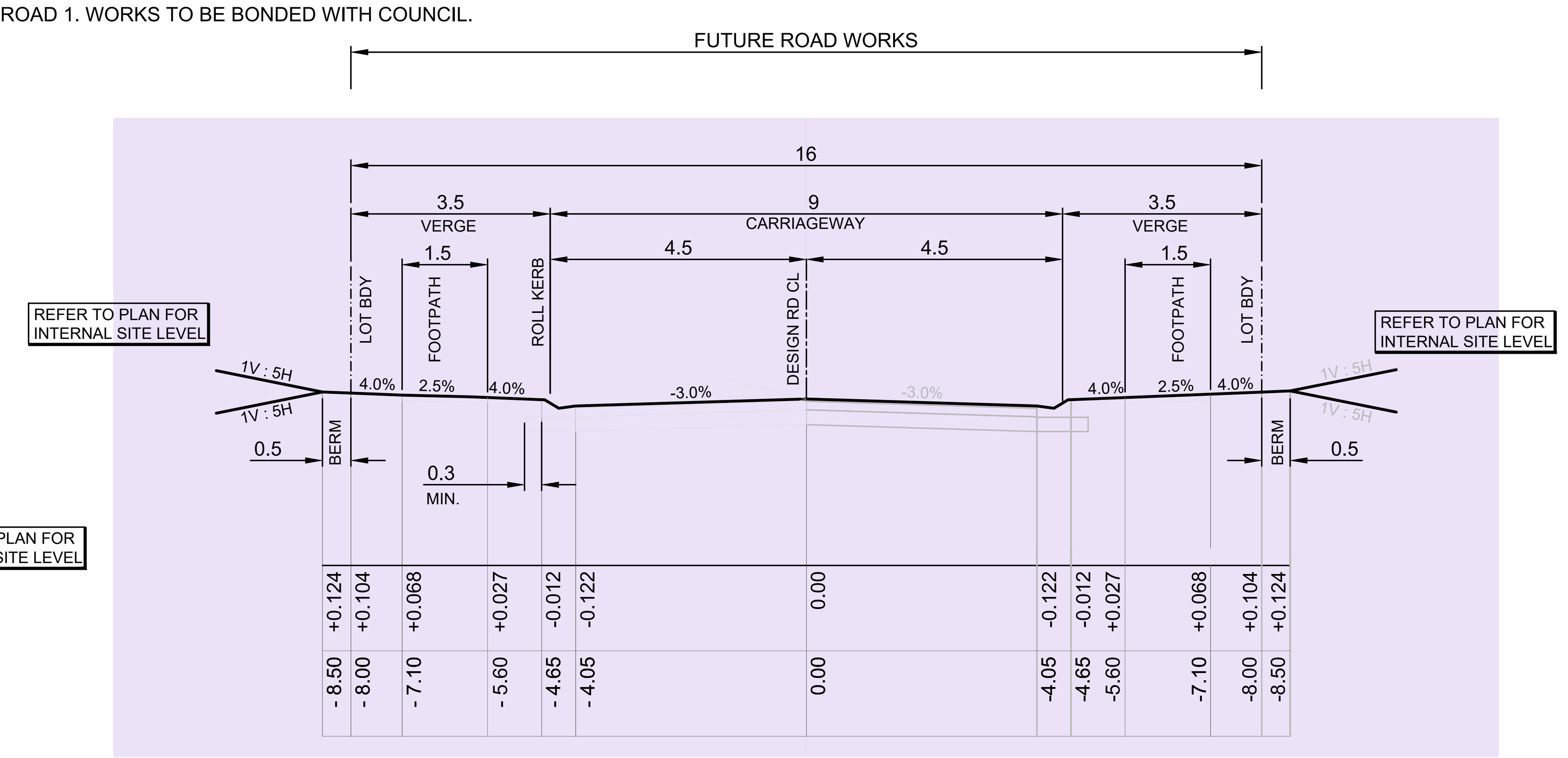
TYPICAL ROAD SECTION ROAD 1 - CH 9.896 TO CH 78 (AREA IN CUT)
SCALE 1:100

PROVIDE TEMPORARY ROLL KERB AND GUTTER FOR LENGTH SHOWN ON SHEET 102. TEMPORARY ROLL KERB AND GUTTER TO BE REPLACED WITH 150mm KERB AND GUTTER UPON COMPLETION OF FULL WIDTH OF ROAD 1. WORKS TO BE BONDED WITH COUNCIL.

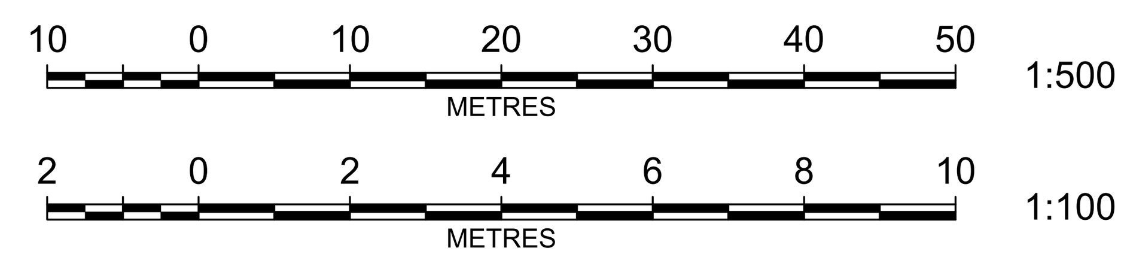
1.8 m HIGH PRIVACY FENCE CONSTRUCTED ALONG TOP OF KERB.



TYPICAL ROAD SECTION ROAD 1 - CH 9.896 TO CH 78 (AREA IN FILL)
SCALE 1:100



TYPICAL ROAD SECTION ROAD 1 - CH 99.937 TO CH 348.35
SCALE 1:100



REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
E	JOINT REPORT AMENDMENTS	RW	18/06/21
F	JOINT REPORT AMENDMENTS	RW	15/07/21
G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION
SYDNEY P: 02 9659 0005
CENTRAL COAST P: 02 4325 5255
HUNTER P: 02 4966 8388
S.E. QLD P: 07 5582 6555
www.brs.com.au
mail@brs.com.au
ABN: 26 134 067 842

Client: THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE PROPOSED SUBDIVISION AND RFB

LONGITUDINAL SECTION AND TYPICAL SECTION ROAD 1

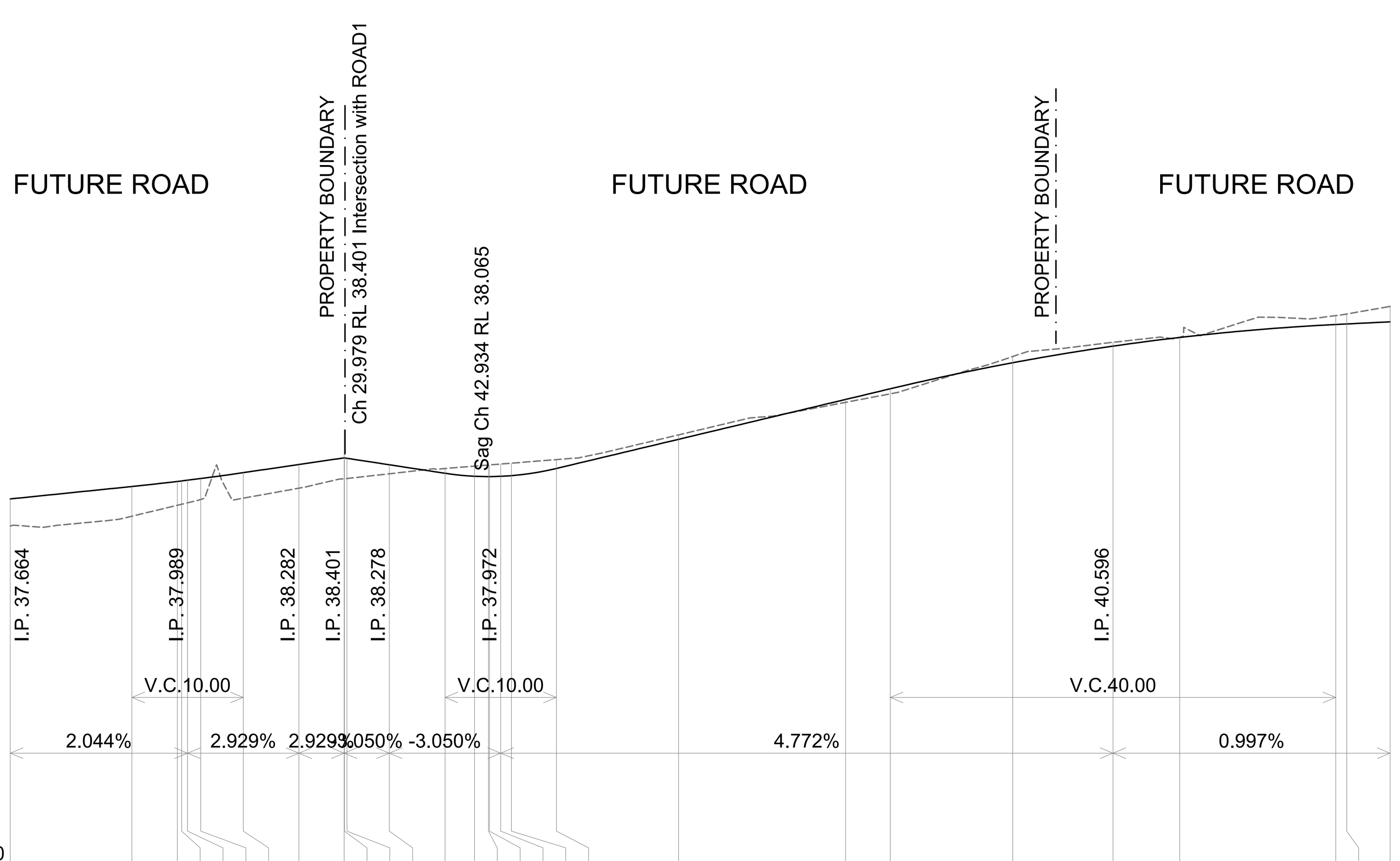
Designed: RW/GL
Drawn: RW
Checked: GJ

Scales: Plan - Horiz. - Vert. - X-Sect. -

Datum: A.H.D.

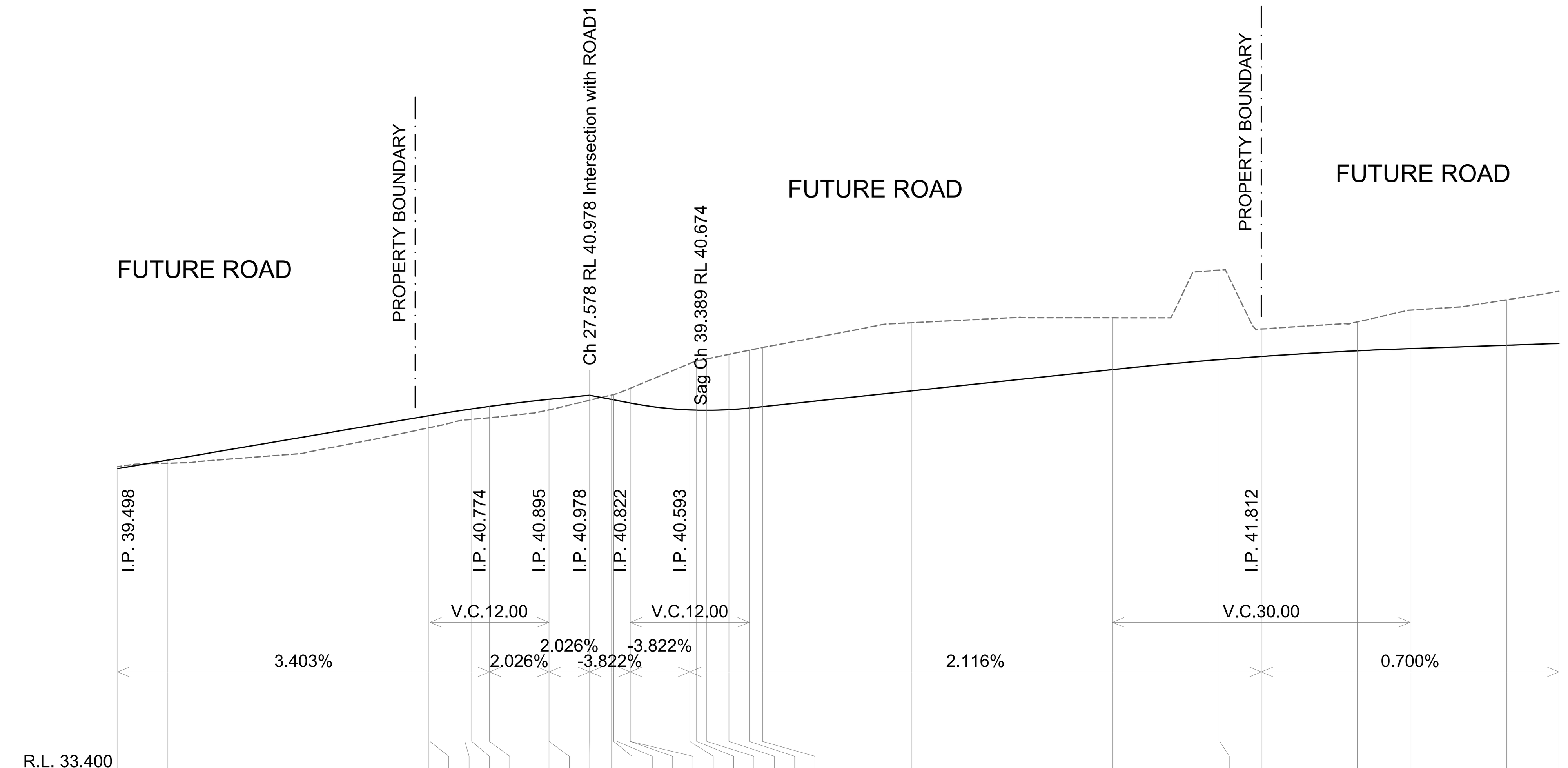
Plan No. SY190192-01-201
File Ref. SY190192
REV. H

A1



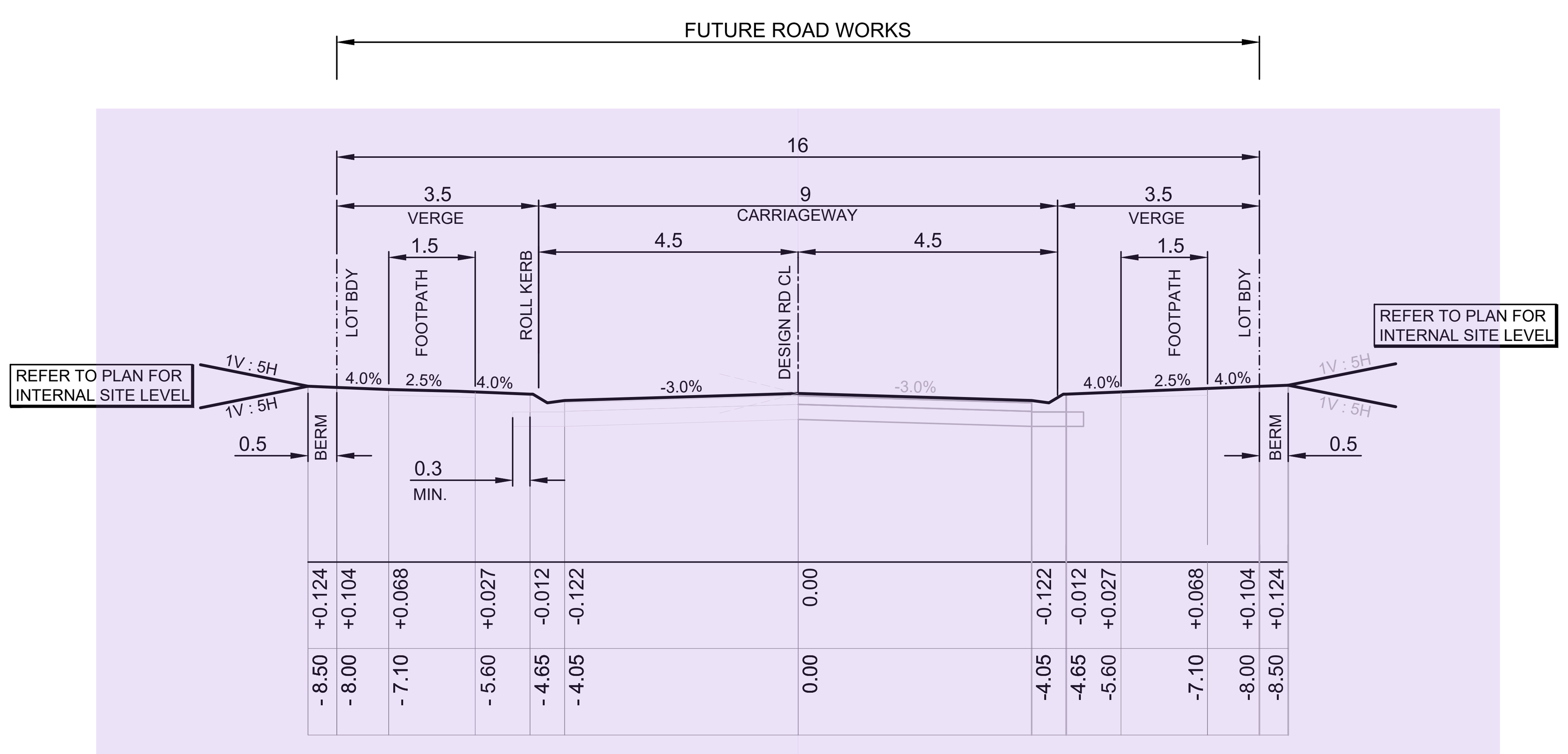
CHAINAGE	DESIGN SURFACE	EXISTING SURFACE
0.000	37.664	37.18
10.918	37.887	37.35
15.000	37.978	37.55
15.382	37.987	37.57
15.918	38.000	37.59
17.099	38.030	37.65
20.918	38.136	37.68
25.919	38.282	37.86
29.979	38.401	38.03
30.000	38.401	38.03
30.238	38.393	38.03
34.033	38.278	38.12
39.034	38.125	38.21
41.680	38.072	38.25
42.934	38.065	38.27
43.026	38.066	38.27
44.034	38.070	38.29
45.000	38.082	38.31
49.034	38.211	38.37
60.000	38.734	38.81
75.000	39.450	39.40
79.013	39.642	39.55
90.000	40.109	40.22
99.013	40.407	40.48
105.000	40.563	40.57
119.013	40.795	40.96
120.000	40.805	40.98
123.893	40.844	41.12

LONGITUDINAL SECTION
ROAD 2 Ch 0.000 to Ch 123.893
HOR 1:500 VERT 1:100

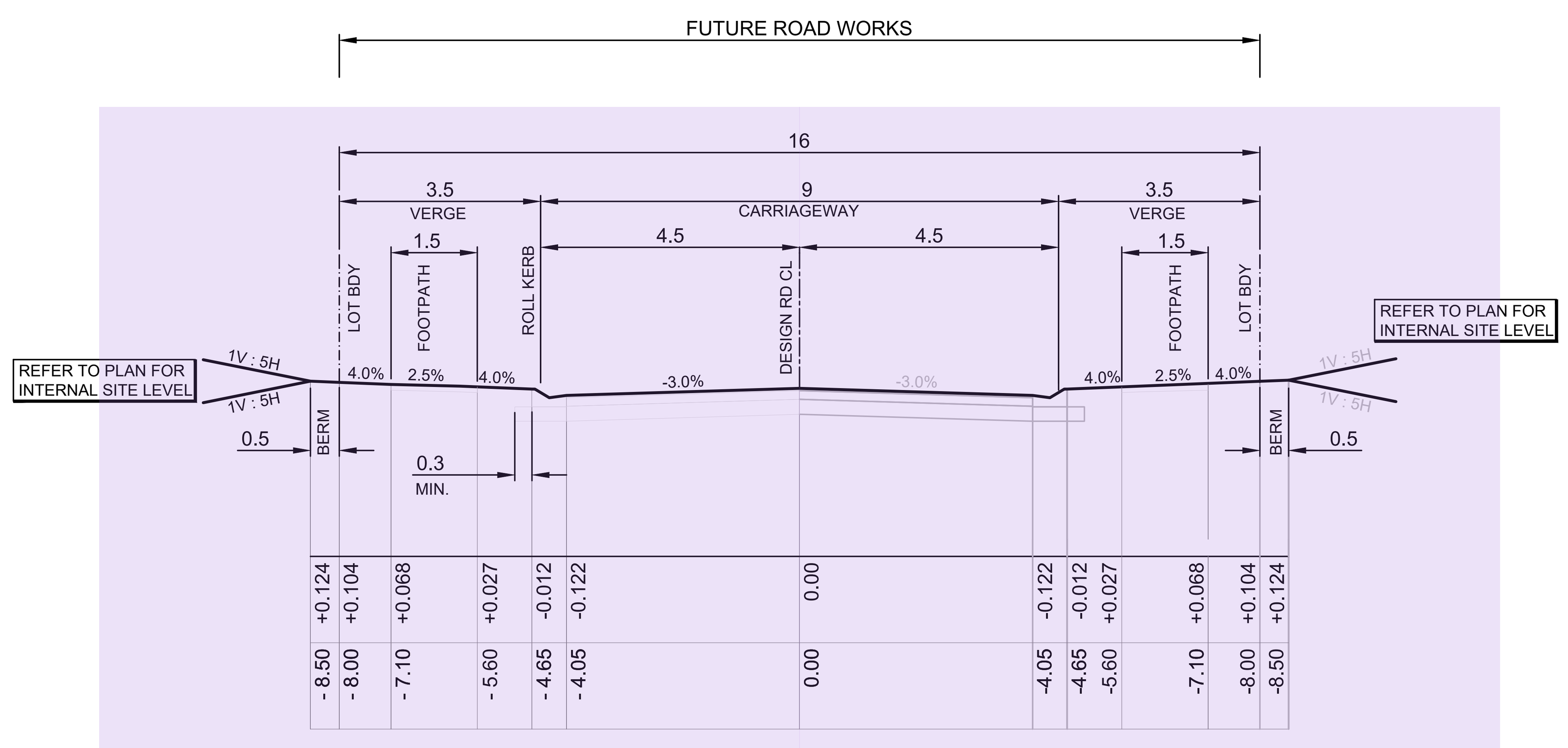


CHAINAGE	DESIGN SURFACE	EXISTING SURFACE
-20.000	39.498	39.54
-15.000	39.668	39.61
0.000	40.179	39.86
11.321	40.564	40.32
11.480	40.569	40.33
15.000	40.682	40.48
15.687	40.702	40.49
17.480	40.753	40.52
23.480	40.895	40.68
23.481	40.895	40.68
27.578	40.978	40.88
29.789	40.894	40.98
30.000	40.885	40.99
30.351	40.872	41.01
31.665	40.822	41.12
31.666	40.822	41.12
37.666	40.682	41.62
38.354	40.677	41.67
39.389	40.674	41.71
41.621	40.687	41.80
43.666	40.720	41.89
45.000	40.748	41.94
60.000	41.065	42.44
75.000	41.383	42.54
80.286	41.495	42.54
90.000	41.678	43.48
91.101	41.696	43.50
95.286	41.759	42.31
99.480	41.814	42.37
105.000	41.873	42.46
110.286	41.917	42.69
120.000	41.985	42.90
125.288	42.022	43.07

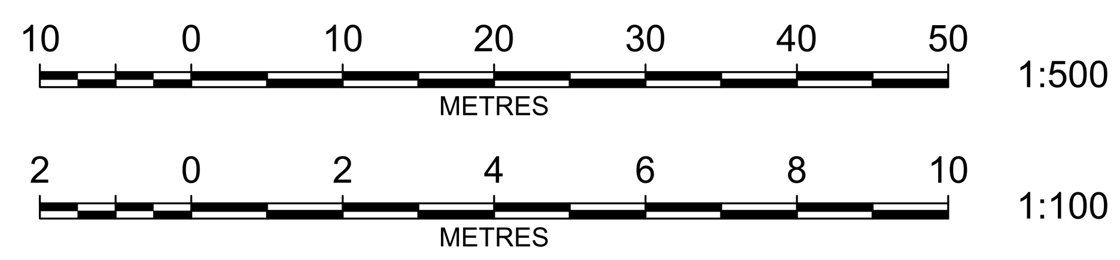
LONGITUDINAL SECTION
ROAD 3 Ch -20.000 to Ch 125.288
HOR 1:500 VERT 1:100



TYPICAL ROAD SECTION ROAD 2
SCALE 1:100



TYPICAL ROAD SECTION ROAD 3
SCALE 1:100



REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
E	JOINT REPORT AMENDMENTS	RW	18/06/21
F	JOINT REPORT AMENDMENTS	RW	15/07/21
G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION
SYDNEY P: 02 9659 0005
CENTRAL COAST P: 02 4325 5255
HUNTER P: 02 4966 8388
S.E. QLD P: 07 5582 6555
www.brs.com.au
mail@brs.com.au
ABN: 26 134 067 842

Client:
THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE PROPOSED SUBDIVISION AND RFB

LONGITUDINAL SECTION AND TYPICAL SECTION ROAD 2 & ROAD 3

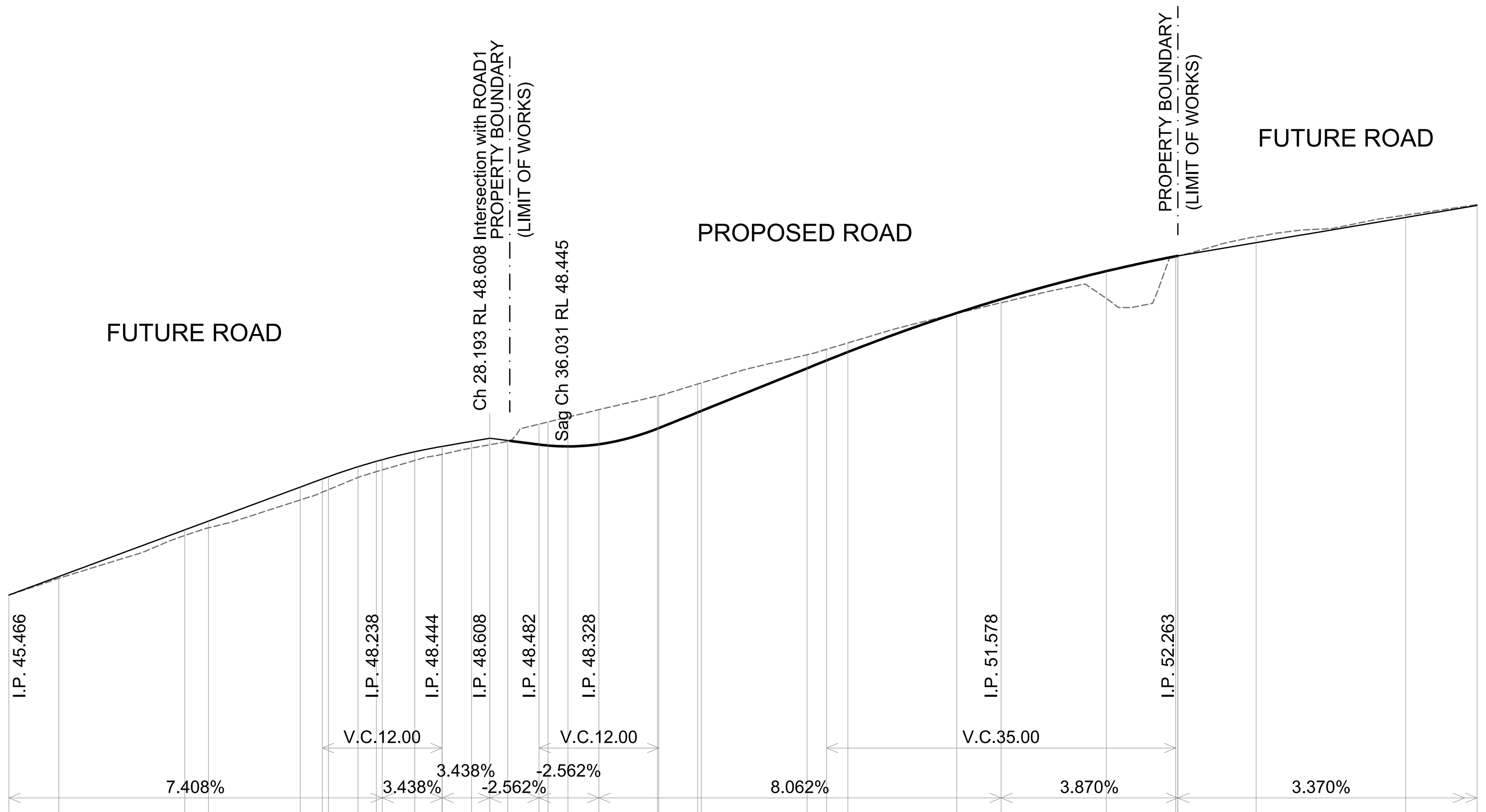
Designed: RW/GL
Drawn: RW
Checked: GJ

Scales: Plan - Horiz. - Vert. - X-Sect. -

Datum: A.H.D.

Plan No. SY190192-01-202
File Ref. SY190192
REV. H

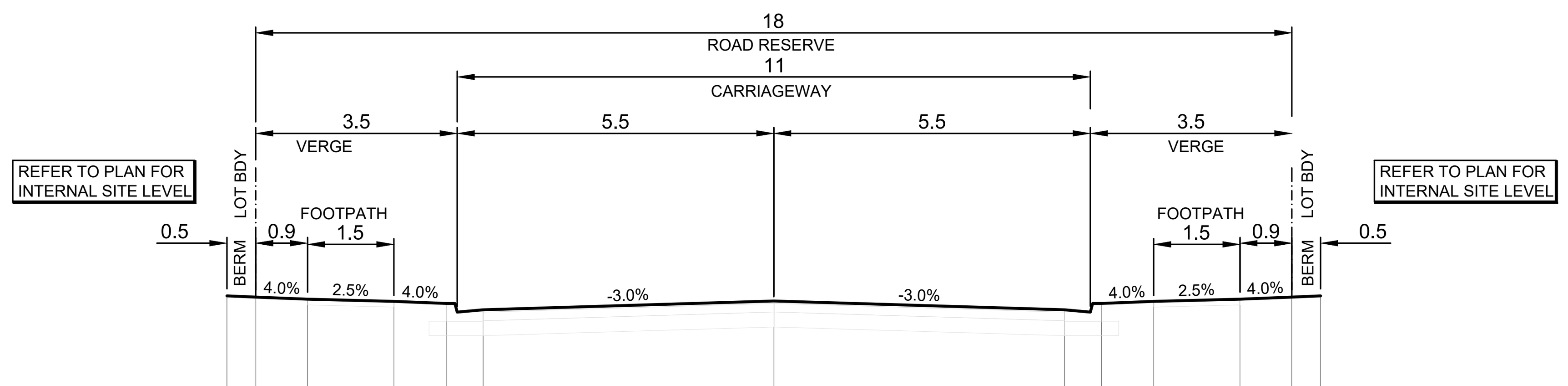
A1



R.L. 39.400

CHAINAGE	DESIGN SURFACE	EXISTING SURFACE
-20.000	45.466	45.47
-15.000	45.836	45.80
-2.370	46.772	46.66
0.000	46.947	46.81
9.193	47.628	47.37
11.419	47.793	47.53
12.028	47.838	47.58
15.000	48.037	47.82
16.829	48.146	47.94
17.419	48.178	47.97
20.682	48.338	48.16
23.419	48.444	48.28
23.420	48.444	48.28
26.368	48.546	48.41
28.193	48.608	48.48
30.000	48.562	48.54
33.136	48.482	48.89
34.032	48.462	48.93
36.031	48.445	49.03
39.137	48.487	49.18
45.000	48.801	49.45
45.137	48.812	49.46
49.033	49.126	49.70
49.387	49.154	49.72
60.000	50.010	50.28
61.950	50.167	50.39
64.094	50.337	50.52
75.000	51.117	51.11
79.450	51.394	51.32
90.000	51.957	51.41
96.950	52.255	52.25
97.156	52.263	52.26
97.158	52.263	52.26
105.000	52.527	52.65
120.000	53.033	53.08
127.158	53.274	53.29

LONGITUDINAL SECTION
ROAD 4 Ch -20.000 to Ch 127.158
HOR 1:500 VERT 1:100



Offset	Level
-9.50	+0.088
-9.00	+0.068
-8.10	+0.032
-6.60	-0.005
-5.69	-0.042
-5.05	-0.150
0.00	0.00
5.05	-0.150
5.69	-0.042
6.60	-0.005
8.10	+0.032
9.00	+0.068
9.50	+0.088

TYPICAL ROAD SECTION ROAD 4
SCALE 1:100

10 0 10 20 30 40 50 METRES 1:500

2 0 2 4 6 8 10 METRES 1:100

REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
E	JOINT REPORT AMENDMENTS	RW	18/06/21
F	JOINT REPORT AMENDMENTS	RW	15/07/21
G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION
SYDNEY P: 02 9659 0005
CENTRAL COAST P: 02 4325 5255
HUNTER P: 02 4966 8388
S.E. QLD P: 07 5582 6555
www.brs.com.au
mail@brs.com.au
ABN: 26 134 067 842

Client: THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

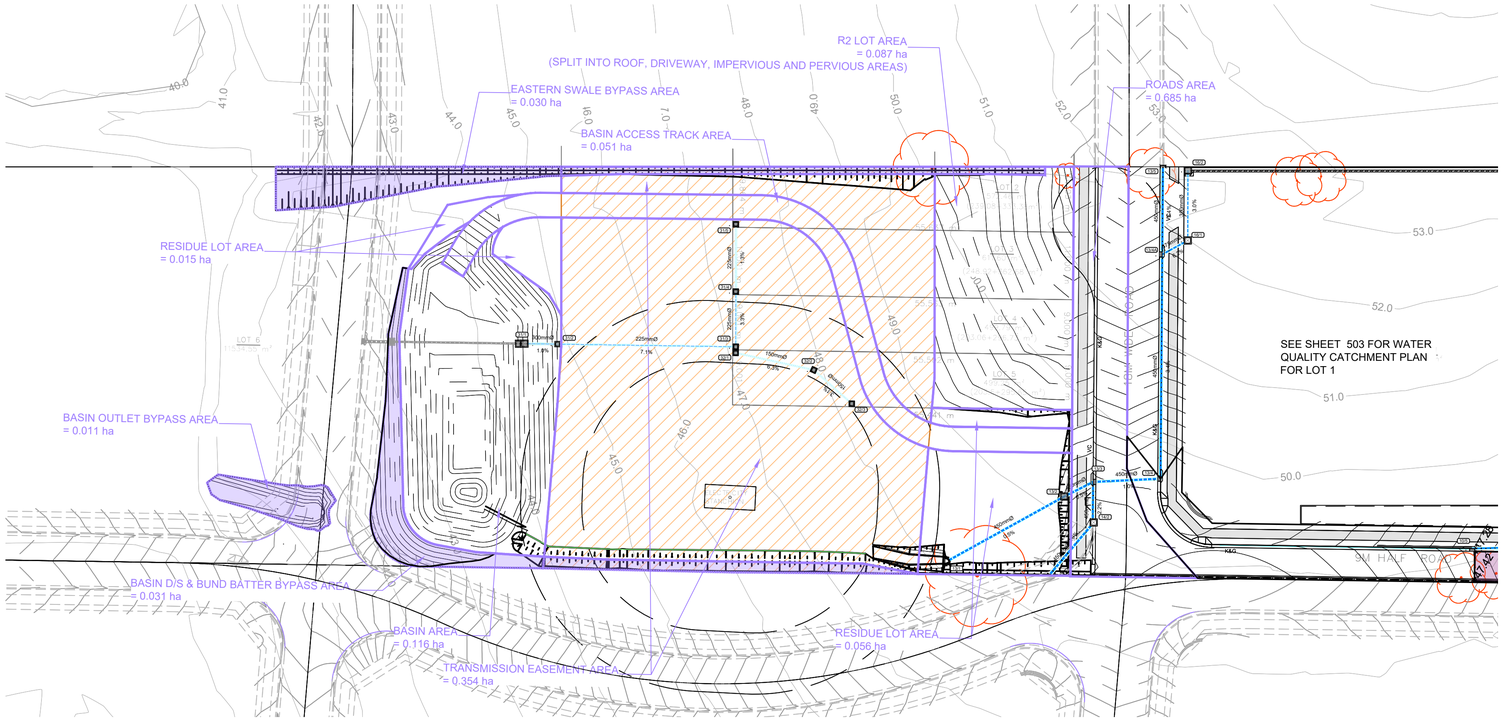
LONGITUDINAL SECTION AND TYPICAL SECTION ROAD 4

Designed: RW/GL
Drawn: RW
Checked: GJ

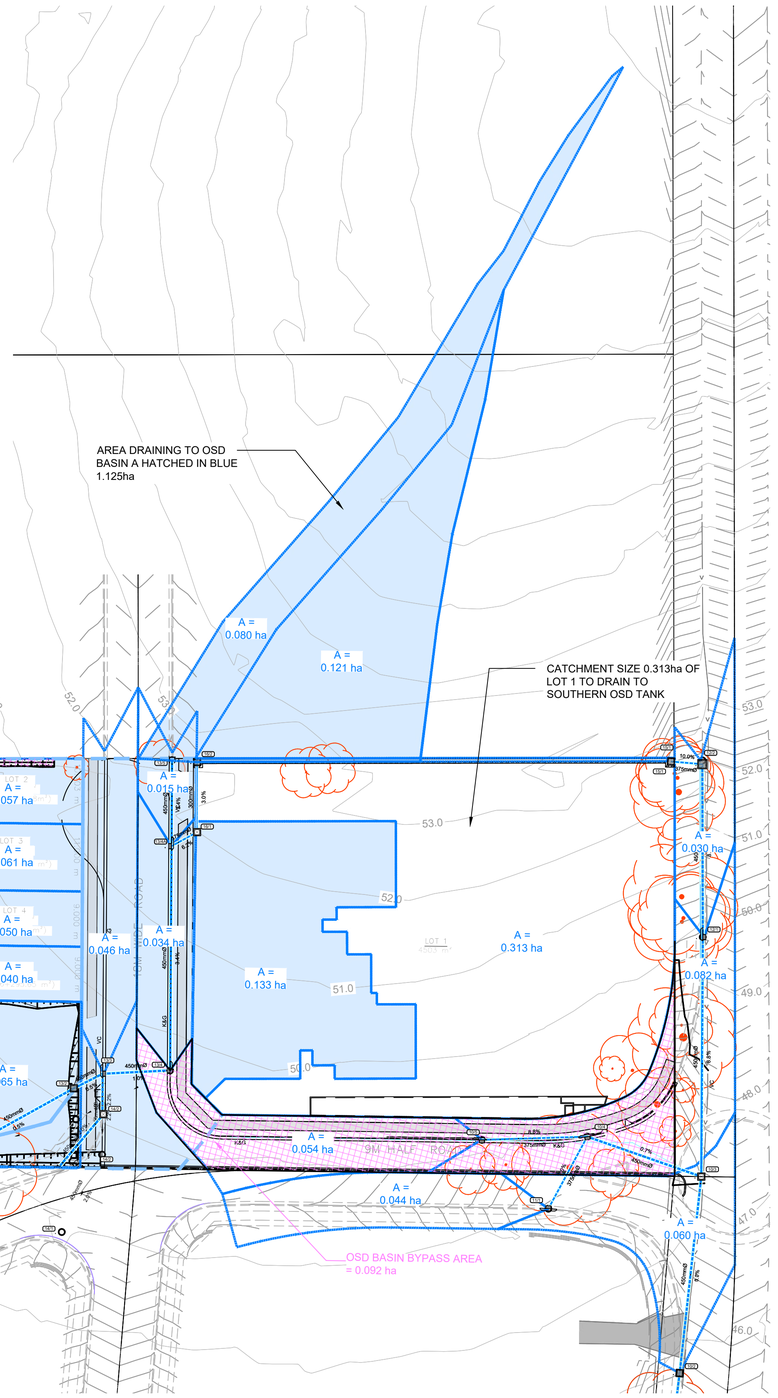
Scales: Plan - Horiz. - Vert. - X-Sect. -
Datum: A.H.D.

Plan No. SY190192-01-203
File Ref. SY190192
REV. H

A1



WATER QUALITY CATCHMENT PLAN
SCALE 1:500



DRAINAGE CATCHMENT AND OSD CATCHMENT PLAN
SCALE 1:500

10 0 10 20 30 40 50
METRES
1:500

REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
E	JOINT REPORT AMENDMENTS	RW	18/06/21
F	JOINT REPORT AMENDMENTS	RW	15/07/21
G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION
SYDNEY P: 02 9659 0005
CENTRAL COAST P: 02 4325 5255
HUNTER P: 02 4966 8388
S.E. QLD P: 07 5582 6555
www.brs.com.au
mail@brs.com.au
ABN: 26 134 067 842

Client:
THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

DRAINAGE CATCHMENT PLAN

Designed: RW/GL
Drawn: RW
Checked: GJ

Scales: Plan 1:500
Horiz. 1:500
Vert. 1:100
X-Sect. -

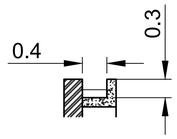
Datum: A.H.D.

Plan No.
SY190192-01-501
File Ref. SY190192
REV. H

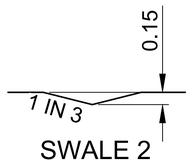
A1

Swale Size Calculations

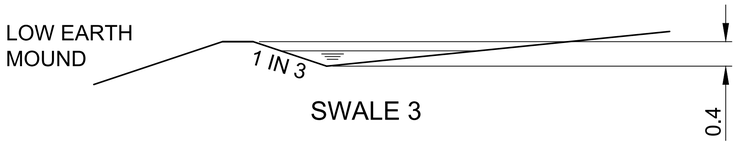
	Time of Concentration					Flow Calculation			Mannings Calculation			
	n*	area ha	slope m/m	length m	time min	intensity	C 100yr	flow l/s	Mannings n	side slope	base width	depth
Channel 1	0.15	0.337	0.08	120	12	154	0.56	81	0.015	Rectangular	0.4	0.13
Swale 2	0.15	0.147	0.08	90	11	160	0.56	37	0.05	1 in 4	0	0.09
Swale 3	0.15	0.19 + 0.447	0.07	100	10	167	0.98	370	0.05	1 in 3/1 in 10	0	0.23



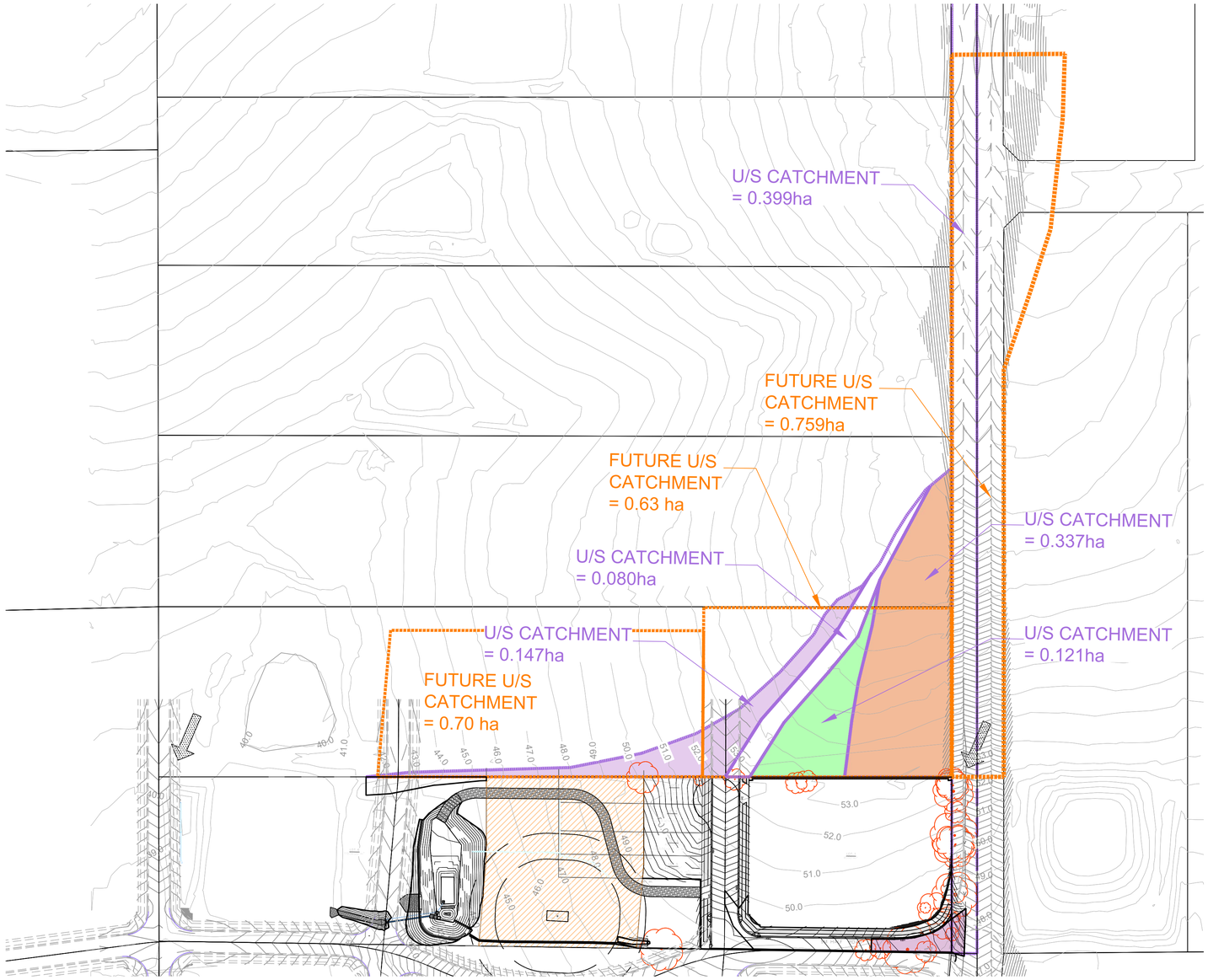
CHANNEL 1



SWALE 2



SWALE 3



PLAN
SCALE 1:1000

20 0 20 40 60 80 100
METRES

1:1000

REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
E	JOINT REPORT AMENDMENTS	RW	18/06/21
F	JOINT REPORT AMENDMENTS	RW	15/07/21
G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION

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ABN: 26 134 067 842

Client:

THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

UPSTREAM CATCHMENT PLAN

Designed: RW/GL
Drawn: RW
Checked: GJ

Scales: Plan 1:500
Horiz. 1:500
Vert. 1:100
X-Sect. -

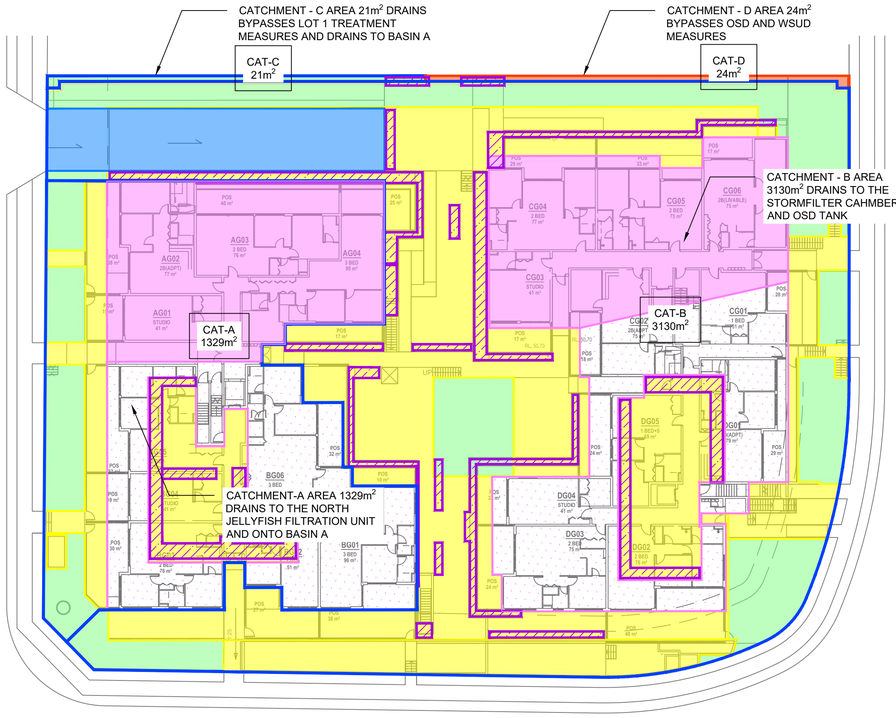
Datum: A.H.D.

Plan No.
SY190192-01-502

File Ref.
SY190192

REV.
H

A1



OSD AND OVERALL MUSIC CATCHMENT PLAN
SCALE 1:300

LEGEND

- SITE BOUNDARY - OUTLINE
- TREATED AREA - OUTLINE
- ROOF AREA TO RAINWATER TANK
- ROOF AREA TO BYPASSING RAINWATER TANK
- DRIVEWAY / SEALED ROAD AREA
- LANDSCAPE AREA - PREVIOUS
- LANDSCAPE AREA - IMPERVIOUS
- BYPASS AREA
- LANDSCAPE RE-USE AREA

NOTE:

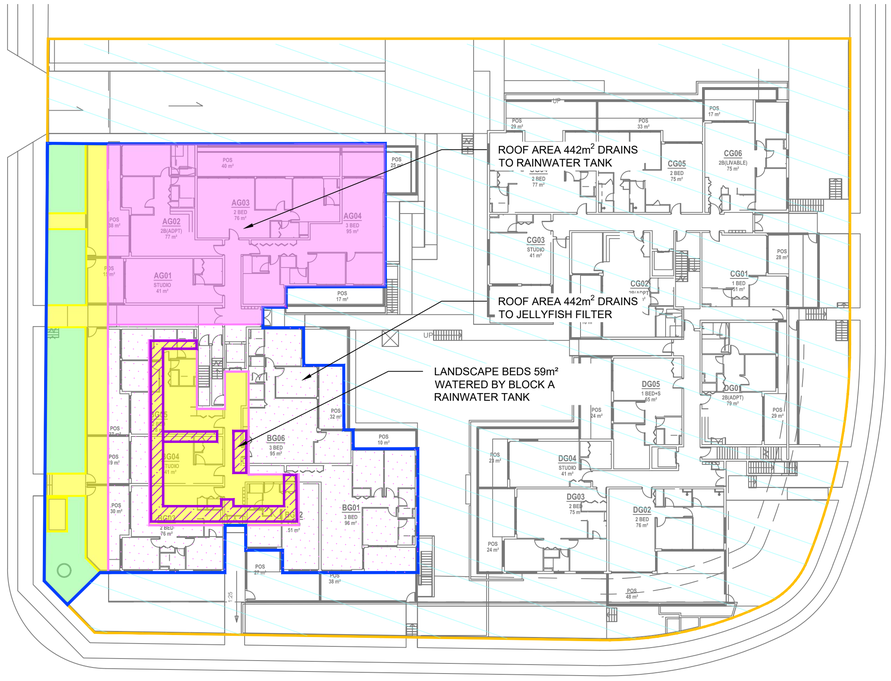
50% OF THE NON-TRAFFICABLE ROOFWATER FROM EACH BUILDING IS TO BE DIRECTED TO THE RESPECTIVE RAINWATER TANK AND THE REMAINING 50% DIRECTLY TO THE JELLYFISH FILTER/ STORMFILTER CHAMBER.

THE TOTAL IMPERVIOUSNESS OF LOT 1 IS 3812 / 4504 = 85%

THE CATCHMENT AREAS HAVE BEEN MODELLED USING BLACKTOWN CITY COUNCIL'S STANDARD NODES PROVIDED THROUGH MUSIC-LINK. THE FOLLOWING SOURCE NODES HAVE BEEN USED:

ROOF - ROOF AREAS
SEALED ROAD - DRIVEWAY AREAS
REVEGETATED LAND - PERVIOUS LANDSCAPED AREAS
UNSEALED ROAD - IMPERVIOUS AREAS (PATHS, TRAFFICABLE ROOF ETC.)

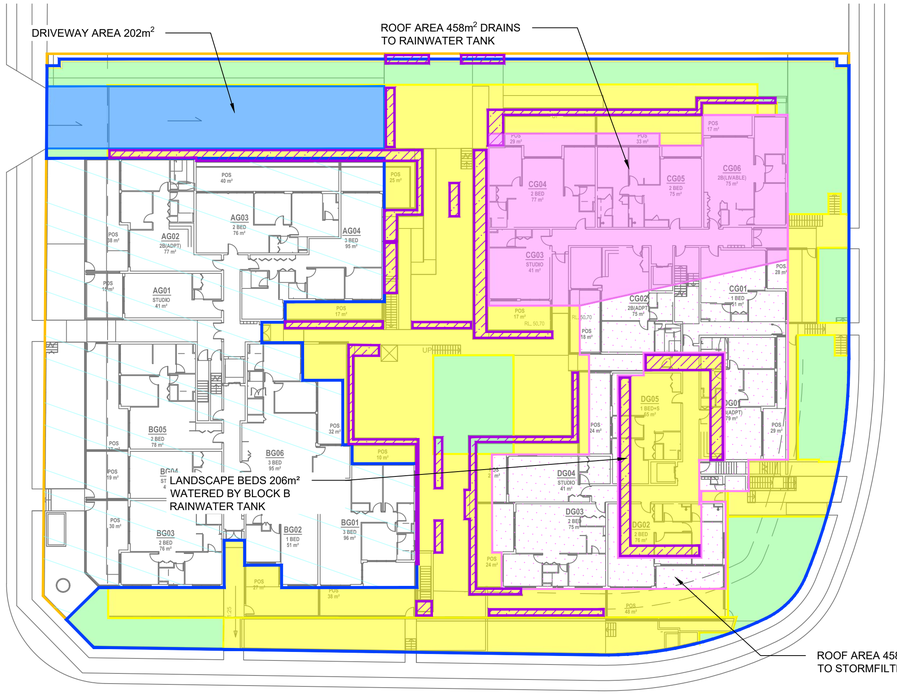
6 0 6 12 18 24 30
METRES
1:300



CATCHMENT - A MUSIC PLAN
SCALE 1:300

CAT-A SURFACE TYPE SUMMARY:

- ROOF AREA TO RAINWATER TANK: 442 m²
- ROOF AREA TO JELLYFISH FILTER: 442 m²
- DRIVEWAY / SEALED ROAD AREA: 0 m²
- LANDSCAPE AREA - PERVIOUS: 150 m²
- LANDSCAPE AREA - IMPERVIOUS: 295 m²
- LANDSCAPE RE-USE AREA: 59 m²



CATCHMENT - B MUSIC PLAN
SCALE 1:300

CAT-B SURFACE TYPE SUMMARY:

- ROOF AREA TO RAINWATER TANK: 458 m²
- ROOF AREA TO STORMFILTER TANK: 458 m²
- DRIVEWAY / SEALED ROAD AREA: 202 m²
- LANDSCAPE AREA - PERVIOUS: 542 m²
- LANDSCAPE AREA - IMPERVIOUS: 1470 m²
- LANDSCAPE RE-USE AREA: 206 m²

REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
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G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
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ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION
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www.brs.com.au
mail@brs.com.au
ABN: 26 134 067 842

Client: THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

LOT 1 CATCHMENT PLANS

Designed: RW/GL
Drawn: RW
Checked: GJ
Scales: Plan 1:300, Horiz., Vert., X-Sect. -
Datum: A.H.D.

Plan No. SY190192-01-503
File Ref. SY190192
REV. H

A1

LINE 10

	10/5 – 10/4	10/4 – 10/3	10/3 – 10/2	10/2 – 10/1	10/1 – 10/1a
FULL FLOW VELOCITY (m/s)	1.600	0.710	1.730	1.850	1.850
PART FLOW VELOCITY (m/s)	2.195	1.479	2.052	2.655	1.724
DISCHARGE (LIT/SEC)	18.000	113.000	275.000	294.000	71.000
DIAMETER (mm) CLASS	375Ø CLASS 2 RRJ	450Ø CLASS 2 RRJ	450Ø CLASS 2 RRJ	450Ø CLASS 2 RRJ	225Ø CLASS 2 RRJ
GRADE	8.83%	0.70%	1.01%	1.81%	1.09%
CHAINAGE (length)	17.195	19.723	32.268	23.543	16.300

DATUM RL 32.91

	10/5	10/4	10/3	10/2	10/1	10/1a
HGL	46.34	45.30 / 45.27	45.24 / 45.08	44.77 / 44.60	44.34 / 44.07	43.65
DEPTH (m)	1.099	1.956 / 2.031	2.893 / 2.918	1.602 / 1.622	0.697 / 0.717	0.069
INVERT LEVEL (m)	46.168	44.650 / 44.575	44.437 / 44.412	44.086 / 44.066	43.641 / 43.621	43.444
TOP OF PIT LEVEL	47.267	46.606	47.330	45.688	44.338	43.513
FINAL SURFACE LEVEL	47.267	46.606	47.354	45.602	44.338	43.413
ROAD CHAINAGE	41.444	7.885 / 7.885				
CHAINAGE	0.000	17.195	36.919	69.186	92.729	109.029

LINE 12

	12/2 – 12/1	12/1 – 10/3
FULL FLOW VELOCITY (m/s)	4.010	4.040
PART FLOW VELOCITY (m/s)	3.904	4.098
DISCHARGE (LIT/SEC)	152.000	161.000
DIAMETER (mm) CLASS	450Ø CLASS 2 RRJ	450Ø CLASS 2 RRJ
GRADE	8.07%	8.83%
CHAINAGE (length)	28.226	39.083

RL 34.03

	12/2	12/1	10/3
HGL	50.48	48.25 / 48.12	45.24
DEPTH (m)	1.870	1.560 / 1.654	2.796
INVERT LEVEL (m)	50.355	48.078 / 47.984	44.534
TOP OF PIT LEVEL	52.225	49.638	47.330
FINAL SURFACE LEVEL	52.028	49.587	47.354
ROAD CHAINAGE	235.409	207.183 / 207.183	
CHAINAGE	0.000	28.226	67.309

LINE 11

	11/1 – 10/4
FULL FLOW VELOCITY (m/s)	1.380
PART FLOW VELOCITY (m/s)	1.218
DISCHARGE (LIT/SEC)	14.000
DIAMETER (mm) CLASS	375Ø CLASS 2 RRJ
GRADE	2.00%
CHAINAGE (length)	13.352

RL 34.96

	11/1	10/4
HGL	45.84	45.53
DEPTH (m)	1.012	1.142
INVERT LEVEL (m)	45.731	45.464
TOP OF PIT LEVEL	46.743	46.606
FINAL SURFACE LEVEL	46.743	46.606
ROAD CHAINAGE	40.016	7.885
CHAINAGE	0.000	13.352

LINE 15

	15/1 – 12/2
FULL FLOW VELOCITY (m/s)	3.470
PART FLOW VELOCITY (m/s)	3.132
DISCHARGE (LIT/SEC)	51.000
DIAMETER (mm) CLASS	375Ø CLASS 2 RRJ
GRADE	10.00%
CHAINAGE (length)	5.120

RL 40.19

	15/1	12/2
HGL	51.42	50.77
DEPTH (m)	1.198	1.535
INVERT LEVEL (m)	51.202	50.690
TOP OF PIT LEVEL	52.400	52.225
FINAL SURFACE LEVEL	52.243	52.028
ROAD CHAINAGE		235.409
CHAINAGE	0.000	5.120

Scale bars: 2 0 2 4 6 8 10 METRES 1:100 — 10 0 10 20 30 40 50 METRES 1:500

REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
E	JOINT REPORT AMENDMENTS	RW	18/06/21
F	JOINT REPORT AMENDMENTS	RW	15/07/21
G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION
SYDNEY P: 02 9659 0005
HUNTER P: 02 4966 8388
CENTRAL COAST P: 02 4325 5255
S.E. QLD P: 07 5582 6555
www.brs.com.au
mail@brs.com.au
ABN: 26 134 067 842

Client: THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

DRAINAGE LONG SECTIONS SHEET 1 OF 4

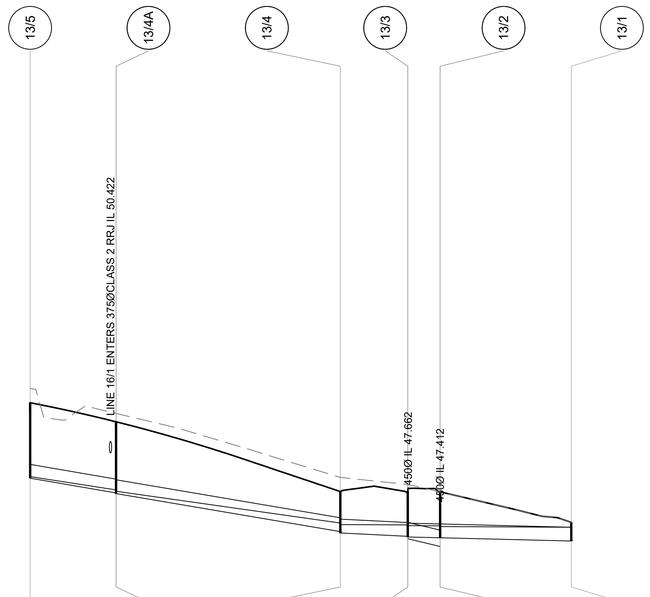
Designed: RW/GL
Drawn: RW
Checked: GJ

Scales: Plan - ; Horiz. 1:500 ; Vert. 1:100 ; X-Sect. -

Datum: A.H.D.

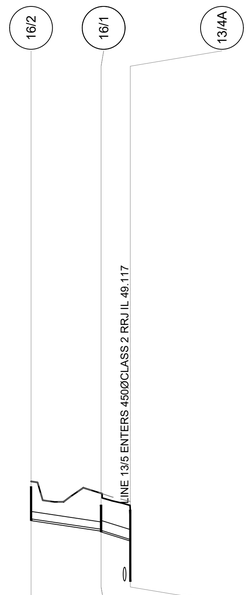
Plan No. SY190192-01-511
File Ref. SY190192
REV. H

A1



FULL FLOW VELOCITY (m/s)		1.370	1.820	0.860	0.710	0.720
PART FLOW VELOCITY (m/s)		1.408	1.821	1.573	1.255	1.262
DISCHARGE (LIT/SEC)		13.000	32.000	87.000	99.000	99.000
DIAMETER (mm) CLASS		450Ø CLASS 2 RRJ	450Ø CLASS 2 RRJ	450Ø CLASS 2 RRJ	450Ø CLASS 2 RRJ	450Ø CLASS 2 RRJ
GRADE		3.44%	3.39%	1.00%	0.49%	0.50%
DATUM RL 37.05						
5 YEAR ARI HGL	49.70	49.22	49.17	48.14	48.08	48.07	48.05	48.04	48.02	48.00
DEPTH (m)	2.462	2.323	2.343	1.308	1.353	1.467	1.487	1.500		0.607
INVERT LEVEL (m)	49.600	49.117	49.097	47.856	47.811	47.701	47.681	47.655		47.548
TOP OF PIT LEVEL	52.062	51.440		49.164		49.168		49.155		48.155
FINAL SURFACE LEVEL	52.062	51.440		49.164		49.168		49.155		48.155
ROAD CHAINAGE	96.920	82.889	82.889	17.800	17.800	45.678	45.678			
CHAINAGE	0.000	14.031	14.031	36.595	50.626	11.017	61.643	5.272	66.915	21.416	88.331

LINE 13



FULL FLOW VELOCITY (m/s)		1.800	1.930
PART FLOW VELOCITY (m/s)		1.977	1.913
DISCHARGE (LIT/SEC)		17.000	17.000
DIAMETER (mm) CLASS		300Ø PVC	375Ø CLASS 2 RRJ
GRADE		3.00%	6.24%
DATUM RL 39.92			
5 YEAR ARI HGL	51.21	50.81	50.77	50.47
DEPTH (m)	1.113	0.856	0.881	1.018
INVERT LEVEL (m)	51.087	50.744	50.719	50.422
TOP OF PIT LEVEL	52.200	51.600		51.440
FINAL SURFACE LEVEL	52.369	51.981		51.440
ROAD CHAINAGE				82.889
CHAINAGE	0.000	11.428	11.428	16.189

LINE 16

2 0 2 4 6 8 10 METRES 1:100

10 0 10 20 30 40 50 METRES 1:500

REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
E	JOINT REPORT AMENDMENTS	RW	18/06/21
F	JOINT REPORT AMENDMENTS	RW	15/07/21
G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
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ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION
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mail@brs.com.au
ABN: 26 134 067 842

Client: THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

DRAINAGE LONG SECTIONS SHEET 2 OF 4

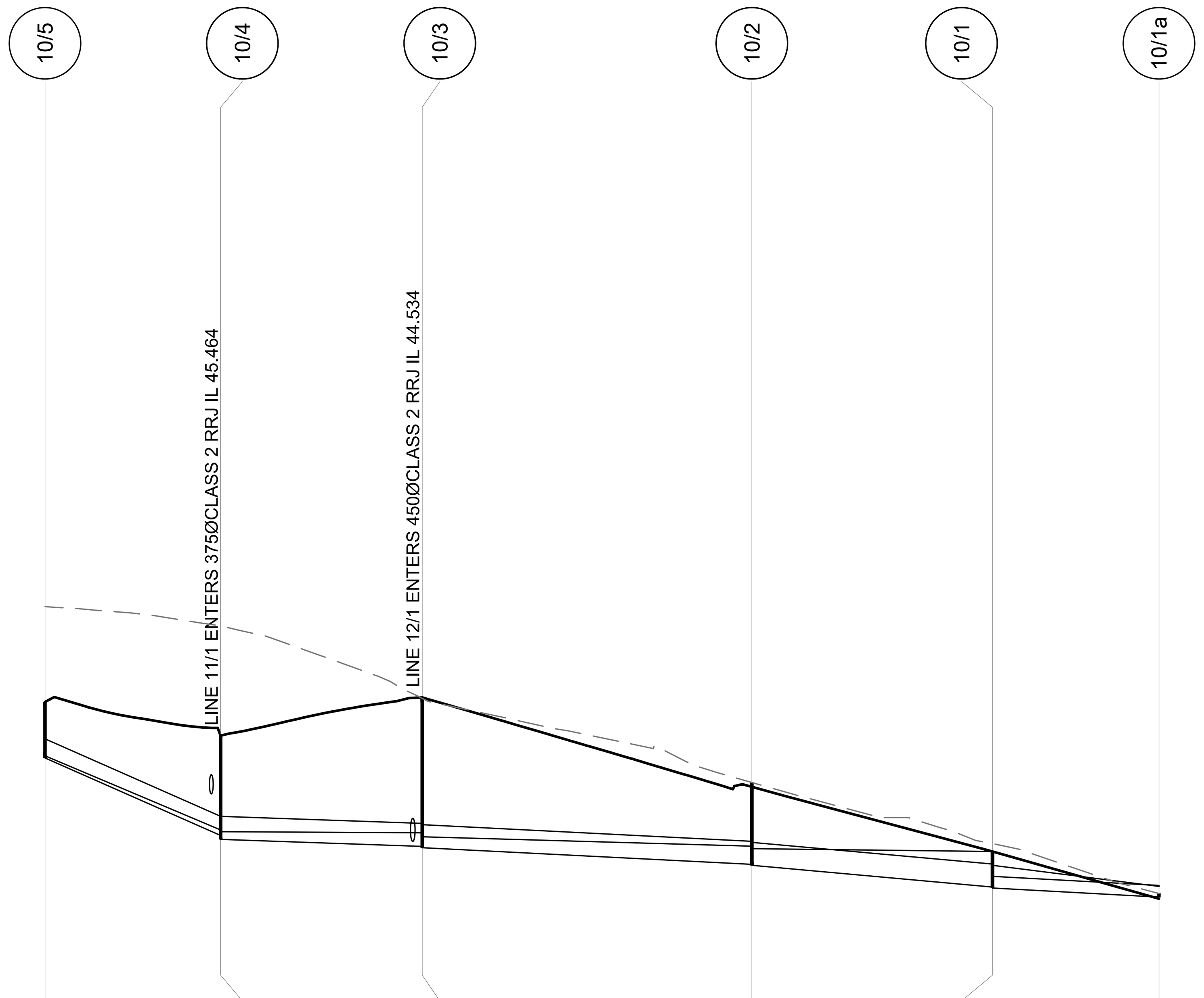
Designed: RW/GL
Drawn: RW
Checked: GJ

Scales: Plan -
Horiz. 1:500
Vert. 1:100
X-Sect. -

Datum: A.H.D.

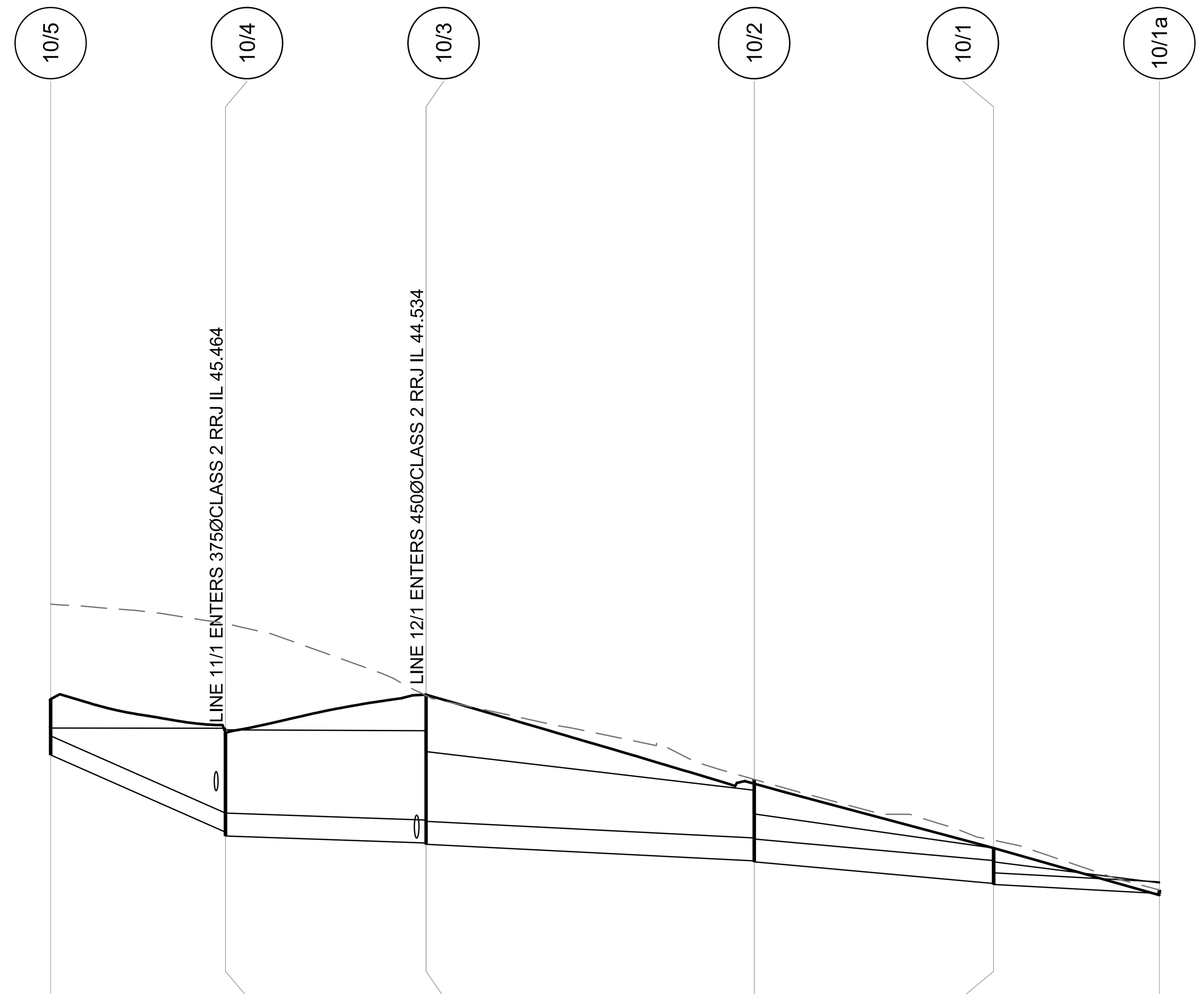
Plan No. SY190192-01-512
File Ref. SY190192
REV. H

A1



	10/5		10/4		10/3		10/2		10/1		10/1a
FULL FLOW VELOCITY (m/s)		2.100		1.080		1.760		1.140		1.850	
PART FLOW VELOCITY (m/s)		2.088		1.186		1.761		2.228		1.724	
DISCHARGE (LIT/SEC)		15.000		50.000		131.000		142.000		71.000	
DIAMETER (mm) CLASS		375Ø CLASS 2 RRJ		450Ø CLASS 2 RRJ		450Ø CLASS 2 RRJ		450Ø CLASS 2 RRJ		225Ø CLASS 2 RRJ	
GRADE		8.83%		0.70%		1.01%		1.81%		1.09%	
DATUM RL 32.91											
HGL	46.28		44.76 44.72		44.70 44.63		44.44 44.39		44.34 44.07		43.65
DEPTH (m)	1.099		1.956 2.031		2.893 2.918		1.602 1.622		0.697 0.717		0.069
INVERT LEVEL (m)	46.168		44.650 44.575		44.437 44.412		44.086 44.066		43.641 43.621		43.444
TOP OF PIT LEVEL	47.267		46.606		47.330		45.688		44.338		43.513
FINAL SURFACE LEVEL	47.267		46.606		47.354		45.602		44.338		43.413
ROAD CHAINAGE	41.444		7.885 7.885								
CHAINAGE	0.000	17.195	17.195	19.723	36.919	32.268	69.186	23.543	92.729	16.300	109.029

LINE 10 - 1 YR ARI



	10/5		10/4		10/3		10/2		10/1		10/1a
FULL FLOW VELOCITY (m/s)		0.270		0.930		2.800		3.020		1.850	
PART FLOW VELOCITY (m/s)		2.558		1.578		2.798		3.024		1.724	
DISCHARGE (LIT/SEC)		30.000		147.000		445.000		481.000		71.000	
DIAMETER (mm) CLASS		375Ø CLASS 2 RRJ		450Ø CLASS 2 RRJ		450Ø CLASS 2 RRJ		450Ø CLASS 2 RRJ		225Ø CLASS 2 RRJ	
GRADE		8.83%		0.70%		1.01%		1.81%		1.09%	
DATUM RL 32.91											
HGL	46.74		46.69 46.66		46.64 46.23		45.47 45.01		44.34 44.07		43.65
DEPTH (m)	1.099		1.956 2.031		2.893 2.918		1.602 1.622		0.697 0.717		0.069
INVERT LEVEL (m)	46.168		44.650 44.575		44.437 44.412		44.086 44.066		43.641 43.621		43.444
TOP OF PIT LEVEL	47.267		46.606		47.330		45.688		44.338		43.513
FINAL SURFACE LEVEL	47.267		46.606		47.354		45.602		44.338		43.413
ROAD CHAINAGE	41.444		7.885 7.885								
CHAINAGE	0.000	17.195	17.195	19.723	36.919	32.268	69.186	23.543	92.729	16.300	109.029

LINE 10 - 100 YR ARI

2 0 2 4 6 8 10 METRES 1:100

10 0 10 20 30 40 50 METRES 1:500

REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
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BARKER RYAN STEWART
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ABN: 26 134 067 842

Client: THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

DRAINAGE LONG SECTIONS SHEET 3 OF 4

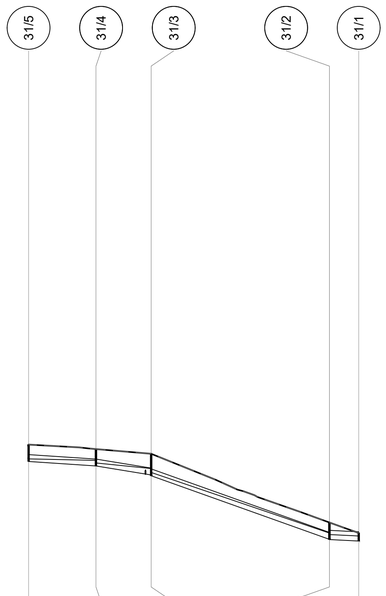
Designed: RW/GL
Drawn: RW
Checked: GJ

Scales: Plan -
Horiz. 1:500
Vert. 1:100
X-Sect. -

Datum: A.H.D.

Plan No. SY190192-01-513
File Ref. SY190192
REV. H

A1

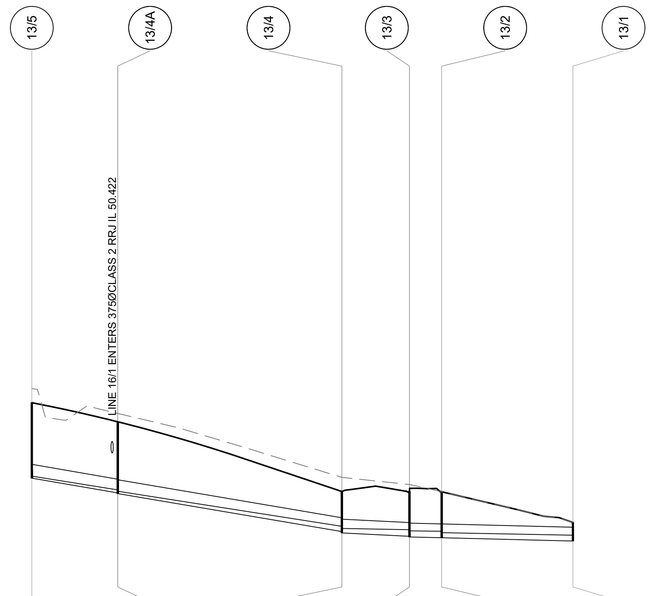


FULL FLOW VELOCITY (m/s)	1.240	2.080	3.250	1.570	
PART FLOW VELOCITY (m/s)	1.521	2.597	4.031	1.919	
DISCHARGE (LIT/SEC)	17.000	36.000	64.000	62.000	
DIAMETER (mm) CLASS	225Ø PVC	225Ø PVC	225Ø PVC	300Ø PVC	
GRADE	1.33%	3.28%	7.13%	1.00%	
DATUM RL 33.77					
HGL	46.99 46.90 46.81	46.63 46.50	44.53 44.48	44.43	
DEPTH (m)	0.550 0.550	0.693 0.718	0.550 0.557	0.263	
INVERT LEVEL (m)	46.861 46.715	46.420 46.395	44.320 44.313	44.265	
TOP OF PIT LEVEL	47.411 47.265	47.113	44.870	44.528	
FINAL SURFACE LEVEL	47.411 47.265	47.113	44.870	44.528	
ROAD CHAINAGE					
CHAINAGE	0.000 11.001 11.001	9.001 20.002	29.102 49.104	4.792 53.896	

LINE 31

FULL FLOW VELOCITY (m/s)	1.560	2.020	0.650	
PART FLOW VELOCITY (m/s)	1.917	2.492	1.278	
DISCHARGE (LIT/SEC)	12.000	12.000	12.000	
DIAMETER (mm) CLASS	150Ø PVC	150Ø PVC	150Ø PVC	
GRADE	3.06%	6.26%	1.00%	
DATUM RL 35.94				
HGL	47.73 47.46 47.42	46.67 46.64	46.63	
DEPTH (m)	0.550 0.550	0.550 0.650	0.678	
INVERT LEVEL (m)	47.616 47.362	46.545 46.445	46.435	
TOP OF PIT LEVEL	48.166 47.912	47.095	47.113	
FINAL SURFACE LEVEL	48.166 47.912	47.095	47.113	
ROAD CHAINAGE				
CHAINAGE	0.000 8.291 8.291	13.051 21.342	1.000	22.342

LINE 32



FULL FLOW VELOCITY (m/s)	2.000	1.820	1.470	1.100	1.400
PART FLOW VELOCITY (m/s)	1.779	1.821	1.459	1.165	1.171
DISCHARGE (LIT/SEC)	29.000	32.000	66.000	74.000	74.000
DIAMETER (mm) CLASS	450Ø CLASS 2 RRJ	450Ø CLASS 2 RRJ	450Ø CLASS 2 RRJ	450Ø CLASS 2 RRJ	450Ø CLASS 2 RRJ
GRADE	3.44%	3.39%	1.00%	0.49%	0.50%
DATUM RL 37.05					
HGL	49.72	49.22 49.17	48.03 47.96	47.92 47.88	47.87 47.82 47.74
DEPTH (m)	2.462	2.323 2.343	1.308 1.353	1.467 1.487	1.500 0.607
INVERT LEVEL (m)	49.600	49.117 49.097	47.856 47.811	47.701 47.681	47.655 47.548
TOP OF PIT LEVEL	52.062	51.440	49.164	49.168	49.155 48.155
FINAL SURFACE LEVEL	52.062	51.440	49.164	49.168	49.155 48.155
ROAD CHAINAGE	96.920	82.889 82.889	17.800 17.800	45.678 45.678	
CHAINAGE	0.000	14.031 14.031	36.595 50.626	11.017 61.643	5.272 66.915 21.416 88.331

LINE 13 - 1 YR ARI

2 0 2 4 6 8 10 METRES 1:100

10 0 10 20 30 40 50 METRES 1:500

REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
E	JOINT REPORT AMENDMENTS	RW	18/06/21
F	JOINT REPORT AMENDMENTS	RW	15/07/21
G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION
SYDNEY P: 02 9659 0005
CENTRAL COAST P: 02 4325 5255
HUNTER P: 02 4966 8388
S.E. QLD P: 07 5582 6555
www.brs.com.au
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ABN: 26 134 067 842

Client: THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

DRAINAGE LONG SECTIONS SHEET 4 OF 4

Designed: RW/GL
Drawn: RW
Checked: GJ

Scales: Plan -
Horiz. 1:500
Vert. 1:100
X-Sect. -

Datum: A.H.D.

Plan No. SY190192-01-514
File Ref. SY190192
REV. H

A1

5 YEAR ARI - CALCULATIONS

LOCATION AND LAND-USE				TIME AND RUNOFF		INLET DESIGN						PIPE SYSTEM DESIGN										PIT RESULTS			
Pit, Node or Basin	Sub-Catchment	Land-Use		Constant Flow	Total Entry	Peak Sub-Catchment		Overflows Approaching Pit					Peak Approach	Bypass	Peak Flow in				U/S Pipe Invert	D/S Pipe Invert	U/S HGL in Pipe	D/S HGL in Pipe	Pipe Flow	Pressure Change	Water Surface	Ground Surface	Pit Free-
Name	Area	Type	Percent-age	Time	Time, t_c	Flowrate	Origin of Approach	Flowrate(s)	Width	Depth x Velocity	Inlet Size	Flow	Flow	Flow(s)	Pipe	Length	Slope	Pipe Diameter	Level	Level	Level	Level	Velocity	Coeff.	Elevation	Level	board
	(ha)	(ILSAX)	(%)	(minutes)	(minutes)	(m^3/s)	Flows	(m^3/s)	(m)	(m^2/s)		(m^3/s)	(m^3/s)	(m^3/s)	(m^3/s)	(m)	(%)	(mm)	(m)	(m)	(m)	(m)	(m/s)	Ku	(m)	(m)	(m)
				*worst storm																							
15/1	0.337	Paved	20	10	10	0.046					900x900	0.046	0	0.051	5.12	10	375	51.202	50.69	51.273	50.767	3.47	18	51.42	52.243	0.82
		Supp.	0	0	12																					
		Grassed	80	12																						
12/2	0.399	Paved	95	10	10	0.113	15/1	0	0	0	1200x1200	0.113	0	0.152	28.226	8.07	450	50.355	48.078	50.484	48.252	4.01	2.2	50.67	52.028	1.36
		Supp.	0	0	12																					
		Grassed	5	12																						
12/1	0.03	Paved	95	5	5	0.01	12/2	0.01	0.41	0.05	1.8 m lintel	0.01	0	0.161	39.083	8.83	450	47.984	44.534	48.118	45.24	4.04	1	48.25	49.587	1.34
		Supp.	0	0	5																					
		Grassed	5	5																						
10/3		Paved									Sealed Pit	0	0	0.275	32.268	1.01	450	44.412	44.086	45.084	44.772	1.73	1.1	45.24	47.354	2.11
		Supp.																								
		Grassed																								
10/2	0.06	Paved	95	5	5	0.02	10/3	0	0	0	900x900	0.02	0	0.294	23.543	1.81	450	44.096	43.641	44.601	44.338	1.85	1	44.77	45.602	0.83
		Supp.	0	0	5		10/4	0	0	0																
		Grassed	5	5			11/1	0	0	0																
10/1		Paved					10/2	0	0	0	900x900	0	0.223	0.071	16.3	1.09	225	43.621	43.444	44.068	43.654	1.85	1.7	44.34	44.338	0
		Supp.																								
		Grassed																								
10/5	0.054	Paved	95	5	5	0.018	13/4	0	0	0	1.8 m lintel	0.018	0	0.018	17.195	8.83	375	46.168	44.65	46.227	45.3	1.6	18	46.34	47.267	0.93
		Supp.	0	0	7																					
		Grassed	5	7																						
10/4	0.082	Paved	95	5	5	0.027	12/1	0.019	0.64	0.07	2.4m Sag	0.027	0	0.113	19.723	0.7	450	44.575	44.437	45.274	45.24	0.71	1	45.3	46.606	1.31
		Supp.	0	0	7		10/5	0	0	0																
		Grassed	5	7																						
11/1	0.044	Paved	95	5	5	0.015					2.4m Sag	0.015	0	0.014	13.352	2	375	45.731	45.464	45.787	45.525	1.38	18	45.84	46.743	0.9
		Supp.	0	0	5																					
		Grassed	5	5																						
16/2	0.121	Paved	20	10	10	0.018					900x900	0.018	0	0.017	11.428	3	300	51.087	50.744	51.145	50.808	1.8	18	51.21	52.369	1.16
		Supp.	0	0	11																					
		Grassed	80	11																						
16/1		Paved									900x900	0	0	0.017	4.76	6.24	375	50.719	50.422	50.771	50.473	1.93	1	50.81	51.981	1.17
		Supp.																								
		Grassed																								
13/4A	0.015	Paved	95	5	5	0.005	16/2	0	0	0	1.8 m lintel	0.005	0	0.032	36.595	3.39	450	49.097	47.856	49.172	48.136	1.82	1	49.22	51.44	2.22
		Supp.	0	0	5		16/1	0.011	0.46	0.05																
		Grassed	5	5			13/5																			
13/4	0.034	Paved	95	5	5	0.011	13/4A	0.018	0.81	0.06	1.8 m lintel	0.011	0	0.087	11.017	1	450	47.811	47.701	48.084	48.073	0.86	2.1	48.14	49.164	1.03
		Supp.	0	0	7																					
		Grassed	5	7																						
13/3	0.046	Paved	95	5	5	0.015					1.8 m lintel	0.015	0	0.099	5.272	0.49	450	47.681	47.655	48.05	48.044	0.71	1	48.07	49.168	1.09
		Supp.	0	0	7																					
		Grassed	5	7																						
13/2		Paved					13/3	0	0	0	900x900	0	0	0.099	21.416	0.5	450	47.655	47.548	48.021	47.998	0.72	1	48.04	49.155	1.11
		Supp.																								
		Grassed																								
13/5	0.08	Paved	20	10	10	0.012					Node	0.012	0		14.031	3.44	450	49.6	49.117				7.4	49.7	52.062	2.36
		Supp.	0	0	11																					
		Grassed	80	11																						
32/3	0.04	Paved	85	5	5	0.012					900x900	0.012	0	0.012	8.291	3.06	150	47.616	47.362	47.683	47.463	1.56	6.8	47.73	48.166	0.43
		Supp.	0	0	7																					
		Grassed	15	7																						
32/2		Paved					32/3	0	0	0	900x900	0	0	0.012	13.051	6.26	150	47.362	46.545	47.418	46.674	2.02	1	47.46	47.912	0.45
		Supp.																								
		Grassed																								
32/1		Paved					32/2	0	0	0	900x900	0	0	0.012	1	1	150	46.445	46.435	46.635	46.631	0.65	1.8	46.67	47.095	0.42
		Supp.																								
		Grassed																								
31/3	0.05	Paved	85	5	5	0.016	32/1	0	0	0	900x900	0.016	0	0.064	29.102	7.13	225	46.395	44.32	46.503	44.525	3.25	2.3	46.63	47.113	0.48
		Supp.	0	0	7		31/4																			
		Grassed	15	7																						
31/2		Paved					31/3	0	0	0	900x900	0	0	0.062	4.792	1	300	44.313	44.265	44.476	44.43	1.57	1	44.52	44.87	0.35
		Supp.																								
		Grassed																								
31/5	0.057	Paved	85	5	5	0.018					900x900	0.018	0		11.001	1.33	225	46.861	46.715				2	46.99	47.411	0.42
		Supp.	0	0	7																					
		Grassed	15	7																						
31/4	0.061	Paved	85	5	5	0.019	31/5				900x900	0.019	0		9.001	3.28	225	46.715	46.42				1.7	46.9	47.265	0.37
		Supp.	0	0	7																					
		Grassed	15	7																						

REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
E	JOINT REPORT AMENDMENTS	RW	18/06/21
F	JOINT REPORT AMENDMENTS	RW	15/07/21
G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION

SYDNEY P: 02 9659 0005
CENTRAL COAST P: 02 4325 5255
HUNTER P: 02 4966 8388
S.E. QLD P: 07 5582 6555

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ABN: 26 134 067 842

Client: THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

DRAINAGE CALCULATIONS SHEET 1 OF 2

Designed: RW/GL
Drawn: RW
Checked: GJ

Scales: Plan -
Horiz. -
Vert. -
X-Sect. -

Datum: A.H.D.

Plan No.
SY190192-01-521
File Ref. SY190192
REV. H

A1

100 YEAR ARI - CALCULATIONS

LOCATION AND LAND-USE				TIME AND RUNOFF			INLET DESIGN						PIPE SYSTEM DESIGN										PIT RESULTS			
Pit, Node or Basin	Sub-Catchment	Land-Use		Constant Flow	Total Entry	Peak Sub-Catchment	Overflows Approaching Pit				Inlet	Peak Approach	Bypass	Peak Flow in				U/S Pipe Invert	D/S Pipe Invert	U/S HGL	D/S HGL	Pipe Flow	Pressure Change	Water Surface	Ground Surface	Pit Free-board
Name	Area	Type	Percent-age	Time	Time, t_c	Flowrate	Origin of Approach	Peak Flowrate(s)	Flow Width	Depth x Velocity	Size	Flow	Flow(s)	Pipe	Length	Slope	Pipe Diameter	Level	Level	in Pipe	in Pipe	Velocity	Coeff.	Elevation	Level	
	(ha)	(ILSAX)	(%)	(minutes)	(minutes)	(m^3/s)	Flows	(m^3/s)	(m)	(m^2/s)		(m^3/s)	(m^3/s)	(m^3/s)	(m)	(%)	(mm)	(m)	(m)	(m)	(m)	(m/s)	Ku	(m)	(m)	(m)
					*worst storm																					
15/1	0.337	Paved	20	10	10	0.135					900x900	0.135	0.031	0.105	5.12	10	375	51.202	50.69	51.31	50.833	3.96	18	51.67	52.243	0.57
		Supp.	0	0	12																					
		Grassed	80	12																						
12/2	0.399	Paved	95	10	10	0.185	15/1	0.031	1.58	0.04	1200x1200	0.216	0	0.315	28.226	8.07	450	50.355	48.078	50.55	48.404	4.77	2.2	50.83	52.028	1.19
		Supp.	0	0	12																					
		Grassed	5	12																						
12/1	0.03	Paved	95	5	5	0.017	12/2	0.017	0.56	0.07	1.8 m lintel	0.017	0	0.326	39.083	8.83	450	47.984	44.534	48.178	46.644	4.97	1	48.4	49.567	1.18
		Supp.	0	0	5																					
		Grassed	5	5																						
10/3		Paved									Sealed Pit	0	0	0.445	32.268	1.01	450	44.412	44.086	46.233	45.474	2.8	1.1	46.64	47.354	0.71
		Supp.																								
		Grassed																								
10/2	0.06	Paved	95	5	5	0.034	10/3	0	0	0	900x900	0.034	0.002	0.481	23.543	1.81	450	44.066	43.641	45.008	44.338	3.02	1	45.47	45.602	0.13
		Supp.	0	0	5		10/4	0	0	0																
		Grassed	5	5			11/1	0	0	0																
10/1		Paved					10/2	0.002	0.26	0.02	900x900	0.002	0.41	0.071	16.3	1.09	225	43.621	43.444	44.066	43.654	1.85	1.7	44.34	44.338	0
		Supp.																								
		Grassed																								
10/5	0.054	Paved	95	5	5	0.03	13/4	0.002	0.96	0	1.8 m lintel	0.032	0	0.03	17.195	8.83	375	46.168	44.65	46.697	46.693	0.27	18	46.74	47.267	0.52
		Supp.	0	0	7																					
		Grassed	5	7																						
10/4	0.082	Paved	95	5	5	0.046	12/1	0.032	0.92	0.09	2.4m Sag	0.061	0.015	0.147	19.723	0.7	450	44.575	44.437	46.662	46.644	0.93	1	46.69	46.606	0
		Supp.	0	0	7		10/5	0.015	4.94	0.01																
		Grassed	5	7																						
11/1	0.044	Paved	95	5	5	0.025					2.4m Sag	0.025	0	0.024	13.352	2	375	45.731	45.464	46.695	46.693	0.21	18	46.73	46.743	0.01
		Supp.	0	0	5																					
		Grassed	5	5																						
16/2	0.121	Paved	20	10	10	0.051					900x900	0.051	0	0.051	11.428	3	300	51.087	50.744	51.195	50.875	2.19	18	51.38	52.369	0.99
		Supp.	0	0	11																					
		Grassed	80	11																						
16/1		Paved									900x900	0	0	0.051	4.76	6.24	375	50.719	50.422	50.806	50.598	2.64	1	50.67	51.961	1.11
		Supp.																								
		Grassed																								
13/4A	0.015	Paved	95	5	5	0.008	16/2	0	0	0	1.8 m lintel	0.008	0	0.089	36.595	3.39	450	49.097	47.856	49.222	48.341	2.47	1	49.3	51.44	2.14
		Supp.	0	0	5		16/1	0.019	0.69	0.07																
		Grassed	5	5			13/5																			
13/4	0.034	Paved	95	5	5	0.019	13/4A	0.03	1.13	0.07	1.8 m lintel	0.019	0	0.151	11.017	1	450	47.811	47.701	48.26	48.214	0.95	2.1	48.34	49.164	0.82
		Supp.	0	0	7																					
		Grassed	5	7																						
13/3	0.046	Paved	95	5	5	0.026					1.8 m lintel	0.026	0.002	0.171	5.272	0.49	450	47.681	47.655	48.155	48.137	1.08	1	48.21	49.168	0.95
		Supp.	0	0	7																					
		Grassed	5	7																						
13/2		Paved					13/3	0	0	0	900x900	0	0	0.172	21.416	0.5	450	47.655	47.548	48.104	47.998	1.08	1	48.14	49.155	1.02
		Supp.																								
		Grassed																								
13/5	0.08	Paved	20	10	10	0.034					Node	0.034	0		14.031	3.44	450	49.6	49.117				7.4	49.79	52.062	2.28
		Supp.	0	0	11																					
		Grassed	80	11																						
											900x900															
32/3	0.04	Paved	85	5	5	0.021						0.021	0	0.021	8.291	3.06	150	47.616	47.362	47.77	47.505	1.16	6.8	48.06	48.166	0.1
		Supp.	0	0	7																					
		Grassed	15	7							900x900															
32/2		Paved					32/3	0	0	0		0	0	0.021	13.051	6.26	150	47.362	46.545	47.437	47.131	2.35	1	47.51	47.912	0.41
		Supp.																								
		Grassed									900x900															
32/1		Paved					32/2	0	0	0		0	0	0.022	1	1	150	46.445	46.435	47.039	47.029	1.2	1.8	47.13	47.095	0
		Supp.																								
		Grassed									900x900															
31/3	0.05	Paved	85	5	5	0.026	32/1	0	0	0		0.026	0	0.104	29.102	7.13	225	46.395	44.32	46.636	44.659	2.27	2.3	47.03	47.113	0.08
		Supp.	0	0	7		31/4																			
		Grassed	15	7							900x900															
31/2		Paved					31/3	0	0	0		0	0	0.104	4.792	1	300	44.313	44.265	44.595	44.507	1.69	1	44.66	44.87	0.21
		Supp.																								
		Grassed									900x900															
31/5	0.057	Paved	85	5	5	0.03						0.03	0		11.001	1.33	225	46.861	46.715				2	47.34	47.411	0.07
		Supp.	0	0	7																					
		Grassed	15	7							900x900															
31/4	0.061	Paved	85	5	5	0.032	31/5					0.032	0		9.001	3.28	225	46.715	46.42				1.7	47.27	47.265	0
		Supp.	0	0	7																					
		Grassed	15	7																						

REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
E	JOINT REPORT AMENDMENTS	RW	18/06/21
F	JOINT REPORT AMENDMENTS	RW	15/07/21
G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION

SYDNEY
P: 02 9659 0005
CENTRAL COAST
P: 02 4325 5255
HUNTER
P: 02 4966 8388
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Client:

THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

DRAINAGE CALCULATIONS SHEET 2 OF 2

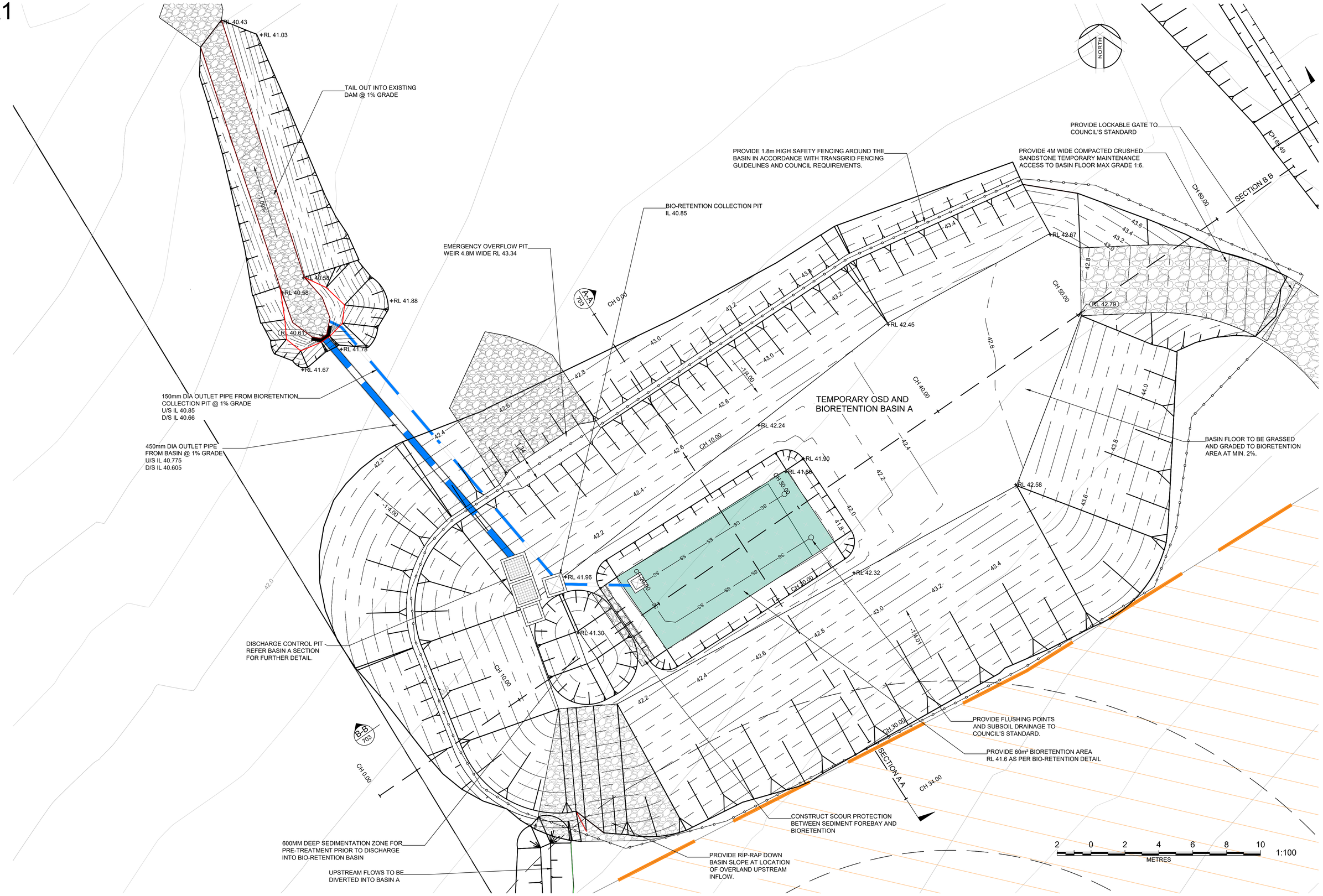
Designed: RW/GL
Drawn: RW
Checked: GJ

Scales: Plan -
Horiz. -
Vert. -
X-Sect. -

Datum: A.H.D.

Plan No.
SY190192-01-522
File Ref. SY190192
REV. H

A1



REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
E	JOINT REPORT AMENDMENTS	RW	18/06/21
F	JOINT REPORT AMENDMENTS	RW	15/07/21
G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION

SYDNEY P: 02 9659 0005
CENTRAL COAST P: 02 4325 5255
HUNTER P: 02 4966 8388
S.E. QLD P: 07 5582 6555

www.brs.com.au
mail@brs.com.au
ABN: 26 134 067 842

Client: THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

TEMPORARY OSD BASIN DETAILS

Designed: RW/GL
Drawn: RW
Checked: GJ

Scales: Plan 1:100, Horiz. -, Vert. -, X-Sect. -

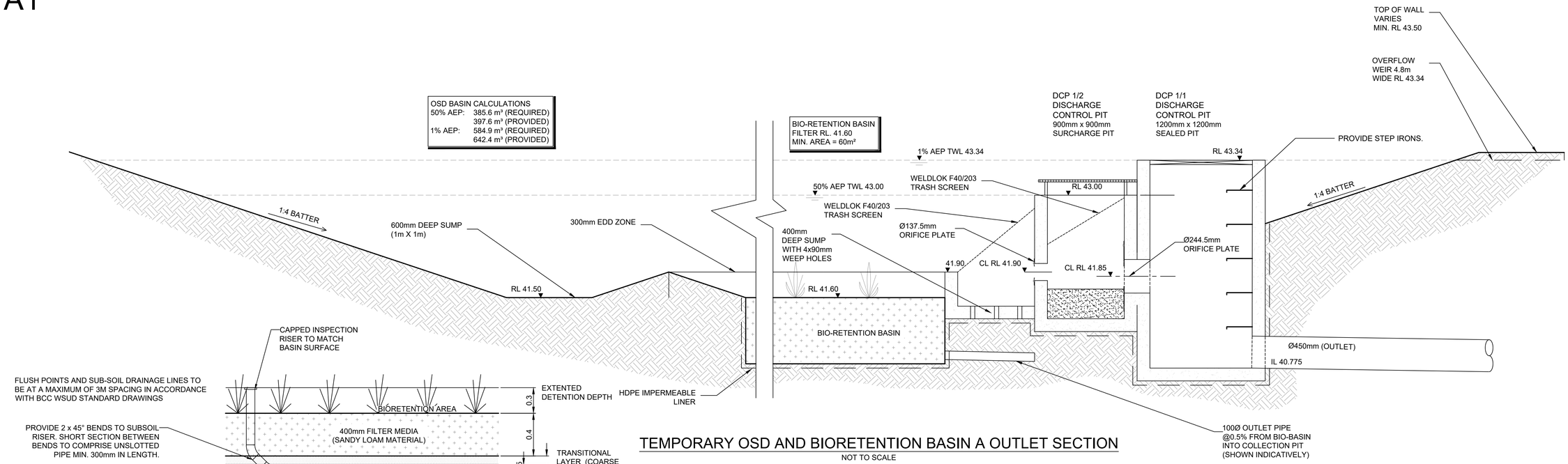
Datum: A.H.D.

Plan No. SY190192-01-701

File Ref. SY190192

REV. H

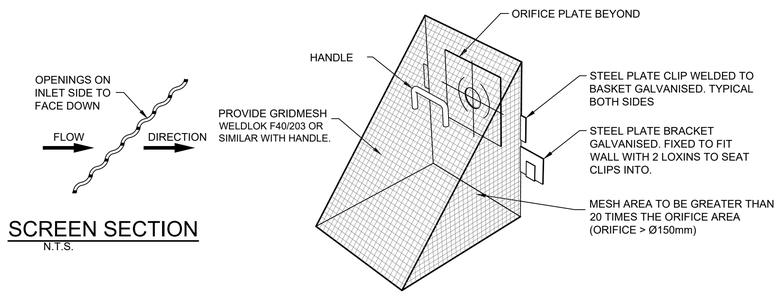
A1



TEMPORARY OSD AND BIORETENTION BASIN A OUTLET SECTION

NOT TO SCALE

BIORETENTION BASIN A TYPICAL DETAIL



SCREEN SECTION

N.T.S.

SCREEN DETAIL WHERE IN LARGE PIT OR TANK

N.T.S.

BASIN A STAGE STORAGE TABLE

STAGE STORAGE TABLE						
ELEV	AREA (sq. m)	DEPTH (m)	AVG END INC. VOL. (cu. m)	AVG END TOTAL VOL. (cu. m)	CONIC INC. VOL. (cu. m)	CONIC TOTAL VOL. (cu. m)
41.300	0.89	N/A	N/A	0.00	N/A	0.00
41.400	3.25	0.100	0.21	0.21	0.20	0.20
41.500	6.68	0.100	0.50	0.70	0.49	0.68
41.600	61.89	0.100	3.43	4.13	2.96	3.65
41.600	11.12	0.000	0.00	4.13	0.00	3.65
41.700	74.61	0.100	4.29	8.42	3.82	7.46
41.700	16.56	0.000	0.00	8.42	0.00	7.46
41.800	89.67	0.100	5.31	13.73	4.83	12.29
41.800	23.00	0.000	0.00	13.73	0.00	12.29
41.900	138.94	0.100	8.10	21.83	7.28	19.57
42.000	166.16	0.100	15.26	37.08	15.23	34.81
42.100	193.29	0.100	17.97	55.06	17.96	52.76
42.200	223.58	0.100	20.84	75.90	20.82	73.59
42.300	257.88	0.100	24.07	99.97	24.05	97.64
42.400	295.21	0.100	27.65	127.63	27.63	125.27
42.500	354.90	0.100	32.51	160.13	32.46	157.73
42.600	434.02	0.100	39.45	199.58	39.38	197.11
42.700	504.10	0.100	46.91	246.48	46.86	243.97
42.800	556.78	0.100	53.04	299.53	53.02	297.00
42.900	599.37	0.100	57.81	357.33	57.79	354.79
43.000	642.99	0.100	62.12	419.45	62.11	416.90
43.100	687.61	0.100	66.53	485.98	66.52	483.41
43.200	733.20	0.100	71.04	557.02	71.03	554.44
43.300	779.77	0.100	75.65	632.67	75.64	630.08
43.340	798.67	0.040	31.57	664.24	31.57	661.65
43.400	827.17	0.060	48.78	713.02	48.77	710.42
43.500	876.02	0.100	85.16	798.18	85.15	795.57

REV	AMENDMENT	ISSUED	DATE
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G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION
SYDNEY P: 02 9659 0005
CENTRAL COAST P: 02 4325 5255
HUNTER P: 02 4966 8388
S.E. QLD P: 07 5582 6555
www.brs.com.au
mail@brs.com.au
ABN: 26 134 067 842

Client: THE BATHLA GROUP

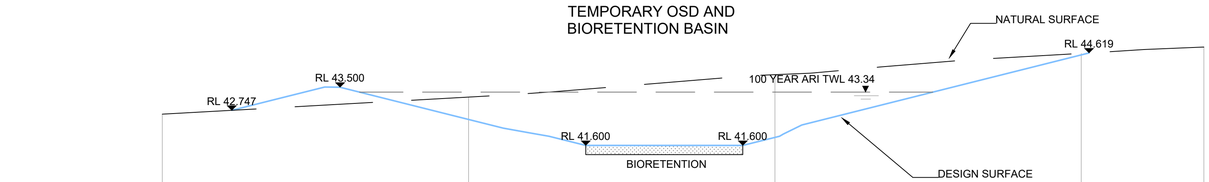
182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

TEMPORARY BASIN CROSS-SECTIONS AND DETAILS SHEET 1

Designed: RW/GL
Drawn: RW
Checked: GJ
Scales: Plan -, Horiz. -, Vert. -, X-Sect. -
Datum: A.H.D.

Plan No. SY190192-01-702
File Ref. SY190192
REV. H

A1



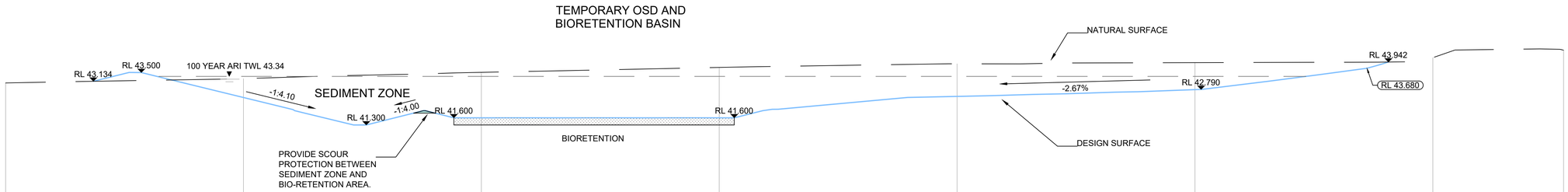
SCALE 1:100
Datum 35.000

DESIGN LEVELS	42.447	41.862	44.555
EXISTING LEVELS	43.179	43.910	44.604
CHAINAGE	10.000	20.000	30.000

SECTION A A LONG SECTION

OSD BASIN SECTION
SCALE 1 : 100

A - A
C701



SCALE 1:100
Datum 35.000

DESIGN LEVELS	42.453	41.600	41.600	42.498	42.784	
EXISTING LEVELS	43.245	43.509	43.715	43.868	43.916	44.126
CHAINAGE	10.000	20.000	30.000	40.000	50.000	60.000

SECTION B B LONG SECTION

OSD BASIN SECTION
SCALE 1 : 100

B - B
C701

REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
E	JOINT REPORT AMENDMENTS	RW	18/06/21
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BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION
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ABN: 26 134 067 842

Client:
THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

TEMPORARY BASIN SECTION DETAILS SHEET 2

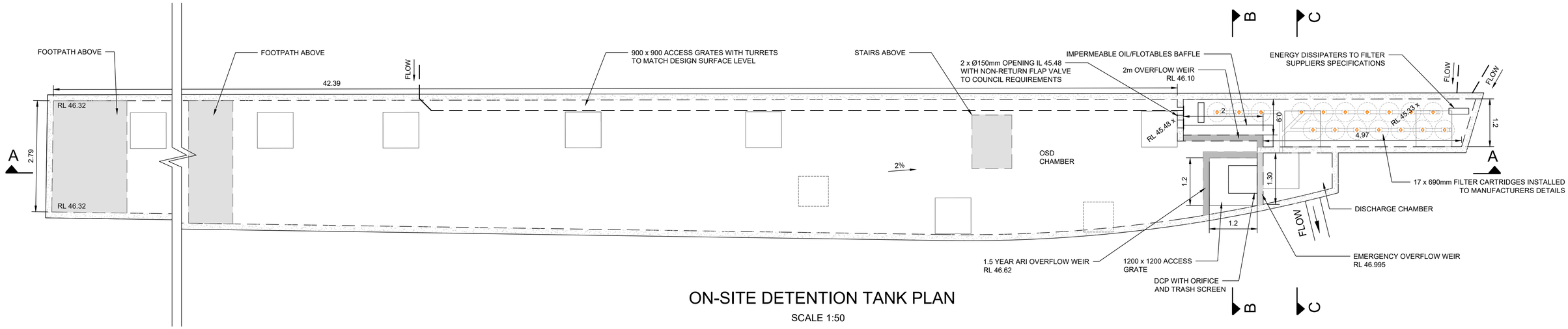
Designed: RW/GL
Drawn: RW
Checked: GJ

Scales: Plan -
Horiz. -
Vert. -
X-Sect. -

Datum: A.H.D.

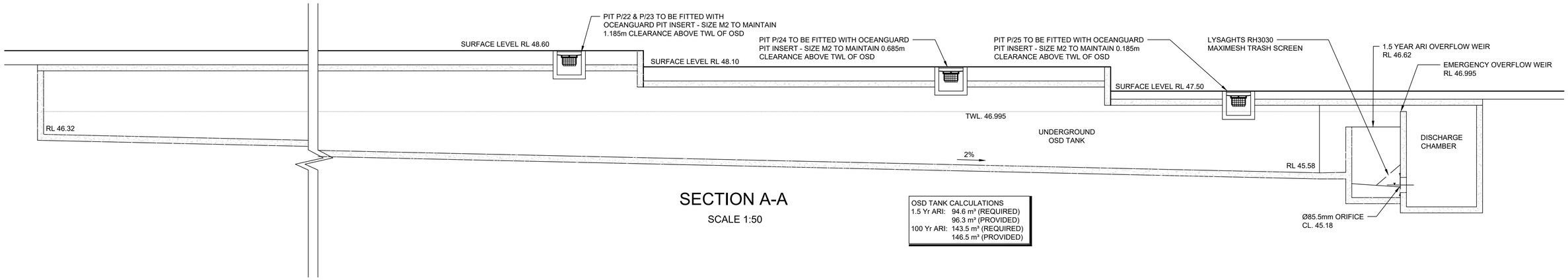
Plan No.
SY190192-01-703
File Ref. SY190192
REV. H

A1



ON-SITE DETENTION TANK PLAN

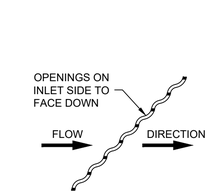
SCALE 1:50



SECTION A-A

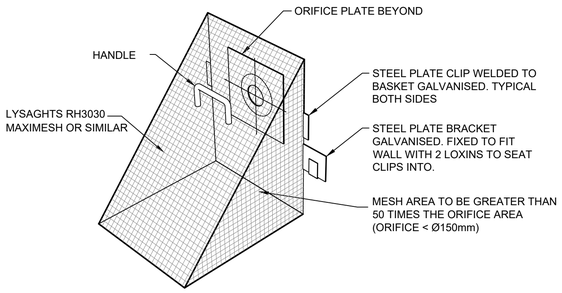
SCALE 1:50

OSD TANK CALCULATIONS
1.5 Yr ARI: 94.6 m³ (REQUIRED)
96.3 m³ (PROVIDED)
100 Yr ARI: 143.5 m³ (REQUIRED)
146.5 m³ (PROVIDED)



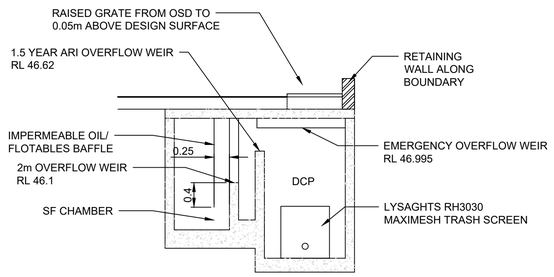
SCREEN SECTION

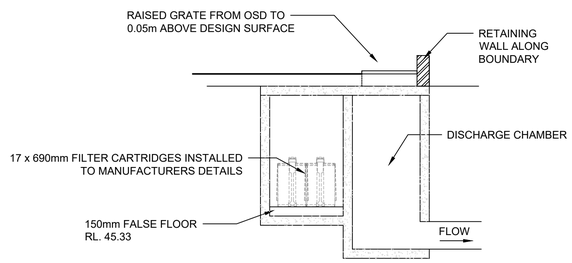
N.T.S.



SCREEN DETAIL WHERE IN SMALL PIT OR TANK

N.T.S.





NOTE :
ACCESS GRATES TO THE BELOW GROUND DETENTION TANK MUST BE A MINIMUM 900mm BY 900mm AND ARE POSITIONED SUCH THAT THE MAXIMUM DISTANCE FROM ANY POINT IN THE TANK TO THE NEAREST GRATE IS NOT GREATER THAN 1.5m FOR CLEAR HEIGHTS LESS THAN 0.7m, 2m FOR CLEAR HEIGHTS LESS THAN 1.0m, 3m FOR CLEAR HEIGHTS LESS THAN 1.5m AND 4m FOR CLEAR HEIGHTS LESS THAN 2.0m, 5m FOR CLEAR HEIGHTS LESS THAN 2.5m AND 6m FOR CLEAR HEIGHTS GREATER THAN 2.5m. PROVIDE 1200 x 1200 GRATED ACCESS OVER THE ORIFICES.

REV	AMENDMENT	ISSUED	DATE
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G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
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CENTRAL COAST P: 02 4325 5255
HUNTER P: 02 4966 8388
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ABN: 26 134 067 842

Client:
THE BATHLA GROUP

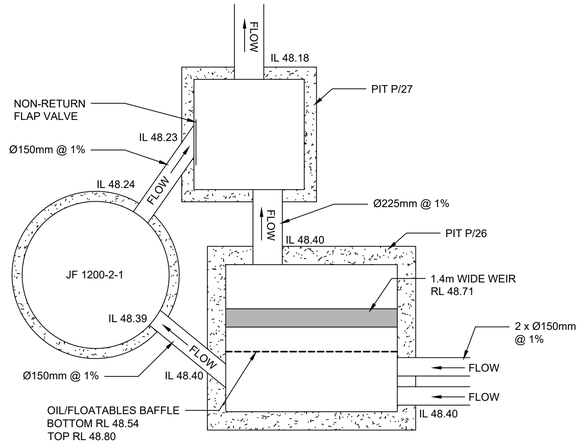
182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

SOUTHERN OSD TANK CROSS-SECTIONS AND DETAILS

Designed: RW/GL
Drawn: RW
Checked: GJ
Scales: Plan 1:50, Horiz. -, Vert. -, X-Sect. -
Datum: A.H.D.

Plan No.
SY190192-01-711
File Ref. SY190192
REV. H

A1



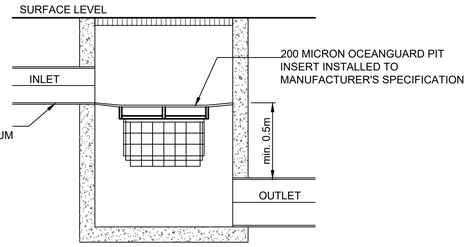
CALCULATIONS
ASSUME 1% AEP FLOW TO DIVERSION WEIR
A = 0.131 ha
ToC = 5 min
I = 219 mm/hr
Q = 0.983x219x0.131/0.36 = 78.3 L/s
WEIR LENGTH = 17.8 x 0.078 = 1.388 m

JELLYFISH AND DIVERSION PIT PLAN

SCALE 1:25

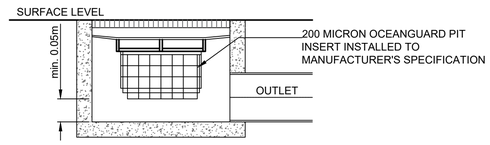
LOT 1	Pit Schedule						
Pit Label	**DWG REF No.**	**RL**	**IL**	**DEPTH**	**SIZE**	**TYPE**	**TREATMENT INSERT**
1	SY190192-01-103	51.80	51.00	0.80	600 x 900	GP	OG-S
1A	SY190192-01-103	52.10	51.50	0.60	600 x 600	GP	OG-S
2	SY190192-01-103	51.45	50.18	1.27	900 x 900	GP	OG-S
3	SY190192-01-103	51.45	50.00	1.45	900 x 900	GP	OG-S
4	SY190192-01-103	51.45	47.83	3.62	900 x 900	GP	OG-S
5	SY190192-01-103	50.60	47.73	2.87	900 x 900	GP	OG-S
6	SY190192-01-103	49.40	47.64	1.76	900 x 900	GP	OG-S
7	SY190192-01-103	48.70	47.53	1.17	900 x 900	GP	OG-S
8	SY190192-01-103	48.40	47.45	0.95	600 x 900	GP	OG-P
9	SY190192-01-103	50.90	50.45	0.45	450 x 450	GP	OG-S
10	SY190192-01-103	50.90	50.45	0.45	450 x 450	GP	OG-S
10A	SY190192-01-103	50.95	50.50	0.45	450 x 450	GP	OG-S
11	SY190192-01-103	48.90	48.45	0.45	450 x 450	GP	OG-S
12	SY190192-01-103	48.90	48.45	0.45	450 x 450	GP	OG-S
13	SY190192-01-103	48.90	48.45	0.45	450 x 450	GP	OG-S
14	SY190192-01-103	48.90	48.45	0.45	450 x 450	GP	OG-S
15	SY190192-01-103	48.90	48.45	0.45	450 x 450	GP	OG-S
16	SY190192-01-103	48.90	48.45	0.45	450 x 450	GP	OG-S
17	SY190192-01-103	50.70	49.25	1.45	900 x 900	GP	OG-S
18	SY190192-01-103	50.70	49.20	1.50	900 x 900	GP	OG-S
19	SY190192-01-103	49.90	48.43	1.47	900 x 900	GP	OG-S
20	SY190192-01-103	48.90	48.00	0.90	900 x 900	GP	OG-S
21	SY190192-01-103	48.90	47.94	0.96	900 x 900	GP	OG-S
22	SY190192-01-103	48.50	47.92	0.58	600 x 600	GP	OG-S
23	SY190192-01-103	48.50	47.87	0.63	600 x 900	GP	OG-S
24	SY190192-01-103	48.00	47.40	0.60	600 x 600	GP	OG-S
25	SY190192-01-103	47.50	46.90	0.60	600 x 600	GP	OG-S

GP	GRATED PIT
OG-S & OG-P	OCEANGUARD (REFER DETAIL - DWG 712)



TYPICAL OCEANGUARD PIT DETAIL (OG-P)

SCALE 1:20



TYPICAL OCEANGUARD PIT DETAIL (OG-S)

SCALE 1:20

REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
E	JOINT REPORT AMENDMENTS	RW	18/06/21
F	JOINT REPORT AMENDMENTS	RW	15/07/21
G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
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ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION
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ABN: 26 134 067 842

Client: THE BATHLA GROUP

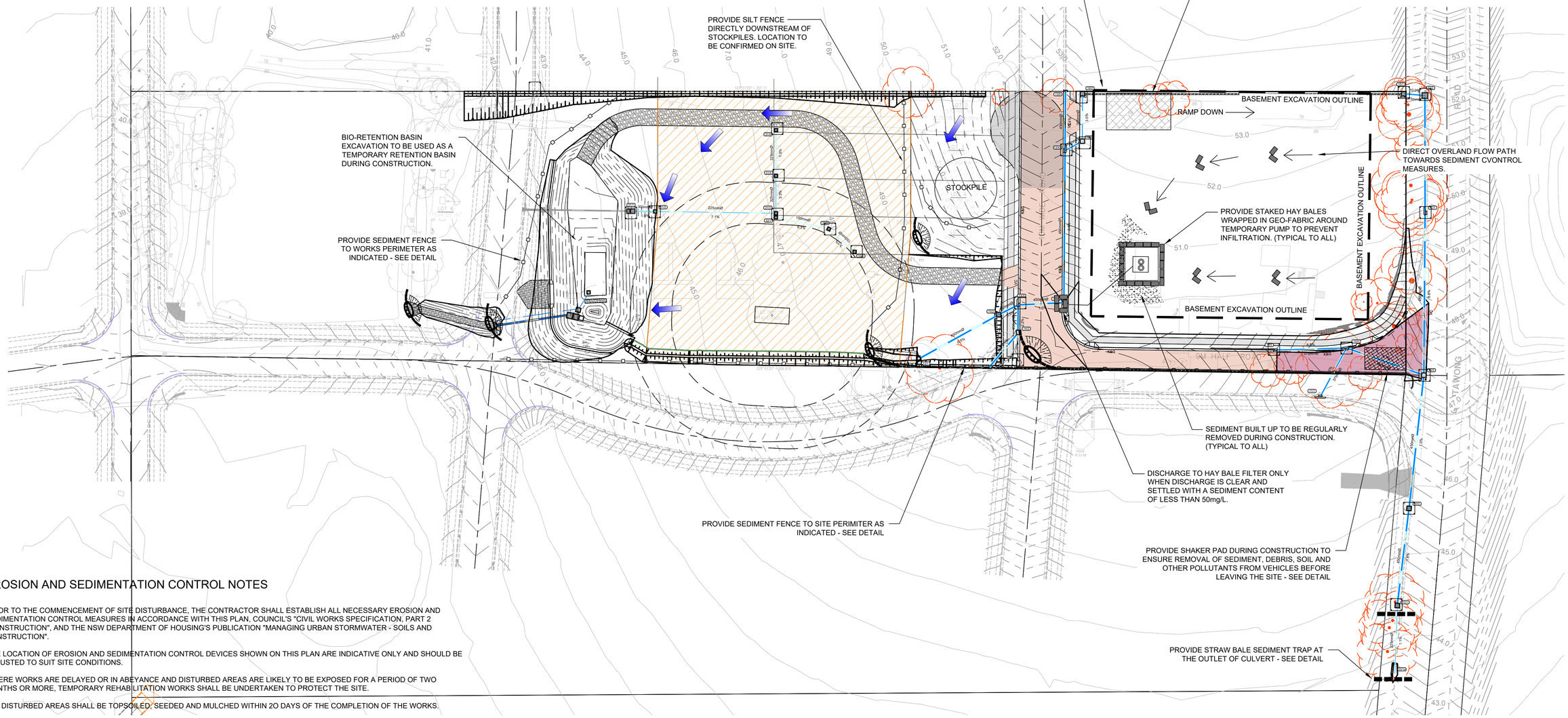
182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

DRAINAGE DETAILS

Designed: RW/GL
Drawn: RW
Checked: GJ
Scales: Plan 1:50, Horiz. -, Vert. -, X-Sect. -
Datum: A.H.D.

Plan No. SY190192-01-712
File Ref. SY190192
REV. H

A1



EROSION AND SEDIMENTATION CONTROL NOTES

1. PRIOR TO THE COMMENCEMENT OF SITE DISTURBANCE, THE CONTRACTOR SHALL ESTABLISH ALL NECESSARY EROSION AND SEDIMENTATION CONTROL MEASURES IN ACCORDANCE WITH THIS PLAN, COUNCIL'S "CIVIL WORKS SPECIFICATION, PART 2 -CONSTRUCTION", AND THE NSW DEPARTMENT OF HOUSING'S PUBLICATION "MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION".
2. THE LOCATION OF EROSION AND SEDIMENTATION CONTROL DEVICES SHOWN ON THIS PLAN ARE INDICATIVE ONLY AND SHOULD BE ADJUSTED TO SUIT SITE CONDITIONS.
3. WHERE WORKS ARE DELAYED OR IN ABEYANCE AND DISTURBED AREAS ARE LIKELY TO BE EXPOSED FOR A PERIOD OF TWO MONTHS OR MORE, TEMPORARY REHABILITATION WORKS SHALL BE UNDERTAKEN TO PROTECT THE SITE.
4. ALL DISTURBED AREAS SHALL BE TOPSOILED, SEEDED AND MULCHED WITHIN 2O DAYS OF THE COMPLETION OF THE WORKS.
5. ALL AREAS WITH SLOPES STEEPER THAN 12% (1 in 8) SHALL BE STRAW MULCHED IN CONJUNCTION WITH SEEDING, OR TURFED.
6. SILT BARRIERS LOCATED AROUND KERB INLET AND ROAD PITS SHALL BE REINSTATED FOLLOWING ROAD PAVING WORKS IF IT IS LIKELY THAT UNDISTURBED AREAS WILL STILL DRAIN TO THE PIT.
7. SANDBAGS SHALL BE PLACED ACROSS THE END OF ROAD CONSTRUCTION AT THE COMPLETION OF EACH DAYS WORK TO PREVENT EROSION OF THE CONSTRUCTED MATERIAL.
8. THE CONTRACTOR SHALL CONDUCT WEEKLY INSPECTIONS OF THE SITE TO ENSURE THAT ALL DEVICES AND REHABILITATION AREAS HAVE BEEN ADEQUATELY MAINTAINED. THE CONTRACTOR SHALL ALSO KEEP A LOG BOOK DETAILING SUCH INSPECTIONS, AND RECORDING RAINFALL EVENTS AND OTHER RELEVANT EVENTS.
9. TOPSOIL SHALL BE STOCKPILED IN THE LOCATIONS SHOWN ON THIS PLAN OR AS DIRECTED BY COUNCIL'S ENGINEER. WHERE IT IS LIKELY THAT STOCKPILES WILL REMAIN IN PLACE FOR A PERIOD EXCEEDING 4 WEEKS, THEN THE STOCKPILE SHALL BE STABILISED BY SEEDING OR EQUIVALENT METHODS.
10. ALL REVEGETATION WORKS ARE TO BE MAINTAINED, INCLUDING WATERING AND MOWING WHERE NECESSARY UNTIL THE COMPLETION OF THE MAINTENANCE PERIOD.
11. THE MOVEMENT OF VEHICULAR TRAFFIC ON THE SITE SHALL BE CONFINED TO DESIGNATED AREAS DURING CONSTRUCTION WORKS. VEHICULAR ACCESS SHALL BE DENIED TO AREAS TO BE LEFT UNDISTURBED.
12. SITE ACCESS SHALL BE LIMITED TO THE LOCATIONS SHOWN ON THIS PLAN. SHAKE-DOWN AREAS SHALL BE CONSTRUCTED AS SHOWN.
13. DURING CONSTRUCTION WORKS, DUST CONTROL MEASURES SHALL BE IMPLEMENTED TO MINIMISE THE AMOUNT OF DUST GENERATED FROM THE SITE. THESE MEASURES TO BE IMPLEMENTED TO COUNCIL'S SATISFACTION.
14. MAINTENANCE AND CLEANING OF CONSTRUCTION PLANT SHALL BE CARRIED OUT IN AN AREA WHERE RUNOFF CAN BE CONTAINED AND APPROPRIATELY TREATED AND DISPOSED OF.
15. ALL EROSION AND SEDIMENTATION CONTROL DEVICES SHALL REMAIN IN PLACE UNTIL ALL DISTURBED AREAS HAVE ADEQUATELY REGENERATED. THIS STAGE SHALL BE DETERMINED BY THE CERTIFIER.

LEGEND

- SEDIMENT FENCE
- STABILISED SITE ACCESS AT ENTRANCE TO WORKS
- SURFACE INLET PIT SEDIMENT TRAP
- HAY BALE SEDIMENT TRAP

10 0 10 20 30 40 50 METRES 1:500

REV	AMENDMENT	ISSUED	DATE
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G	JOINT REPORT AMENDMENTS	GL	29/07/21
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mail@brs.com.au
ABN: 26 134 067 842

Client: THE BATHLA GROUP

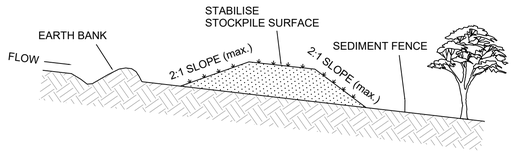
182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

SOIL AND WATER MANAGEMENT PLAN

Designed: RW/GL
Drawn: RW
Checked: GJ
Scales: Plan 1:500, Horiz. 1:500, Vert. 1:100, X-Sect. -
Datum: A.H.D.

Plan No. SY190192-01-801
File Ref. SY190192
REV. H

A1



CONSTRUCTION NOTES

1. WHERE POSSIBLE LOCATE STOCKPILE AT LEAST 5 METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOWS, ROADS, HAZARD AREAS AND MIN. 1.5m AWAY FROM EMBANKMENTS.

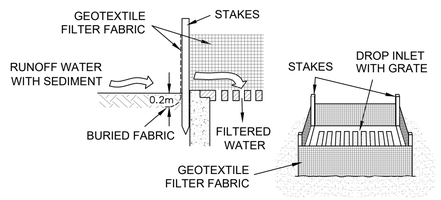
2. CONSTRUCT ON THE CONTOUR AS A LOW, FLAT ELONGATED MOUND.

3. WHERE THERE IS SUFFICIENT AREA TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT.

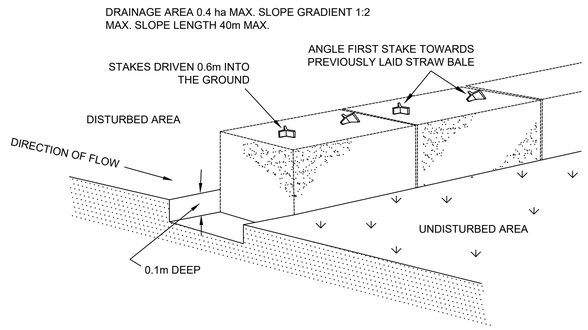
4. REHABILITATE IN ACCORDANCE WITH THE SWMP/ESCP.

5. CONSTRUCT EARTH BANK (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT RUN OFF AROUND THE STOCKPILE AND A SEDIMENT FENCE (STANDARD DRAWING 6-8) 1 TO 2 METRES DOWNSLOPE OF STOCKPILE.

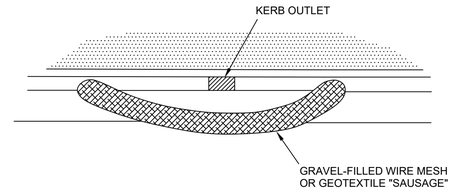
TOPSOIL STOCKPILE



SURFACE INLET PIT SEDIMENT TRAP



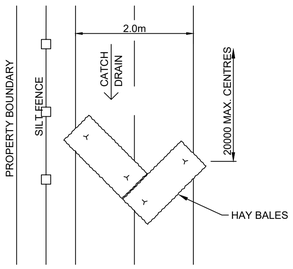
STRAW BALE SEDIMENT FILTER



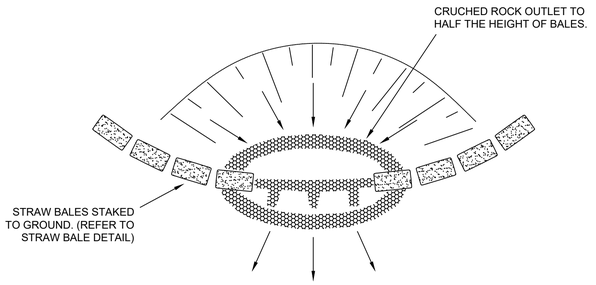
CONSTRUCTION NOTES

1. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH AND FILL IT WITH 25mm TO 50mm GRAVEL.
2. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH X 400mm WIDE.
3. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING FILTER.
4. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

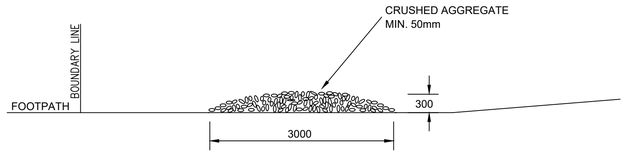
MESH & GRAVEL FILTER "SAUSAGE" BARRIER



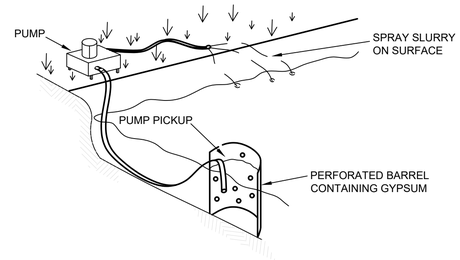
CATCH DRAIN DETAIL



STRAW BALE & CRUSHED ROCK SEDIMENT FILTER



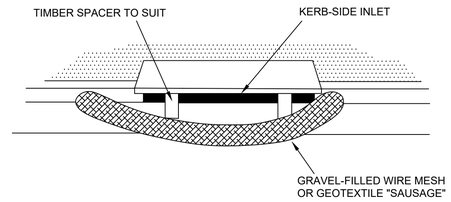
VEHICLE DUST SHAKE DOWN DETAIL

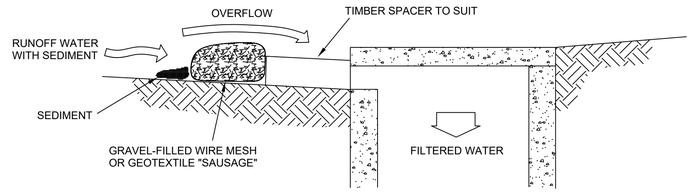


NOTE:
1. FLOCCULATION TO BE USED IF WATER IS NOT CLEAR (IE: SEDIMENT GREATER THAN 50 mg/L) PRIOR TO DISCHARGING FROM TEMPORARY PUMP OUT

2. FOR RATES & AGENTS SEE APPENDIX E OF HOUSING NSW "MANAGING URBAN SW SOILS & CONSTRUCTION".

FLOCCULATION DETAIL

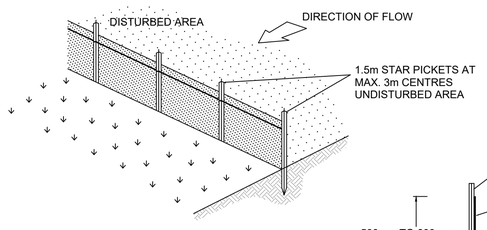


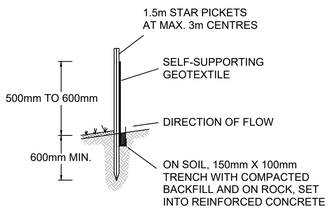


CONSTRUCTION NOTES

1. INSTALL FILTERS TO KERB INLET ONLY AT SAG POINTS.
2. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH X 400mm WIDE.
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING FILTER.
6. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

MESH & GRAVEL INLET "SAUSAGE" FILTER





SECTION DETAIL

CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARRALLEL TO THE CONTOURS OF THE SITE.

2. DRIVE 1.5m LONG STAR PICKETS INTO GROUND 2.5 METRES APART (MAX.)

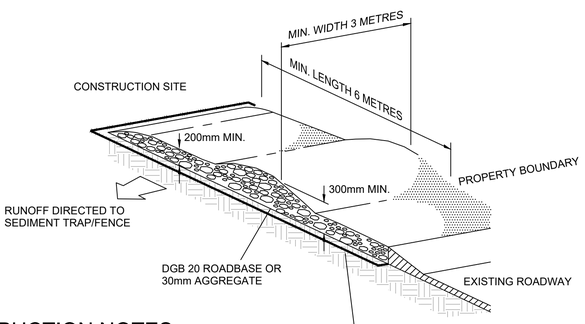
3. DIG A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.

4. FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.

5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.

6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

SEDIMENT FENCE



CONSTRUCTION NOTES

1. STRIP TOPSOIL AND LEVEL SITE.

2. COMPACT SUBGRADE.

3. COVER AREA WITH NEEDLE-PUNCHED GEOTEXTILE.

4. CONSTRUCT 200mm THICK PAD OVER GEOTEXTILE USING ROADBASE OR 30mm AGGREGATE. MINIMUM LENGTH 15 METRES OR TO BUILDING ALIGNMENT. MINIMUM WIDTH 3 METRES.

5. CONSTRUCT HUMP IMMEDIATELY WITHIN BOUNDARY TO DIVERT WATER TO A SEDIMENT FENCE OR OTHER SEDIMENT TRAP.

GEOTEXTILE FABRIC DESIGNED TO PREVENT INTERMIXING OF SUBGRADE AND BASE MATERIALS AND TO MAINTAIN GOOD PROPERTIES OF THE SUB-BASE LAYERS.

GEOFABRIC MAY BE A WOVEN OR NEEDLE PUNCHED PRODUCT WITH A MINIMUM CBR BURST STRENGTH (AS3706.4-90) OF 2500 N

STABILISED SITE ACCESS

REV	AMENDMENT	ISSUED	DATE
D	S34 CONFERENCE	RW	10/06/21
E	JOINT REPORT AMENDMENTS	RW	18/06/21
F	JOINT REPORT AMENDMENTS	RW	15/07/21
G	JOINT REPORT AMENDMENTS	GL	29/07/21
H	JOINT REPORT AMENDMENTS	GL	30/08/21

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION
SYDNEY P: 02 9659 0005
CENTRAL COAST P: 02 4325 5255
HUNTER P: 02 4966 8388
S.E. QLD P: 07 5582 6555
www.brs.com.au
mail@brs.com.au
ABN: 26 134 067 842

Client: THE BATHLA GROUP

182 GUNTAWONG ROAD RIVERSTONE
PROPOSED SUBDIVISION AND RFB

SOIL AND WATER MANAGEMENT PLAN DETAIL

Designed: RW/GL
Drawn: RW
Checked: GJ
Scales: Plan -, Horiz. -, Vert. -, X-Sect. -
Datum: A.H.D.

Plan No. SY190192-01-802
File Ref. SY190192
REV. H