CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

DETAILED ENGINEERING DESIGN
HUTLEY DRIVE SOUTHERN EXTENSION



LOCALITY PLAN
NTS

nearmap
NEARMAP PHOTO DATED: 15/01/2021

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NORTH

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D	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
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A	23/04/2021	GT	50% DESIGN ISSUE	SW

Amendments

ballina shire council

CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1000.dwg		
SHEET	1 OF 60		

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
COVER SHEET

Scale HORIZONTAL: NTS
VERTICAL: -

Plan No. 721982-01-CI-1000

Rev D



SITE PLAN
SCALE 1:2000

SCHEDULE OF DRAWINGS	
DRAWING No.	DESCRIPTION
721982-01-CI-1000	COVER SHEET
721982-01-CI-1001	SITE PLAN AND DRAWING SCHEDULE
721982-01-CI-1010	EXISTING FEATURES PLAN - SHEET 1 OF 3
721982-01-CI-1011	EXISTING FEATURES PLAN - SHEET 2 OF 3
721982-01-CI-1012	EXISTING FEATURES PLAN - SHEET 3 OF 3
721982-01-CI-1015	TYPICAL CROSS SECTIONS - SHEET 1 OF 2
721982-01-CI-1016	TYPICAL CROSS SECTIONS - SHEET 2 OF 2
721982-01-CI-1020	HORIZONTAL CONTROL LINE AND SETOUT TABLE
721982-01-CI-1101	EARTHWORKS LAYOUT PLAN - SHEET 1 OF 3
721982-01-CI-1102	EARTHWORKS LAYOUT PLAN - SHEET 2 OF 3
721982-01-CI-1103	EARTHWORKS LAYOUT PLAN - SHEET 3 OF 3
721982-01-CI-1201	GENERAL ARRANGEMENT PLAN AND PROFILE - SHEET 1 OF 5
721982-01-CI-1202	GENERAL ARRANGEMENT PLAN AND PROFILE - SHEET 2 OF 5
721982-01-CI-1203	GENERAL ARRANGEMENT PLAN AND PROFILE - SHEET 3 OF 5
721982-01-CI-1204	GENERAL ARRANGEMENT PLAN AND PROFILE - SHEET 4 OF 5
721982-01-CI-1205	GENERAL ARRANGEMENT PLAN AND PROFILE - SHEET 5 OF 5
721982-01-CI-1206	SEDIMENT AND EROSION CONTROL DETAILS
721982-01-CI-1210	CROSS SECTIONS - SHEET 1 OF 10
721982-01-CI-1211	CROSS SECTIONS - SHEET 2 OF 10
721982-01-CI-1212	CROSS SECTIONS - SHEET 3 OF 10
721982-01-CI-1213	CROSS SECTIONS - SHEET 4 OF 10
721982-01-CI-1214	CROSS SECTIONS - SHEET 5 OF 10
721982-01-CI-1215	CROSS SECTIONS - SHEET 6 OF 10
721982-01-CI-1216	CROSS SECTIONS - SHEET 7 OF 10
721982-01-CI-1217	CROSS SECTIONS - SHEET 8 OF 10
721982-01-CI-1218	CROSS SECTIONS - SHEET 9 OF 10
721982-01-CI-1219	CROSS SECTIONS - SHEET 10 OF 10
721982-01-CI-1301	STORMWATER DRAINAGE LAYOUT PLAN - SHEET 1 OF 3
721982-01-CI-1302	STORMWATER DRAINAGE LAYOUT PLAN - SHEET 2 OF 3
721982-01-CI-1303	STORMWATER DRAINAGE LAYOUT PLAN - SHEET 3 OF 3

SCHEDULE OF DRAWINGS	
DRAWING No.	DESCRIPTION
721982-01-CI-1311	STORMWATER DRAINAGE LONGITUDINAL SECTION - SHEET 1 OF 6
721982-01-CI-1312	STORMWATER DRAINAGE LONGITUDINAL SECTION - SHEET 2 OF 6
721982-01-CI-1313	STORMWATER DRAINAGE LONGITUDINAL SECTION - SHEET 3 OF 6
721982-01-CI-1314	STORMWATER DRAINAGE LONGITUDINAL SECTION - SHEET 4 OF 6
721982-01-CI-1315	STORMWATER DRAINAGE LONGITUDINAL SECTION - SHEET 5 OF 6
721982-01-CI-1316	STORMWATER DRAINAGE LONGITUDINAL SECTION - SHEET 6 OF 6
721982-01-CI-1320	STORMWATER DRAINAGE CATCHMENT PLAN
721982-01-CI-1321	STORMWATER DRAINAGE CALCULATION TABLE - SHEET 1 OF 2
721982-01-CI-1322	STORMWATER DRAINAGE CALCULATION TABLE - SHEET 2 OF 2
721982-01-CI-1350	WATER QUALITY MANAGEMENT - CATCHMENT A
721982-01-CI-1351	WATER QUALITY MANAGEMENT - CATCHMENT B AND CATCHMENT C
721982-01-CI-1352	WATER QUALITY MANAGEMENT - CATCHMENT PLAN
721982-01-CI-1401	SIGNS AND LINEMARKING PLAN - SHEET 1 OF 3
721982-01-CI-1402	SIGNS AND LINEMARKING PLAN - SHEET 2 OF 3
721982-01-CI-1403	SIGNS AND LINEMARKING PLAN - SHEET 3 OF 3
721982-01-CI-1901	RETAINING WALL - SETOUT PLAN
721982-01-CI-1902	RETAINING WALL - SETOUT TABLES - SHEET 1 OF 3
721982-01-CI-1903	RETAINING WALL - SETOUT TABLES - SHEET 2 OF 3
721982-01-CI-1904	RETAINING WALL - SETOUT TABLES - SHEET 3 OF 3
721982-01-CI-1905	RETAINING WALL - LONGITUDINAL SECTION - SHEET 1 OF 3
721982-01-CI-1906	RETAINING WALL - LONGITUDINAL SECTION - SHEET 2 OF 3
721982-01-CI-1907	RETAINING WALL - LONGITUDINAL SECTION - SHEET 3 OF 3
721982-01-CI-1920	RETAINING WALL - NOTES
721982-01-CI-1925	RETAINING WALL - BLOCKWALL - TYPICAL SECTIONS - TYPE 1 & TYPE 2
721982-01-CI-1926	RETAINING WALL - BLOCKWALL - TYPICAL SECTIONS - TYPE 3
721982-01-CI-1927	RETAINING WALL - BLOCKWALL - TYPICAL SECTIONS - TYPE 4
721982-01-CI-1930	RETAINING WALL - BLOCKWALL - TYPICAL DETAILS
721982-01-CI-1935	RETAINING WALL - CONCRETE SLEEPER WALL - TYPICAL SECTION
721982-01-CI-1936	RETAINING WALL - CONCRETE SLEEPER WALL - TYPICAL DETAIL
721982-01-CI-1940	RAMP AND STAIR PARK ACCESS LAYOUT PLAN

DRAWING No.	DESCRIPTION
TRANSPORT FOR NSW - STANDARD DRAWINGS	
NORTHERN RIVERS LOCAL GOVERNMENT - STANDARD DRAWINGS AS LISTED ON C-00.	
MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.)	

GENERAL NOTES

1. ALL DIMENSIONS GIVEN ON THESE DRAWINGS ARE IN METRES, UNLESS NOTED OTHERWISE.
2. ALL WORK AND MATERIALS SHALL COMPLY WITH THE PROJECT DRAWINGS, SPECIFICATION AND CURRENT COUNCIL STANDARDS AND SPECIFICATIONS.
3. ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE WORK HEALTH AND SAFETY ACT (2011).
4. CONTRACTOR TO PROVIDE TRAFFIC MANAGEMENT FOR THE DURATION OF CONSTRUCTION IN ACCORDANCE WITH "THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES"
5. THE CONTRACTOR IS TO LOCATE, IDENTIFY AND ESTABLISH THE CONNECTIVITY OF ALL EXISTING SERVICES WITHIN THE LIMITS OF PROPOSED WORKS AND CONFIRM THIS INFORMATION WITH THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
6. PROPERTY BOUNDARIES ARE SUBJECT TO CONFIRMATION BY FIELD SURVEY CARRIED OUT BY A REGISTERED SURVEYOR.
7. ALL WORK SHALL BE JOINED NEATLY TO EXISTING FEATURES.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL MEASURING DEVICES, SAFETY EQUIPMENT AND MACHINERY REQUIRED TO CARRY OUT INSPECTIONS/MEETINGS AS SPECIFIED OR REQUESTED BY THE ENGINEER.
9. PROOF ROLLING SHALL BE CARRIED OUT USING A SINGLE AXLE HIGHWAY TRUCK WITH A REAR AXLE LOAD NOT LESS THAN 8 TONNES AND TYRES INFLATED TO 550kPa OR APPROVED EQUIVALENT. EQUIPMENT LABOUR AND LOADING REQUIRED FOR PROOF ROLLING IS TO BE PROVIDED BY THE CONTRACTOR.
10. THE CONTRACTOR SHALL RESTORE ALL EXISTING AREAS TO BE MAINTAINED, TO THEIR ORIGINAL CONDITION UPON COMPLETION OF THE WORKS.
11. AS CONSTRUCTED SURVEY OF ALL COMPLETED WORKS IS TO BE COMPLETED BY A REGISTERED SURVEYOR AT CONTRACTOR COST, AND PROVIDED AT THE COMPLETION OF WORKS.
12. THESE NOTES SHALL APPLY TO ALL PORTIONS OF THE WORKS.
13. FOR SETOUT REFER TO CONSULTING ENGINEER FOR DIGITAL DATA.
14. COUNCIL TO ASSESS THE ALIGNMENT AND CONDITION OF EXISTING SERVICES TO DETERMINE ANY RENEWALS OR RELOCATIONS PRIOR TO COMMENCEMENT OF WORKS.

nearmap
NEARMAP PHOTO DATED: 15/01/2021

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CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

NORTH

0 50 100 150 200m
SCALE 1:2000 @A1

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Amendments

ballina shire council

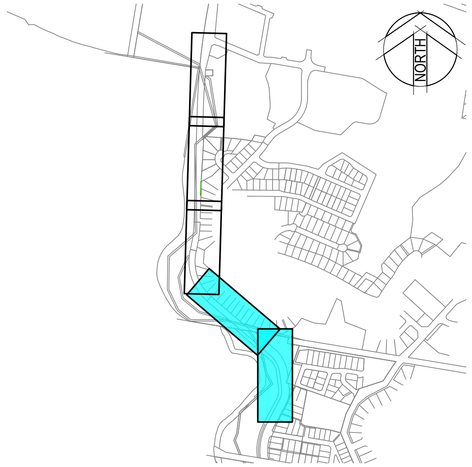
CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B. L.B.	-	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1001.dwg		

SHEET 2 OF 60

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
SITE PLAN AND
DRAWING SCHEDULE

Scale	Plan No.	Rev
HORIZONTAL: 1:2000 VERTICAL: -	721982-01-CI-1001	D



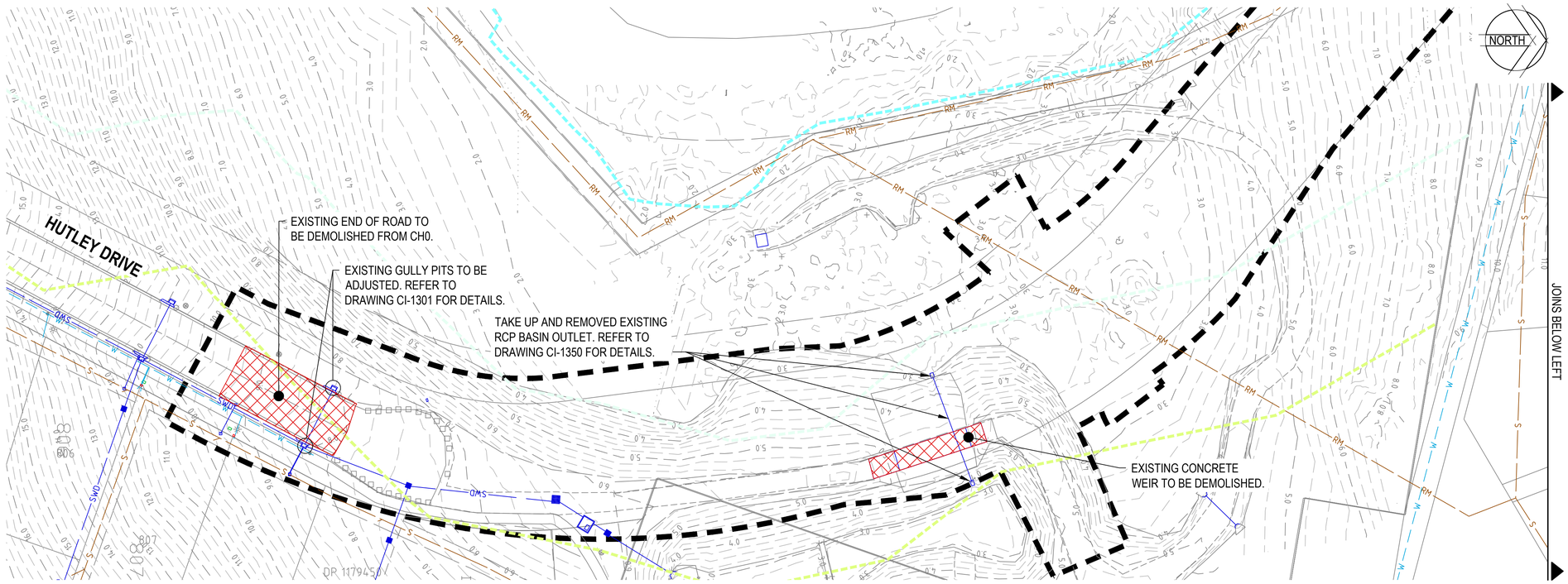
KEY PLAN
SCALE 1:10000

LEGEND

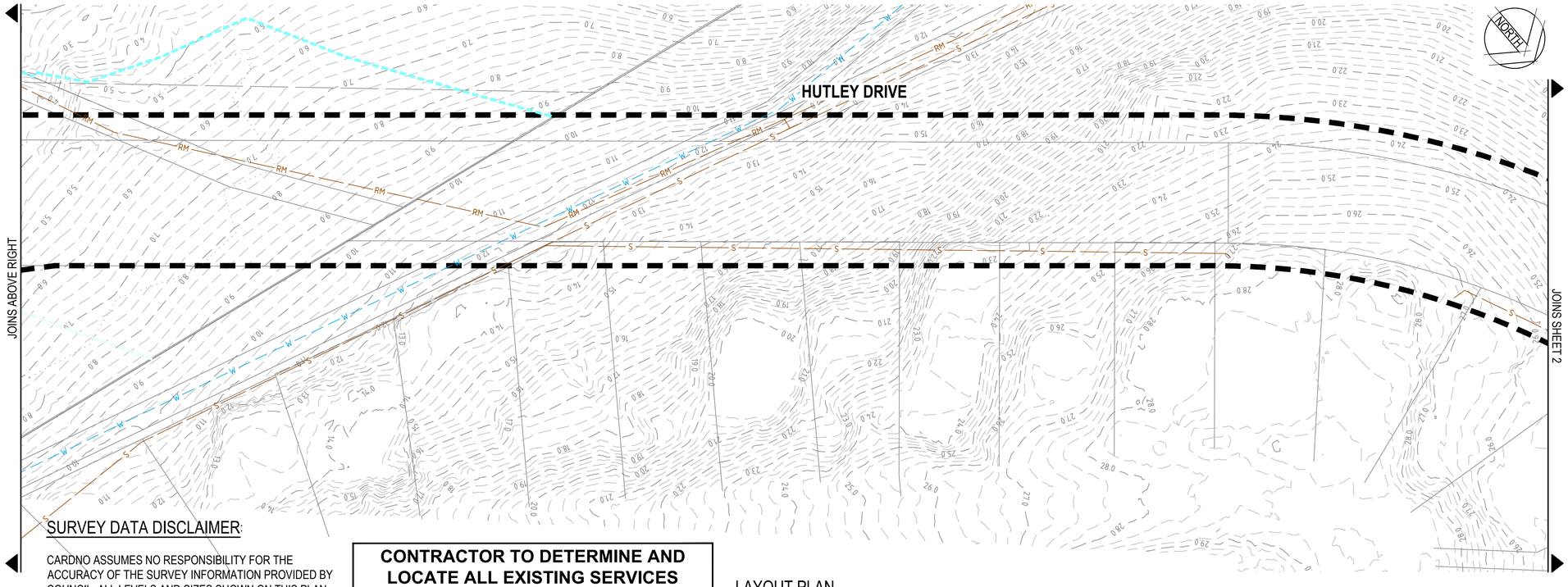
- PROPOSED DEMOLITION
- EXISTING TOP OF BANK
- EXISTING BOTTOM OF BANK
- EXISTING VEGETATION
- EXISTING EDGE OF TRACK
- EDGE OF WETLANDS (INDICATIVE ONLY)
- MOSQUITO BUFFER (INDICATIVE ONLY)
- VEGETATION BUFFER (INDICATIVE ONLY)
- EXISTING STORMWATER PIPE
- EXISTING SEWER PIPE
- EXISTING RISING MAIN
- EXISTING WATER PIPE
- EXTENT OF WORKS
- MAJOR EXISTING CONTOUR (1.00m INTERVAL)
- MINOR EXISTING CONTOUR (0.25m INTERVAL)
- EXISTING DCDB BOUNDARY
- EXISTING DCDB EASEMENT

DEMOLITION AND CLEARING NOTES

1. PRIOR TO CLEARING AND DEMOLITION OPERATIONS REMOVE WITHOUT DAMAGING, ALL EXISTING INFRASTRUCTURE TO BE REUSED OR STORED AS NOTED AND DIRECTED BY THE SUPERINTENDENT.
2. CLEARING AND DEMOLITION OPERATIONS SHALL BE CARRIED OUT ONLY WITHIN THOSE AREAS AFFECTED BY THE PROPOSED WORKS UNLESS NOTED OTHERWISE.
3. DEMOLISH EXISTING REDUNDANT INFRASTRUCTURE SUCH AS KERBS, PAVEMENT SEALS, CONCRETE FOOTPATHS, ABANDONED SERVICE STRUCTURES ETC. COMPLETELY BELOW PROPOSED PAVEMENT SUBGRADE LEVEL AND 500mm BELOW FINISHED LEVEL IN ALL OTHER AREAS, OR AS OTHERWISE APPROVED BY THE ENGINEER. REFILL AS NOTED BELOW. DISPOSE OF ALL SUCH MATERIAL OFF SITE.
4. CLEAR RUBBISH, SCRUB, TREES, STUMPS ETC. AND GRUB OUT STUMPS AND ROOTS OVER 50mm DIAMETER COMPLETELY BELOW PROPOSED PAVEMENT SUBGRADE LEVEL AND 300mm BELOW FINISHED LEVEL IN ALL OTHER AREAS, OR AS OTHERWISE APPROVED BY THE ENGINEER. REFILL AS NOTED BELOW. DISPOSE OF ALL SUCH MATERIAL OFF SITE.
5. REFILL DEMOLITION EXCAVATIONS AND GRUB HOLES WITH ON SITE MATERIAL WON FROM CUT AREAS SUITABLE FOR USE AS FILL MATERIAL (REFER EARTHWORKS NOTES). PLACE AND COMPACT FILL MATERIAL IN ACCORDANCE WITH EARTHWORKS NOTES.



LAYOUT PLAN
SCALE 1:500



SURVEY DATA DISCLAIMER:

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CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

LAYOUT PLAN
SCALE 1:500

0 10 20 30 40 50m
SCALE 1:500 @A1

0 200 400 600 800 1000m
SCALE 1:10000 @A1

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Amendments

ballina shire council

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F.B. L.B. -	CHECKED LH
DATUM GDA94	APPROVED LH
DRAWING 721982-01-CI-1010-1012.dwg	
SHEET 3 OF 60	

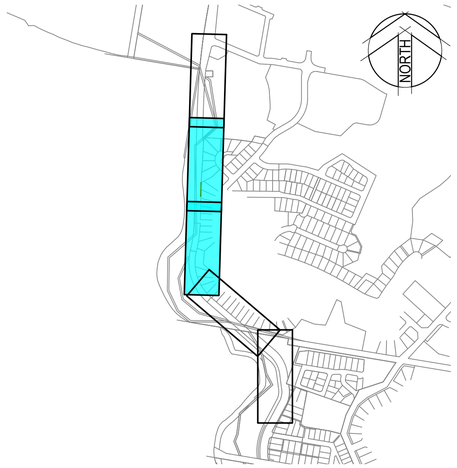
BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
EXISTING FEATURES PLAN
SHEET 1 OF 3

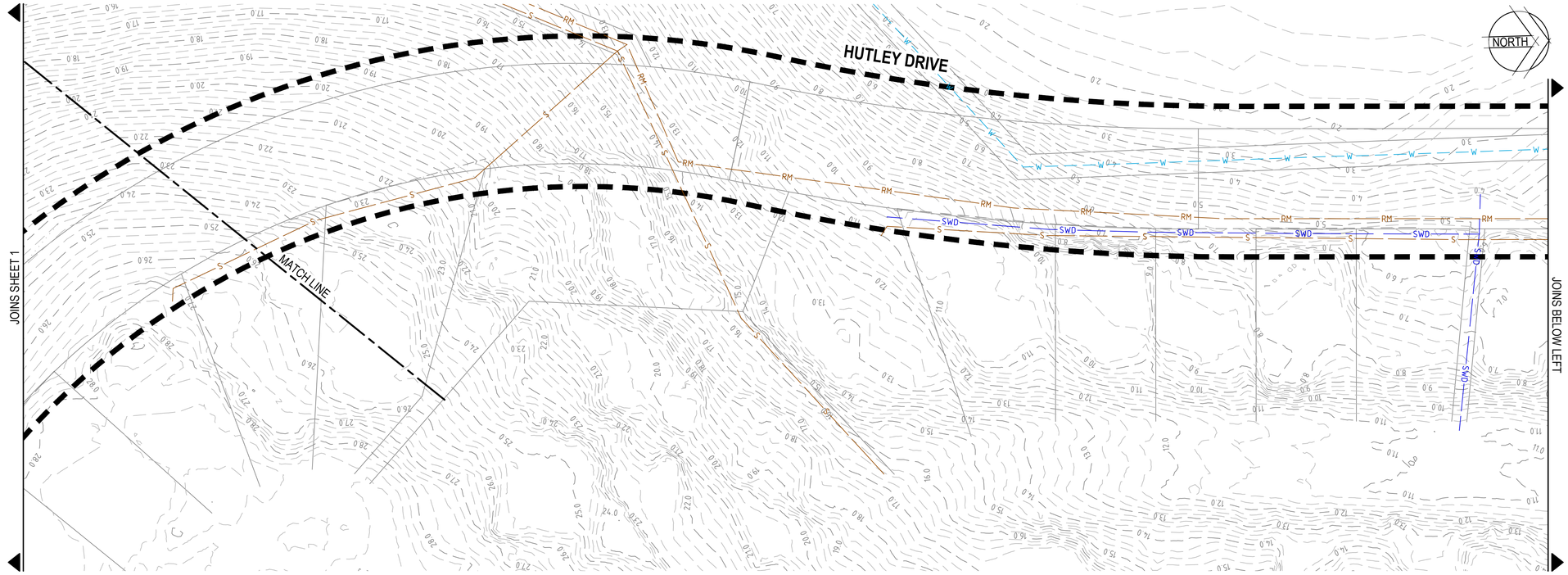
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VERTICAL: -

Plan No. 721982-01-CI-1010

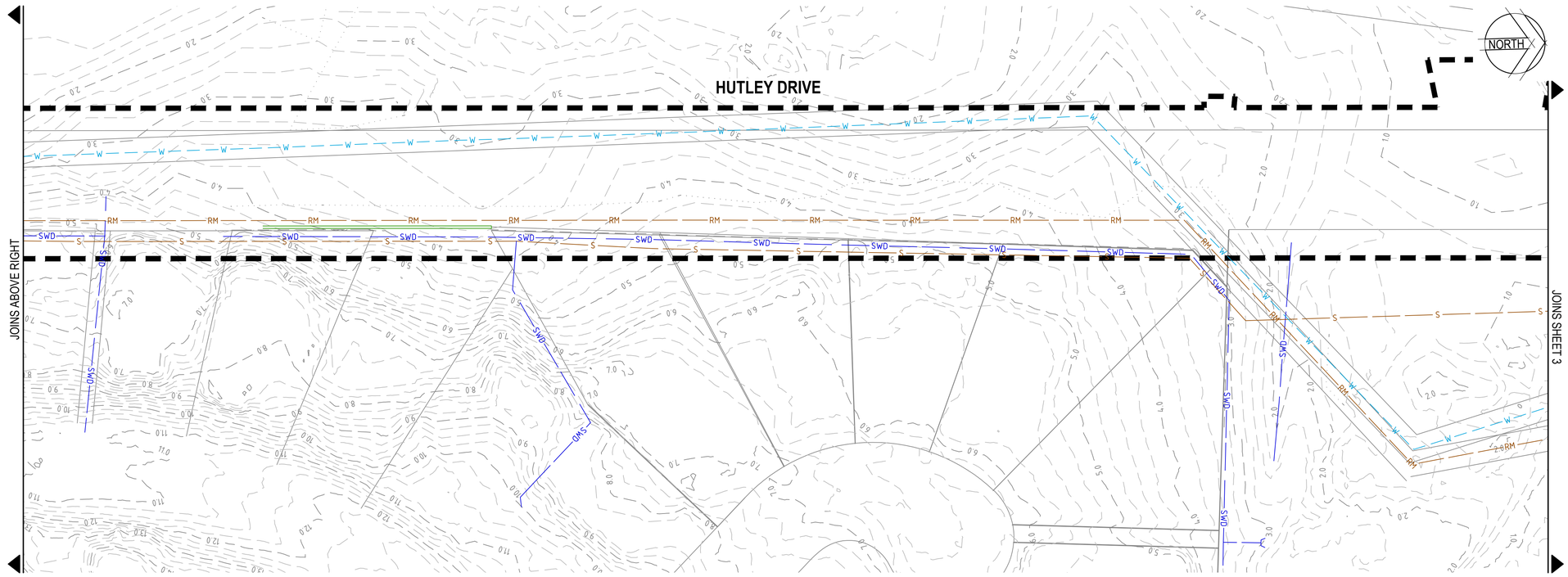
Rev D



KEY PLAN
SCALE 1:10000



LAYOUT PLAN
SCALE 1:500



LAYOUT PLAN
SCALE 1:500

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

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0 10 20 30 40 50m
SCALE 1:500 @A1

0 200 400 600 800 1000m
SCALE 1:10000 @A1

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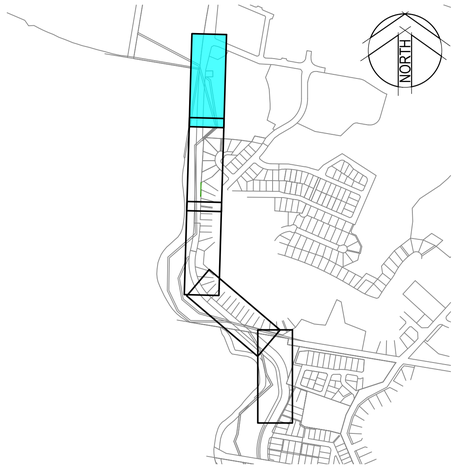
ballina shire council

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SHEET	4 OF 60		

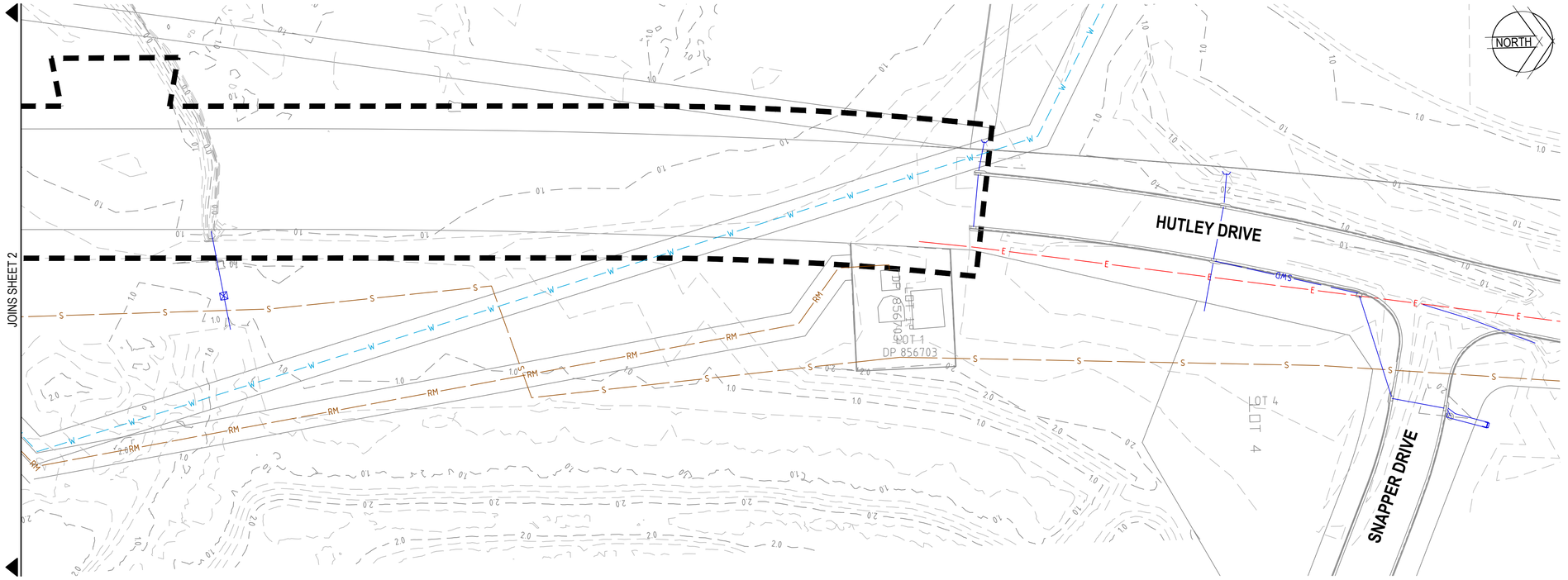
BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
EXISTING FEATURES PLAN
SHEET 2 OF 3

Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: -	721982-01-CI-1011	D



KEY PLAN
SCALE 1:10000



LAYOUT PLAN
SCALE 1:500

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CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

0 10 20 30 40 50m
SCALE 1:500 @A1

0 200 400 600 800 1000m
SCALE 1:10000 @A1

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ballina shire council

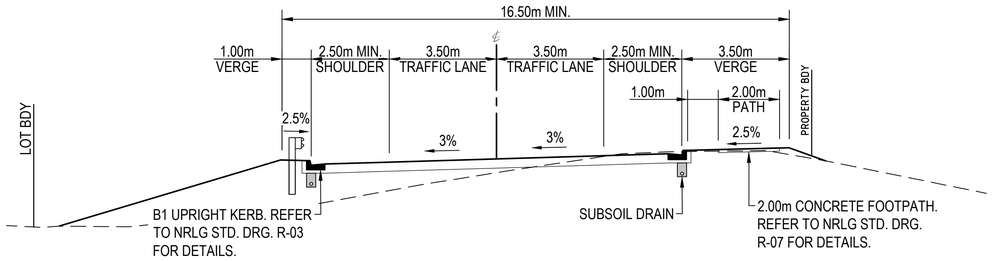
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DRAWING	721982-01-CI-1010-1012.dwg		

SHEET 5 OF 60

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
EXISTING FEATURES PLAN
SHEET 3 OF 3

Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: -	721982-01-CI-1012	D

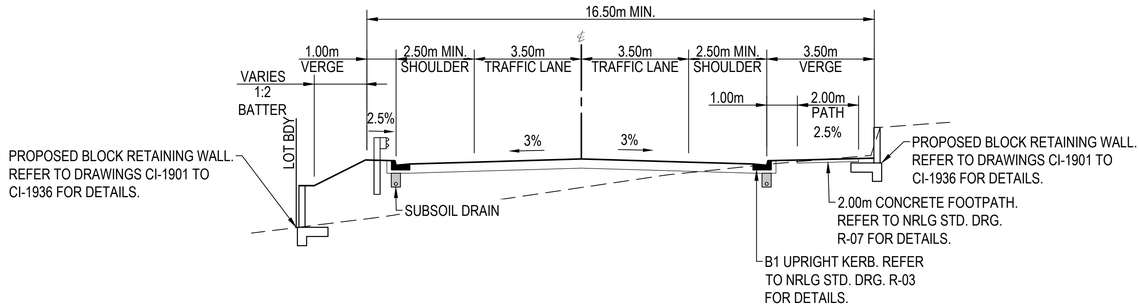


TYPICAL ROAD SECTION - CH40 TO CH125

SCALE 1:100

LEFT SIDE
- INTERFACE TO EXISTING AT 1 IN 2 MAX.
- GUARD RAIL BETWEEN CH45 AND CH125

RIGHT SIDE
- INTERFACE TO EXISTING AT 1 IN 3 MAX.
- PEDESTRIAN FENCE BETWEEN CH60 AND CH68

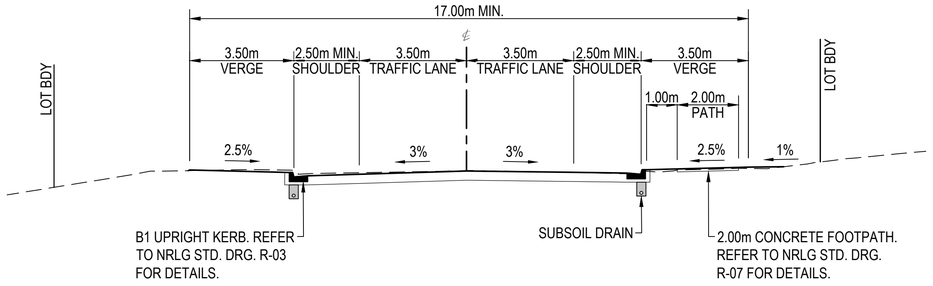


TYPICAL ROAD SECTION - CH233 TO CH400

SCALE 1:100

LEFT SIDE
- INTERFACE TO EXISTING AT 1 IN 3 MAX. BETWEEN CH233 AND CH320
- GUARD RAIL BETWEEN CH233 AND CH400

RIGHT SIDE
- INTERFACE TO EXISTING AT 1 IN 2 MAX. BETWEEN CH233 AND CH288
- INTERFACE TO EXISTING AT 1 IN 4 MAX. BETWEEN CH355 AND CH400
- PEDESTRIAN BARRIER FENCE BETWEEN CH380 AND 400

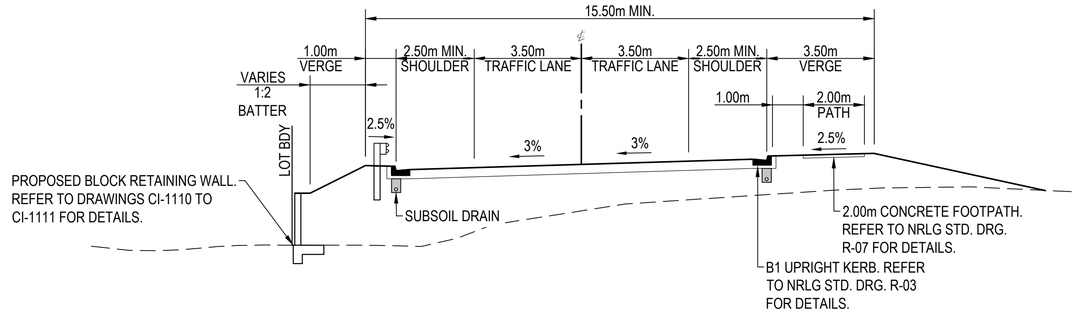


TYPICAL ROAD SECTION - CH0 TO CH40

SCALE 1:100

LEFT SIDE
- TRANSITION FROM 3.5m VERGE TO 1.0m VERGE BETWEEN CH0 AND CH40
- TRANSITION FROM EXISTING SHOULDER TO 2.50m SHOULDER BETWEEN CH0 AND CH30
- INTERFACE TO EXISTING AT 1 IN 4 MAX.

RIGHT SIDE
- TRANSITION FROM -1.85% TO 3% XFALL ON RIGHT TRAFFIC LANE BETWEEN CH0 AND CH35
- TRANSITION FROM EXISTING SHOULDER TO 2.50m SHOULDER BETWEEN CH0 AND CH30
- INTERFACE TO EXISTING AT 1 IN 100 FILL AND 1 IN 16 CUT



TYPICAL ROAD SECTION - CH125 TO CH233

SCALE 1:100

LEFT SIDE
- GUARD RAIL BETWEEN CH125 AND CH233
- INTERFACE TO EXISTING AT 1 IN 2 MAX.

RIGHT SIDE
- TRANSITION FROM 3% TO -3% XFALL ON RIGHT TRAFFIC LANE BETWEEN CH198 AND CH233
- INTERFACE TO EXISTING AT 1 IN 2 MAX
- PEDESTRIAN BARRIER FENCE BETWEEN CH125 AND 220

ROADWORKS NOTES

1. GEOTECHNICAL TESTING FOR PAVEMENT CONSTRUCTION IS TO BE CARRIED OUT IN ACCORDANCE WITH THE NORTHERN RIVERS - LOCAL GOVERNMENT DEVELOPMENT AND DESIGN, AND CONSTRUCTION MANUALS. TEST CERTIFICATES ARE TO BE PREPARED BY A REGISTERED N.A.T.A. LABORATORY AT THE CONTRACTOR'S COST AND SHALL BE PROVIDED TO THE ENGINEER PROGRESSIVELY THROUGH THE WORKS. THE CONTRACTOR IS TO NOTIFY THE ENGINEER OF ANY NON-CONFORMANCES. ALL NON CONFORMING WORK IS TO BE RECTIFIED AS DIRECTED BY THE ENGINEER.
2. FULL DEPTH PAVEMENT CONSTRUCTION SHALL EXTEND BEHIND ALL KERB AND KERB AND CHANNEL FOR A DISTANCE WHICH IS THE GREATER OF 150mm FROM THE BACK OF KERB OR ACROSS TO THE OUTER LIMIT OF SIDE DRAIN FILTER MATERIAL.
3. KERB / KERB AND CHANNEL TRANSITIONS ARE TO BE MADE SMOOTHLY OVER MIN. 1.0m LENGTH.
4. PAVEMENT THICKNESSES NOMINATED ON THESE DRAWINGS ARE PROVISIONAL. INSITU PAVEMENT SUBGRADE (AT THE UNDERSIDE OF THE NOMINATED LOWER SUBBASE COURSE WITHIN FILL AREAS, AND TO THE UNDERSIDE OF THE NOMINATED UPPER SUBBASE COURSE WITHIN CUT AREAS) TESTING IS TO BE CARRIED OUT BY A REGISTERED N.A.T.A. LABORATORY AT THE CONTRACTORS COST AND SHALL BE PROVIDED TO THE ENGINEER FOR FINALISATION OF PAVEMENT DESIGN (CONTRACTOR IS TO ALLOW 3 WORKING DAYS FOR ENGINEER'S RESPONSE). ALL CBR TESTING FOR ROADS IS TO BE UNDERTAKEN IN NATURAL SUBGRADE MATERIAL AND NOT REPLACEMENT MATERIAL.
5. SUBSOIL DRAINAGE TO BE PROVIDED BENEATH ALL BARRIER AND MEDIAN KERB.
6. FOR SETOUT REFER TO CONSULTING ENGINEER FOR DIGITAL DATA (NOTE THAT MODEL WAS PRODUCED USING UNKNOWN CO-ORDINATE SYSTEM AND ALL SETOUT INFORMATION SHOULD BE CHECKED ON SITE IN CONJUNCTION WITH PROPERTY BOUNDARIES AND SURVEY FEATURES). ORIGINAL SURVEY FILE CAN BE PROVIDED FOR REFERENCE IF REQUESTED.
7. ADDITIONAL CBR TESTING TO BE COMPLETED BY CONTRACTOR ON SUBGRADE. CBR RESULTS TO BE PROVIDED TO ENGINEER FOR PAVEMENT DESIGN CERTIFICATION OF PAVEMENT TYPES PRIOR TO CONSTRUCTION.

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

0 1 2 4 6 8 10m
SCALE 1:100 @A1

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
E	26/09/2023	LH	NOTE 6 AMENDED.	LH
D	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
C	16/12/2022	LH	100% DESIGN ISSUE	LH
B	30/07/2021	GT	85% DESIGN ISSUE	GH
A	23/04/2021	GT	50% DESIGN ISSUE	SW

Amendments

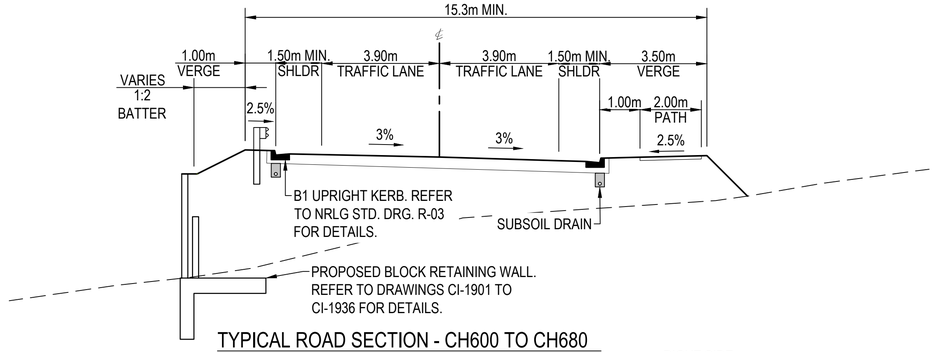
ballina shire council

CERTIFIED LH		DESIGNED GT / WS	
DATE 16/12/2022		DRAWN AH / TNDF	
F.B. -	L.B. -	CHECKED LH	
DATUM GDA94		APPROVED LH	
DRAWING 721982-01-CI-1015.dwg			
SHEET 6 OF 60			

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
TYPICAL CROSS SECTIONS
SHEET 1 OF 2

Scale	Plan No.	Rev
HORIZONTAL: 1:100 VERTICAL: -	721982-01-CI-1015	E



TYPICAL ROAD SECTION - CH600 TO CH680

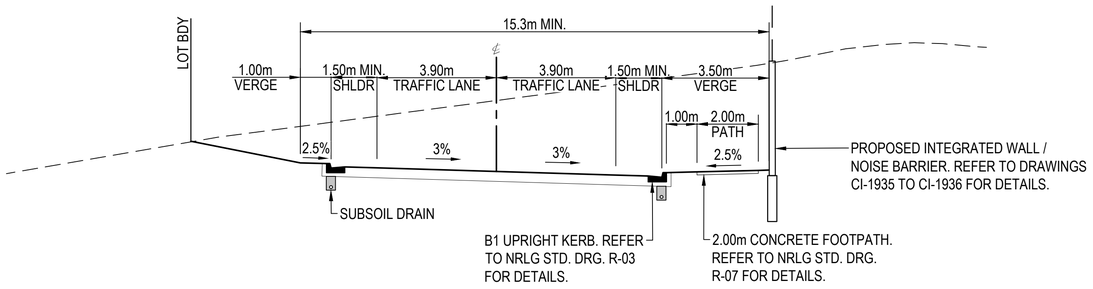
SCALE 1:100

LEFT SIDE

- TRANSITION FROM 3% TO -3% XFALL ON LEFT TRAFFIC LANE BETWEEN CH635 AND CH670
- TRANSITION FROM TRAFFIC LANE FROM 3.5m TO 3.9m BETWEEN CH635 AND CH670
- GUARD RAIL BETWEEN CH600 AND CH680

RIGHT SIDE

- TRANSITION FROM TRAFFIC LANE FROM 3.9m TO 3.5m BETWEEN CH615 AND CH675
- INTERFACE TO EXISTING AT 1 IN 2 MAX. BETWEEN CH624 TO CH680
- PEDESTRIAN BARRIER FENCE BETWEEN CH630 AND 680



TYPICAL ROAD SECTION - CH400 TO CH600

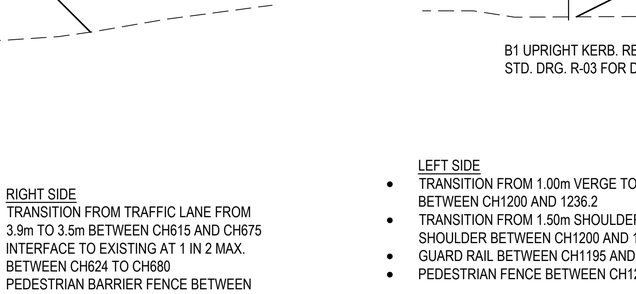
SCALE 1:100

LEFT SIDE

- RETAINING WALL BETWEEN CH400 AND CH435
- TRANSITION FROM -3% TO 3% XFALL ON LEFT TRAFFIC LANE BETWEEN CH440 AND CH475
- TRANSITION FROM TRAFFIC LANE FROM 3.5m TO 3.9m BETWEEN CH440 AND CH475
- TRANSITION FROM SHOULDER FROM 2.5m TO 1.5m BETWEEN CH440 AND CH475
- INTERFACE TO EXISTING AT 1 IN 2 BETWEEN CH435 TO CH600
- GUARD RAIL BETWEEN CH400 AND CH445
- GUARD RAIL BETWEEN CH570 AND CH600

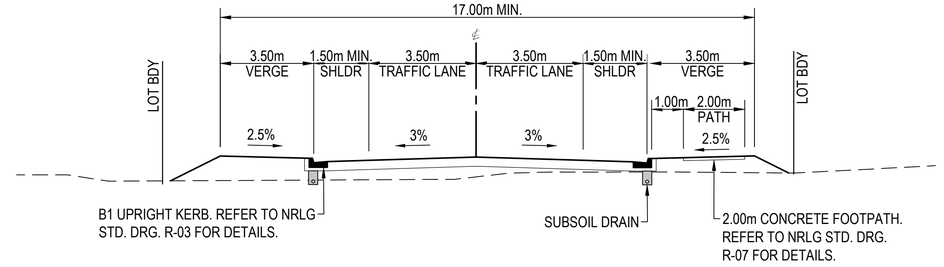
RIGHT SIDE

- TRANSITION FROM TRAFFIC LANE FROM 3.5m TO 3.9m BETWEEN CH433 AND CH493
- TRANSITION FROM SHOULDER FROM 2.5m TO 1.5m BETWEEN CH430 AND CH463
- INTERFACE TO EXISTING AT 1 IN 2 BETWEEN CH435 TO CH600



PAVEMENT TIE-IN DETAIL

NTS



TYPICAL ROAD SECTION - CH1195 TO CH1236.2

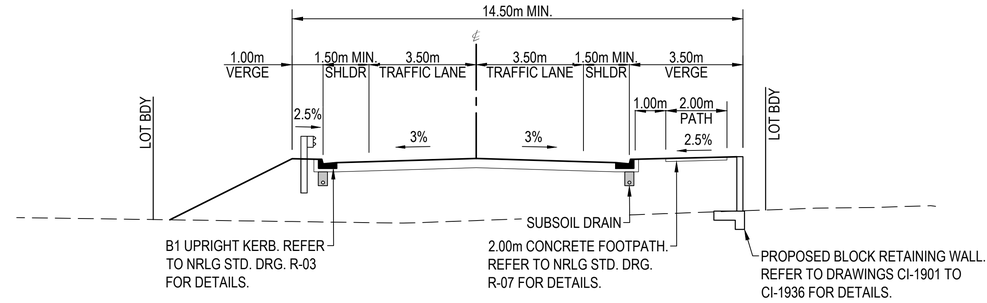
SCALE 1:100

LEFT SIDE

- TRANSITION FROM 1.00m VERGE TO 3.50m VERGE BETWEEN CH1200 AND 1236.2
- TRANSITION FROM 1.50m SHOULDER TO EXISTING SHOULDER BETWEEN CH1200 AND 12.36.2
- GUARD RAIL BETWEEN CH1195 AND CH1220
- PEDESTRIAN FENCE BETWEEN CH1220 AND 1236.2

RIGHT SIDE

- TRANSITION FROM 1.50m SHOULDER TO EXISTING SHOULDER BETWEEN CH1195 AND CH1236.2
- PEDESTRIAN BARRIER FENCE BETWEEN CH1220 AND 1236.2



TYPICAL ROAD SECTION - CH680 TO CH1195

SCALE 1:100

LEFT SIDE

- RETAINING WALL BETWEEN CH680 AND CH778
- INTERFACE TO EXISTING AT 1 IN 3 MAX. BETWEEN CH680 TO CH1195
- GUARD RAIL BETWEEN CH680 AND CH795
- GUARD RAIL BETWEEN CH1030 AND CH1195

RIGHT SIDE

- RETAINING WALL BETWEEN CH757 AND CH822
- INTERFACE TO EXISTING AT 1 IN 3 MAX. BETWEEN CH822 TO CH895
- RETAINING WALL BETWEEN CH757 AND CH985
- INTERFACE TO EXISTING AT 1 IN 10 MAX. BETWEEN CH985 TO CH1005
- RETAINING WALL BETWEEN CH1006 AND CH1168
- INTERFACE TO EXISTING AT 1 IN 3 MAX. BETWEEN CH1168 TO CH1195
- PEDESTRIAN BARRIER FENCE BETWEEN CH1005 AND 1195

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

0 1 2 4 6 8 10m

SCALE 1:100 @A1

DRAFT

NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
C	26/09/2023	LH	SCALE REFREENCE AMENDED	LH
B	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
A	16/12/2022	LH	100% DESIGN ISSUE	LH

Amendments

ballina shire council

CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA95	APPROVED	LH
DRAWING	721982-01-CI-1015.dwg		

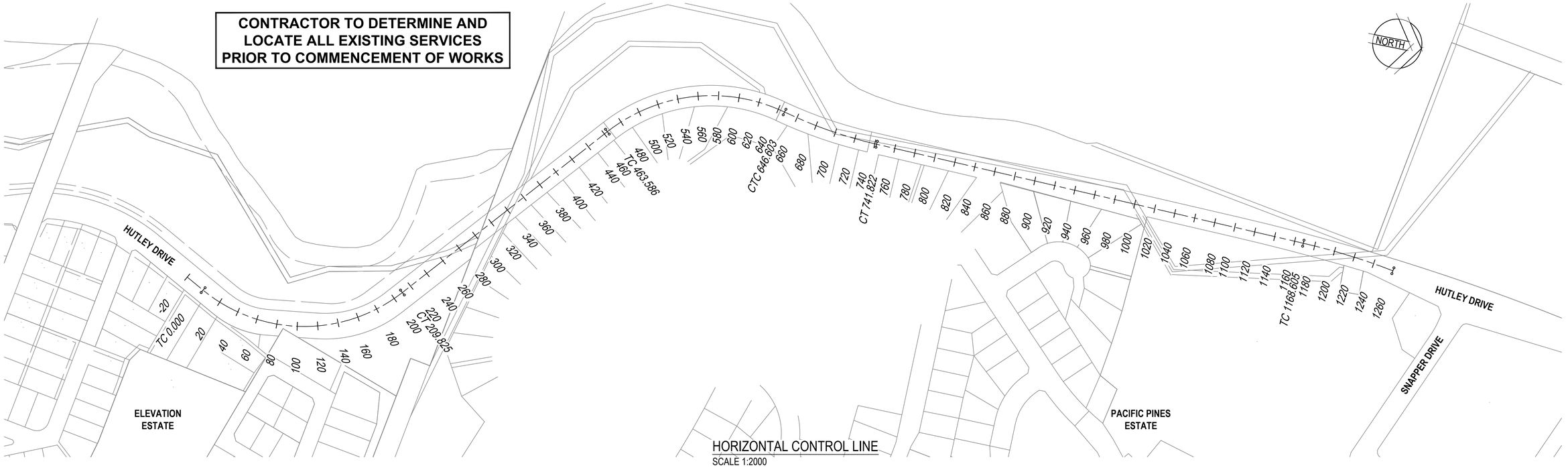
SHEET 7 OF 60

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
TYPICAL CROSS SECTIONS
SHEET 2 OF 2

Scale	Plan No.	Rev
HORIZONTAL: AS SHOWN VERTICAL:	721982-01-CI-1016	C

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS



HORIZONTAL CONTROL LINE

SCALE 1:2000

ROAD ALIGNMENT - SETOUT DETAILS

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
	-20.000	556970.955	6811965.930	11.352	28°02'10.70"			
	0.000	556980.355	6811983.583	9.471	28°02'10.70"			
TC	0.000	556980.355	6811983.584	9.471	28°02'10.70"			
	20.000	556988.592	6812001.793	8.018	20°38'36.50"			
	40.000	556994.418	6812020.911	6.993	13°15'01.69"			
	60.000	556997.735	6812040.620	6.351	5°51'26.87"			
	80.000	556998.489	6812060.592	5.794	358°27'52.06"			
	100.000	556996.666	6812080.495	5.446	351°04'17.25"			
IP 2	104.913	557038.892	6812093.507	5.399		R = -155.000	209.825	77°33'42.05"
	120.000	556992.298	6812099.998	5.349	343°40'42.43"			
	140.000	556985.457	6812118.776	5.445	336°17'07.62"			
	160.000	556976.255	6812136.519	5.555	328°53'32.81"			
	180.000	556964.848	6812152.929	5.665	321°29'57.99"			
	200.000	556951.424	6812167.736	5.775	314°06'23.18"			
CT	209.825	556944.157	6812174.346	5.830	310°28'28.65"			
	220.000	556936.417	6812180.951	5.935	310°28'28.65"			
	240.000	556921.203	6812193.933	6.352	310°28'28.65"			
	260.000	556905.989	6812206.915	7.048	310°28'28.65"			
	280.000	556890.775	6812219.897	8.025	310°28'28.65"			
	300.000	556875.561	6812232.880	9.282	310°28'28.65"			
	320.000	556860.347	6812245.862	10.818	310°28'28.65"			
	340.000	556845.134	6812258.844	12.635	310°28'28.65"			
	360.000	556829.920	6812271.826	14.632	310°28'28.65"			
	380.000	556814.706	6812284.808	16.632	310°28'28.65"			
	400.000	556799.492	6812297.791	18.619	310°28'28.65"			
	420.000	556784.278	6812310.773	20.322	310°28'28.65"			
	440.000	556769.064	6812323.755	21.629	310°28'28.65"			
	460.000	556753.850	6812336.737	22.540	310°28'28.65"			
TC	463.586	556751.123	6812339.065	22.661	310°28'28.65"			
	480.000	556739.187	6812350.323	23.054	316°10'28.10"			
	500.000	556726.245	6812365.555	23.173	323°07'09.89"			
	520.000	556715.239	6812382.240	22.896	330°03'51.69"			
	540.000	556706.332	6812400.133	22.223	337°00'33.48"			
IP 3	555.094	556673.373	6812405.410	21.453		R = 165.000	183.018	63°33'08.41"
	560.000	556699.654	6812418.972	21.154	343°57'15.27"			
	580.000	556695.303	6812438.481	19.689	350°53'57.07"			
	600.000	556693.343	6812458.372	17.840	357°50'38.86"			
	620.000	556693.802	6812478.355	15.880	4°47'20.66"			
	640.000	556696.674	6812498.135	13.920	11°44'02.45"			
CC	646.603	556698.146	6812504.572	13.273	14°01'37.06"			
	660.000	556701.195	6812517.616	11.960	12°16'56.87"			
	680.000	556705.004	6812537.249	10.044	9°40'41.20"			
IP 4	694.213	556709.731	6812550.943	8.830		R = -440.000	95.219	12°23'57.09"
	700.000	556707.917	6812557.034	8.376	7°04'25.52"			
	720.000	556709.928	6812576.930	6.984	4°28'09.85"			
	740.000	556711.033	6812596.898	5.868	1°51'54.18"			
CT	741.822	556711.089	6812598.720	5.780	1°37'39.98"			
	760.000	556711.605	6812616.890	5.027	1°37'39.98"			
	780.000	556712.173	6812636.882	4.462	1°37'39.98"			
	800.000	556712.741	6812656.874	4.172	1°37'39.98"			
	820.000	556713.309	6812676.866	4.068	1°37'39.98"			
	840.000	556713.878	6812696.858	3.968	1°37'39.98"			
	860.000	556714.446	6812716.850	3.868	1°37'39.98"			
	880.000	556715.014	6812736.842	3.768	1°37'39.98"			
	900.000	556715.582	6812756.834	3.668	1°37'39.98"			
	920.000	556716.150	6812776.825	3.568	1°37'39.98"			
	940.000	556716.718	6812796.817	3.468	1°37'39.98"			
	960.000	556717.286	6812816.809	3.368	1°37'39.98"			
	980.000	556717.854	6812836.801	3.268	1°37'39.98"			
	1000.000	556718.422	6812856.793	3.168	1°37'39.98"			
	1020.000	556718.991	6812876.785	3.068	1°37'39.98"			
	1040.000	556719.559	6812896.777	2.968	1°37'39.98"			
	1060.000	556720.127	6812916.769	2.868	1°37'39.98"			
	1080.000	556720.695	6812936.761	2.768	1°37'39.98"			
	1100.000	556721.263	6812956.753	2.668	1°37'39.98"			
	1120.000	556721.831	6812976.745	2.568	1°37'39.98"			
	1140.000	556722.399	6812996.737	2.468	1°37'39.98"			
	1160.000	556722.967	6813016.729	2.368	1°37'39.98"			
TC	1168.605	556723.212	6813025.330	2.325	1°37'39.98"			
	1180.000	556723.635	6813036.717	2.268	2°37'56.05"			
	1200.000	556724.861	6813056.679	2.175	4°23'42.66"			
	1220.000	556726.700	6813076.593	2.156	6°09'29.27"			
IP 5	1238.544	556725.206	6813095.512	2.220		R = 650.000	139.879	12°19'47.97"
	1240.000	556729.151	6813096.442	2.228	7°55'15.88"			
	1260.000	556732.212	6813116.205	2.333	9°41'02.49"			

0 50 100 150 200m

SCALE 1:2000 @A1

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NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
D	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
C	16/12/2022	LH	100% DESIGN ISSUE	LH
B	30/07/2021	GT	85% DESIGN ISSUE	GH
A	23/04/2021	GT	50% DESIGN ISSUE	SW

Amendments

ballina shire council

CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1020.dwg		

SHEET 8 OF 60

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
HORIZONTAL CONTROL LINE
AND SETOUT TABLE

Scale	Plan No.	Rev
HORIZONTAL: 1:2000 VERTICAL: -	721982-01-CI-1020	D

LEGEND

- OVER 5.00m CUT
- 4.00m - 5.00m CUT
- 3.00m - 4.00m CUT
- 2.00m - 3.00m CUT
- 1.00m - 2.00m CUT
- 0.00m - 1.00m CUT
- 0.00m - 1.00m FILL
- 1.00m - 2.00m FILL
- 2.00m - 3.00m FILL
- 3.00m - 4.00m FILL
- 4.00m - 5.00m FILL
- OVER 5.00m FILL
- PROPOSED RETAINING WALL - BLOCK
- PROPOSED RETAINING WALL - INTEGRATED
- 8.0 MAJOR DESIGN CONTOUR (1.00m INTERVAL)
- MINOR DESIGN CONTOUR (0.25m INTERVAL)
- 8.0 MAJOR EXISTING CONTOUR (1.00m INTERVAL)
- MINOR EXISTING CONTOUR (0.25m INTERVAL)

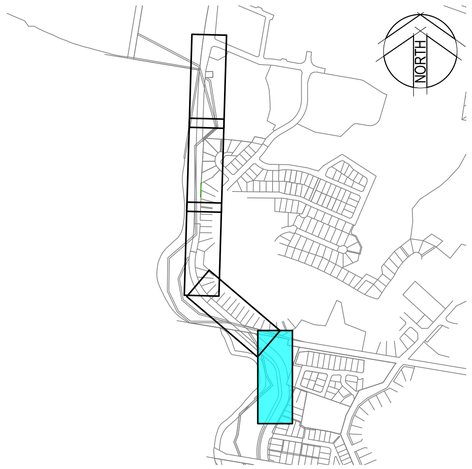
EARTHWORKS NOTES:

1. THE CONTRACTOR IS TO INFORM COUNCIL AND THE SUPERINTENTDENT PRIOR TO COMMENCEMENT OF WORKS.
2. THE CONTRACTOR IS TO VERIFY LOCATION AND LEVELS OF ALL SERVICES AND TO LIAISE WITH LOCAL AUTHORITIES PRIOR TO COMMENCING CONSTRUCTION. EXISTING SERVICES TO BE PROTECTED DURING CONSTRUCTION. DAMAGED SERVICES TO BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
3. EARTHWORK AREAS TO BE CLEARED OF ALL TREES, STUMPS, FALLEN TIMBER AND SCRUB PRIOR TO COMMENCING CONSTRUCTION TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER UNDERTAKING LEVEL 1 SUPERVISION.
4. TIMBER CLEARED TO BE MULCHED AND STOCKPILED ON SITE AS DIRECTED BY SUPERINTENDENT.
5. HOLES LEFT BY CLEARING OR GRUBBING OPERATIONS TO BE FILLED WITH SOUND MATERIAL TO THE APPROVAL OF THE SUPERINTENDENT.
6. AREAS STRIPPED OF TOPSOIL AND ORGANIC MATTER TO BE STOCKPILED AS DIRECTED BY THE SUPERINTENDENT.
7. PRIOR TO FILLING, STRIPPED SURFACES TO BE PREPARED AND COMPACTED IN ACCORDANCE WITH AS 3798 - 1996 TO THE SATISFACTION OF THE SUPERINTENDENT.
8. ALL FILL MATERIAL SHALL BE FREE OF TOPSOIL, ORGANIC MATTER AND OTHER DELETERIOUS MATTER AND TO THE APPROVAL OF THE SUPERINTENDENT PRIOR TO THE COMMENCEMENT OF FILLING WORKS.
9. EARTHWORKS TO BE INSPECTED / SUPERVISED BY A REGISTERED GEOTECHNICAL TESTING CONSULTANT TO LEVEL 1 STANDARD IN ACCORDANCE WITH APPENDIX B AS 3798 - 1996. IN ADDITION FREQUENCY OF FIELD DENSITY TESTING SHALL BE TO TYPE 1 STANDARD IN ACCORDANCE WITH TABLE 8.1 AS 3798 - 1996.
10. EARTHWORKS TO BE CERTIFIED BY A REGISTERED GEOTECHNICAL TESTING CONSULTANT THAT FILLING OPERATIONS COMPLY WITH AS 3798 - 1996.
11. FILLING SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 300mm LAYERS OR LESS THAN 150mm AND COMPACTED TO THE DENSITY REQUIREMENTS FOR ROADWAYS AND ALLOTMENTS AS PER AS 3798 - 1996.
12. TOPSOIL TO BE 100mm THICK ON ALLOTMENTS, ROAD VERGES AND DISTURBED PARK AREAS
13. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE IN PLACE TO THE SATISFACTION OF THE SUPERINTENDENT PRIOR TO ANY UPSTREAM EARTHWORKS COMMENCING.
14. WHERE MULCH IS USED TO STABILISE EARTHWORKS IT SHALL BE PLACED ABOVE THE FINISHED SURFACE LEVELS UNLESS NOTED OTHERWISE.
15. WHERE TOPSOIL STOCKPILES ARE TO REMAIN IN PLACE FOR A PERIOD OF MORE THAN 14 DAYS, THE STOCKPILE SHALL BE GRASSED WITH A SUITABLE QUICK STRIKING CEREAL GRASS. PROVIDE A DIVERSION DRAIN OR BUND ON THE UPHILL SIDE AND A SEDIMENT FENCE ON THE DOWNHILL SIDE OF ALL STOCKPILES.
16. EARTHWORKS SHOULD BE CARRIED OUT IN ACCORDANCE WITH TRC STANDARD SPECIFICATIONS.
17. ALL AREAS OF THE SITE SHALL BE KEPT FREE DRAINING DURING ALL PHASES OF THE PROJECT.
18. REFER TO LAYOUT PLANS FOR ALL BATTER GRADES. WHERE GRADES ARE NOT SPECIFIED:
    FILL = 1:4 (MAX)
    CUT = 1:4 (MAX)

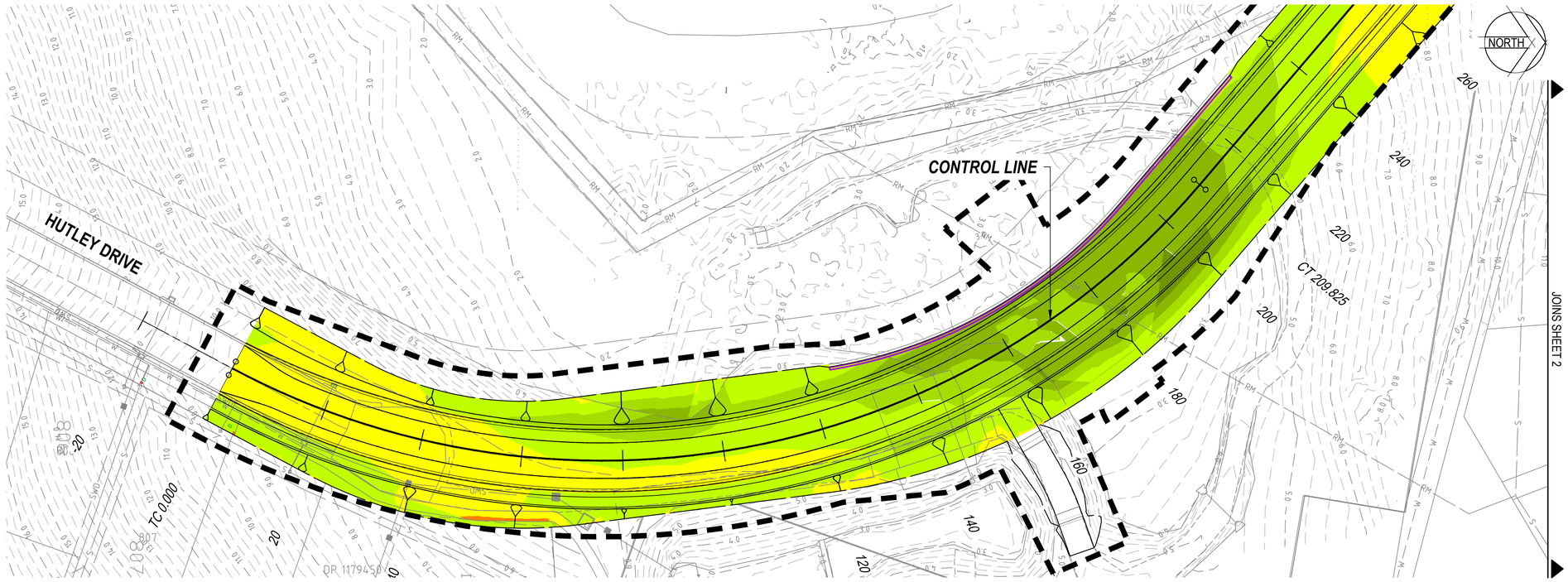
EARTHWORKS VOLUMES

TOTAL CUT	-6,856 m³
TOTAL FILL	19,938 m³
TOTAL BALANCE	13,082 m³
IE. EXCESS OF FILL OVER CUT	13,082 m³

* QUANTITIES ARE FROM EXISTING SURFACE LEVEL DOWN 100mm (TO ALLOW FOR TOPSOIL STRIP QUANTIFIED SEPERATLY) TO FINISHED SURFACE LEVEL WITH ALLOWANCE ROAD BOXING AND TOP SOILING. NO ALLOWANCE FOR BULKING FACTORS.



KEY PLAN
SCALE 1:10000



LAYOUT PLAN
SCALE 1:500

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

0 10 20 30 40 50m
SCALE 1:500 @A1

0 200 400 600 800 1000m
SCALE 1:10000 @A1

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DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
E	26/09/2023	LH	AMENDED EARTHWORKS QUANTITIES	LH
D	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
C	16/12/2022	LH	100% DESIGN ISSUE	LH
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Amendments

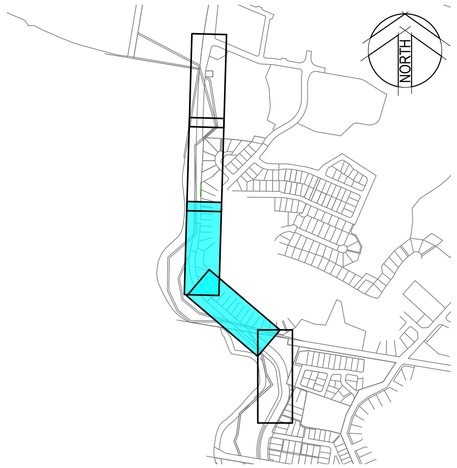
ballina shire council

CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1101-1103.dwg		
SHEET	9 OF 60		

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
EARTHWORKS LAYOUT PLAN
SHEET 1 OF 3

Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: -	721982-01-CI-1101	E

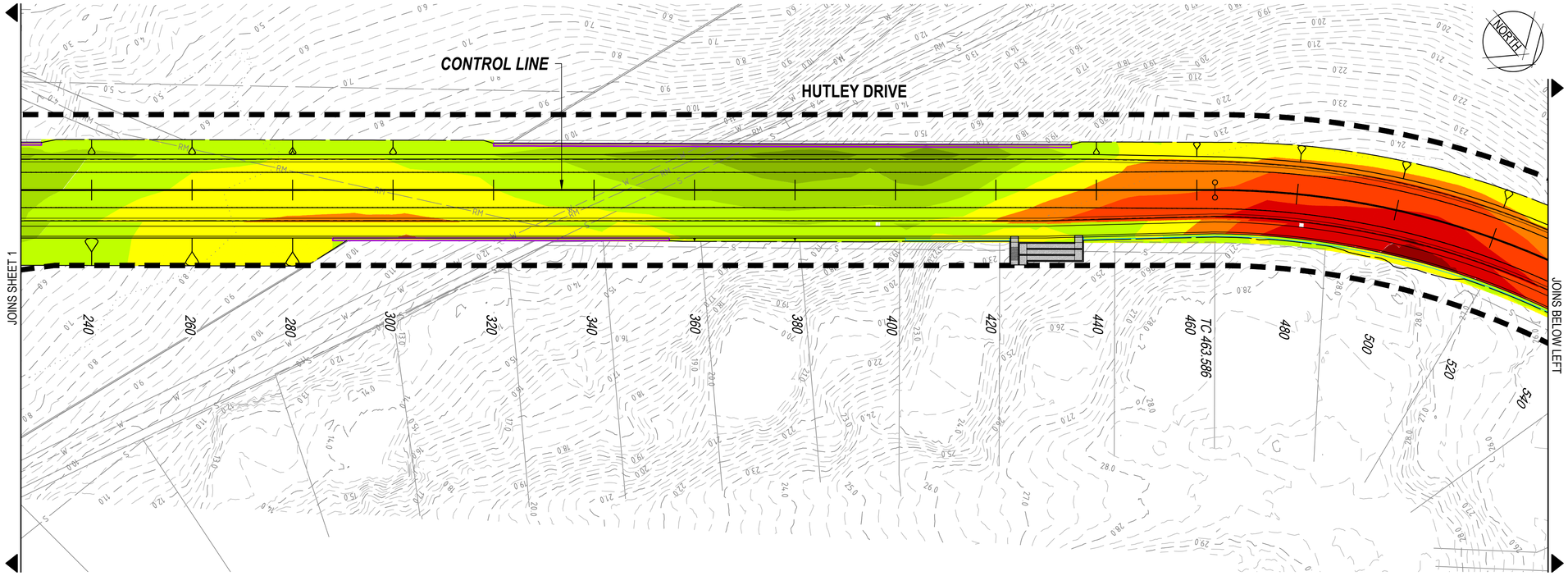


KEY PLAN
SCALE 1:10000

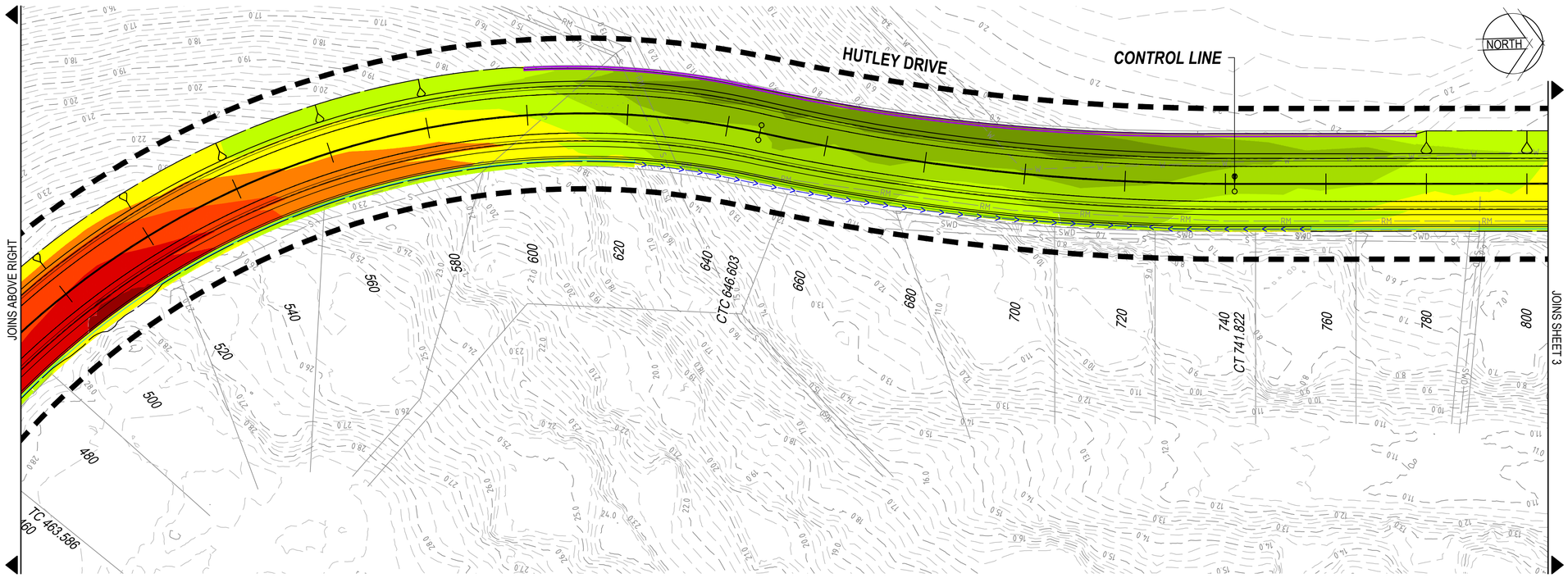
LEGEND

- OVER 5.00m CUT
- 4.00m - 5.00m CUT
- 3.00m - 4.00m CUT
- 2.00m - 3.00m CUT
- 1.00m - 2.00m CUT
- 0.00m - 1.00m CUT
- 0.00m - 1.00m FILL
- 1.00m - 2.00m FILL
- 2.00m - 3.00m FILL
- 3.00m - 4.00m FILL
- 4.00m - 5.00m FILL
- OVER 5.00m FILL
- PROPOSED RETAINING WALL - BLOCK
- PROPOSED RETAINING WALL - INTEGRATED
- MAJOR DESIGN CONTOUR (1.00m INTERVAL)
- MINOR DESIGN CONTOUR (0.25m INTERVAL)
- MAJOR EXISTING CONTOUR (1.00m INTERVAL)
- MINOR EXISTING CONTOUR (0.25m INTERVAL)

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS



LAYOUT PLAN
SCALE 1:500



LAYOUT PLAN
SCALE 1:500

0 10 20 30 40 50m
SCALE 1:500 @A1

0 200 400 600 800 1000m
SCALE 1:10000 @A1

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B	30/07/2021	GT	85% DESIGN ISSUE	GH
A	23/04/2021	GT	50% DESIGN ISSUE	SW

Amendments

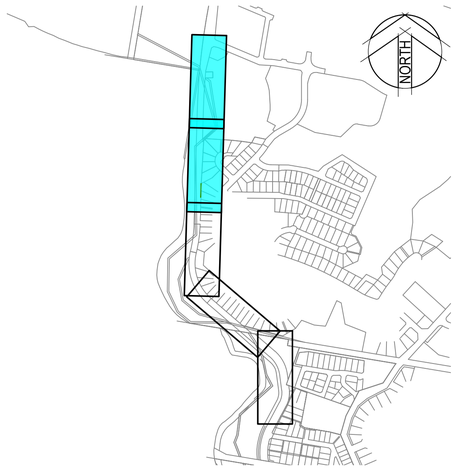
ballina shire council

CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1101-1103.dwg		
SHEET	10 OF 60		

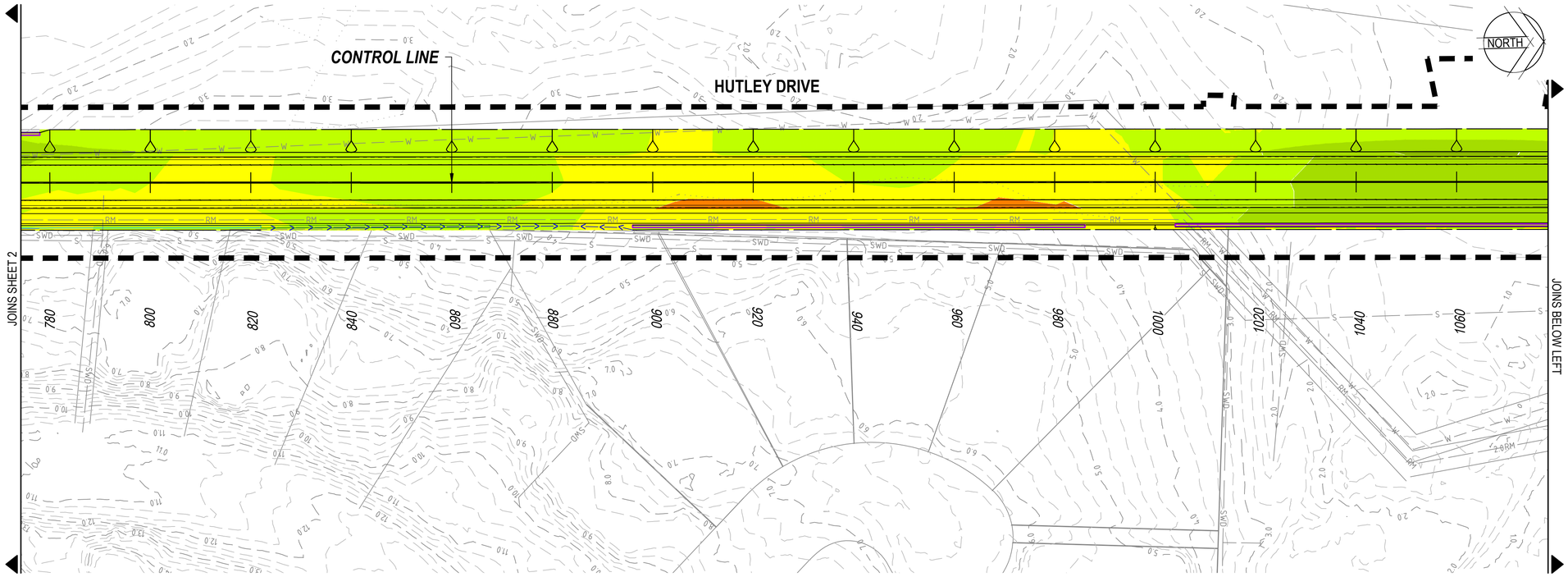
BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
EARTHWORKS LAYOUT PLAN
SHEET 2 OF 3

Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: -	721982-01-CI-1102	D



KEY PLAN
SCALE 1:10000

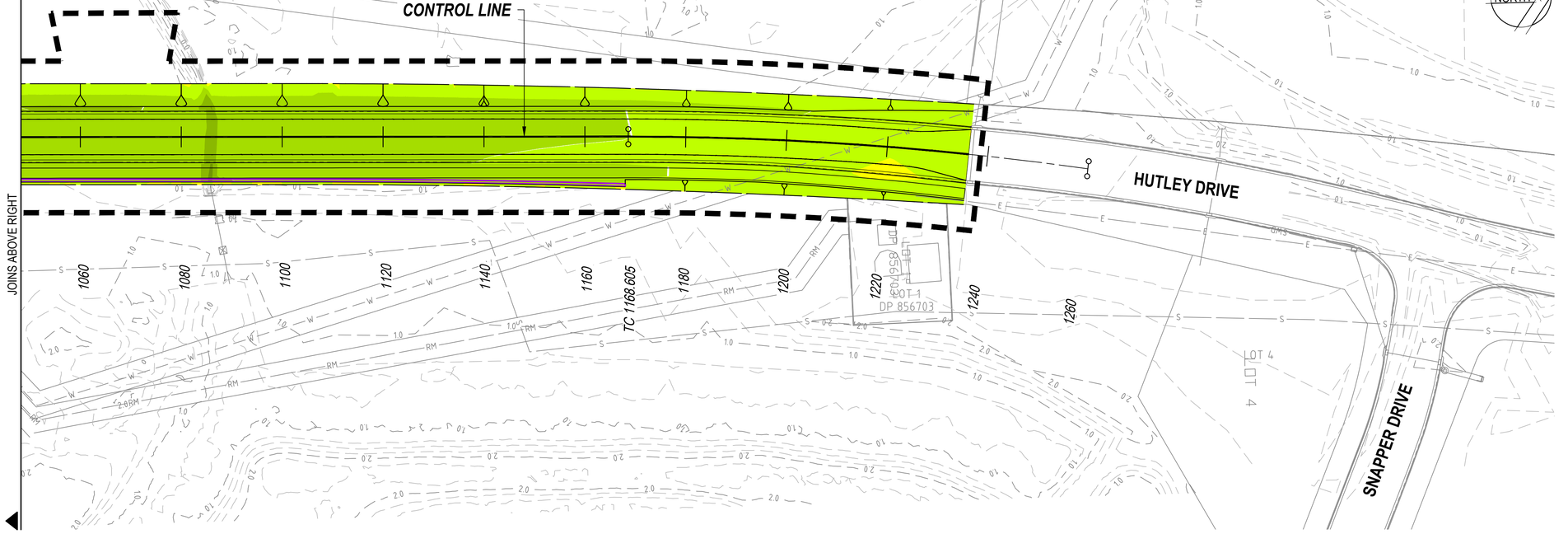


LAYOUT PLAN
SCALE 1:500

LEGEND

- OVER 5.00m CUT
- 4.00m - 5.00m CUT
- 3.00m - 4.00m CUT
- 2.00m - 3.00m CUT
- 1.00m - 2.00m CUT
- 0.00m - 1.00m CUT
- 0.00m - 1.00m FILL
- 1.00m - 2.00m FILL
- 2.00m - 3.00m FILL
- 3.00m - 4.00m FILL
- 4.00m - 5.00m FILL
- OVER 5.00m FILL
- PROPOSED RETAINING WALL - BLOCK
- PROPOSED RETAINING WALL - INTEGRATED
- 8.0 MAJOR DESIGN CONTOUR (1.00m INTERVAL)
- MINOR DESIGN CONTOUR (0.25m INTERVAL)
- 8.0 MAJOR EXISTING CONTOUR (1.00m INTERVAL)
- MINOR EXISTING CONTOUR (0.25m INTERVAL)

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS



LAYOUT PLAN
SCALE 1:500

0 10 20 30 40 50m
SCALE 1:500 @A1

0 200 400 600 800 1000m
SCALE 1:10000 @A1

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Amendments

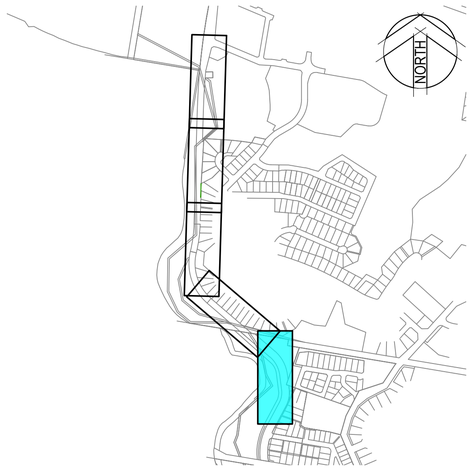
ballina shire council

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DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1101-1103.dwg		
SHEET	11 OF 60		

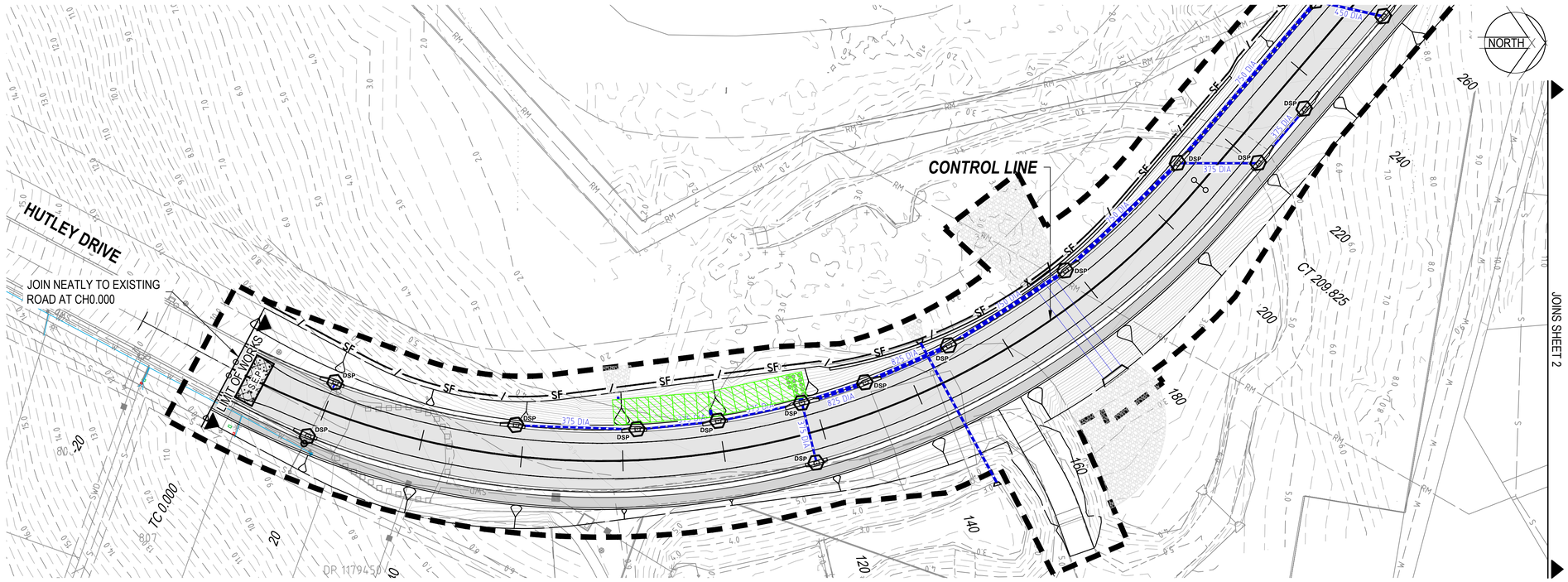
BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
EARTHWORKS LAYOUT PLAN
SHEET 3 OF 3

Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: -	721982-01-CI-1103	D



KEY PLAN
SCALE 1:10000

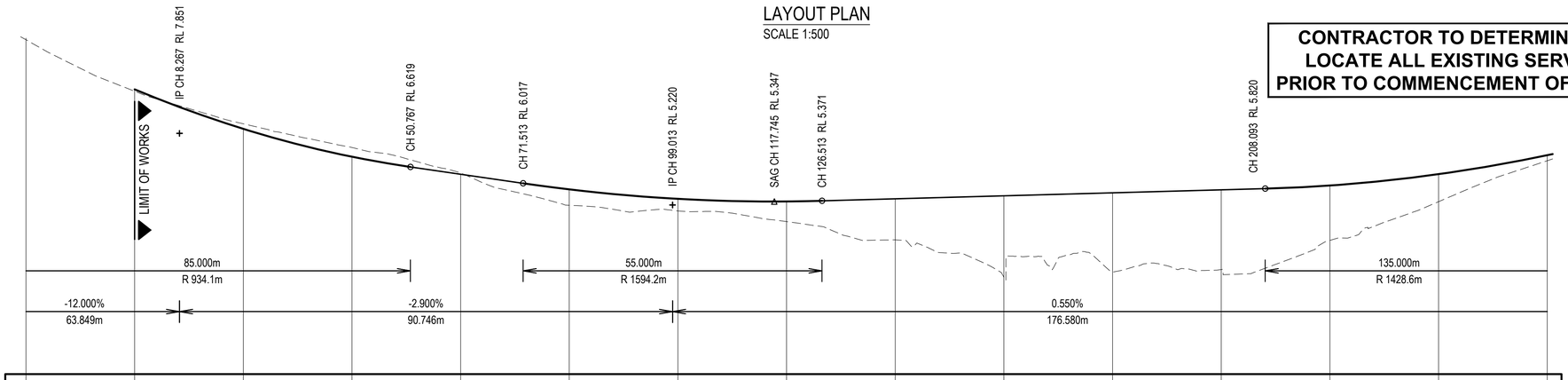


LAYOUT PLAN
SCALE 1:500

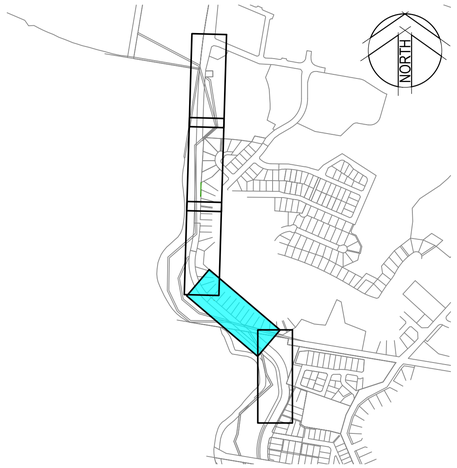
CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

LEGEND

- PROPOSED RETAINING WALL
- (NB) PROPOSED NOISE BARRIER
- PROPOSED TOP OF BANK
- PROPOSED BOTTOM OF BANK
- PROPOSED CHANGE OF GRADE LINE
- PROPOSED BARRIER KERB AND CHANNEL
- PROPOSED ROAD PAVEMENT
- PROPOSED CONCRETE FOOTPATH
- EXTENT OF WORKS
- 8.0 MAJOR DESIGN CONTOUR (1.00m INTERVAL)
- MINOR DESIGN CONTOUR (0.25m INTERVAL)
- EXISTING DCDB BOUNDARY
- EXISTING DCDB EASEMENT
- SF SEDIMENT FENCE
- S.E.P. STABILISED ENTRY/EXIT POINT
- DSP DRAINAGE STRUCTURE PROTECTION REFER DWG CI-1206 FOR DETAILS

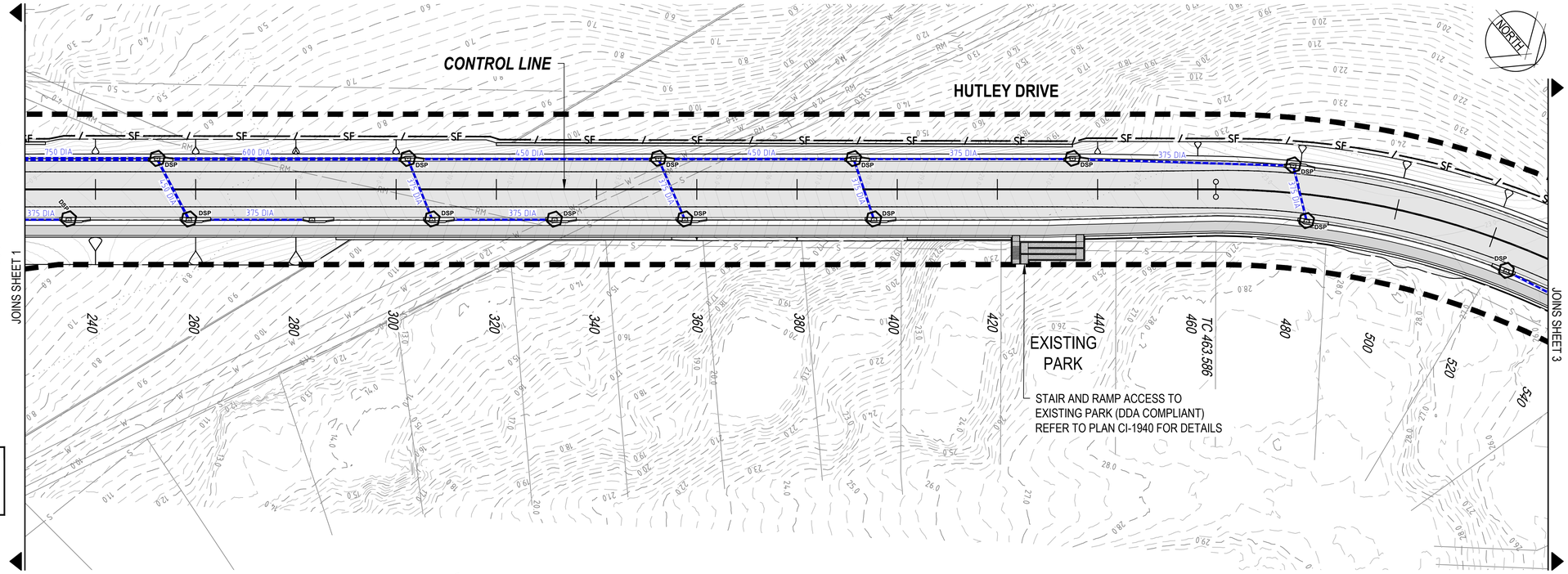


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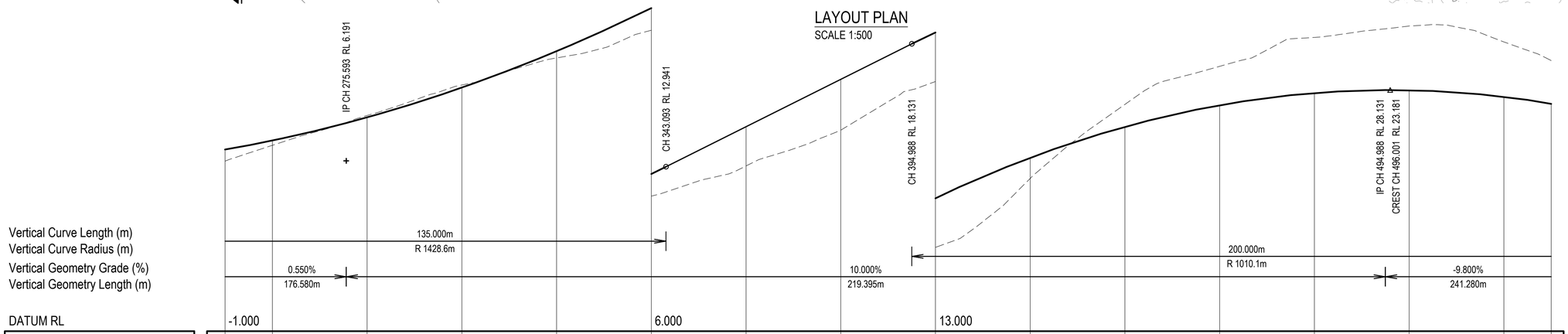


KEY PLAN
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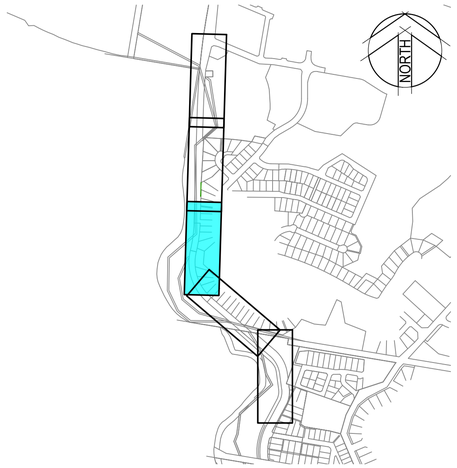
CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS



LAYOUT PLAN
SCALE 1:500

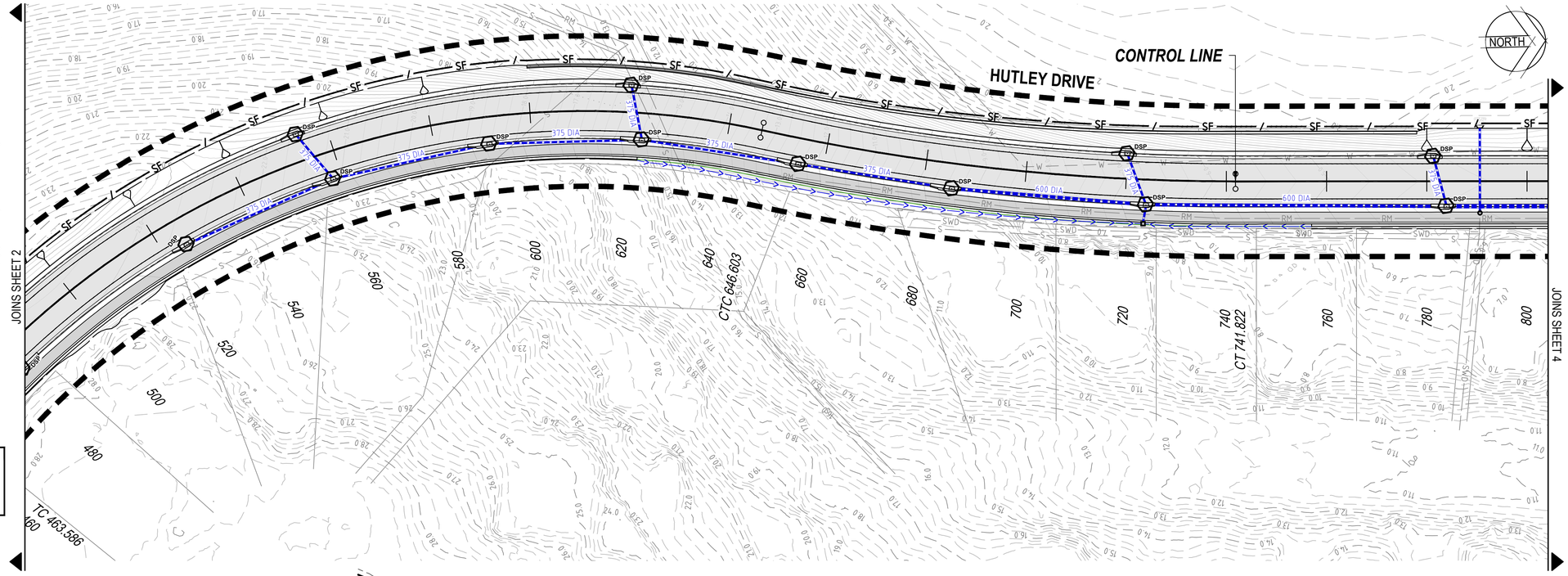


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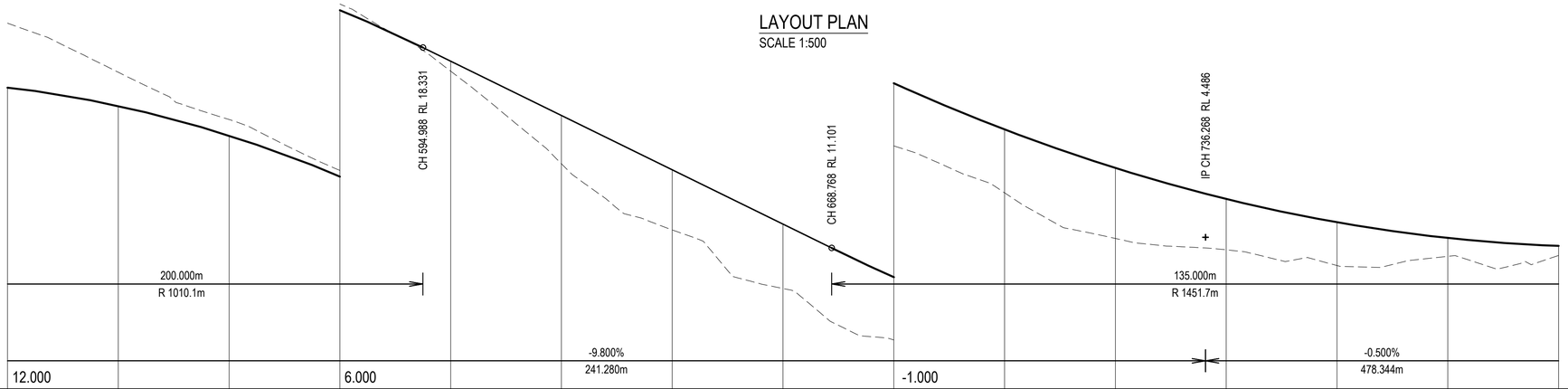


KEY PLAN
SCALE 1:10000

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS



LAYOUT PLAN
SCALE 1:500



HUTLEY DRIVE
SCALE: HORIZONTAL - 1:500
VERTICAL - 1:100

0 1 2 4 6 8 10m
SCALE 1:100 @A1

0 10 20 30 40 50m
SCALE 1:500 @A1

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Amendments

ballina shire council

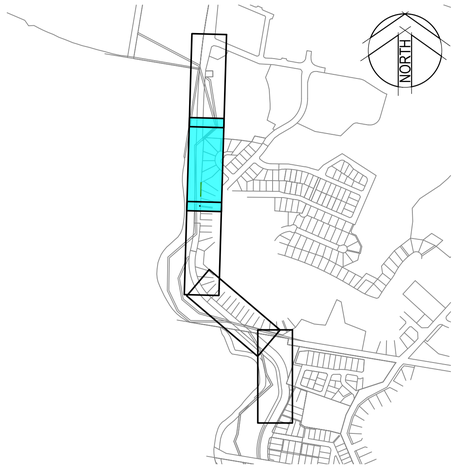
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DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1201-1205.dwg		

SHEET 14 OF 60

BALLINA SHIRE COUNCIL

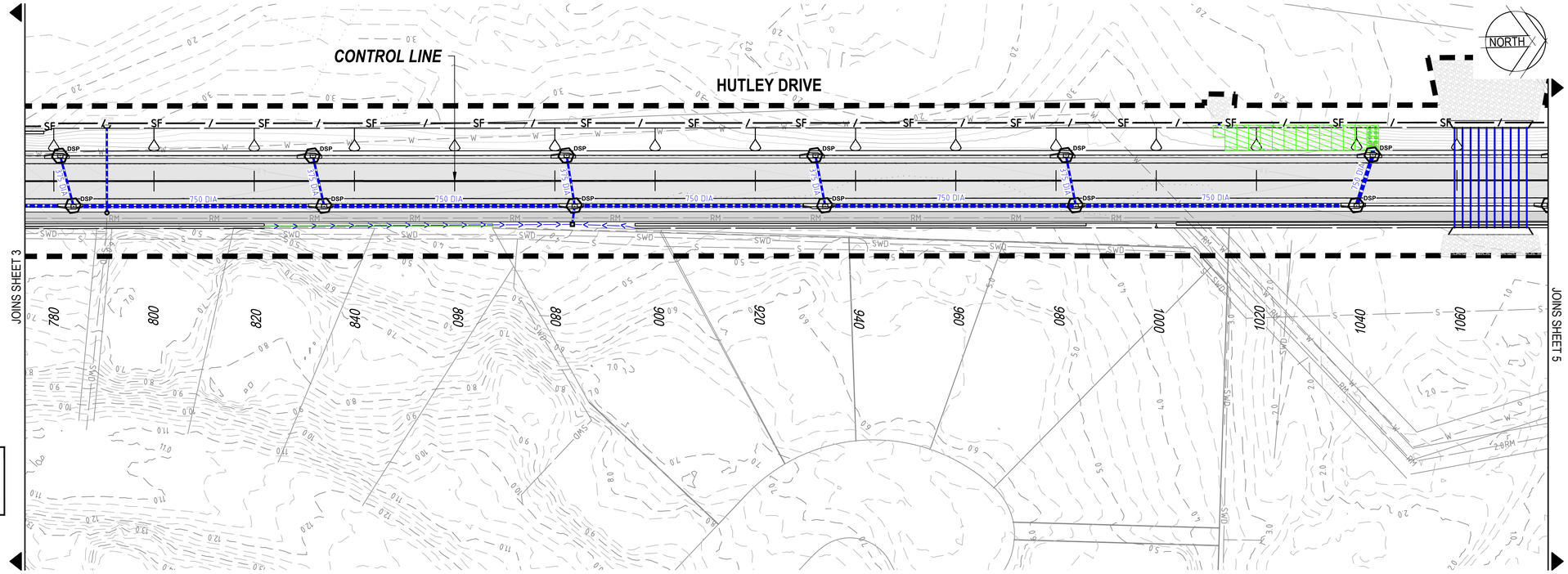
HUTLEY DRIVE SOUTHERN EXTENSION
GENERAL ARRANGEMENT PLAN AND PROFILE
SHEET 3 OF 5

Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: 1:100	721982-01-CI-1203	D



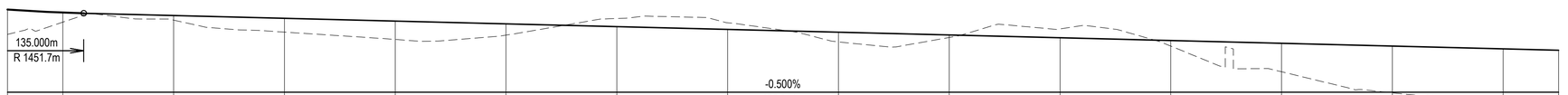
KEY PLAN
SCALE 1:10000

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

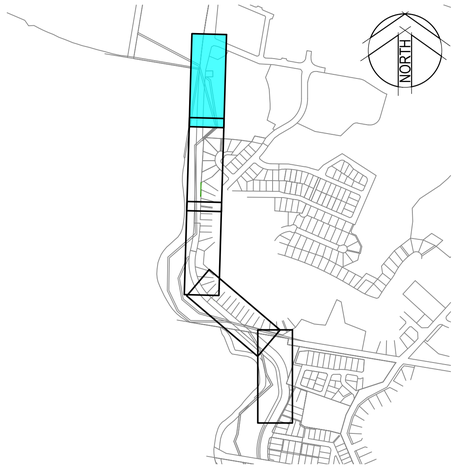


LAYOUT PLAN
SCALE 1:500

CH 803.768 RL 4.149



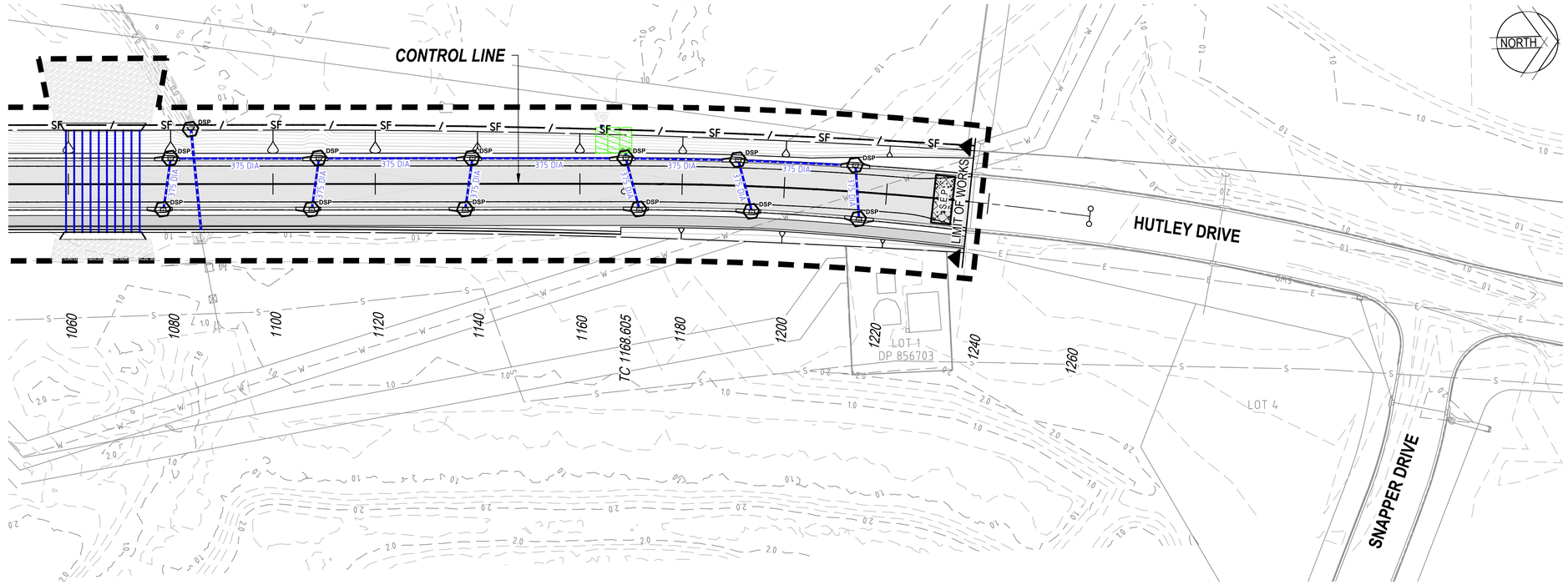
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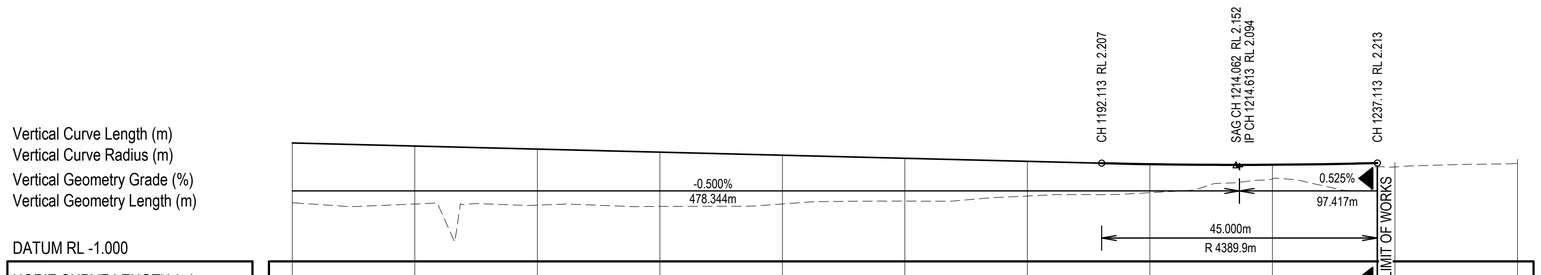
KEY PLAN
SCALE 1:10000

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

JOINS SHEET 4



LAYOUT PLAN
SCALE 1:500



Vertical Curve Length (m)
Vertical Curve Radius (m)
Vertical Geometry Grade (%)
Vertical Geometry Length (m)

DATUM RL -1.000

HORIZ CURVE LENGTH (m) HORIZ CURVE RADIUS (m)											
EXISTING SURFACE LEVELS ROAD CENTRELINE	0.916	0.875	0.838	0.795	0.877	0.969	1.135	1.245	1.696	2.085	2.197
CUT / FILL DEPTH TO EXISTING SURFACE	1.951	1.892	1.830	1.772	1.591	1.399	1.132	0.930	0.460		
DESIGN SURFACE LEVELS ROAD CENTRELINE	2.868	2.768	2.668	2.568	2.468	2.368	2.268	2.175	2.156		
CONTROL LINE CHAINAGE ROAD CENTRELINE	1060.000	1080.000	1100.000	1120.000	1140.000	1160.000	1180.000	1200.000	1220.000	1240.000	1260.000

HUTLEY DRIVE
SCALE: HORIZONTAL - 1:500
VERTICAL - 1:100

SEDIMENT AND EROSION CONTROL NOTES

1. THE PROJECT SEDIMENT AND EROSION CONTROL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SITE'S APPROVED STORMWATER MANAGEMENT PLAN.
2. CONSTRUCTION IS TO BE PROGRAMMED TO PROVIDE INSTALLATION OF PERIMETER LANDSCAPING / SURFACE TREATMENTS AS EARLY AS PRACTICAL.
3. THE CONTRACTOR'S WORKS PROGRAM IS TO BE REVIEWED AT THE PRESTART MEETING. ALTERATIONS TO THE PROGRAM MAY BE REQUIRED TO ENSURE SATISFACTORY EROSION AND SEDIMENT CONTROL.
4. SAFETY ISSUES MUST BE CONSIDERED AND MONITORED FOR EACH DEVICE TO THE SATISFACTION OF THE SUPERINTENDENT.
5. SEDIMENT FENCE FILTER FABRIC IS TO BE APPROVED BY THE ENGINEER. FILTER CLOTH AND SHADE CLOTH IS NOT TO BE USED.
6. SEDIMENTATION MANAGEMENT DEVICES SHALL BE INSTALLED PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES AND MAINTAINED AT A SUITABLE LEVEL/ CONDITION THROUGHOUT CONSTRUCTION.
7. SEDIMENT FENCES ARE TO BE CLEANED OUT WHEN CAPACITY IS REDUCED BY 30%.
8. DRAINAGE STRUCTURE PROTECTION IS TO BE CLEANED FOLLOWING EACH SIGNIFICANT RUNOFF PRODUCING STORM.
9. ACCESS TO THE SITE IS TO BE PROVIDED BY THE CONTRACTOR. APPROVAL IS TO BE OBTAINED FROM COUNCIL FOR THE LOCATION OF THE SITE ACCESS POINT AND WASH DOWN AREA WHICH IS TO BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. ACCESS TO AND FROM THE SITE IS TO BE VIA THE SHAKEDOWN FACILITY ONLY. ALL VEHICLES ARE TO BE WASHED DOWN PRIOR TO LEAVING THE SITE.
10. THE CONTRACTOR SHALL PROVIDE TEMPORARY DRAINAGE CONTROLS TO DIVERT FLOW FROM UNDISTURBED AREAS AROUND DISTURBED AREAS AND DIRECT FLOW FROM DISTURBED AREAS TOWARD CONTROL DEVICES.
11. SEDIMENT TRAP WILL COLLECT SEDIMENT DURING RUN-OFF EVENTS . DEWATERING OF THIS SEDIMENT TRAP CAN ONLY OCCUR WHEN TSS IS <50MG/L AND PH IS BETWEEN 6.5 - 8.5 IN ACCORDANCE WITH IECA GUIDELINES.

0 1 2 4 6 8 10m
SCALE 1:100 @A1

0 10 20 30 40 50m
SCALE 1:500 @A1

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Amendments

ballina shire council

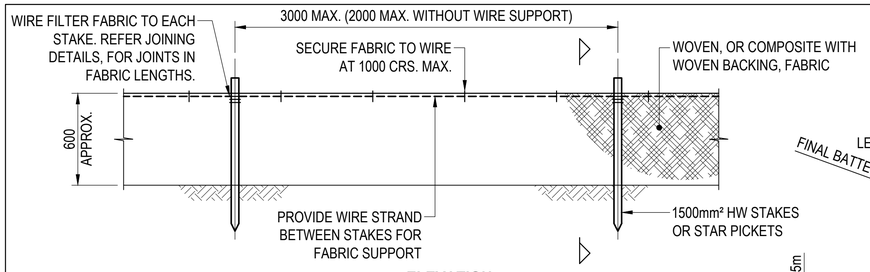
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DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1201-1205.dwg		

SHEET 16 OF 60

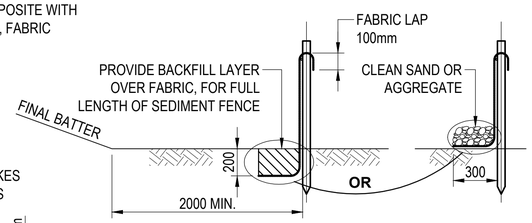
BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
GENERAL ARRANGEMENT PLAN AND PROFILE
SHEET 5 OF 5

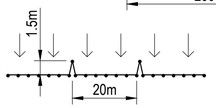
Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: 1:100	721982-01-CI-1205	D



ELEVATION



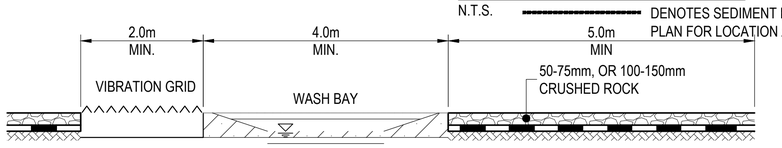
SECTION



NOTE: INSTALL 1.5m (MIN.) DEEP 'RETURNS' AT 20m SPACING (MAX.) ON UPSLOPE SIDE OF FENCELINE (5-10m MAX SPACING IF FENCE ALIGNED AT ANGLE TO CONTOUR). EG:

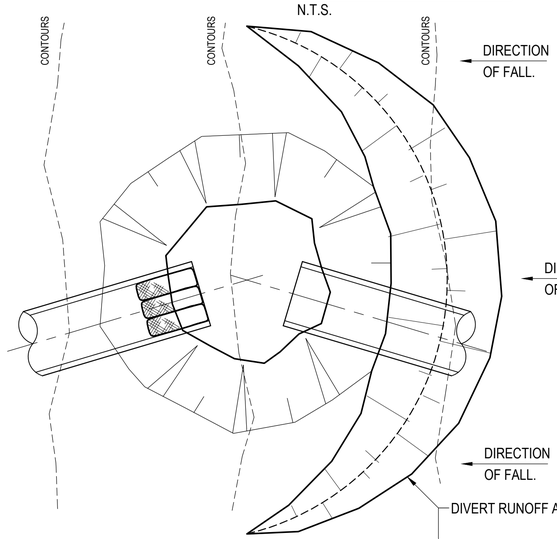
SEDIMENT FENCE DETAILS

N.T.S. ---------- DENOTES SEDIMENT FENCE. REFER PLAN FOR LOCATION AND EXTENTS.

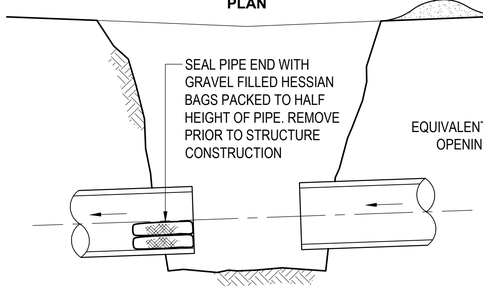


VEHICLE WASH BAY

N.T.S.

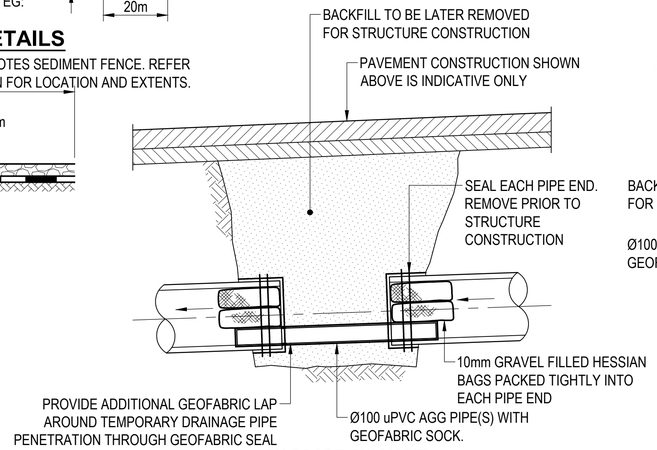


PLAN

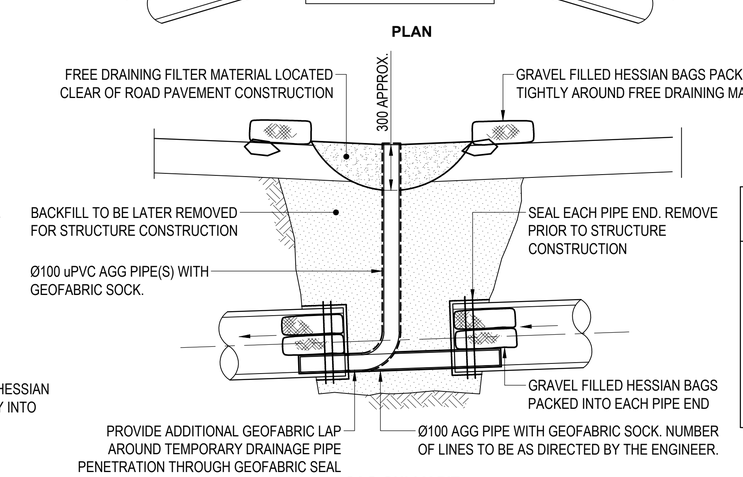


STAGE 1

EXCAVATION AND PIPE INSTALLATION



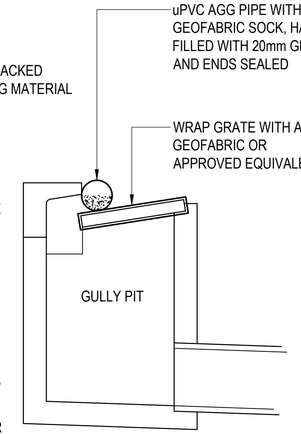
ON GRADE GULLY PIT



SAG GULLY PIT

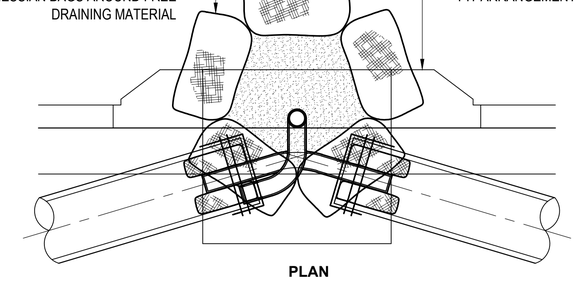
STAGE 1

EXCAVATION, PIPE INSTALLATION AND INTERIM BACKFILLING



STAGE 2

STRUCTURE COMPLETE

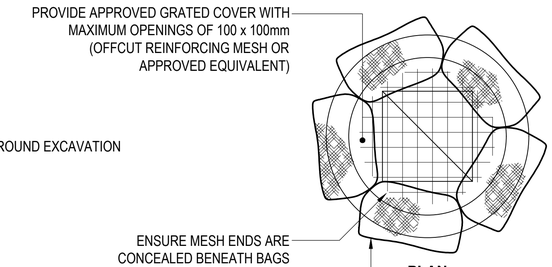


PLAN

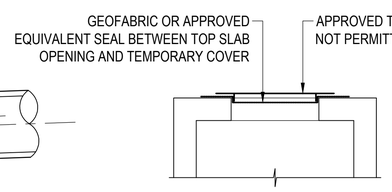
ROADWAY GULLY PIT

DSP DENOTES DRAINAGE STRUCTURE PROTECTION. REFER PLAN FOR LOCATION & EXTENTS.

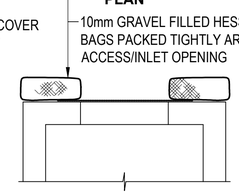
N.T.S.



PLAN



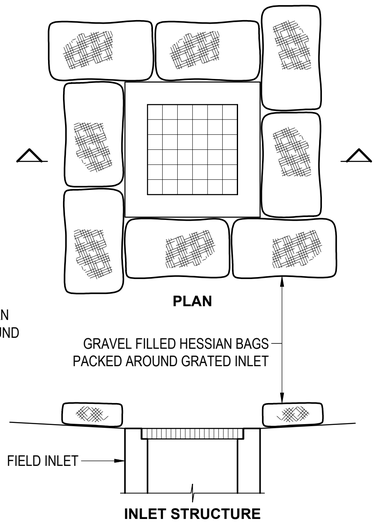
ACCESS CHAMBER



INLET STRUCTURE

STAGE 2

STRUCTURE COMPLETE UP TO TOP SLAB

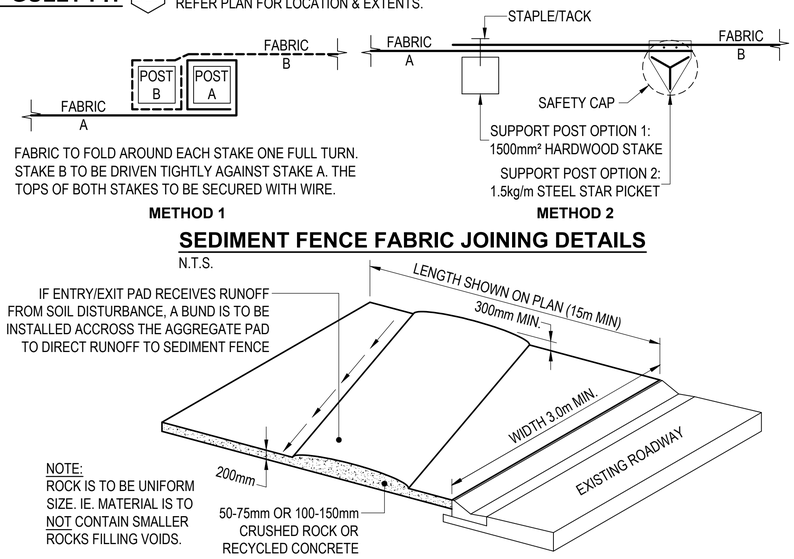


PLAN

INLET STRUCTURE

STAGE 3

STRUCTURE COMPLETE



FABRIC TO FOLD AROUND EACH STAKE ONE FULL TURN. STAKE B TO BE DRIVEN TIGHTLY AGAINST STAKE A. THE TOPS OF BOTH STAKES TO BE SECURED WITH WIRE.

METHOD 1 **METHOD 2**

SEDIMENT FENCE FABRIC JOINING DETAILS

N.T.S.

NOTE:
ROCK IS TO BE UNIFORM SIZE. IE. MATERIAL IS TO NOT CONTAIN SMALLER ROCKS FILLING VOIDS.

STABILISED ENTRY/EXIT POINT

N.T.S. **OR APPROVED EQUIVALENT**

SEP DENOTES STABILISED ENTRY/EXIT POINT, REFER PLAN FOR LOCATIONS.

ACCESS CHAMBER / INLET STRUCTURE

N.T.S.

DSP DENOTES DRAINAGE STRUCTURE PROTECTION, REFER PLAN FOR LOCATION & EXTENTS.

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
B	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
A	16/12/2022	LH	100% DESIGN ISSUE	LH

Amendments

ballina shire council

CERTIFIED LH		DESIGNED GT / WS	
DATE 16/12/2022		DRAWN AH / TNDF	
F.B. -	L.B. -	CHECKED LH	
DATUM GDA94		APPROVED LH	
DRAWING 721982-01-CI-1201-1205.dwg			
SHEET 17 OF 60			

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
SEDIMENT AND EROSION CONTROL DETAILS

Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: 1:100	721982-01-CI-1206	B

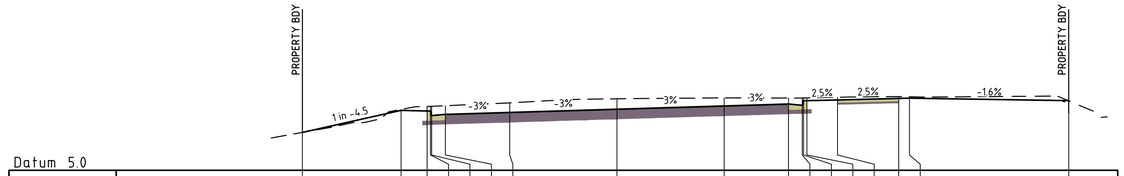
PAVEMENT DESIGN

ROAD	HUTLEY DRIVE
CLASS	URBAN RESIDENTIAL LOCAL DISTRIBUTOR
ESA's	2×10^6
SURFACE	40mm of AC14
PRIMER TYPE	7mm of AMC00
BASE	150mm of DGB20
SUBBASE	140mm of DGS20
TOTAL BOX	330mm

REFER TO CONSTRUCTION SCIENCES TECHNICAL MEMORANDUM DATED 9 JUNE 2021 FOR DESIGN AND SUBGRADE ASSUMPTIONS.

LEGEND:

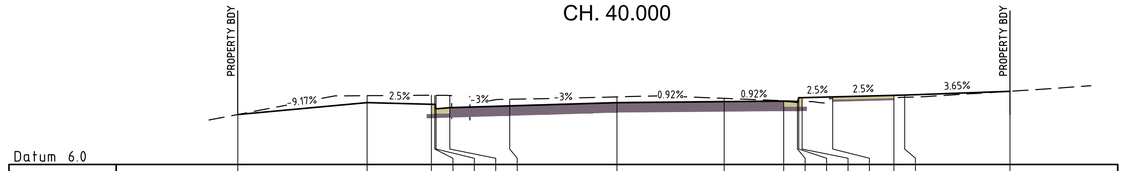
PROPOSED BARRIER FENCE. POWDER COATED. REFER TO GCCC STD DRG NO 05-05-002 FOR DETAILS.



Datum 5.0

DESIGN LEVELS	6.235	6.957	6.935	6.935	6.785	6.825	6.888	6.993	7.098	7.161	7.121	7.271	7.271	7.296	7.346	7.355	7.272	
NATURAL SURFACE	6.235	6.985	7.083	7.087	7.089	7.108	7.199	7.333	7.361	7.359	7.359	7.360	7.362	7.383	7.406	7.399	7.272	
OFFSET	-10.269	-7.050	-6.200	-6.090	-6.050	-5.600	-3.500	0.000	3.500	5.600	6.050	6.090	6.200	7.200	9.200	9.550	14.748	

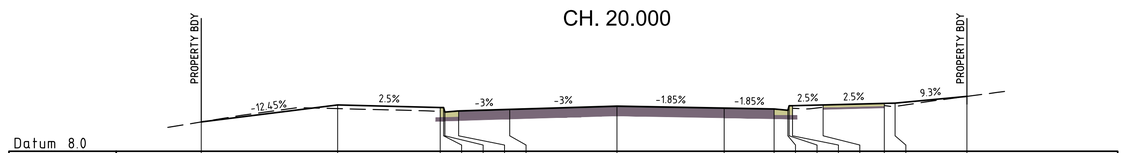
CH. 40.000



Datum 6.0

DESIGN LEVELS	7.629	8.017	7.964	7.964	7.814	7.854	7.913	8.018	8.050	8.068	8.028	8.178	8.178	8.203	8.253	8.262	8.387	
NATURAL SURFACE	7.629	8.244	8.257	8.256	8.256	8.248	8.125	8.203	8.155	8.080	8.062	8.061	8.057	8.149	8.176	8.189	8.387	
OFFSET	-12.380	-8.157	-6.057	-5.947	-5.907	-5.457	-3.500	0.000	3.500	5.443	5.893	5.933	6.043	7.043	9.043	9.393	12.831	

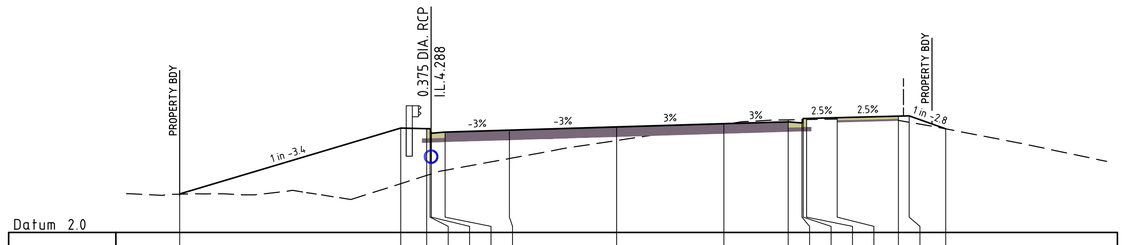
CH. 20.000



Datum 8.0

DESIGN LEVELS	8.955	9.509	9.426	9.426	9.276	9.316	9.366	9.471	9.406	9.376	9.336	9.486	9.486	9.511	9.561	9.570	9.788	
NATURAL SURFACE	8.955	9.389	9.297	9.295	9.282	9.276	9.319	9.402	9.334	9.309	9.332	9.401	9.400	9.433	9.489	9.458	9.788	
OFFSET	-13.574	-9.120	-5.770	-5.660	-5.620	-5.170	-3.500	0.000	3.500	5.130	5.580	5.620	5.730	6.730	8.730	9.080	11.426	

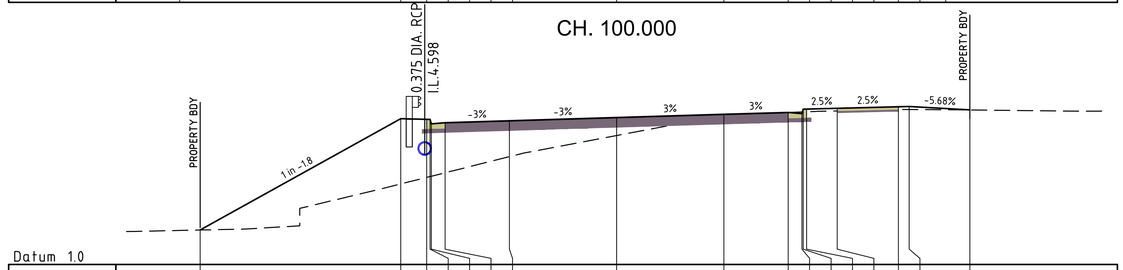
CH. 0.000



Datum 2.0

DESIGN LEVELS	3.256	5.409	5.388	5.388	5.238	5.278	5.341	5.446	5.551	5.614	5.574	5.724	5.724	5.749	5.799	5.807	5.382	
NATURAL SURFACE	3.251	3.592	3.863	3.897	3.910	4.030	4.413	5.001	5.525	5.677	5.684	5.685	5.686	5.701	5.660	5.597	5.382	
OFFSET	-14.264	-7.050	-6.200	-6.090	-6.050	-5.600	-3.500	0.000	3.500	5.600	6.050	6.090	6.200	7.200	9.200	9.550	10.746	

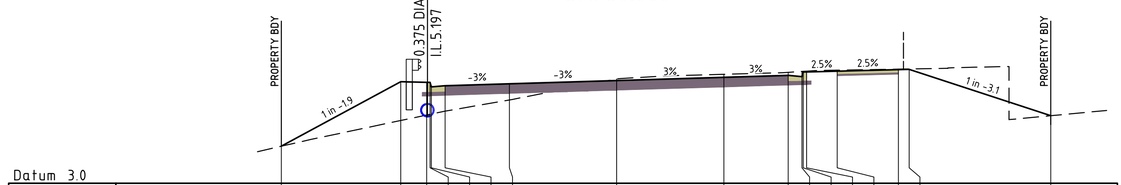
CH. 100.000



Datum 1.0

DESIGN LEVELS	2.123	5.757	5.736	5.736	5.586	5.626	5.689	5.794	5.899	5.962	5.922	6.072	6.072	6.097	6.147	6.156	6.043	
NATURAL SURFACE	2.123	3.628	3.841	3.869	3.879	3.991	4.518	5.209	5.871	5.961	5.977	5.978	5.982	6.010	6.055	6.056	6.043	
OFFSET	-13.597	-7.050	-6.200	-6.090	-6.050	-5.600	-3.500	0.000	3.500	5.600	6.050	6.090	6.200	7.200	9.200	9.550	11.532	

CH. 80.000



Datum 3.0

DESIGN LEVELS	4.208	6.314	6.293	6.293	6.143	6.183	6.246	6.351	6.456	6.519	6.479	6.629	6.629	6.654	6.704	6.713	5.202	
NATURAL SURFACE	4.208	5.046	5.225	5.248	5.257	5.351	5.716	6.400	6.554	6.619	6.648	6.650	6.657	6.689	6.723	6.729	5.202	
OFFSET	-10.947	-7.050	-6.200	-6.090	-6.050	-5.600	-3.500	0.000	3.500	5.600	6.050	6.090	6.200	7.200	9.200	9.550	14.174	

CH. 60.000

0 1 2 4 6 8 10m
SCALE 1:100 @A1

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
E	26/09/2023	LH	SCALE REFERENCE AMENDED	LH
D	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
C	16/12/2022	LH	100% DESIGN ISSUE	LH
B	30/07/2021	GT	85% DESIGN ISSUE	GH
A	23/04/2021	GT	50% DESIGN ISSUE	SW

Amendments

ballina shire council

CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1210-1219.dwg		
SHEET	18 OF 60		

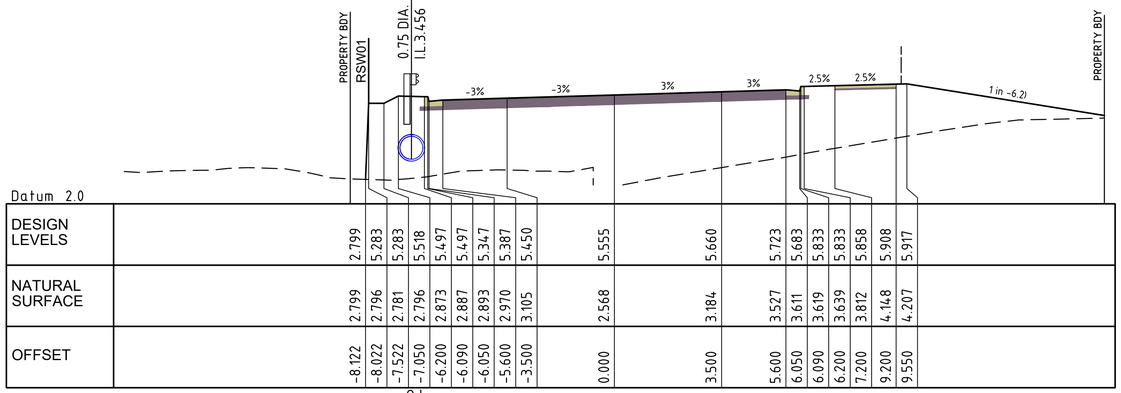
BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
CROSS SECTIONS
SHEET 1 OF 10

Scale HORIZONTAL: 1:100
VERTICAL: 1:100

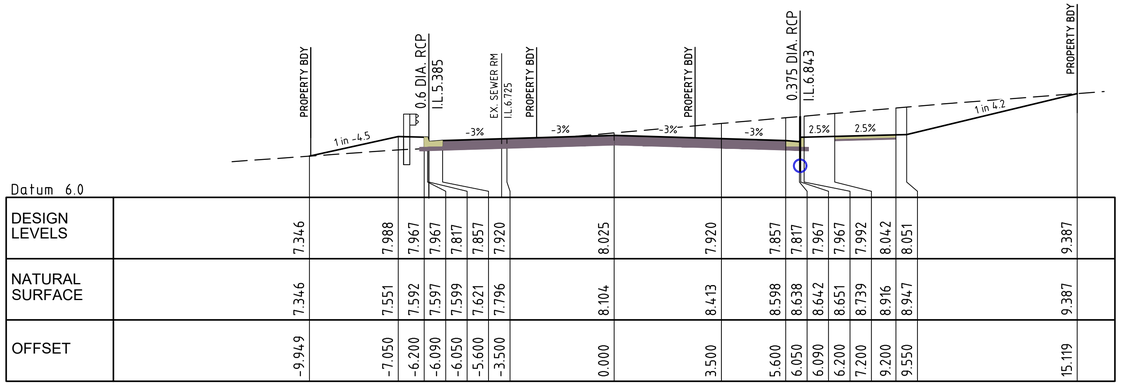
Plan No. 721982-01-CI-1210

Rev E


PROPERTY BDY
RSW01
0.75 DIA. RCP
I.L.3.456
-3%
-3%
3%
3%
2.5%
2.5%
1 in -6.2)
PROPERTY BDY

Datum 2.0

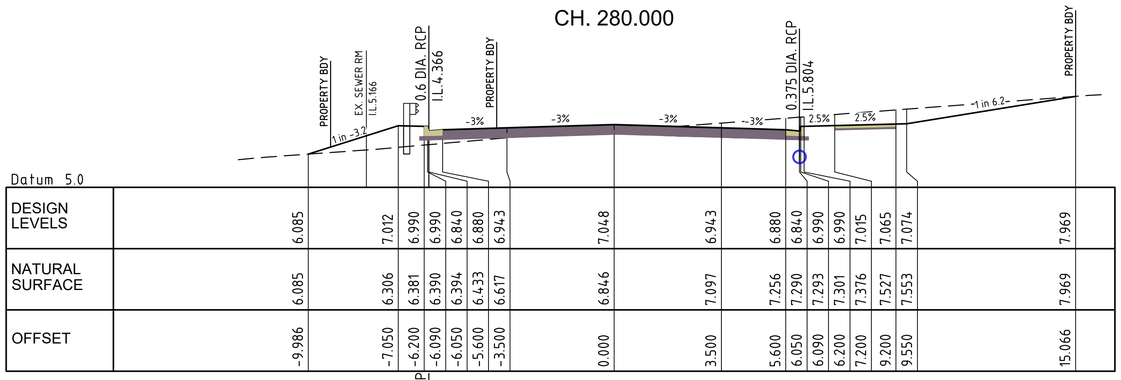
| | | |



Datum 6.0

DESIGN LEVELS	7.346		7.988	7.967	7.967	7.817	7.857	7.920		8.025	7.920	7.857	7.817	7.967	7.967	8.042	8.051		9.387
NATURAL SURFACE	7.346		7.551	7.592	7.597	7.599	7.621	7.796		8.104	8.413	8.598	8.638	8.642	8.651	8.916	8.947		9.387
OFFSET	-9.949		-7.050	-6.200	-6.090	-6.050	-5.600	-3.500		0.000	3.500	5.600	6.050	6.090	6.200	7.200	9.200	9.550	15.119

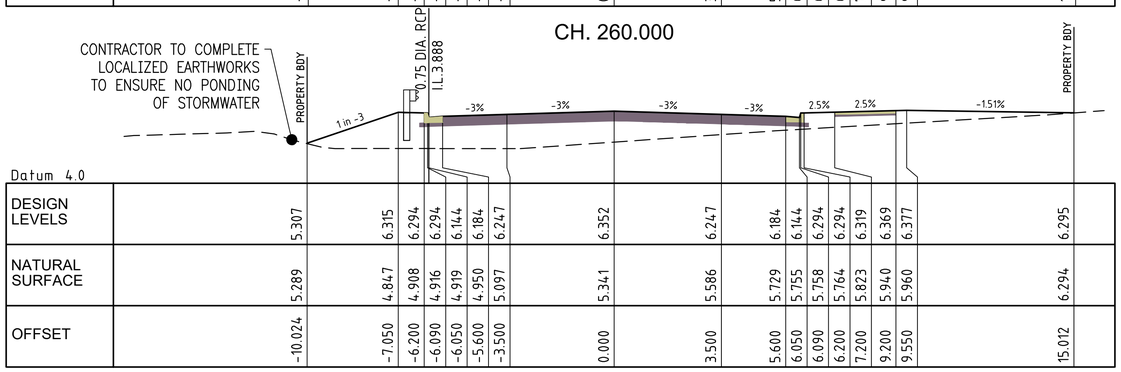
CH. 280.000



Datum 5.0

DESIGN LEVELS	6.085		7.012	6.990	6.990	6.840	6.880	6.943		7.048	6.943	6.880	6.840	6.990	6.990	7.015	7.065	7.074	7.969
NATURAL SURFACE	6.085		6.306	6.381	6.390	6.394	6.433	6.617		6.846	7.097	7.256	7.290	7.293	7.301	7.376	7.527	7.553	7.969
OFFSET	-9.986		-7.050	-6.200	-6.090	-6.050	-5.600	-3.500		0.000	3.500	5.600	6.050	6.090	6.200	7.200	9.200	9.550	15.066

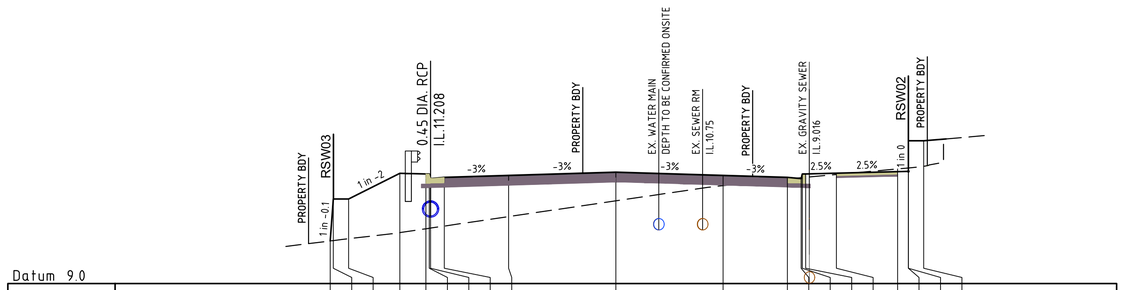
CH. 260.000



Datum 4.0

DESIGN LEVELS	5.307		6.315	6.294	6.294	6.144	6.184	6.247		6.352	6.247	6.184	6.144	6.294	6.294	6.319	6.369	6.377	6.295
NATURAL SURFACE	5.289		4.847	4.908	4.916	4.919	4.950	5.097		5.341	5.586	5.729	5.755	5.758	5.764	5.823	5.940	5.960	6.294
OFFSET	-10.024		-7.050	-6.200	-6.090	-6.050	-5.600	-3.500		0.000	3.500	5.600	6.050	6.090	6.200	7.200	9.200	9.550	15.012

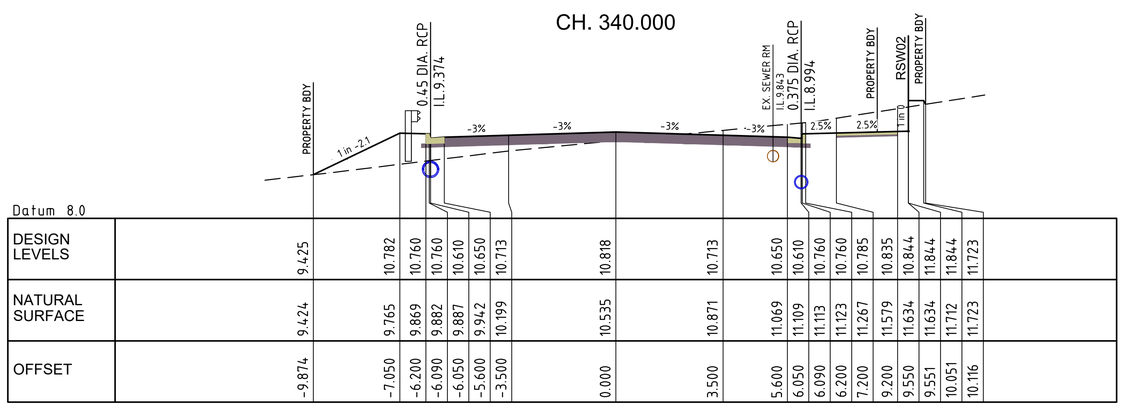
CH. 240.000



Datum 9.0

DESIGN LEVELS	10.391	11.762	11.762	12.598	12.577	12.577	12.427	12.467	12.530		12.635		12.530		12.467	12.427	12.577	12.577	12.602	12.652	12.661	13.661	13.661
NATURAL SURFACE	10.391	10.403	10.463	10.664	10.789	10.805	10.811	10.877	11.186		11.700		12.195		12.415	12.456	12.460	12.470	12.560	12.741	12.772	12.773	12.828
OFFSET	-9.323	-9.223	-8.723	-7.050	-6.200	-6.090	-6.050	-5.600	-3.500		0.000		3.500		5.600	6.050	6.090	6.200	7.200	9.200	9.550	9.551	10.051

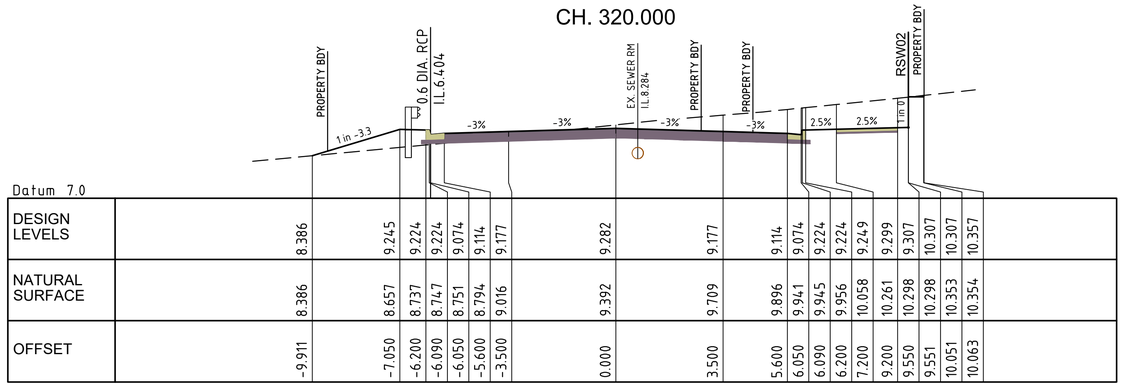
CH. 340.000



Datum 8.0

DESIGN LEVELS	9.425	10.782	10.760	10.760	10.610	10.650	10.713		10.818		10.713		10.650	10.610	10.760	10.760	10.785	10.835	10.844	10.844	11.844	11.723
NATURAL SURFACE	9.424	9.765	9.869	9.882	9.887	9.942	10.199		10.535		10.871		11.069	11.109	11.113	11.123	11.267	11.579	11.634	11.634	11.712	11.723
OFFSET	-9.874	-7.050	-6.200	-6.090	-6.050	-5.600	-3.500		0.000		3.500		5.600	6.050	6.090	6.200	7.200	9.200	9.550	9.551	10.051	10.116

CH. 320.000



Datum 7.0

DESIGN LEVELS	8.386	9.245	9.224	9.224	9.074	9.114	9.177		9.282		9.177		9.114	9.074	9.224	9.224	9.249	9.299	9.307	10.307	10.307	10.357
NATURAL SURFACE	8.386	8.657	8.737	8.747	8.751	8.794	9.016		9.392		9.709		9.896	9.941	9.945	9.956	10.058	10.261	10.298	10.298	10.353	10.354
OFFSET	-9.911	-7.050	-6.200	-6.090	-6.050	-5.600	-3.500		0.000		3.500		5.600	6.050	6.090	6.200	7.200	9.200	9.550	9.551	10.051	10.063

CH. 300.000

0 1 2 4 6 8 10m

SCALE 1:100 @A1

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
E	26/09/2023	LH	SCALE REFERENCE AMENDED	LH
D	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
C	16/12/2022	LH	100% DESIGN ISSUE	LH
B	30/07/2021	GT	85% DESIGN ISSUE	GH
A	23/04/2021	GT	50% DESIGN ISSUE	SW

Amendments

ballina shire council

CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1210-1219.dwg		
SHEET	20 OF 60		

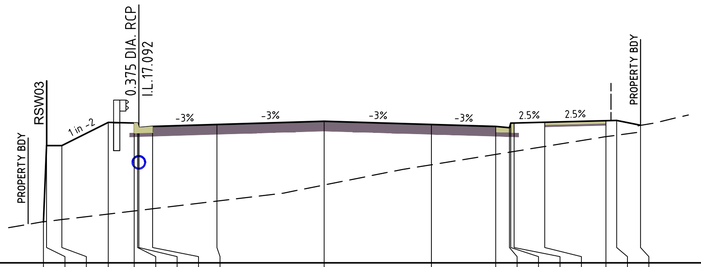
BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
CROSS SECTIONS
SHEET 3 OF 10

Scale HORIZONTAL: 1:100
VERTICAL: 1:100

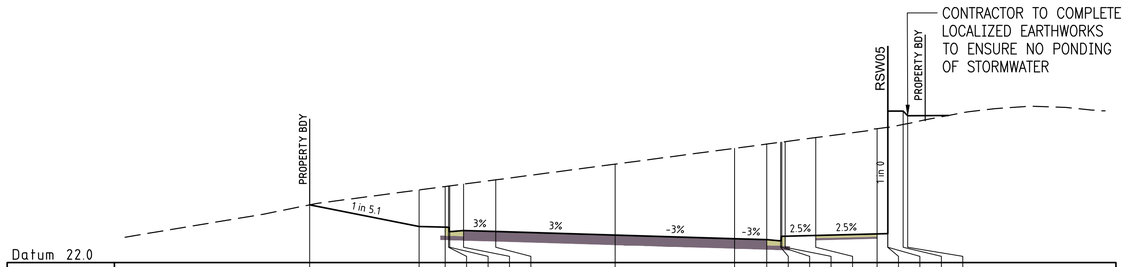
Plan No. 721982-01-CI-1212

Rev E


PROPERTY BDY
RSW03
1 in -2
0.375 DIA. RCP
I.L.17.092
-3%
-3%
-3%
-3%
2.5%
2.5%
PROPERTY BDY

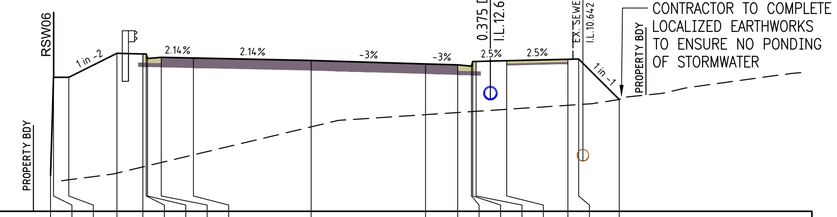
Datum 14.0

| | | |


CONTRACTOR TO COMPLETE LOCALIZED EARTHWORKS TO ENSURE NO PONDING OF STORMWATER
RSW05
PROPERTY BDY
PROPERTY BDY
1 in 5.1
3%
3%
-3%
-3%
2.5%
2.5%
1 in 0

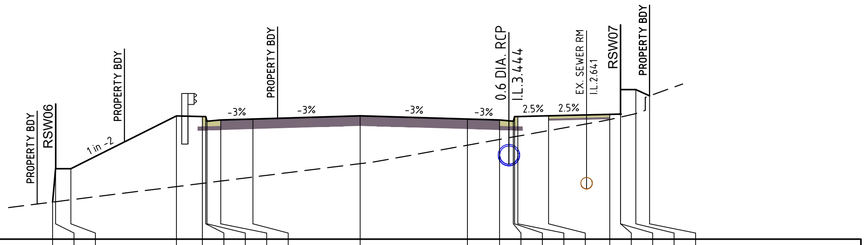
Datum 22.0

| | | |


RSW06
1 in -2
2.14%
2.14%
-3%
-3%
0.375 DIA. RCP
I.L.12.667
2.5%
2.5%
EX. SEWER RM
I.L.10.642
1 in -1
PROPERTY BDY
CONTRACTOR TO COMPLETE LOCALIZED EARTHWORKS TO ENSURE NO PONDING OF STORMWATER

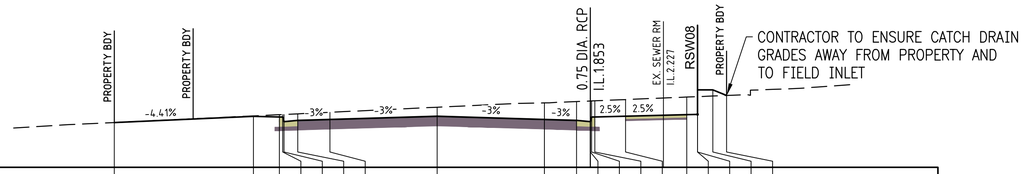
Datum 9.0

| | | |


PROPERTY BDY
RSW06
1 in -2
PROPERTY BDY
PROPERTY BDY
-3%
-3%
-3%
-3%
0.6 DIA. RCP
I.L.3.444
2.5%
2.5%
EX. SEWER RM
I.L.2.641
RSW07
PROPERTY BDY

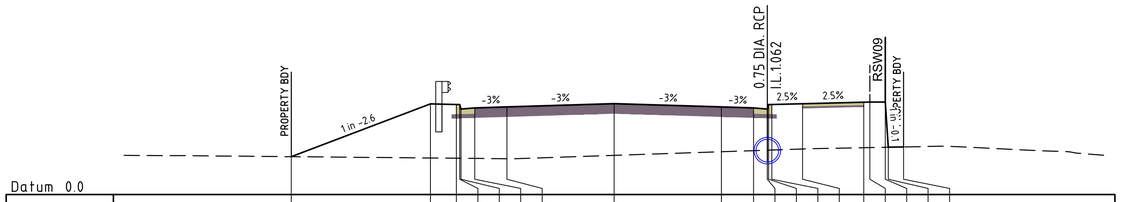
Datum 1.0

| | | |


PROPERTY BDY
PROPERTY BDY
-4.41%
-3%
-3%
-3%
-3%
0.75 DIA. RCP
I.L.1.853
EX. SEWER RM
I.L.2.227
RSW08
PROPERTY BDY
2.5%
2.5%
CONTRACTOR TO ENSURE CATCH DRAIN GRADES AWAY FROM PROPERTY AND TO FIELD INLET

Datum 2.0

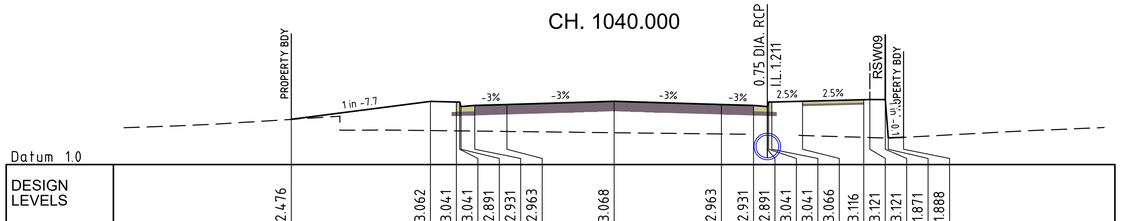
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Datum 0.0

DESIGN LEVELS	1.238		2.962	2.941	2.941	2.791	2.831	2.863		2.968		2.863	2.831	2.791	2.941	2.941	2.966	3.016	3.021	3.021	1.546	1.555
NATURAL SURFACE	1.238		1.195	1.187	1.186	1.186	1.181	1.172		1.279		1.398	1.433	1.448	1.450	1.453	1.487	1.531	1.534	1.544	1.546	1.555
OFFSET	-10.543		-6.000	-5.150	-5.040	-5.000	-4.550	-3.500		0.000		3.500	4.550	5.000	5.040	5.150	6.150	8.150	8.350	8.850	8.950	9.450

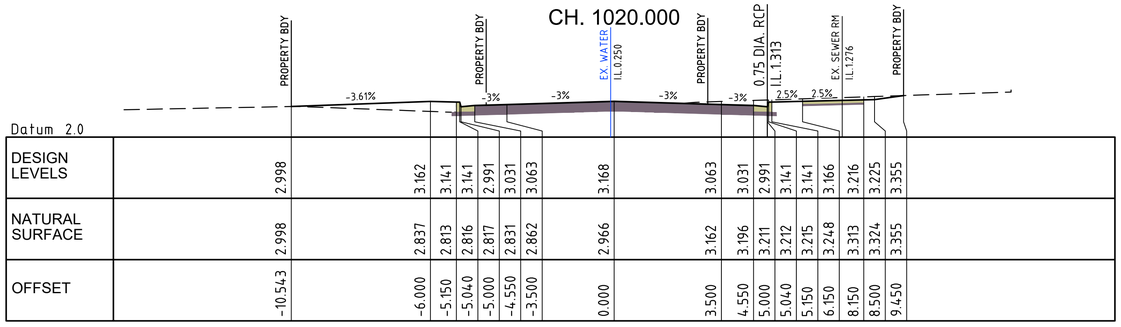
CH. 1040.000



Datum 1.0

DESIGN LEVELS	2.476		3.062	3.041	3.041	2.891	2.931	2.963		3.068		2.963	2.931	2.891	3.041	3.041	3.066	3.116	3.121	3.121	1.871	1.888
NATURAL SURFACE	2.475		2.110	2.100	2.099	2.099	2.093	2.081		2.040		1.999	1.986	1.981	1.980	1.978	1.948	1.889	1.883	1.868	1.865	1.888
OFFSET	-10.543		-6.000	-5.150	-5.040	-5.000	-4.550	-3.500		0.000		3.500	4.550	5.000	5.040	5.150	6.150	8.150	8.350	8.850	8.950	9.450

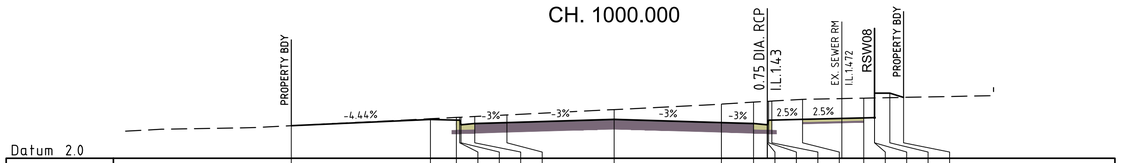
CH. 1020.000



Datum 2.0

DESIGN LEVELS	2.998		3.162	3.141	3.141	2.991	3.031	3.063		3.168		3.063	3.031	2.991	3.141	3.141	3.166	3.216	3.225	3.355		
NATURAL SURFACE	2.998		2.837	2.813	2.816	2.817	2.831	2.862		2.966		3.162	3.196	3.211	3.212	3.215	3.248	3.313	3.324	3.355		
OFFSET	-10.543		-6.000	-5.150	-5.040	-5.000	-4.550	-3.500		0.000		3.500	4.550	5.000	5.040	5.150	6.150	8.150	8.500	9.450		

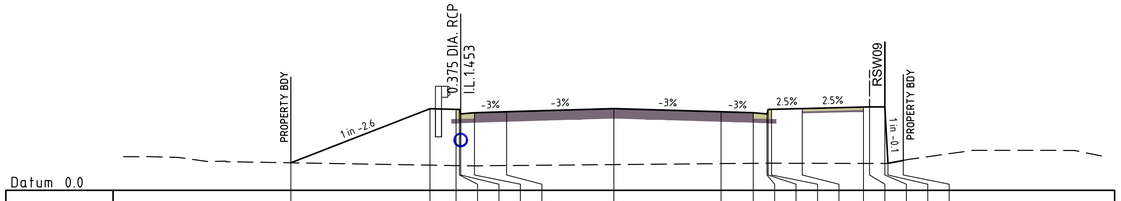
CH. 1000.000



Datum 2.0

DESIGN LEVELS	3.061		3.262	3.241	3.241	3.091	3.131	3.163		3.268		3.163	3.131	3.091	3.241	3.241	3.266	3.316	3.325	4.125	3.985	
NATURAL SURFACE	3.061		3.287	3.329	3.335	3.337	3.359	3.412		3.586		3.766	3.829	3.856	3.858	3.865	3.920	3.960	3.966	3.966	3.985	
OFFSET	-10.543		-6.000	-5.150	-5.040	-5.000	-4.550	-3.500		0.000		3.500	4.550	5.000	5.040	5.150	6.150	8.150	8.500	8.501	9.001	9.450

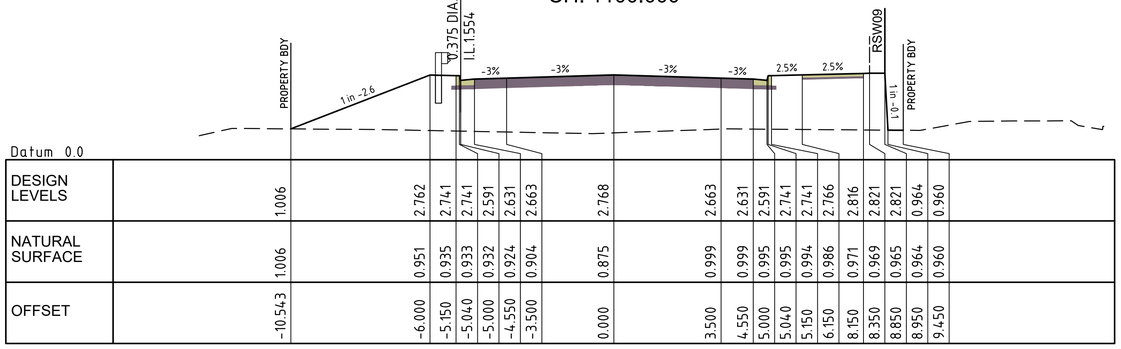
CH. 980.000



Datum 0.0

DESIGN LEVELS	0.896		2.662	2.641	2.641	2.491	2.531	2.563		2.668		2.563	2.531	2.491	2.641	2.641	2.666	2.716	2.721	2.721	0.878	0.974
NATURAL SURFACE	0.896		0.819	0.804	0.803	0.802	0.795	0.806		0.838		0.870	0.879	0.883	0.883	0.883	0.880	0.876	0.875	0.874	0.877	0.974
OFFSET	-10.543		-6.000	-5.150	-5.040	-5.000	-4.550	-3.500		0.000		3.500	4.550	5.000	5.040	5.150	6.150	8.150	8.350	8.850	8.950	9.450

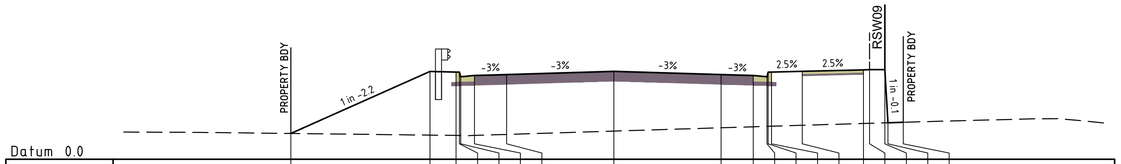
CH. 1100.000



Datum 0.0

DESIGN LEVELS	1.006		2.762	2.741	2.741	2.591	2.631	2.663		2.768		2.663	2.631	2.591	2.741	2.741	2.766	2.816	2.821	2.821	0.964	0.960
NATURAL SURFACE	1.006		0.951	0.935	0.933	0.932	0.924	0.904		0.875		0.999	0.999	0.995	0.995	0.994	0.986	0.971	0.969	0.965	0.964	0.960
OFFSET	-10.543		-6.000	-5.150	-5.040	-5.000	-4.550	-3.500		0.000		3.500	4.550	5.000	5.040	5.150	6.150	8.150	8.350	8.850	8.950	9.450

CH. 1080.000



Datum 0.0

DESIGN LEVELS	0.839		2.862	2.841	2.841	2.691	2.731	2.763		2.868		2.763	2.731	2.691	2.841	2.841	2.866	2.916	2.921	2.921	1.189	1.203
NATURAL SURFACE	0.839		0.785	0.775	0.774	0.773	0.775	0.808		0.916		1.025	1.057	1.071	1.072	1.076	1.105	1.165	1.171	1.186	1.189	1.203
OFFSET	-10.543		-6.000	-5.150	-5.040	-5.000	-4.550	-3.500		0.000		3.500	4.550	5.000	5.040	5.150	6.150	8.150	8.350	8.850	8.950	9.450

CH. 1060.000

0 1 2 4 6 8 10m

SCALE 1:100 @A1

DRAFT

NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
E	26/09/2023	LH	SCALE REFERENCE AMENDED	LH
D	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
C	16/12/2022	LH	100% DESIGN ISSUE	LH
B	30/07/2021	GT	85% DESIGN ISSUE	GH
A	23/04/2021	GT	50% DESIGN ISSUE	SW

Amendments

ballina shire council

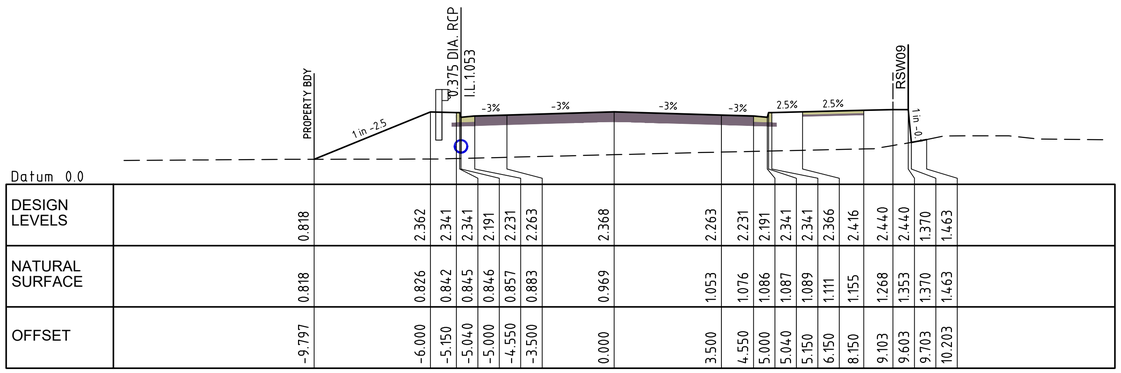
CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1210-1219.dwg		

SHEET 26 OF 60

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
CROSS SECTIONS
SHEET 9 OF 10

Scale		Plan No.	Rev
HORIZONTAL:	1:100	721982-01-CI-1218	E
VERTICAL:	1:100		


PROPERTY BDY
1 in -2.5
Ø375 DIA. RCP
I.L.1.053
-3%
-3%
-3%
-3%
2.5%
2.5%
RSW09
1 in -0.1

Datum 0.0

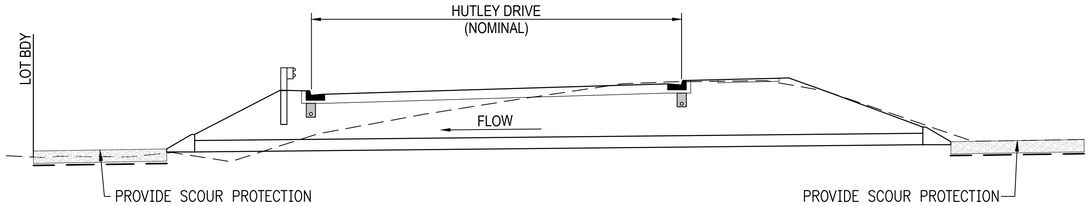
| | | |

LEGEND

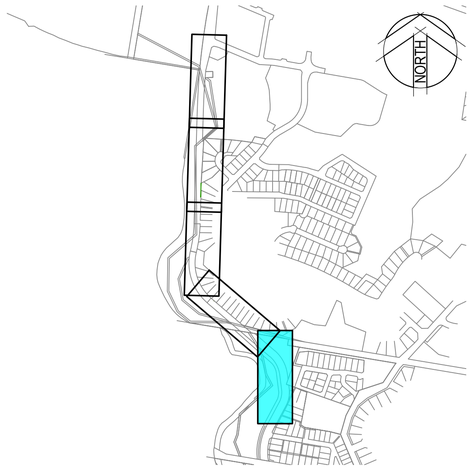
- EXTENT OF WORKS
- PROPOSED STORMWATER PIPE
- PROPOSED STORMWATER GULLY PIT - SAG
- PROPOSED STORMWATER GULLY PIT - ON GRADE
- PROPOSED STORMWATER MANHOLE
- PROPOSED STORMWATER FIELD INLET PIT
- PROPOSED STORMWATER HEADWALL
- PROPOSED STORMWATER STRUCTURE LABEL (1 / 1)
- PROPOSED SPEL DETENTION TANK WITH FILTER SYSTEM. REFER TO SPEL FOR SPECIFICATIONS AND DETAILS
- PROPOSED CATCH DRAIN
- EXISTING STORMWATER PIPE (SWD)
- EXISTING SEWER PIPE (S)
- EXISTING RISING MAIN PIPE (RM)
- EXISTING WATER PIPE (W)
- EXISTING ELECTRICAL CABLE (E)

STORMWATER NOTES:

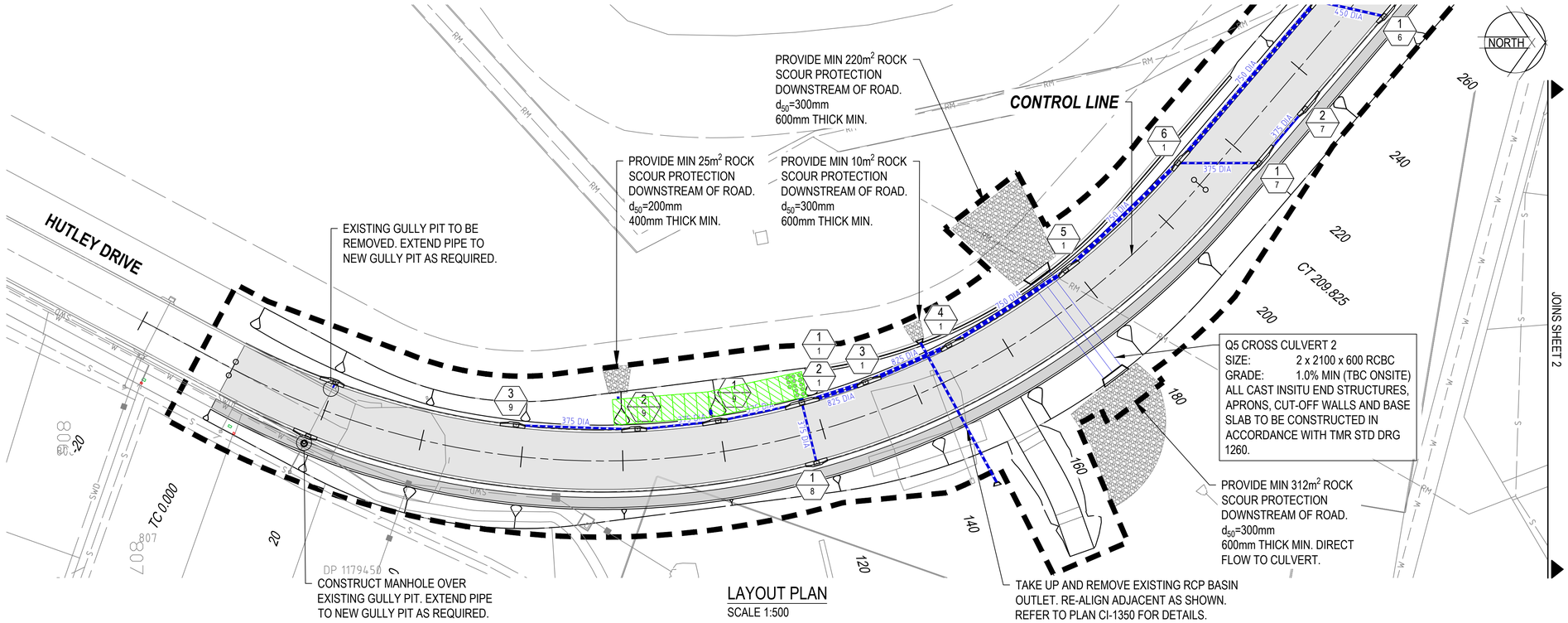
1. 100mm DIA. CONDUITS SHALL BE UPVC CLASS 12 AND SHALL EXTEND 1.00m BEHIND BACK OF KERB WITH 600mm MIN. COVER. REFER WATER RETICULATION, ELECTRICAL AND NBN DRAWINGS FOR LOCATIONS.
2. NOTWITHSTANDING THE DETAILS SHOWN ON THE DRAWINGS ALL WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NRLG STANDARD SPECIFICATIONS AND DRAWINGS, INCLUDING BALLINA SHIRE COUNCIL STANDARD DRAWING SW-01A, SW-02B, SW-05A AND SW-06A.
3. NOTWITHSTANDING THE LIMITS AND FILLING SHOWN ON THE CROSS SECTIONS THE ACTUAL LIMITS SHALL BE DETERMINED ON SITE BY THE SUPERINTENDENT DURING CONSTRUCTION AND SIMILARLY THE FINISHED SURFACE CONTOURS MAY BE ADJUSTED BY WRITTEN DIRECTION OF THE SUPERINTENDENT DURING CONSTRUCTION.
4. SIDE DRAINS SHALL BE CONSTRUCTED UNDER ALL KERB AS DIRECTED BY THE SUPERINTENDENT. REFER NRLG STD. DRG. SW-01A
5. ALL DISTURBED AREAS SHALL BE TOPSOILED (MINIMUM THICKNESS 100mm) AND BE GRASS SEEDED U.N.O.
6. SUBGRADE TEST RESULTS TO BE FORWARDED TO SUPERINTENDENT FOR DETERMINATION OF BOX DEPTHS PRIOR TO EXCAVATION. TESTS SHALL INCLUDE SOAKED C.B.R. AND/OR OTHER TESTS AS REQUESTED BY THE SUPERINTENDENT.
7. THE CONTRACTOR SHALL OBTAIN THE LOCATION OF ALL SERVICES AND PROTECT THESE SERVICES PRIOR TO WORKING IN THE VICINITY. ANY DAMAGE WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
8. ALL TRENCH BACK FILL MATERIAL UNDER ROAD PAVEMENT SHALL BE CBR 15 OR APPROVED EQUIVALENT.
9. REINSTATE THE AFFECTED WORK AREA TO PRIOR CONDITION INCLUDING FENCES, GATES, DRIVEWAYS ETC. WITH EXISTING OR MATCHING MATERIALS, U.N.O BY INFRASTRUCTURE PROJECT OFFICER.
10. REFER NRLG STD. DRG. SW-02B FOR MANHOLE DETAILS.
11. INLET GRATES TO BE APPROVED CLASS 'D' HEAVY DUTY TRAFFICABLE GALVANISED TO SUIT 900mm x 900mm CLEAR OPENING AS SHOWN. V-GRATE TYPE TO BE CONFIRMED PRIOR TO SUPPLY.
12. REFER TO TMR STANDARD DRAWING SET 1250 AND 1260 FOR ALL DETAILS REGARDING END STRUCTURES, APRONS, CUT OFF WALLS AND BASE SLABS.
13. STEEL HANDRAIL TO BE INSTALLED TO CULVERT HEADWALLS (WEBFORGE MONOWILLS POWDER COATED STANCHION OR APPROVED EQUIVALENT).



TYPICAL SCOUR PROTECTION DETAIL
NOT TO SCALE



KEY PLAN
SCALE 1:10000



LAYOUT PLAN
SCALE 1:500

0 10 20 30 40 50m
SCALE 1:500 @A1

0 200 400 600 800 1000m
SCALE 1:10000 @A1

THIS DRAWING IS PRODUCED IN COLOUR. REPRODUCTION OR READING IN OTHER THAN FULL COLOUR MAY IMPART FALSE OR MISSING INFORMATION.

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
D	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
C	16/12/2022	LH	100% DESIGN ISSUE	LH
B	30/07/2021	GT	85% DESIGN ISSUE	GH
A	23/04/2021	GT	50% DESIGN ISSUE	SW

Amendments

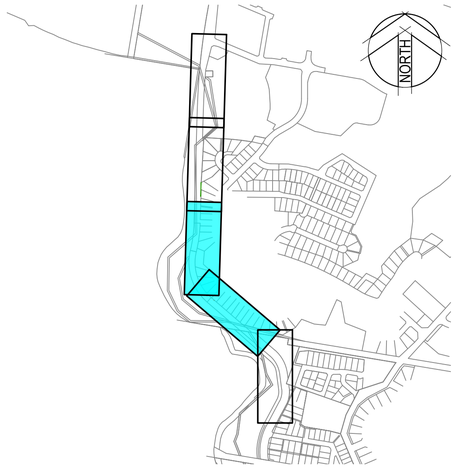
ballina shire council

CERTIFIED LH		DESIGNED GT / WS	
DATE 16/12/2022		DRAWN AH / TNDF	
F.B. L.B. -		CHECKED LH	
DATUM GDA94		APPROVED LH	
DRAWING 721982-01-CI-1301-1303.dwg			
SHEET 28 OF 60			

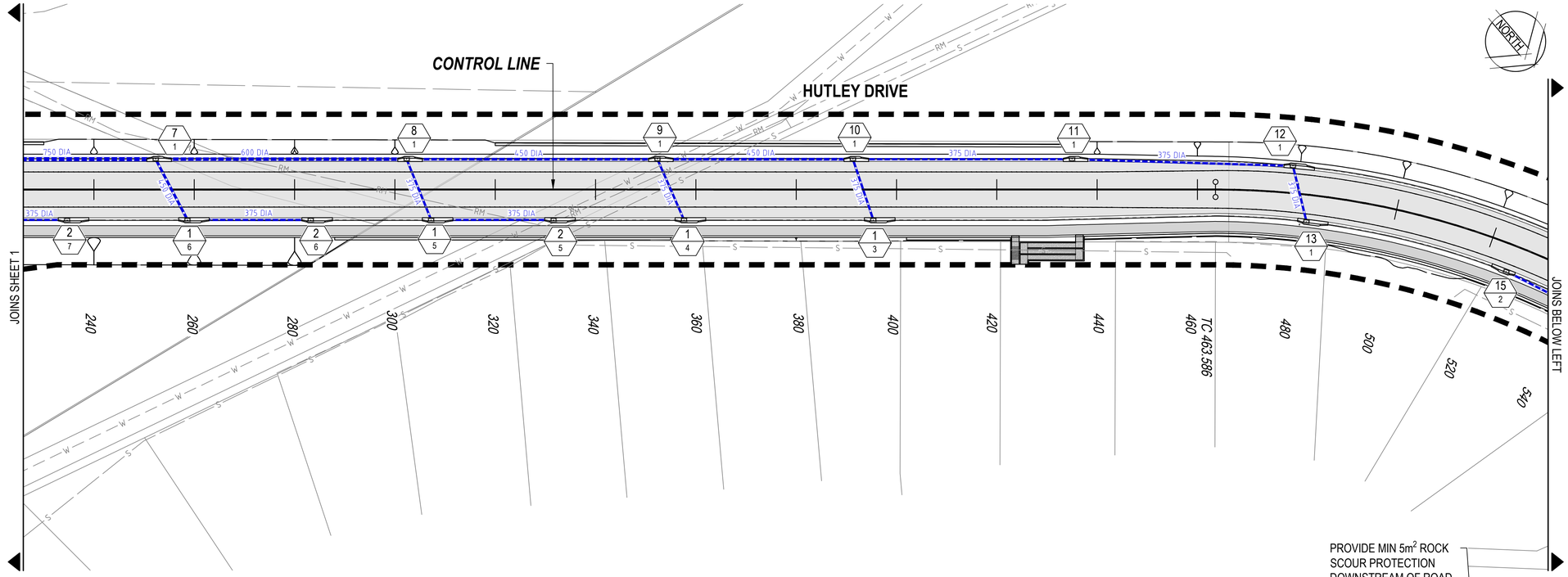
BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
STORMWATER DRAINAGE LAYOUT PLAN
SHEET 1 OF 3

Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: -	721982-01-CI-1301	D



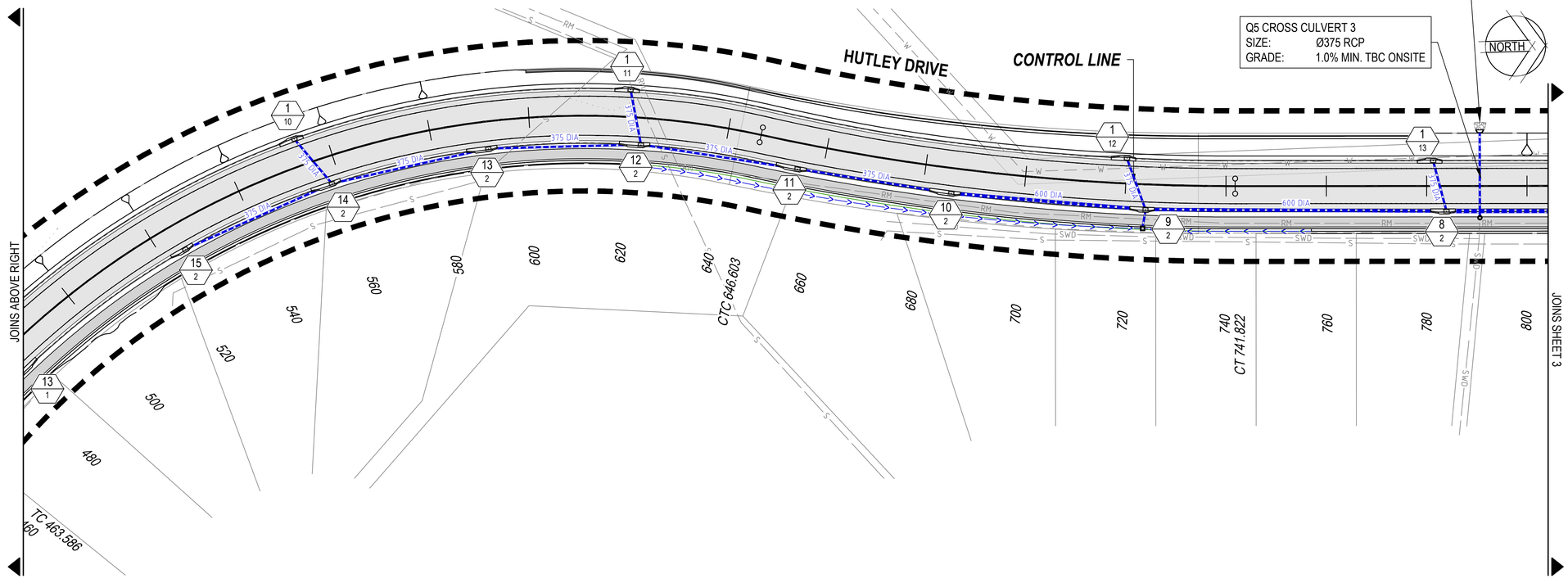
KEY PLAN
SCALE 1:10000



LAYOUT PLAN
SCALE 1:500

PROVIDE MIN 5m^2 ROCK SCOUR PROTECTION DOWNSTREAM OF ROAD.
d_{50}=200mm
400mm THICK MIN.

Q5 CROSS CULVERT 3
SIZE: Ø375 RCP
GRADE: 1.0% MIN. TBC ONSITE



LAYOUT PLAN
SCALE 1:500

0 10 20 30 40 50m
SCALE 1:500 @A1

0 200 400 600 800 1000m
SCALE 1:10000 @A1

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DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
D	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
C	16/12/2022	LH	100% DESIGN ISSUE	LH
B	30/07/2021	GT	85% DESIGN ISSUE	GH
A	23/04/2021	GT	50% DESIGN ISSUE	SW

Amendments

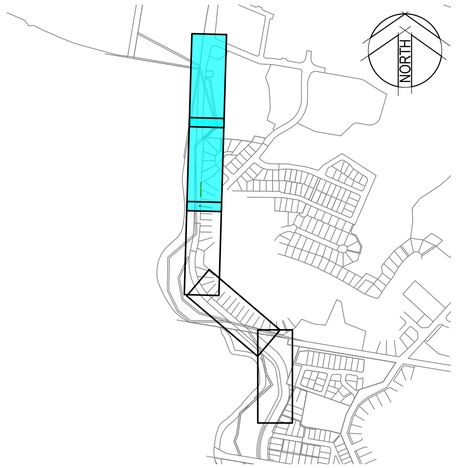
ballina shire council

CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1301-1303.dwg		
SHEET	29 OF 60		

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
STORMWATER DRAINAGE LAYOUT PLAN
SHEET 2 OF 3

Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: -	721982-01-CI-1302	D



KEY PLAN
SCALE 1:10000

PROVIDE MIN 5m² ROCK SCOUR PROTECTION DOWNSTREAM OF ROAD. d_{50}=200mm 400mm THICK MIN.

CONTROL LINE

HUTLEY DRIVE

PROVIDE MIN 18m² ROCK SCOUR PROTECTION DOWNSTREAM OF ROAD. d_{50}=200mm 400mm THICK MIN.

Q5 CROSS CULVERT 3
SIZE: Ø375 RCP
GRADE: 1.0% MIN. TBC ONSITE

Q5 CROSS CULVERT 4
SIZE: 9x 1500 x 900 RCBCs
GRADE: 0.5% MIN (TBC ONSITE)
ALL CAST INSITU END STRUCTURES, APRONS, CUT-OFF WALLS AND BASE SLAB TO BE CONSTRUCTED IN ACCORDANCE WITH TMR STD DRG 1250.

JOINS SHEET 2

JOINS BELOW LEFT

PROVIDE MIN 255m² ROCK SCOUR PROTECTION DOWNSTREAM OF ROAD. d_{50}=300mm 600mm THICK MIN.

PROVIDE MIN 5m² ROCK SCOUR PROTECTION DOWNSTREAM OF ROAD. d_{50}=200mm 400mm THICK MIN.

Q5 CROSS CULVERT 5
SIZE: Ø450 RCP
GRADE: 0.5% MIN. TBC ONSITE

CONTROL LINE

PROVIDE MIN 5m² ROCK SCOUR PROTECTION DOWNSTREAM OF ROAD. d_{50}=200mm 400mm THICK MIN.

HUTLEY DRIVE

JOINS ABOVE RIGHT

PROVIDE MIN 78m² ROCK SCOUR PROTECTION UPSTREAM OF ROAD. d_{50}=300mm 600mm THICK MIN.

LOT 1 DP 856703

LOT 4

SNAPPER DRIVE

LAYOUT PLAN
SCALE 1:500

LAYOUT PLAN
SCALE 1:500

0 10 20 30 40 50m
SCALE 1:500 @A1

0 200 400 600 800 1000m
SCALE 1:10000 @A1

THIS DRAWING IS PRODUCED IN COLOUR. REPRODUCTION OR READING IN OTHER THAN FULL COLOUR MAY IMPART FALSE OR MISSING INFORMATION.

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
D	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
C	16/12/2022	LH	100% DESIGN ISSUE	LH
B	30/07/2021	GT	85% DESIGN ISSUE	GH
A	23/04/2021	GT	50% DESIGN ISSUE	SW

Amendments

ballina shire council

CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1301-1303.dwg		
SHEET	30 OF 60		

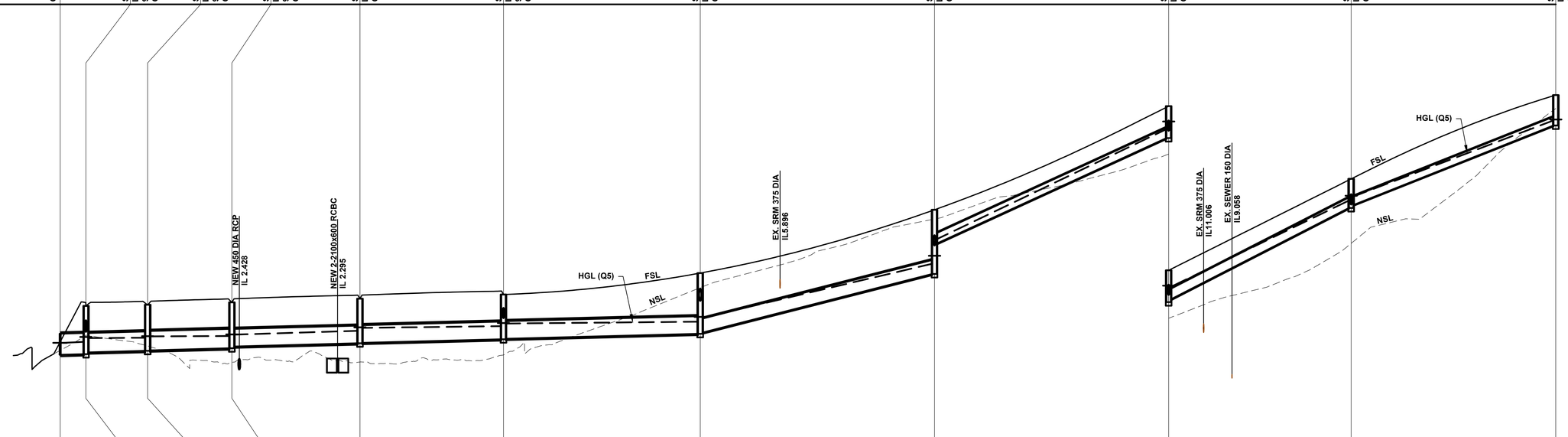
BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
STORMWATER DRAINAGE LAYOUT PLAN
SHEET 3 OF 3

Scale HORIZONTAL: 1:500
VERTICAL: -

Plan No. 721982-01-CI-1303

Rev D



STRUCTURE NAME	1/1	2/1	3/1	4/1	5/1	6/1	7/1	8/1	9/1	10/1	11/1
STRUCTURE DESCRIPTION	OUTLET - CONNECT TO SPEL TANKS	STD NRLG GULLY IN SAG LINTEL (L), LIP IN LINE, GRATE (D) 920 x 830 HOLE, 225 THICK ASPRO OVER 1500 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) 920 x 830 HOLE, 175 THICK ASPRO OVER 1200 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) 920 x 830 HOLE, 175 THICK ASPRO OVER 1200 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 1050 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) 920 x 830 HOLE, 175 THICK ASPRO OVER 1200 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 1050 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 1050 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 900 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 900 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 600 DIA ACCESS CHAMBER
PIPE SIZE (mm)		900	825	825	750	750	750	600	450	450	375
PIPE CLASS		3	3	3	3	3	3	3	3	3	3
PIPE GRADE (%)		0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	5.00%	9.00%	10.00%	7.77%
PIPE SLOPE (1 in X)		200.0	200.0	200.0	200.0	200.0	200.0	20.0	11.1	10.0	12.9
PIPE FLOW (cumecs)		0.786	0.690	0.684	0.670	0.650	0.604	0.448	0.299	0.206	0.089
CAPACITY FLOW (cumecs)		1.286	1.015	1.015	0.788	0.788	0.788	1.374	0.856	0.902	0.489
FULL PIPE VELOCITY (m/s)		1.24	1.29	1.28	1.52	1.47	1.37	1.58	1.88	1.29	0.81
NORMAL DEPTH VELOCITY (m/s)		2.11	2.04	2.04	2.00	1.99	1.96	4.34	4.90	4.59	3.37
DATUM RL	-8.000									-1.000	
HGL ELEVATION	3.565	3.605	3.812 3.769	3.782 3.848 3.840	3.855 3.922 3.916	4.077 4.225 4.202	4.274 4.408 4.387	4.466 4.670 4.633	6.939 7.277 7.982	12.679 13.002 12.951	16.636 16.836 16.803	20.052 20.090
DEPTH TO INVERT	0.900 0.900	2.056	1.981	1.965 1.945	1.958 1.883	1.903 1.883	1.907 1.887	2.591 2.541	2.739 1.442	1.361 1.239	1.238 1.116	1.288
INVERT LEVEL OF DRAIN	3.055 3.055	3.083	3.158	3.224 3.244	3.334 3.409	3.545 3.565	3.719 3.739	3.949 3.999	6.500 7.798	12.298 12.420	16.316 16.439	19.833
DESIGN (& EXISTING) SURFACE LEVEL	3.600 (3.240)	5.139 (3.890)	5.189 (3.433)	5.292 (2.744)	5.449 (2.747)	5.626 (3.049)	6.540 (5.917)	9.239 (6.844)	13.668 (11.614)	17.555 (14.807)	21.131 (20.560)	
SETOUT COORDINATES	556981.821E 6812094.628N	556987.166E 6812095.922N	556983.112E 6812108.469N	556975.821E 6812124.915N	556961.073E 6812147.943N	556939.857E 6812170.062N	556907.908E 6812197.325N	556869.850E 6812229.800N	556831.816E 6812262.255N	556802.174E 6812287.549N	556768.941E 6812315.507N	
CHAINAGE	0.000	5.500 5.500	13.186 16.685	17.989 36.674	27.347 64.021	30.649 94.670	42.000 136.670	50.030 186.700	50.000 236.700	38.967 275.666	43.688 319.354	

LINE 1

NOTES:
1. REFER TO CI-1201 FOR GENERAL ARRANGEMENT LAYOUT PLAN
2. REFER TO CI-1301 FOR STORMWATER LAYOUT PLAN

NORTH

0 1 2 4 6 8 10m
SCALE 1:100 @A1

0 10 20 30 40 50m
SCALE 1:500 @A1

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
D	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
C	16/12/2022	LH	100% DESIGN ISSUE	LH
B	30/07/2021	GT	85% DESIGN ISSUE	GH
A	23/04/2021	GT	50% DESIGN ISSUE	SW

Amendments

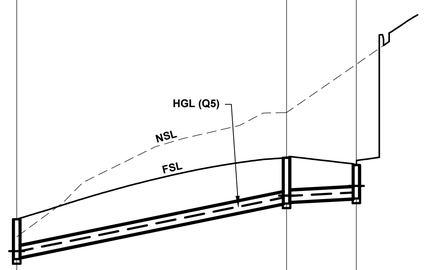
ballina shire council

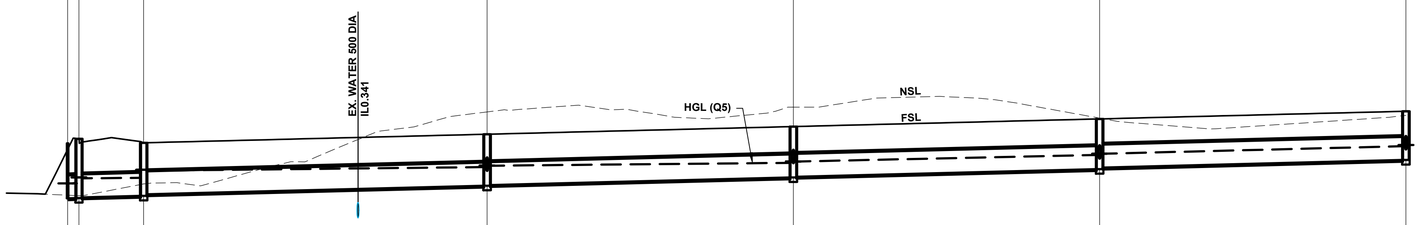
CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1311-1316.dwg		
SHEET	31 OF 60		

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
STORMWATER DRAINAGE LONGITUDINAL SECTIONS
SHEET 1 OF 6

Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: 1:100	721982-01-CI-1311	D





STRUCTURE NAME	11/1	12/1	13/1
STRUCTURE DESCRIPTION	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 600 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (M), LIP IN LINE, GRATE (D) OVER 600 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (M), LIP IN LINE, GRATE (D)
PIPE SIZE (mm)	375	375	
PIPE CLASS	3	3	
PIPE GRADE (%)	4.00%	1.00%	
PIPE SLOPE (1 in X)	25.0	100.0	
PIPE FLOW (cumecs)	0.073	0.074	
CAPACITY FLOW (cumecs)	0.351	0.175	
FULL PIPE VELOCITY (m/s)	0.66	0.67	
NORMAL DEPTH VELOCITY (m/s)	2.51	1.52	
DATUM RL	7.000		
HGL ELEVATION	20.052 20.080 20.089	21.843 21.905 21.896	22.007 22.219
DEPTH TO INVERT	1.298 1.248	1.493 1.443	1.093
INVERT LEVEL OF DRAIN	19.833 19.883	21.646 21.696	21.809
DESIGN (& EXISTING) SURFACE LEVEL	21.131 (20.560)	23.164 (24.617)	22.903 (26.192)
SETOUT COORDINATES	556768.941E 6812315.907N	556736.313E 6812345.518N	556741.460E 6812355.674N
CHAINAGE	319.354	363.415	374.801
	44.061	11.386	
LINE	1		

STRUCTURE NAME	1/2	2/2	3/2	4/2	5/2	6/2	7/2
STRUCTURE DESCRIPTION	OUTLET - CONNECT TO SPEL TANKS	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 1050 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 1050 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) 920 x 830 HOLE, 175 THICK ASPRO OVER 1200 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (M), LIP IN LINE, GRATE (D) 920 x 830 HOLE, 175 THICK ASPRO OVER 1200 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) 920 x 830 HOLE, 175 THICK ASPRO OVER 1200 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) 920 x 830 HOLE, 175 THICK ASPRO OVER 1200 DIA ACCESS CHAMBER
PIPE SIZE (mm)	750	750	750	750	750	750	750
PIPE CLASS	3	3	3	3	3	3	3
PIPE GRADE (%)	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
PIPE SLOPE (1 in X)	200.0	200.0	200.0	200.0	200.0	200.0	200.0
PIPE FLOW (cumecs)	0.617	0.604	0.594	0.572	0.549	0.525	
CAPACITY FLOW (cumecs)	0.788	0.788	0.788	0.788	0.788	0.788	
FULL PIPE VELOCITY (m/s)	1.40	1.37	1.35	1.29	1.24	1.19	
NORMAL DEPTH VELOCITY (m/s)	1.97	1.96	1.96	1.94	1.93	1.91	
DATUM RL	-14.000						
HGL ELEVATION	1.466	1.486 1.662 1.631	1.650 1.813 1.882	1.998 2.047 2.044	2.137 2.183 2.180	2.394 2.438 2.435	2.680 2.722
DEPTH TO INVERT	1.795	1.795 1.936 1.916	1.729 1.679	1.679 1.659	1.659 1.639	1.639 1.590	1.590
INVERT LEVEL OF DRAIN	0.980	0.960 0.989 1.009	1.062 1.112	1.392 1.412	1.662 1.682	1.932 1.982	2.232
DESIGN (& EXISTING) SURFACE LEVEL	2.577	(1.080) 2.925 (1.063)	2.791 (1.448)	3.071 (3.799)	3.321 (3.954)	3.571 (3.597)	3.821 (3.687)
SETOUT COORDINATES	556724.648E 6812699.861N	556714.595E 6812900.149N	556724.557E 6812896.635N	556722.964E 6812840.603N	556721.544E 6812790.624N	556720.124E 6812740.644N	556718.703E 6812690.660N
CHAINAGE	0.000	1.846 1.846	10.563 12.410	56.054 68.464	50.000 118.464	50.000 168.464	50.004 218.468
LINE	2						

NOTES:
1. REFER TO CI-1201 FOR GENERAL ARRANGEMENT LAYOUT PLAN
2. REFER TO CI-1301 FOR STORMWATER LAYOUT PLAN

NORTH

0 1 2 4 6 8 10m
SCALE 1:100 @A1

0 10 20 30 40 50m
SCALE 1:500 @A1

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
D	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
C	16/12/2022	LH	100% DESIGN ISSUE	LH
B	30/07/2021	GT	85% DESIGN ISSUE	GH
A	23/04/2021	GT	50% DESIGN ISSUE	SW

Amendments

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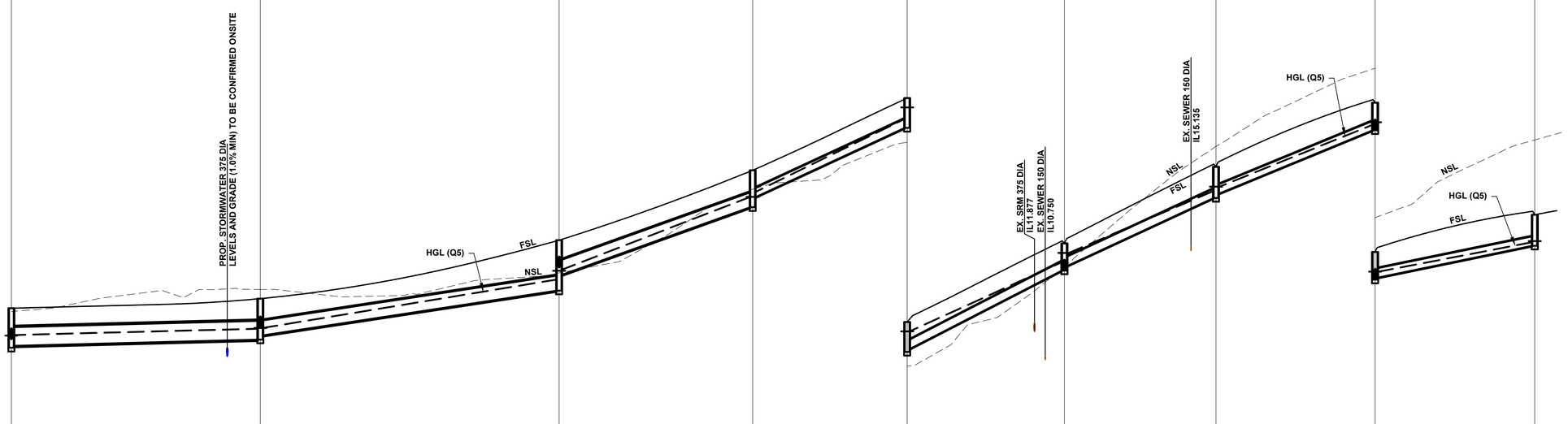
CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1311-1316.dwg		
SHEET	32 OF 60		

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
STORMWATER DRAINAGE LONGITUDINAL SECTIONS
SHEET 2 OF 6

Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: 1:100	721982-01-CI-1312	D

STRUCTURE NAME	7/2	8/2	9/2	10/2	11/2	12/2	13/2	14/2	15/2	10/1	1/3
STRUCTURE DESCRIPTION	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) 920 x 830 HOLE, 175 THICK ASPRO OVER 1200 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) 920 x 830 HOLE, 175 THICK ASPRO OVER 1200 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 1050 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (M), LIP IN LINE, GRATE (D) OVER 900 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (M), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (M), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (M), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (M), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 900 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (M), LIP IN LINE, GRATE (D) OVER 900 DIA ACCESS CHAMBER



PIPE SIZE (mm)	750	600	600	375	375	375	375	375	375		375
PIPE CLASS	3	3	3	3	3	3	3	3	3		3
PIPE GRADE (%)	0.50%	3.00%	7.00%	9.00%	10.00%	9.00%	8.00%	4.00%			1.00%
PIPE SLOPE (1 in X)	200.0	33.3	14.3	11.1	10.0	11.1	12.5	25.0			99.9
PIPE FLOW (cumecs)	0.498	0.462	0.402	0.313	0.226	0.145	0.092	0.039			0.105
CAPACITY FLOW (cumecs)	0.788	1.064	1.625	0.526	0.555	0.526	0.496	0.351			0.176
FULL PIPE VELOCITY (m/s)	1.13	1.63	1.42	2.84	2.05	1.31	0.83	0.35			0.95
NORMAL DEPTH VELOCITY (m/s)	1.89	3.63	4.76	4.97	4.77	4.07	3.43	2.09			1.66
DATUM RL	-9.000				0.000			6.000			0.000
HGL ELEVATION	2.680 2.722 2.744	2.996 3.031 3.028	4.974 5.325 5.362	8.295 8.482	11.429 11.890 11.889	14.676 15.042 15.007	17.531 17.708 17.684	20.193 20.292 20.280	21.474 21.518	16.636 16.836 16.803	16.862 17.206
DEPTH TO INVERT	1.590 1.510	1.646 1.478	2.026 1.395	1.485 1.091	1.200 1.090	1.087 0.913	1.200 1.088	1.110 1.031	1.200	1.238 1.059	1.337
INVERT LEVEL OF DRAIN	2.232 2.311	2.561 2.728	4.528 5.159	7.879 8.273	11.065 11.160	14.337 14.511	17.303 17.415	19.971 20.050	21.378	16.316 16.496	16.624
DESIGN (& EXISTING) SURFACE LEVEL	3.821 (3.687)	4.207 (4.573)	6.555 (5.242)	9.364 (8.801)	12.268 (10.490)	15.424 (14.486)	18.503 (19.322)	21.081 (22.462)	22.578 (25.583)	17.555 (14.807)	17.961 (17.170)
SETOUT COORDINATES	556718.703E 6812690.660N	556717.283E 6812640.684N	556715.220E 6812580.720N	556710.866E 6812542.101N	556705.110E 6812511.610N	556699.378E 6812480.551N	556699.283E 6812450.115N	556705.348E 6812418.749N	556717.593E 6812389.117N	556802.174E 6812287.549N	556806.936E 6812299.392N
CHAINAGE	218.468	49.996	268.464	60.000	328.464	38.863	367.327	31.030	398.357	31.583	429.941	30.436	460.377	31.946	492.323	32.062	524.386	0.000	12.765	12.765
LINE	2										3

NOTES:
1. REFER TO CI-1201 FOR GENERAL ARRANGEMENT LAYOUT PLAN
2. REFER TO CI-1301 FOR STORMWATER LAYOUT PLAN

NORTH

0 1 2 4 6 8 10m
SCALE 1:100 @A1

0 10 20 30 40 50m
SCALE 1:500 @A1

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
D	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
C	16/12/2022	LH	100% DESIGN ISSUE	LH
B	30/07/2021	GT	85% DESIGN ISSUE	GH
A	23/04/2021	GT	50% DESIGN ISSUE	SW

Amendments

ballina shire council

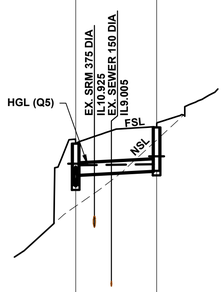
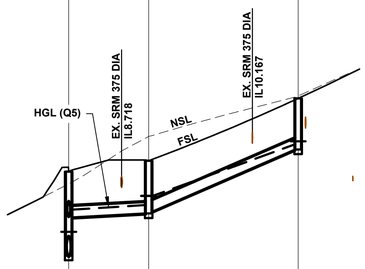
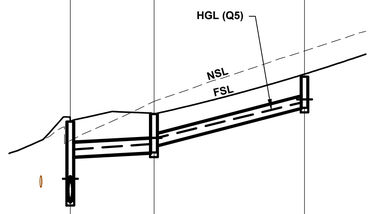
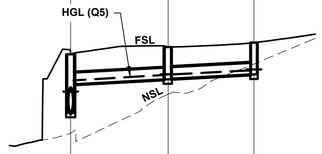
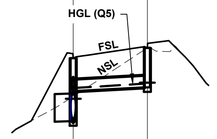
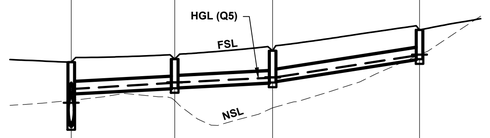
CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1311-1316.dwg		

SHEET 33 OF 60

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
STORMWATER DRAINAGE LONGITUDINAL SECTIONS
SHEET 3 OF 6

Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: 1:100	721982-01-CI-1313	D

STRUCTURE NAME	9/1	1/4	8/1	1/5	2/5	7/1	1/6	2/6	6/1	1/7	2/7	2/1	1/8	2/1	1/9	2/9	3/9
STRUCTURE DESCRIPTION	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 900 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (M), LIP IN LINE, GRATE (D) OVER 600 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 1050 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (M), LIP IN LINE, GRATE (D) OVER 600 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (M), LIP IN LINE, GRATE (D) OVER 600 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 1050 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (M), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (M), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) 920 x 830 HOLE, 175 THICK ASPRO OVER 1200 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (M), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (M), LIP IN LINE, GRATE (D)	STD NRLG GULLY IN SAG LINTEL (L), LIP IN LINE, GRATE (D) 920 x 830 HOLE, 225 THICK ASPRO OVER 1500 DIA ACCESS CHAMBER	STD NRLG GULLY IN SAG LINTEL (S), LIP IN LINE, GRATE (D) OVER 600 DIA ACCESS CHAMBER	STD NRLG GULLY IN SAG LINTEL (L), LIP IN LINE, GRATE (D) 920 x 830 HOLE, 225 THICK ASPRO OVER 1500 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)
												
PIPE SIZE (mm)	375		375	375		450	375		375	375		375		375	375	375	
PIPE CLASS	3		3	3		3	3		3	3		3		3	3	3	
PIPE GRADE (%)	1.00%		1.00%	8.34%		1.00%	5.00%		1.00%	1.00%		1.00%		1.00%	1.00%	3.00%	
PIPE SLOPE (1 in X)	100.0		100.0	12.0		100.0	20.0		100.0	100.0		100.0		100.0	100.0	33.3	
PIPE FLOW (cumecs)	0.085		0.140	0.057		0.153	0.058		0.040	0.033		0.028		0.057	0.046	0.030	
CAPACITY FLOW (cumecs)	0.175		0.175	0.507		0.285	0.392		0.175	0.175		0.175		0.175	0.175	0.304	
FULL PIPE VELOCITY (m/s)	0.77		1.27	0.52		0.96	0.53		0.36	0.30		0.26		0.52	0.42	0.27	
NORMAL DEPTH VELOCITY (m/s)	1.57		1.76	3.04		1.82	2.55		1.28	1.22		1.17		1.42	1.34	1.75	
DATUM RL	-5.000		-7.000			-10.000			-12.000			-12.000		-12.000			
HGL ELEVATION	12.679 13.002 12.951	12.984 13.245	6.939 7.277 8.000	8.153 8.450 8.435	10.137 10.233	4.466 4.670 5.627	5.804 6.006 6.003	7.162 7.261	4.274 4.408 4.771	4.952 4.968 4.966	5.099 5.131	3.605 3.812 4.168	4.307 4.340	3.605 3.812 4.266	4.461 4.479 4.478	4.628 4.645 4.644	5.360 5.386
DEPTH TO INVERT	1.361 1.020	1.417	2.739 1.494	1.720 1.670	1.670	2.591 1.147	1.200 1.026	1.014	1.907 0.976	1.051 1.031	1.036	2.056 1.073	1.288	2.056 1.020	0.952 0.926	1.040 0.997	0.959
INVERT LEVEL OF DRAIN	12.298 12.639	12.771	6.500 7.746	7.876 7.926	9.963	3.949 5.393	5.684 5.758	6.987	3.719 4.649	4.809 4.829	4.969	3.083 4.066	4.187	3.083 4.119	4.288 4.313	4.473 4.516	5.236
DESIGN (& EXISTING) SURFACE LEVEL	13.658 (11.614)	14.187 (13.772)	9.239 (8.844)	9.596 (10.392)	11.633 (11.714)	6.540 (5.917)	6.785 (7.199)	8.088 (8.842)	5.626 (3.049)	5.859 (4.325)	6.005 (5.305)	5.139 (3.890)	5.476 (5.474)	5.139 (3.890)	5.239 (3.885)	5.513 (3.848)	6.195 (5.379)
SETOUT COORDINATES	556831.816E 6812262.255N	556835.646E 6812274.893N	556869.850E 6812229.800N	556873.994E 6812242.170N	556856.424E 6812258.017N	556907.908E 6812197.325N	556910.940E 6812210.644N	556892.265E 6812226.609N	556939.857E 6812170.062N	556939.846E 6812185.977N	556929.197E 6812195.065N	556987.166E 6812095.922N	556998.921E 6812098.810N	556987.166E 6812095.922N	556990.712E 6812079.416N	556992.327E 6812063.305N	556991.534E 6812039.545N
CHAINAGE	0.000 13.206 13.206		0.000 13.046 13.046 24.412 37.458			0.000 13.660 13.660 24.569 38.229			0.000 15.916 15.916 14.000 29.916			0.000 12.104 12.104		0.000 16.883 16.883 15.992 32.875 23.974 56.849			
LINE	4		5			6			7			8		9			

NOTES:
1. REFER TO CI-1201 FOR GENERAL ARRANGEMENT LAYOUT PLAN
2. REFER TO CI-1301 FOR STORMWATER LAYOUT PLAN

NORTH

0 1 2 4 6 8 10m
SCALE 1:100 @A1

0 10 20 30 40 50m
SCALE 1:500 @A1

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
B	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
A	16/12/2022	LH	100% DESIGN ISSUE	LH

Amendments

ballina shire council

CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1311-1316.dwg		

SHEET 34 OF 60

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
STORMWATER DRAINAGE LONGITUDINAL SECTIONS
SHEET 4 OF 6

Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: 1:100	721982-01-CI-1314	B

STRUCTURE NAME	14/2	1/10	12/2	1/11	9/2	1/12	8/2	1/13	7/2	1/14	6/2	1/15	5/2	1/16	4/2	1/17	2/21	1/18
STRUCTURE DESCRIPTION	STD NRLG GULLY ON GRADE LINTEL (M), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (M), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 1050 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) 920 x 830 HOLE, 175 THICK ASPRO OVER 1200 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) 920 x 830 HOLE, 175 THICK ASPRO OVER 1200 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) 920 x 830 HOLE, 175 THICK ASPRO OVER 1200 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (M), LIP IN LINE, GRATE (D) 920 x 830 HOLE, 175 THICK ASPRO OVER 1200 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) 920 x 830 HOLE, 175 THICK ASPRO OVER 1200 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 900 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)
	HGL (Q5) NSL FSL		HGL (Q5) FSL NSL		HGL (Q5) FSL NSL EX. WATER 500 DIA. I.L. 2.006		HGL (Q5) FSL NSL		HGL (Q5) FSL NSL		HGL (Q5) FSL NSL		HGL (Q5) FSL NSL		HGL (Q5) NSL FSL		HGL (Q5) FSL NSL	
PIPE SIZE (mm)	375		375		375		375		375		375		375		375		375	
PIPE CLASS	3		3		3		3		3		3		3		3		3	
PIPE GRADE (%)	4.72%		4.00%		1.00%		1.00%		1.00%		1.00%		1.00%		1.00%		0.50%	
PIPE SLOPE (1 in X)	21.2		25.0		100.0		100.0		100.0		100.0		100.0		100.0		200.0	
PIPE FLOW (cumecs)	0.002		0.005		0.026		0.019		0.015		0.015		0.014		0.014		0.070	
CAPACITY FLOW (cumecs)	0.381		0.351		0.175		0.175		0.175		0.175		0.175		0.175		0.124	
FULL PIPE VELOCITY (m/s)	0.02		0.04		0.24		0.17		0.14		0.13		0.13		0.13		0.63	
NORMAL DEPTH VELOCITY (m/s)	0.91		1.11		1.14		1.03		0.97		0.96		0.96		0.96		1.16	
DATUM RL	5.000		-2.000		-12.000		-13.000		-13.000		-14.000		-14.000		-14.000		-15.000	
HGL ELEVATION	20.193	20.282 20.280	14.676	15.042 15.007	4.974	5.325 5.589	2.996	3.031 3.162	2.680	2.722 2.719	2.394	2.438 2.435	2.137	2.183 2.228	1.998	2.047 2.044	0.933	1.046 1.202
		20.576		15.008		5.715 5.743		3.280 3.294		2.796 2.806		2.494 2.503		2.342 2.351		2.096 2.104		1.361 1.399
DEPTH TO INVERT	1.110	1.082	1.087	1.062	2.026	1.063	1.646	1.127	1.590	1.215	1.639	1.264	1.659	1.165	1.679	1.162	1.491	1.137
		1.082		1.182		1.200		1.075		1.123		1.171		1.073		1.070		1.137
INVERT LEVEL OF DRAIN	19.971	19.999	14.337	14.362	4.528	5.491	2.561	3.080	2.232	2.607	1.932	2.307	1.662	2.166	1.392	1.909	0.655	1.009
		20.545		14.806		5.607		3.183		2.709		2.409		2.258		2.011		1.159
DESIGN (& EXISTING) SURFACE LEVEL	21.081	(22.462)	15.424	(14.486)	6.555	(5.242)	4.207	(4.573)	3.821	(3.687)	3.571	(3.597)	3.321	(3.954)	3.071	(3.799)	2.146	(0.864)
		21.627 (21.447)		15.988 (13.303)		6.808 (3.459)		4.259 (2.961)		3.833 (3.436)		3.579 (3.353)		3.331 (2.978)		3.081 (3.398)		2.296 (0.822)
SETOUT COORDINATES	556705.346E	6812418.749N	556699.378E	6812480.551N	556715.220E	6812580.720N	556717.283E	6812640.684N	556718.703E	6812690.660N	556720.124E	6812740.644N	556721.544E	6812790.624N	556722.964E	6812840.603N	556718.225E	6813025.854N
		556696.297E 6812411.521N		556688.421E 6812478.806N		556704.943E 6812577.320N		556707.212E 6812638.316N		556708.644E 6812688.705N		556710.083E 6812739.339N		556711.493E 6812788.963N		556712.913E 6812838.942N		556717.373E 6812995.866N
CHAINAGE	0.000	11.583 11.583	0.000	11.095 11.095	0.000	10.824 10.824	0.000	10.345 10.345	0.000	10.248 10.248	0.000	10.126 10.126	0.000	10.188 10.188	0.000	10.188 10.188	0.000	30.000 30.000
LINE	10		11		12		13		14		15		16		17		18	

NOTES:
1. REFER TO CI-1201 FOR GENERAL ARRANGEMENT LAYOUT PLAN
2. REFER TO CI-1301 FOR STORMWATER LAYOUT PLAN

NORTH

0 1 2 4 6 8 10m
SCALE 1:100 @A1

0 10 20 30 40 50m
SCALE 1:500 @A1

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
B	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
A	16/12/2022	LH	100% DESIGN ISSUE	LH

Amendments

ballina shire council

CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1311-1316.dwg		

SHEET 35 OF 60

BALLINA SHIRE COUNCIL

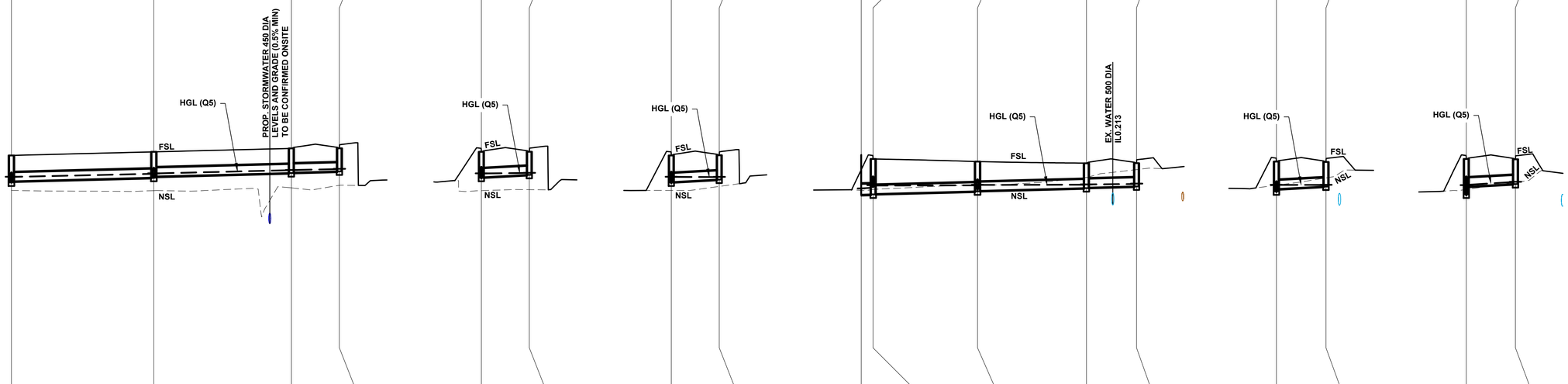
HUTLEY DRIVE SOUTHERN EXTENSION
STORMWATER DRAINAGE LONGITUDINAL SECTIONS
SHEET 5 OF 6

Scale HORIZONTAL: 1:500
VERTICAL: 1:100

Plan No. 721982-01-CI-1315

Rev B

STRUCTURE NAME	1/18	2/18	3/18	4/18	2/18	1/19	1/18	1/20	1/21	2/21	3/21	4/21	5/21	3/21	1/22	2/21	1/23
STRUCTURE DESCRIPTION	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)	OUTLET - CONNECT TO SPEL TANKS	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 900 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 900 DIA ACCESS CHAMBER	STD NRLG GULLY IN SAG LINTEL (M), LIP IN LINE, GRATE (D)	STD NRLG GULLY IN SAG LINTEL (M), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 900 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D) OVER 900 DIA ACCESS CHAMBER	STD NRLG GULLY ON GRADE LINTEL (S), LIP IN LINE, GRATE (D)
PIPE SIZE (mm)	375	375	375		375		375		450	375	375	375		375		375	
PIPE CLASS	3	3	3		3		3		3	3	3	3		3		3	
PIPE GRADE (%)	0.50%	0.50%	0.50%		1.00%		1.00%		0.50%	0.50%	0.50%	0.50%		1.00%		1.00%	
PIPE SLOPE (1 in X)	200.0	200.0	200.0		100.0		100.0		200.0	200.0	200.0	199.8		100.0		100.0	
PIPE FLOW (cumecs)	0.048	0.028	0.017		0.012		0.013		0.144	0.051	0.036	0.020		0.009		0.014	
CAPACITY FLOW (cumecs)	0.124	0.124	0.124		0.175		0.175		0.202	0.124	0.124	0.124		0.175		0.175	
FULL PIPE VELOCITY (m/s)	0.44	0.25	0.15		0.11		0.12		0.90	0.46	0.33	0.18		0.08		0.13	
NORMAL DEPTH VELOCITY (m/s)	1.05	0.90	0.79		0.92		0.93		1.38	1.07	0.97	0.82		0.83		0.96	
DATUM RL	-15.000				-15.000		-15.000		-15.000					-15.000		-15.000	
HGL ELEVATION	1.361 1.389 1.382	1.522 1.544 1.539	1.675 1.682 1.683	1.719 1.730	1.522 1.544 1.539	1.559 1.565	1.361 1.392 1.382	1.387 1.394	0.909 0.933 1.046 1.026	1.039 1.056 1.055	1.064 1.078 1.077	1.094 1.110		1.039 1.058 1.055	1.056 1.059	0.933 1.046 1.061	1.177 1.186
DEPTH TO INVERT	1.137 1.087	1.087 1.037	1.037 1.017	0.973	1.087 1.067	0.973	1.137 1.117	1.023	1.675 1.675 1.491 1.471	1.252 1.232	1.047 1.027	0.979		1.252 1.152	1.033	1.491 1.157	1.040
INVERT LEVEL OF DRAIN	1.159 1.209	1.359 1.409	1.554 1.574	1.625	1.359 1.379	1.480	1.159 1.179	1.280	0.643 0.643 0.655 0.675	0.785 0.805	0.920 0.940	0.993		0.785 0.885	0.989	0.655 0.989	1.092
DESIGN (& EXISTING) SURFACE LEVEL	2.296 (0.822)	2.446 (0.815)	2.591 (0.932)	2.598 (1.039)	2.446 (0.815)	2.463 (0.854)	2.296 (0.822)	2.303 (0.991)	1.698 (0.824)	2.146 (0.864)	2.040 (1.042)	1.972 (1.367)	1.966 (1.698)	2.040 (1.042)	2.022 (1.349)	2.146 (0.864)	2.133 (1.164)
SETOUT COORDINATES	556717.373E 6812995.866N	556716.520E 6812965.878N	556715.697E 6812936.903N	556725.653E 6812935.219N	556716.520E 6812965.878N	556726.477E 6812964.203N	556717.373E 6812995.866N	556727.329E 6812994.191N	556715.735E 6813025.921N	556718.225E 6813025.854N	556719.232E 6813047.831N	556720.943E 6813070.711N	556731.497E 6813071.089N	556719.232E 6813047.831N	556729.406E 6813050.193N	556718.225E 6813028.854N	556728.303E 6813028.220N
CHAINAGE	0.000 30.000	30.000 60.000	28.987 88.987	10.098 99.084	0.000 10.096	10.096 10.096	0.000 10.096	10.096 10.096	0.000 2.491	2.491 22.000	24.491 22.944	47.436 10.551	57.987	0.000 10.445	10.445	0.000 10.352	10.352
LINE	18				19		20		21					22		23	



NOTES:
1. REFER TO CI-1201 FOR GENERAL ARRANGEMENT LAYOUT PLAN
2. REFER TO CI-1301 FOR STORMWATER LAYOUT PLAN

NORTH

0 1 2 4 6 8 10m
SCALE 1:100 @A1

0 10 20 30 40 50m
SCALE 1:500 @A1

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
B	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
A	16/12/2022	LH	100% DESIGN ISSUE	LH

Amendments

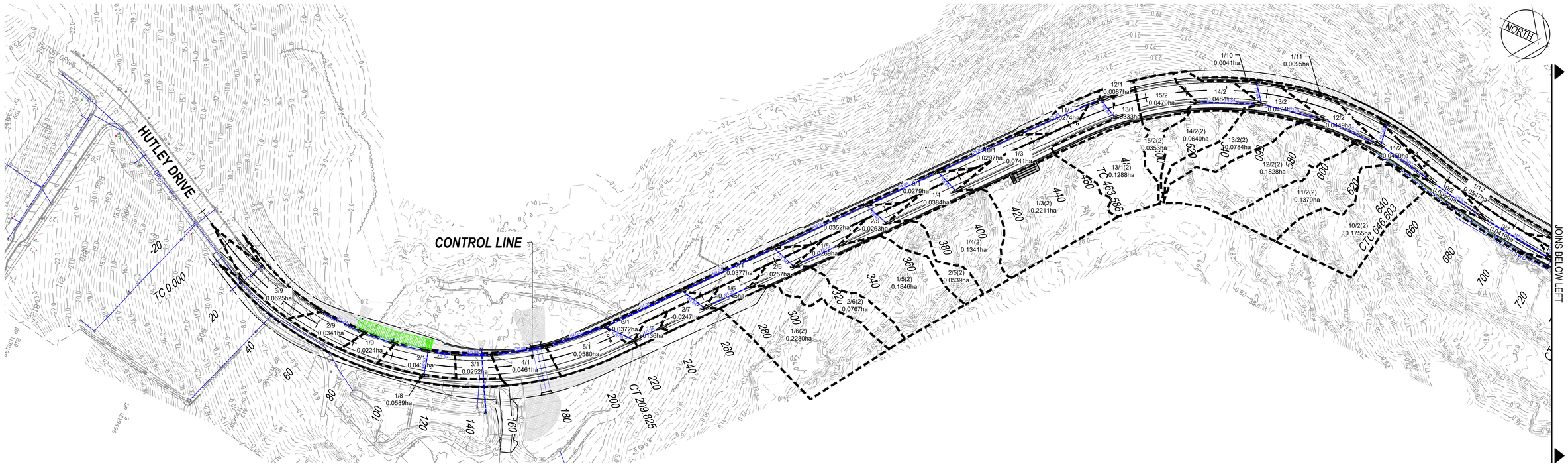
ballina shire council

CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1311-1316.dwg		
SHEET	36 OF 60		

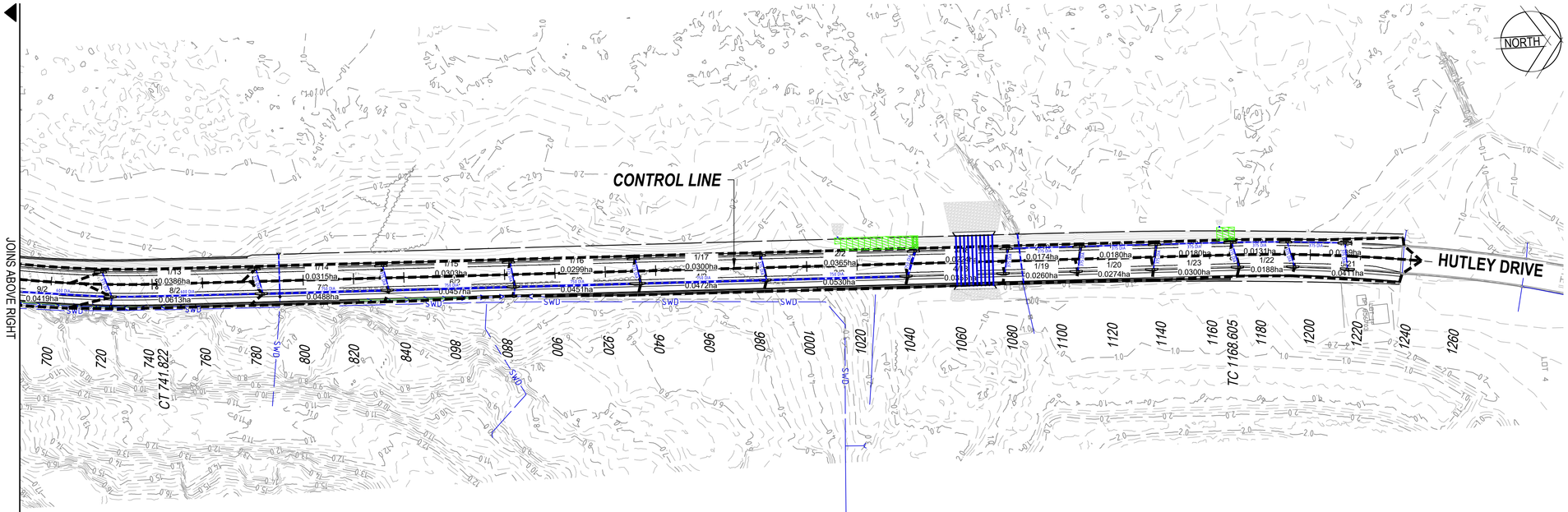
BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
STORMWATER DRAINAGE LONGITUDINAL SECTIONS
SHEET 6 OF 6

Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: 1:100	721982-01-CI-1316	B



LAYOUT PLAN
SCALE 1:1000



LAYOUT PLAN
SCALE 1:1000

LEGEND

- PROPOSED CATCHMENT BOUNDARY
- PROPOSED STORMWATER PIPE
- PROPOSED STORMWATER GULLY PIT - SAG
- PROPOSED STORMWATER GULLY PIT - ON GRADE
- PROPOSED STORMWATER MANHOLE
- PROPOSED STORMWATER FIELD INLET PIT
- PROPOSED STORMWATER HEADWALL
- PROPOSED SPEL DETENTION TANK WITH FILTER SYSTEM. REFER TO SPEL FOR SPECIFICATIONS AND DETAILS

0 20 40 60 80 100m
SCALE 1:1000 @A1

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DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
D	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
C	16/12/2022	LH	100% DESIGN ISSUE	LH
B	30/07/2021	GT	85% DESIGN ISSUE	GH
A	23/04/2021	GT	50% DESIGN ISSUE	SW

Amendments

ballina shire council

CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1320.dwg		
SHEET	37 OF 60		

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
STORMWATER DRAINAGE CATCHMENT PLAN

Scale	Plan No.	Rev
HORIZONTAL: 1:1000 VERTICAL: -	721982-01-CI-1320	D

12D MODEL - HYDRAULIC DESIGN SHEET

Project: Hutley Drive Road Design
Drainage Model: DRAINAGE
Rainfall File: Ballina Shire Council.12dhydro
Rainfall Method: IFD Table
Pipe Cover Limit: 0.6 m
Manning n Roughness: 0.013
Freeboard Limit: 0.15 m

Minor 5 Year Storm Event

Pipe ID	Pipe Type	Pipe Length	Pipe Size	Full Pipe Area Af	Pipe Grade	Pipe Grade	Full-area Tct	Full-area I	Full-area Sum CA	Full-area Qc=CIA	Part-area Tct	Part-area I	Part-area Sum CA	Part-area Qc=CIA	Peak Flow Qrat	Net Bypass Flow Qb	Pipe Flow Q	Capacity Flow Qcap	Q/Qcap Ratio	Full Pipe Vel Vf=Q/Af	Norm Depth Vel Vn=Q/An	Crit Depth Vel Vc=Q/Ac	Capacity Vel Vcap=Qcap/Af	US Node Grate RL	Pipe US IL	Pipe DS IL	DS Node Grate RL	Cover Min	Pipe DS Bend	Pipe DS Drop	US Node Ku	US Node Kw	Pipe V'head	P'head Loss (Ku.V'head)	WSE Loss (Kw.V'head)	Pipe T'head Loss	US Node HGL	Pipe US HGL	Pipe DS HGL	DS Node HGL	HGL Grade	HGL Grade	F'board US
(-)	(-)	(m)	(mm)	(sq.m)	(%)	(1 in)	(min)	(mm/hr)	(ha)	(L/s)	(min)	(mm/hr)	(ha)	(L/s)	(L/s)	(L/s)	(L/s)	(L/s)	(-)	(m/s)	(m/s)	(m/s)	(m/s)	(m)	(m)	(m)	(m)	(m)	(deg)	(m)	(-)	(-)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(%)	(1 in)	(m)
2/1 to 1/1	3	5.5	900	0.636	0.5	200	9.08	170.37	1.5925	753.6	7.62	181.91	1.5555	786	786		786	1285.5	0.61	1.24	2.11	2.05	2.02	5.14	3.08	3.06	3.96	0.2	0		2.11	2.66	0.08	0.16	0.21	0.03	3.81	3.6	3.56	3.56	0.72	138.5	1.33
3/1 to 2/1	3	13.19	825	0.535	0.5	200	8.97	171.18	1.3966	664.1	7.51	182.79	1.3598	690.4	690.4		690.4	1015.4	0.68	1.29	2.04	2.03	1.9	5.19	3.22	3.16	5.14	1.14	-94.3	0.075	0.68	0.78	0.09	0.06	0.07	0.04	3.85	3.78	3.77	3.81	0.1	996.2	1.34
4/1 to 3/1	3	17.99	825	0.535	0.5	200	8.82	172.36	1.3743	658	7.36	184.03	1.3374	683.7	683.7		683.7	1015.4	0.67	1.28	2.04	2.02	1.9	5.29	3.33	3.24	5.19	1.15	-6	0.02	0.68	0.8	0.08	0.06	0.07	0.06	3.92	3.86	3.84	3.85	0.09	1142.8	1.37
5/1 to 4/1	3	27.35	750	0.442	0.5	200	8.59	174.14	1.3334	645	7.13	185.9	1.2966	669.6	669.6		669.6	787.5	0.85	1.52	2	2.11	1.78	5.45	3.55	3.41	5.29	1.23	-8.7	0.075	1.07	1.27	0.12	0.13	0.15	0.14	4.23	4.08	3.92	3.92	0.59	169.7	1.22
6/1 to 5/1	3	30.65	750	0.442	0.5	200	8.33	176.13	1.2821	627.3	7.08	186.33	1.2565	650.4	650.4		650.4	787.5	0.83	1.47	1.99	2.08	1.78	5.63	3.72	3.57	5.45	1.23	-11.2	0.02	1.02	1.21	0.11	0.11	0.13	0.11	4.41	4.27	4.2	4.23	0.24	425.1	1.22
7/1 to 6/1	3	42	750	0.442	0.5	200	7.98	178.88	1.2153	603.9	6.73	189.21	1.1897	625.3	625.3	-21.3	604	787.5	0.77	1.37	1.96	2.02	1.78	6.54	3.95	3.74	5.63	1.08	-5.7	0.02	1.76	2.14	0.1	0.17	0.2	0.14	4.67	4.47	4.39	4.41	0.19	534.7	1.87
8/1 to 7/1	3	50.03	600	0.283	5	20	7.57	182.31	0.8861	448.7	6.57	190.54	0.8732	462.2	462.2	-14.3	447.9	1373.6	0.33	1.58	4.34	2.02	4.86	9.24	6.5	4	6.54	1.76	0	0.05	2.1	2.64	0.13	0.27	0.34	2.39	7.28	6.94	4.63	4.67	4.61	21.7	1.96
9/1 to 8/1	3	50	450	0.159	9	11.1	7.15	185.74	0.6111	315.3	6.15	193.98	0.5982	322.3	322.3	-22.9	299.4	855.7	0.35	1.88	4.9	2.08	5.38	13.66	12.3	7.8	9.24	0.7	0	1.298	1.51	1.79	0.18	0.27	0.32	3.69	13	12.68	7.98	7.28	9.39	10.6	0.66
10/1 to 9/1	3	38.97	450	0.159	10	10	6.83	188.41	0.4418	231.2	6.11	194.34	0.4356	235.1	235.1	-29.5	205.7	902	0.23	1.29	4.59	1.7	5.67	17.55	16.32	12.42	13.66	0.7	0	0.122	1.96	2.35	0.09	0.17	0.2	3.75	16.84	16.64	12.95	13	9.46	10.6	0.72
11/1 to 10/1	3	43.69	375	0.11	7.77	12.9	6.46	191.41	0.1676	89.1	6.37	192.19	0.1668	89.1	89.1		89.1	488.9	0.18	0.81	3.37	1.33	4.43	21.13	19.83	16.44	17.55	0.75	0	0.122	1.1	1.14	0.03	0.04	0.04	3.31	20.09	20.05	16.8	16.84	7.44	13.4	1.04
12/1 to 11/1	3	44.06	375	0.11	4	25	6.09	194.44	0.1434	77.4	6	195.22	0.1426	77.3	77.4	-4.2	73.3	350.8	0.21	0.66	2.51	1.24	3.18	23.14	21.65	19.88	21.13	0.87	1.8	0.05	2.37	2.74	0.02	0.05	0.06	1.76	21.9	21.84	20.09	20.09	3.98	25.1	1.23
13/1 to 12/1	3	11.39	375	0.11	1	100	6	195.22	0.1357	73.6	6	195.22	0.1357	73.6	73.6		73.6	175.4	0.42	0.67	1.52	1.24	1.59	22.9	21.81	21.7	23.14	0.72	74.6	0.05	9.35		0.02	0.21		0.11	22.22	22.01	21.9	21.9	0.98	102.5	0.68
2/2 to 1/2	3	1.85	750	0.442	0.5	200	10.35	161.29	1.328	595	9.09	170.3	1.305	617.3	617.3		617.3	787.6	0.78	1.4	1.97	2.04	1.78	2.92	0.99	0.98	2.77	0.84	0		1.46	1.77	0.1	0.15	0.18	0.01	1.66	1.49	1.47	1.47	1.05	95.4	1.26
3/2 to 2/2	3	10.56	750	0.442	0.5	200	10.27	161.88	1.2957	582.6	9	170.94	1.2727	604.3	604.3		604.3	787.5	0.77	1.37	1.96	2.02	1.78	2.79	1.06	1.01	2.92	0.96	17.9	0.02	2.43	2.76	0.1	0.23	0.26	0.03	1.91	1.65	1.63	1.66	0.17	572.2	0.88
4/2 to 3/2	3	56.05	750	0.442	0.5	200	9.8	165.12	1.2488	572.8	8.53	174.59	1.2258	594.5	594.5		594.5	787.5	0.75	1.35	1.96	2.01	1.78	3.07	1.39	1.11	2.79	0.87	72.2	0.05	0.5	0.53	0.09	0.05	0.05	0.15	2.05	2	1.88	1.91	0.21	482.2	1.02
5/2 to 4/2	3	50	750	0.442	0.5	200	9.38	168.15	1.1804	551.4	8.12	177.85	1.1574	571.8	571.8		571.8	787.5	0.73	1.29	1.94	1.98	1.78	3.32	1.66	1.41	3.07	0.85	0	0.02	0.5	0.54	0.09	0.04	0.05	0.18	2.18	2.14	2.04	2.05	0.19	538.9	1.14
6/2 to 5/2	3	50	750	0.442	0.5	200	8.97	171.2	1.1141	529.8	7.7	181.23	1.0911	549.3	549.3		549.3	787.5	0.7	1.24	1.93	1.94	1.78	3.57	1.93	1.68	3.32	0.83	0	0.02	0.52	0.56	0.08	0.04	0.04	0.24	2.44	2.39	2.18	2.18	0.43	233.8	1.13
7/2 to 6/2	3	50	750	0.442	0.5	200	8.55	174.45	1.0468	507.3	7.28	184.66	1.0238	525.1	525.1		525.1	787.5	0.67	1.19	1.91	1.91	1.78	3.82	2.23	1.96	3.57	0.78	0	0.049	0.55	0.59	0.07	0.04	0.04	0.25	2.72	2.68	2.43	2.44	0.49	204.2	1.1
8/2 to 7/2	3	50	750	0.442	0.5	200	8.13	177.71	0.9757	481.7	7.08	186.3	0.9626	498.1	498.1		498.1	787.5	0.63	1.13	1.89	1.88	1.78	4.21	2.56	2.31	3.82	0.7	0	0.079	0.49	0.54	0.06	0.03	0.04	0.25	3.03	3	2.74	2.72	0.5	198.4	1.18
9/2 to 8/2	3	60	600	0.283	3	33.3	7.63	181.77	0.8873	448	6.58	190.42	0.8742	462.4	462.4	-0.4	462	1064	0.43	1.63	3.63	2.05	3.76	6.55	4.53	2.73	4.21	0.75	0.3	0.168	2.26	2.58	0.14	0.31	0.35	1.61	5.32	4.97	3.03	3.03	3.24	30.8	1.23
10/2 to 9/2	3	38.86	600	0.283	7	14.3	7.31	184.44	0.8019	410.8	6.31	192.68	0.7905	423.1	423.1	-21.1	401.9	1625.2	0.25	1.42	4.76	1.92	5.75	9.36	7.88	5.16	6.55	0.7	4.5	0.63			0.1			1.96	8.29	8.29	5.36	5.32	7.55	13.3	1.07
11/2 to 10/2	3	31.03	375	0.11	9	11.1	7.05	186.57	0.6257	324.3	6.05	194.81	0.6144	332.5	332.5	-19.1	313.3	526.2	0.6	2.84	4.97	2.86	4.76	12.27	11.07	8.27	9.36	0.7	4.3	0.394	1.12		0.41	0.46		2.11	11.89	11.43	8.48	8.29	9.5	10.5	0.38
12/2 to 11/2	3	31.58	375	0.11	10	10	6.79	188.73	0.4721	247.5	6	195.22	0.4661	252.7	252.7	-26.5	226.2	554.7	0.41	2.05	4.77	2.15	5.02	15.42	14.34	11.18	12.27	0.78	-0.2	0.113	1.55	1.71	0.21	0.33	0.37	2.81	15.04	14.68	11.89	11.89	8.82	11.3	0.38
13/2 to 12/2	3	30.44	375	0.11	9	11.1	6.53	190.82	0.2731	144.7	6	195.22	0.2703	146.6	146.6	-1.5	145.1	526.2	0.28	1.31	4.07	1.64	4.76	18.5	17.25	14.51	15.42	0.7	-10.3	0.174	1.73	2	0.09	0.15	0.18	2.57	17.71	17.53	15.01	15.04	8.29	12.1	0.8
14/2 to 13/2	3	31.95	375	0.11	8	12.5	6.27	193.02	0.1709	91.6	6	195.22	0.1701	92.2	92.2	-0.5	91.8	496.1	0.18	0.83	3.43	1.35	4.49	21.08	19.97	17.42	18.5	0.82	-11.1	0.165	2.48	2.79	0.04	0.09	0.1	2.54	20.29	20.19	17.68	17.71	7.85	12.7	0.79
15/2 to 14/2	3	32.06	375	0.11	4	25	6	195.22	0.0715	38.8	6	195.22	0.0715	38.8	38.8		38.8	350.8	0.11	0.35	2.09	1.01	3.18	22.58	21.33	20.05	21.08	0.8	-11.5	0.079	7		0.01	0.04		1.23	21.52	21.47	20.28	20.29	3.72	26.9	1.06
1/3 to 10/1	3	12.76	375	0.11	1	99.9	6	195.22	0.248	134.5	6	195.22	0.248	134.5	134.5	-29.5	105	175.5	0.6	0.95	1.66	1.42	1.59	17.96	16.62	16.5	17.55	0.7	71.4	0.18	7.45		0.05	0.34		0.1	17.21	16.86	16.8	16.84	0.46	215.5	0.76
1/4 to 9/1	3	13.21	375	0.11	1	100	6	195.22	0.1446	78.4	6	195.22	0.1446	78.4	78.4	6.5	84.9	175.4	0.48	0.77	1.57	1.31	1.59	14.19	12.77	12.64	13.66	0.67	66.4	0.341	8.64		0.03	0.26		0.08	13.24	12.98	12.95	13	0.25	402.3	0.94
1/5 to 8/1	3	13.05	375	0.11	1	100	6.2	193.54	0.2438	131.1	6	195.22	0.2431	131.8	131.8	8.6	140.5	175.4	0.8	1.27	1.76	1.61	1.59	9.6	7.88	7.75	9.24	1.13	68	1.246	3.42	3.6	0.08	0.28	0.3	0.13	8.45	8.15	8	7.28	1.17	85.3	1.15
2/5 to 1/5	3	24.41	375	0.11	8.34	12	6	195.22	0.0677	36.7	6	195.22	0.0677	36.7	36.7	20.5	57.3	506.7	0.11	0.52	3.04	1.14	4.59	11.63	9.96	7.93	9.6	1.2	-68	0.05	7		0.01	0.1		1.75	10.23	10.14	8.44	8.45	6.97	14.3	1.4
1/6 to 7/1	3	13.66	450	0.159	1	100	6.2	193.53	0.2958	159	6	195.22	0.2947	159.8	159.8	-.7	152.9	285.2	0.54	0.96	1.82	1.51	1.79	6.78	5.53	5.39	6.54	0.7	62.4	1.444	4.24	4.3	0.05	0.2	0.2	0.12	6.01	5.8	5.63	4.67	1.29	77.4	0.78
2/6 to 1/6	3	24.57	375	0.11	5	20	6	195.22	0.086	46.6	6	195.22	0.086	46.6	46.6	11.6	58.2	392.2	0.15	0.53	2.55	1.15	3.55	8	6.99	5.76	6.78	0.6	-62.3	0.229	7		0.01	0.1		1.2	7.26	7.16	6	6.01	4.71	21.2	0.74
1/7 to 6/1	3	15.92	375	0.11	1	100	6.12	194.26	0.0339	18.3	6	195.22	0.0339	18.4	18.4	21.3	39.6	175.4	0.23	0.36	1.28	1.02	1.59	5.86	4.81	4.65	5.63	0.61	43.8	0.931	2.1	2.51	0.01	0.01	0.02	0.15	4.97	4.95	4.77	4.41	1.14	87.8	0.89
2/7 to 1/7	3	14	375	0.11	1	100	6	195.22	0.0219	11.9	6	195.22	0.0219	11.9	11.9	21.3	33.1	175.4	0.19	0.3	1.22	0.97	1.59	6	4.97	4.83	5.86	0.6	-49.5	0.02	7		0	0.03		0.14	5.13	5.1	4.97	4.97	0.95	104.9	0.87
1/8 to 2/1	3	12.1	375	0.11	1	100	6	195.22	0.0521	28.2	6	195.22	0.0521	28.2	28.2		28.2	175.4	0.16	0.26	1.17	0.92	1.59	5.48	4.19	4.07	5.14	0.7	-0.2	0.984	9.7		0	0.03		0.11	4.34	4.31	4.17	3.81	1.15	86.8	1.14
1/9 to 2/1	3	16.88	375	0.11	1	100	6.33	192.48	0.1053	56.3	6	195.22	0.105	56.9	56.9		56.9	175.4	0.32	0.52	1.42	1.14	1.59	5.24	4.29	4.12	5.14	0.63	91.5	1.036	1.24	1.37	0.01	0.02	0.02	0.16	4.48	4.46	4.27	3.81	1.15	86.6	0.76
2/9 to 1/9	3	15.99	375	0.11	1	100	6.2	193.57	0.0855	46	6	195.22	0.0853	46.3	46.3		46.3	175.4	0.26	0.42	1.34	1.07	1.59	5.51	4.47	4.31	5.24	0.61	6.3	0.026	1.68	1.86	0.01	0.02	0.02	0.16	4.65	4.63	4.48	4.48	0.94	106	0.87
3/9 to 2/9	3	23.97	375	0.11	3	33.3	6	195.22	0.0553	30	6	195.22	0.0553	30	30		30	303.8	0.1	0.27	1.75	0.94	2.75	6.19	5.24	4.52	5.51	0.66	7.7	0.043	7		0	0.03		0.72	5.39	5.36	4.64	4.65	2.99	33.5	0.81
1/10 to 14/2	3	11.58	375	0.11	4.72	21.2	6	195.22	0.0037	2	6	195.22	0.0037	2	2		2	381	0.01	0.02	0.91	0.46	3.45	21.63	20.55	20	21.08	0.7	62.3	0.028	9.7		0	0		0.31	20.58	20.58	20.28	20.29	2.55	39.1	1.05
1/11 to 12/2	3	11.1	375	0.11	4	25	6	195.22	0.0084	4.6	6	195.22	0.0084	4.6	4.6		4.6	350.8	0.01	0.04	1.11	0.56	3.18	15.99	14.81	14.36	15.42	0.7	70.5	0.025	9.7		0	0		0	15.01	15.01	15.01	15.04	0		0.98
1/12 to 9/2	3	10.82	375	0.11	1	100	6	195.22	0.0484	26.2	6	195.22	0.0484	26.2	26.2		26.2	175.4	0.15	0.24	1.14	0.91	1.59	6.81	5.6	5.49	6.55	0.7	69.7	0.963	9.7		0	0.03		0.1	5.74	5.72	5.59	5.32	1.16	86	1.06
1/13 to 8/2	3	10.35	375	0.11	1	100	6	195.22	0.0342	18.5	6	195.22	0.0342	18.5	18.5		18.5	175.4	0.11	0.17	1.03	0.82	1.59	4.26	3.18	3.08	4.21	0.7	75.2	0.519	9.7		0	0.01		0.1	3.29	3.28	3.16	3.03	1.14	87.8	0.96
1/14 to 7/2	3	10.25	375	0.11	1	100	6	195.22	0.0279	15.1	6	195.22	0.0279	15.1	15.1		15.1	175.4	0.09	0.14	0.97	0.78	1.59	3.83	2.71	2.61	3.82	0.75	77.4	0.375	9.7		0	0.01		0.09	2.81	2.8	2.72	2.72	0.76	132.4	1.03
1/15 to 6/2	3	10.13	375	0.11	1	100	6	195.22	0.0268	14.5	6	195.22	0.0268	14.5	14.5		14.5	175.4	0.08	0.13	0.96	0.77	1.59	3.58	2.41	2.31	3.57	0.8	81	0.375	9.7		0	0.01		0.08	2.5	2.49	2.43	2.44	0.59	170.7	1.08
1/16 to 5/2	3	10.19	375	0.11	1	100	6	195.22	0.0264	14.3	6	195.22	0.0264	14.3	14.3		14.3	175.4	0.08	0.13	0.96	0.76	1.59	3.33	2.26	2.16	3.32	0.7	79	0.494	9.7		0	0.01		0.1	2.35	2.34	2.23	2.18	1.12	89.2	0.98
1/17 to 4/2	3	10.19	375	0.11	1	100	6	195.22	0.0266	14.4	6	195.22	0.0266	14.4	14.4		14.4	175.4	0.08	0.13	0.96	0.77	1.59	3.08	2.01	1.91	3.07	0.7	79	0.517	9.7		0	0.01		0.07	2.1	2.1	2.04	2.05	0.51	196.9	0.98
1/18 to 2/21	3	30	375	0.11	0.5	200	6.58	190.48	0.1298	68.7	6	195.22	0.1292	70.1	70.1		70.1	124	0.56	0.63	1.16	1.22	1.12	2.3	1.16	1.01	2.15	0.72	90.1	0.354	1.54	1.88	0.02	0.03	0.04	0.15	1.4	1.36	1.2	1.05	0.53	188.9	0.9
2/18 to 1/18	3	30	375	0.11	0.5	200	6.33	192.54	0.0896	47.9	6	195.22	0.0894	48.5	48.5		48.5	124	0.39	0.44	1.05	1.09	1.12	2.45	1.36	1.21	2.3	0.67	0	0.05	1.79	2.25	0.01	0.02	0.02	0.14	1.54	1.52	1.39	1.4	0.43	231.8	0.9
3/18 to 2/18	3	28.99	375	0.11	0.5	200	6.08	194.53	0.0512	27.7	6	195.22	0.0512	27.7	27.7		27.7	124	0.22	0.25	0.9	0.92	1.12	2.59	1.55	1.41	2.45	0.62	0	0.051	2.39	2.71	0	0.01	0.01	0.14	1.68	1.67	1.54	1.54	0.47	213.8	0.91
4/18 to 3/18	3	10.1	375	0.11	0.5	200	6	195.22	0.0314	17	6	195.22	0.0314	17	17		17	124	0.14	0.15	0.79	0.8	1.12	2.6	1.62	1.57	2.59	0.6	-82	0.02	9.7		0	0.01		0.05	1.73	1.72	1.68	1.68	0.36	280	0.87
1/19 to 2/18	3	10.1	375	0.11	1	100	6	195.22	0.023	12.5	6	195.22	0.023	12.5	12.5		12.5	175.4	0.07	0.11	0.92	0.74	1.59	2.45	1.48	1.38	2.45	0.6	-82.1	0.02	9.7		0	0.01		0.04	1.57	1.56	1.54	1.54	0.19	517.2	0.89
1/20 to 1/18	3	10.1	375	0.11	1	100	6	195.22	0.0242	13.1	6	195.22	0.0242	13.1	13.1		13.1	175.4	0.07	0.12	0.93	0.75	1.59	2.3	1.28	1.18	2.3	0.65	-82.1	0.02	9.7		0	0.01		0.01	1.39	1.39	1.39	1.4	-0.05	-1825.5	0.91
2/21 to 1/21	3	2.49	450	0.159	0.5	200	6.83	188.42	0.2669	139.7	6	195.22	0.2653	143.9	143.9		143.9	201.7	0.71	0.9	1.38	1.47	1.27	2.15	0.66	0.64	2.32	0.56	0		2.27	2.71	0.04	0.09	0.11	0.01	1.05	0.93	0.91	0.91	0.99	101.3	1.1
3/21 to 2/21	3	22	375	0.11	0.5	200	6.28	192.92	0.0946	50.7	6	195.22	0.0944	51.2	51.2		51.2	124	0.41	0.46	1.07	1.1	1.12	2.04	0.79	0.68	2.15	0.84	-88.9	0.02	1.48	1.79	0.01	0.02	0.02	0.02	1.06	1.04	1.03	1.05	0.05	2058	0.98
4/21 to 3/21	3	22.94	375	0.11	0.5	200	6.09	194.5	0.0664	35.9	6	195.22	0.0664	36	36		36	124	0.29	0.33	0.97	0.99	1.12	1.97	0.92	0.81	2.04	0.64	1.7	0.02	2.38	2.7	0.01	0.01	0.01	0.04	1.08	1.06	1.06	1.06	0.04	2669.9	0.89
5/21 to 4/21	3	10.55	375	0.11	0.5	199.8	6	195.22	0.0364	19.7	6	195.22	0.0364	19.7	19.7		19.7	124.1	0.16	0.18	0.82	0.84	1.12	1.97	0.99	0.94	1.97	0.6	83.7	0.02	9.7		0	0.02		0.04	1.11	1.09	1.08	1.08	0.16	606.9	0.86
1/22 to 3/21	3	10.45	375	0.11	1	100	6	195.22	0.0166	9	6	195.22	0.0166	9	9		9	175.4	0.05	0.08	0.83	0.67	1.59	2.02	0.99	0.88	2.04	0.66	74.3	0.099	9.7		0	0		0.02	1.06	1.06	1.06	1.06	0.01	11014.9	0.96
1/23 to 2/21	3	10.35	375	0.11	1	100	6	195.22	0.0266	14.4	6	195.22	0.0266	14.4	14.4		14.4	175.4	0.08	0.13	0.96	0.77	1.59	2.13	1.09	0.99	2.15	0.67	-14.8	0.333	9.7		0	0.01		0.1	1.19	1.18	1.06	1.05	1.12	89.4	0.95

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No.	Date	By	Change	X'd
B	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
A	16/12/2022	LH	100% DESIGN ISSUE	LH

Amendments

ballina shire council

CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B

12D MODEL - HYDRAULIC DESIGN SHEET

Project: Hutley Drive Road Design
Drainage Model: DRAINAGE
Rainfall File: Ballina Shire Council.12dhydro
Rainfall Method: IFD Table
Pipe Cover Limit: 0.6 m
Manning n Roughness: 0.013
Freeboard Limit: 0.15 m

Major 100 Year Storm Event

Pipe ID	Pipe Type	Pipe Length	Pipe Size	Full Pipe Area Af	Pipe Grade	Pipe Grade	Full-area Tct	Full-area I	Full-area Sum CA	Full-area Qc=CIA	Part-area Tct	Part-area I	Part-area Sum CA	Part-area Qc=CIA	Peak Flow Qrat	Net Bypass Flow Qb	Pipe Flow Q	Capacity Flow Qcap	Q/Qcap Ratio	Full Pipe Vel Vf=Q/Af	Norm Depth Vel Vn=Q/An	Crit Depth Vel Vc=Q/Ac	Capacity Vel Vcap=Qcap/Af	US Node Grate RL	Pipe US IL	Pipe DS IL	DS Node Grate RL	Cover Min	Pipe DS Bend	Pipe DS Drop	US Node Ku	US Node Kw	Pipe V'head	P'head Loss (Ku.V'head)	WSE Loss (Kw.V'head)	Pipe T'head Loss	US Node HGL	Pipe US HGL	Pipe DS HGL	DS Node HGL	HGL Grade	HGL Grade	F'board US
(-)	(-)	(m)	(mm)	(sq.m)	(%)	(1 in)	(min)	(mm/hr)	(ha)	(L/s)	(min)	(mm/hr)	(ha)	(L/s)	(L/s)	(L/s)	(L/s)	(L/s)	(-)	(m/s)	(m/s)	(m/s)	(m/s)	(m)	(m)	(m)	(m)	(m)	(deg)	(m)	(-)	(-)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(%)	(1 in)	(m)
2/1 to 1/1	3	5.5	900	0.636	0.5	200	23.08	171.07	1.5925	756.8	21.82	175.7	1.5737	768.1	768.1	-3.8	764.3	1285.5	0.59	1.2	2.1	2.03	2.02	5.14	3.08	3.06	3.96	0.2	0		2.11	2.66	0.07	0.16	0.2	0.03	3.79	3.6	3.56	3.56	0.75	134.2	1.35
3/1 to 2/1	3	13.19	825	0.535	0.5	200	22.97	171.48	1.3966	665.2	21.93	175.32	1.3842	674.1	674.1	-6.9	667.2	1015.4	0.66	1.25	2.03	2.01	1.9	5.19	3.22	3.16	5.14	1.14	-94.3	0.075	0.68	0.79	0.08	0.05	0.06	0.04	3.83	3.76	3.75	3.79	0.08	1233.3	1.36
4/1 to 3/1	3	17.99	825	0.535	0.5	200	22.82	172.03	1.3743	656.7	21.78	175.87	1.3619	665.3	665.3	-8.9	656.4	1015.4	0.65	1.23	2.02	1.99	1.9	5.29	3.33	3.24	5.19	1.15	-6	0.02	0.68	0.8	0.08	0.05	0.06	0.07	3.88	3.82	3.82	3.83	0.02	4016.2	1.41
5/1 to 4/1	3	27.35	750	0.442	0.5	200	22.59	172.87	1.3334	640.3	21.55	176.71	1.3211	648.4	648.4	-9.6	638.9	787.5	0.81	1.45	1.98	2.07	1.78	5.45	3.55	3.41	5.29	1.23	-8.7	0.075	1.06	1.26	0.11	0.11	0.13	0.14	4.19	4.06	3.9	3.88	0.57	176.9	1.26
6/1 to 5/1	3	30.65	750	0.442	0.5	200	22.33	173.81	1.2821	619	21.29	177.65	1.2697	626.6	626.6	-7.7	618.9	787.5	0.79	1.4	1.97	2.04	1.78	5.63	3.72	3.57	5.45	1.23	-11.2	0.02	1.23	1.47	0.1	0.12	0.15	0.12	4.38	4.24	4.17	4.19	0.22	461.7	1.24
7/1 to 6/1	3	42	750	0.442	0.5	200	21.98	175.1	1.2153	591.1	20.94	178.94	1.2029	597.9	597.9	-51.5	546.4	787.5	0.69	1.24	1.92	1.94	1.78	6.54	3.95	3.74	5.63	1.08	-5.7	0.02	1.77	2.15	0.08	0.14	0.17	0.14	4.58	4.42	4.36	4.38	0.13	747.3	1.95
8/1 to 7/1	3	50.03	600	0.283	5	20	21.57	176.64	0.8861	434.8	20.85	179.29	0.8807	438.6	438.6	-43.5	395.1	1373.6	0.29	1.4	4.2	1.91	4.86	9.24	6.5	4	6.54	1.76	0	0.05	2.11	2.66	0.1	0.21	0.27	2.44	7.18	6.91	4.55	4.58	4.71	21.2	2.06
9/1 to 8/1	3	50	450	0.159	9	11.1	21.15	178.18	0.6111	302.5	20.43	180.83	0.6057	304.2	304.2	-54.2	250	855.7	0.29	1.57	4.67	1.87	5.38	13.66	12.3	7.8	9.24	0.7	0	1.298	1.64	1.99	0.13	0.21	0.25	3.75	12.9	12.65	7.96	7.18	9.37	10.7	0.76
10/1 to 9/1	3	38.97	450	0.159	10	10	20.83	179.37	0.4418	220.1	20.11	182.03	0.4364	220.7	220.7	-56.4	164.2	902	0.18	1.03	4.31	1.55	5.67	17.55	16.32	12.42	13.66	0.7	0	0.122	1.97	2.37	0.05	0.11	0.13	3.81	16.73	16.6	12.86	12.9	9.61	10.4	0.82
11/1 to 10/1	3	43.69	375	0.11	7.77	12.9	20.46	180.72	0.1676	84.1	20.37	181.07	0.167	84	84.1	-17	67.2	488.9	0.14	0.61	3.1	1.21	4.43	21.13	19.83	16.44	17.55	0.75	0	0.122	1.1	1.14	0.02	0.02	0.02	3.36	20.04	20.02	16.71	16.73	7.58	13.2	1.09
12/1 to 11/1	3	44.06	375	0.11	4	25	20.09	182.07	0.1434	72.5	20	182.42	0.1427	72.3	72.5	-17.6	54.9	350.8	0.16	0.5	2.31	1.13	3.18	23.14	21.65	19.88	21.13	0.87	1.8	0.05	2.37	2.74	0.01	0.03	0.03	1.76	21.85	21.82	20.04	20.04	4.02	24.9	1.29
13/1 to 12/1	3	11.39	375	0.11	1	100	20	182.42	0.1357	68.8	20	182.42	0.1357	68.8	68.8	-13.8	55	175.4	0.31	0.5	1.4	1.13	1.59	22.9	21.81	21.7	23.14	0.72	74.6	0.05	9.7		0.01	0.12		0.11	22.1	21.98	21.85	21.85	1.18	84.8	0.8
2/2 to 1/2	3	1.85	750	0.442	0.5	200	24.35	166.36	1.328	613.7	23.3	170.24	1.3151	621.9	621.9	-9.8	612.1	787.6	0.78	1.39	1.97	2.03	1.78	2.92	0.99	0.98	2.77	0.84	0		1.46	1.77	0.1	0.14	0.17	0.01	1.66	1.48	1.46	1.46	1.03	97.5	1.27
3/2 to 2/2	3	10.56	750	0.442	0.5	200	24.27	166.69	1.2957	600	23.22	170.56	1.2828	607.8	607.8	-9.2	598.6	787.5	0.76	1.35	1.96	2.01	1.78	2.79	1.06	1.01	2.92	0.96	17.9	0.02	2.43	2.76	0.09	0.23	0.26	0.03	1.9	1.64	1.63	1.66	0.17	590	0.89
4/2 to 3/2	3	56.05	750	0.442	0.5	200	23.8	168.41	1.2488	584.2	22.75	172.28	1.2358	591.4	591.4	-8.6	582.8	787.5	0.74	1.32	1.95	1.99	1.78	3.07	1.39	1.11	2.79	0.87	72.2	0.05	0.49	0.52	0.09	0.04	0.05	0.14	2.02	1.98	1.87	1.9	0.19	536.9	1.05
5/2 to 4/2	3	50	750	0.442	0.5	200	23.38	169.95	1.1804	557.3	22.33	173.82	1.1675	563.7	563.7	-8.5	555.2	787.5	0.7	1.26	1.93	1.95	1.78	3.32	1.66	1.41	3.07	0.85	0	0.02	0.5	0.53	0.08	0.04	0.04	0.19	2.17	2.13	2.02	2.02	0.22	464.3	1.15
6/2 to 5/2	3	50	750	0.442	0.5	200	22.97	171.48	1.1141	530.7	22.18	174.39	1.1073	536.4	536.4	-8.8	527.6	787.5	0.67	1.19	1.91	1.92	1.78	3.57	1.93	1.68	3.32	0.83	0	0.02	0.53	0.56	0.07	0.04	0.04	0.24	2.42	2.38	2.17	2.17	0.43	233	1.15
7/2 to 6/2	3	50	750	0.442	0.5	200	22.55	173.02	1.0468	503.1	21.76	175.92	1.04	508.2	508.2	-10.1	498.2	787.5	0.63	1.13	1.89	1.88	1.78	3.82	2.23	1.96	3.57	0.78	0	0.049	0.58	0.62	0.06	0.04	0.04	0.25	2.71	2.67	2.42	2.42	0.49	202.6	1.11
8/2 to 7/2	3	50	750	0.442	0.5	200	22.13	174.56	0.9757	473.1	21.35	177.46	0.969	477.7	477.7	-14.3	463.3	787.5	0.59	1.05	1.85	1.83	1.78	4.21	2.56	2.31	3.82	0.7	0	0.079	0.62	0.67	0.06	0.03	0.04	0.25	3.02	2.98	2.72	2.71	0.51	196.1	1.19
9/2 to 8/2	3	60	600	0.283	3	33.3	21.63	176.4	0.8873	434.8	20.85	179.3	0.8806	438.6	438.6	-26.7	411.8	1064	0.39	1.46	3.52	1.94	3.76	6.55	4.53	2.73	4.21	0.75	0.3	0.168	2.31	2.64	0.11	0.25	0.29	1.64	5.23	4.95	3.01	3.02	3.23	31	1.32
10/2 to 9/2	3	38.86	600	0.283	7	14.3	21.31	177.59	0.8019	395.6	20.52	180.5	0.7951	398.7	398.7	-51.4	347.3	1625.2	0.21	1.23	4.57	1.81	5.75	9.36	7.88	5.16	6.55	0.7	4.5	0.63			0.08			2.02	8.26	8.26	5.35	5.23	7.51	13.3	1.1
11/2 to 10/2	3	31.03	375	0.11	9	11.1	21.05	178.55	0.6257	310.3	20.52	180.51	0.6225	312.1	312.1	-46.1	266	526.2	0.51	2.41	4.78	2.46	4.76	12.27	11.07	8.27	9.36	0.7	4.3	0.394	1.22		0.3	0.36		2.1	11.78	11.42	8.46	8.26	9.53	10.5	0.48
12/2 to 11/2	3	31.58	375	0.11	10	10	20.79	179.52	0.4721	235.4	20.25	181.48	0.4689	236.4	236.4	-47.7	188.7	554.7	0.34	1.71	4.54	1.9	5.02	15.42	14.34	11.18	12.27	0.78	-0.2	0.113	1.62	1.85	0.15	0.24	0.28	2.91	14.93	14.65	11.78	11.78	9.09	11	0.5
13/2 to 12/2	3	30.44	375	0.11	9	11.1	20.53	180.45	0.2731	136.9	20.27	181.44	0.2721	137.1	137.1	-16	121.1	526.2	0.23	1.1	3.87	1.5	4.76	18.5	17.25	14.51	15.42	0.7	-10.3	0.174	1.77	2.04	0.06	0.11	0.13	2.67	17.63	17.51	14.9	14.93	8.58	11.7	0.87
14/2 to 13/2	3	31.95	375	0.11	8	12.5	20.27	181.43	0.1709	86.1	20.1	182.06	0.1703	86.1	86.1	-12.7	73.4	496.1	0.15	0.67	3.22	1.24	4.49	21.08	19.97	17.42	18.5	0.82	-11.1	0.165	2.78	3.08	0.02	0.06	0.07	2.56	20.24	20.17	17.62	17.63	7.99	12.5	0.84
15/2 to 14/2	3	32.06	375	0.11	4	25	20	182.42	0.0715	36.2	20	182.42	0.0715	36.2	36.2	-7.2	29	350.8	0.08	0.26	1.92	0.93	3.18	22.58	21.33	20.05	21.08	0.8	-11.5	0.079	7		0	0.02		1.25	21.48	21.45	20.23	20.24	3.81	26.2	1.1
1/3 to 10/1	3	12.76	375	0.11	1	99.9	20	182.42	0.248	125.6	20	182.42	0.248	125.6	125.6	-39.4	86.3	175.5	0.49	0.78	1.58	1.32	1.59	17.96	16.62	16.5	17.55	0.7	71.4	0.18	8.56		0.03	0.27		0.13	17.11	16.84	16.71	16.73	1.02	97.7	0.86
1/4 to 9/1	3	13.21	375	0.11	1	100	20	182.42	0.1446	73.3	20	182.42	0.1446	73.3	73.3	2.1	75.4	175.4	0.43	0.68	1.53	1.25	1.59	14.19	12.77	12.64	13.66	0.67	66.4	0.341	9.24		0.02	0.22		0.13	13.19	12.97	12.86	12.9	0.87	115.4	1
1/5 to 8/1	3	13.05	375	0.11	1	100	20.2	181.67	0.2438	123	20	182.42	0.2431	123.2	123.2	11.3	134.5	175.4	0.77	1.22	1.75	1.58	1.59	9.6	7.88	7.75	9.24	1.13	68	1.246	3.15	3.32	0.08	0.24	0.25	0.13	8.4	8.15	7.99	7.18	1.19	84.3	1.2
2/5 to 1/5	3	24.41	375	0.11	8.34	12	20	182.42	0.0677	34.3	20	182.42	0.0677	34.3	34.3	25.9	60.2	506.7	0.12	0.54	3.08	1.16	4.59	11.63	9.96	7.93	9.6	1.2	-68	0.05	7		0.02	0.11		1.81	10.25	10.14	8.39	8.4	7.19	13.9	1.39
1/6 to 7/1	3	13.66	450	0.159	1	100	20.2	181.67	0.2958	149.3	20	182.42	0.2949	149.4	149.4	-7.7	141.8	285.2	0.5	0.89	1.79	1.46	1.79	6.78	5.53	5.39	6.54	0.7	62.4	1.444	3.72	3.79	0.04	0.15	0.15	0.12	5.95	5.79	5.62	4.58	1.29	77.6	0.84
2/6 to 1/6	3	24.57	375	0.11	5	20	20	182.42	0.086	43.6	20	182.42	0.086	43.6	43.6	15.5	59.1	392.2	0.15	0.53	2.56	1.16	3.55	8	6.99	5.76	6.78	0.6	-62.3	0.229	7		0.01	0.1		1.23	7.27	7.16	5.94	5.95	4.96	20.1	0.74
1/7 to 6/1	3	15.92	375	0.11	1	100	20.12	181.99	0.0339	17.1	20	182.42	0.0338	17.1	17.1	43.8	61	175.4	0.35	0.55	1.44	1.17	1.59	5.86	4.81	4.65	5.63	0.61	43.8	0.931	2.08	2.53	0.02	0.03	0.04	0.15	5.03	4.99	4.8	4.38	1.17	85.6	0.83
2/7 to 1/7	3	14	375	0.11	1	100	20	182.42	0.0219	11.1	20	182.42	0.0219	11.1	11.1	35.7	46.8	175.4	0.27	0.42	1.34	1.07	1.59	6	4.97	4.83	5.86	0.6	-49.5	0.02	7		0.01	0.06		0.13	5.19	5.12	5.02	5.03	0.75	133.9	0.82
1/8 to 2/1	3	12.1	375	0.11	1	100	20	182.42	0.0521	26.4	20	182.42	0.0521	26.4	26.4	-0.2	26.2	175.4	0.15	0.24	1.14	0.9	1.59	5.48	4.19	4.07	5.14	0.7	-0.2	0.984	9.7		0	0.03		0.11	4.33	4.3	4.16	3.79	1.15	87.3	1.14
1/9 to 2/1	3	16.88	375	0.11	1	100	20.33	181.19	0.1053	53	20.13	181.93	0.1047	52.9	53	-2.8	50.1	175.4	0.29	0.45	1.37	1.1	1.59	5.24	4.29	4.12	5.14	0.63	91.5	1.036	1.35	1.48	0.01	0.01	0.02	0.16	4.47	4.45	4.26	3.79	1.15	87.2	0.77
2/9 to 1/9	3	15.99	375	0.11	1	100	20.2	181.68	0.0855	43.1	20	182.42	0.0849	43	43.1	-4.2	39	175.4	0.22	0.35	1.28	1.02	1.59	5.51	4.47	4.31	5.24	0.61	6.3	0.026	1.83	2.02	0.01	0.01	0.01	0.16	4.63	4.62	4.46	4.47	0.95	105.7	0.89
3/9 to 2/9	3	23.97	375	0.11	3	33.3	20	182.42	0.0553	28	20	182.42	0.0553	28	28	-5.6	22.4	303.8	0.07	0.2	1.61	0.87	2.75	6.19	5.24	4.52	5.51	0.66	7.7	0.043	7		0	0.01		0.72	5.36	5.34	4.63	4.63	2.98	33.5	0.84
1/10 to 14/2	3	11.58	375	0.11	4.72	21.2	20	182.42	0.0037	1.9	20	182.42	0.0037	1.9	1.9	-0.4	1.5	381	0	0.01	0.83	0.42	3.45	21.63	20.55	20	21.08	0.7	62.3	0.028	9.7		0	0		0.35	20.57	20.57	20.23	20.24	2.94	34	1.05
1/11 to 12/2	3	11.1	375	0.11	4	25	20	182.42	0.0084	4.3	20	182.42	0.0084	4.3	4.3	-0.6	3.7	350.8	0.01	0.03	1.04	0.53	3.18	15.99	14.81	14.36	15.42	0.7	70.5	0.025	9.7		0	0		0	14.89	14.89	14.9	14.93	-0.02		1.09
1/12 to 9/2	3	10.82	375	0.11	1	100	20	182.42	0.0484	24.5	20	182.42	0.0484	24.5	24.5	-4.2	20.4	175.4	0.12	0.18	1.06	0.84	1.59	6.81	5.6	5.49	6.55	0.7	69.7	0.963	9.7		0	0.02		0.1	5.72	5.7	5.58	5.23	1.14	87.7	1.09
1/13 to 8/2	3	10.35	375	0.11	1	100	20	182.42	0.0342	17.3	20	182.42	0.0342	17.3	17.3	0.6	17.9	175.4	0.1	0.16	1.02	0.81	1.59	4.26	3.18	3.08	4.21	0.7	75.2	0.519	9.7		0	0.01		0.1	3.29	3.28	3.16	3.02	1.14	88	0.97
1/14 to 7/2	3	10.25	375	0.11	1	100	20	182.42	0.0279	14.1	20	182.42	0.0279	14.1	14.1	0.8	14.9	175.4	0.08	0.13	0.97	0.77	1.59	3.83	2.71	2.61	3.82	0.75	77.4	0.375	9.7		0	0.01		0.1	2.8	2.8	2.7	2.71	0.89	112.3	1.03
1/15 to 6/2	3	10.13	375	0.11	1	100	20	182.42	0.0268	13.6	20	182.42	0.0268	13.6	13.6	0.3	13.8	175.4	0.08	0.13	0.95	0.76	1.59	3.58	2.41	2.31	3.57	0.8	81	0.375	9.7		0	0.01		0.09	2.5	2.49	2.42	2.42	0.71	140.5	1.08
1/16 to 5/2	3	10.19	375	0.11	1	100	20	182.42	0.0264	13.4	20	182.42	0.0264	13.4	13.4	0.1	13.5	175.4	0.08	0.12	0.94	0.75	1.59	3.33	2.26	2.16	3.32	0.7	79	0.494	9.7		0	0.01		0.1	2.35	2.34	2.23	2.17	1.12	89.6	0.98
1/17 to 4/2	3	10.19	375	0.11	1	100	20	182.42	0.0266	13.5	20	182.42	0.0266	13.5	13.5		13.5	175.4	0.08	0.12	0.94	0.75	1.59	3.08	2.01	1.91	3.07	0.7	79	0.517	9.7		0	0.01		0.09	2.1	2.09	2.02	2.02	0.72	138.1	0.98
1/18 to 2/21	3	30	375	0.11	0.5	200	20.58	180.3	0.1298	65	20.33	181.19	0.1292	65	65	4.6	69.7	124	0.56	0.63	1.16	1.22	1.12	2.3	1.16	1.01	2.15	0.72	90.1	0.354	1.48	1.8	0.02	0.03	0.04	0.15	1.4	1.36	1.2	1.04	0.53	189	0.9
2/18 to 1/18	3	30	375	0.11	0.5	200	20.33	181.22	0.0896	45.1	20.24	181.53	0.0895	45.1	45.1	4.4	49.6	124	0.4	0.45	1.06	1.09	1.12	2.45	1.36	1.21	2.3	0.67	0	0.05	1.79	2.25	0.01	0.02	0.02	0.15	1.55	1.52	1.39	1.4	0.45	224.4	0.9
3/18 to 2/18	3	28.99	375	0.11	0.5	200	20.08	182.11	0.0512	25.9	20	182.42	0.0511	25.9	25.9	2.6	28.5	124	0.23	0.26	0.91	0.93	1.12	2.59	1.55	1.41	2.45	0.62	0	0.051	2.39	2.71	0	0.01	0.01	0.14	1.69	1.68	1.54	1.55	0.46	215.5	0.91
4/18 to 3/18	3	10.1	375	0.11	0.5	200	20	182.42	0.0314	15.9	20	182.42	0.0314	15.9	15.9	1.5	17.4	124	0.14	0.16	0.79	0.81	1.12	2.6	1.62	1.57	2.59	0.6	-82	0.02	9.7		0	0.01		0.05	1.73	1.72	1.68	1.69	0.35	289.7	0.87
1/19 to 2/18	3	10.1	375	0.11	1	100	20	182.42	0.023	11.7	20	182.42	0.023	11.7	11.7	1.1	12.8	175.4	0.07	0.12	0.93	0.74	1.59	2.45	1.48	1.38	2.45	0.6	-82.1	0.02	9.7		0	0.01		0.04	1.57	1.56	1.54	1.55	0.18	569.5	0.89
1/20 to 1/18	3	10.1	375	0.11	1	100	20	182.42	0.0242	12.3	20	182.42	0.0242	12.3	12.3	0.1	12.4	175.4	0.07	0.11	0.92	0.74	1.59	2.3	1.28	1.18	2.3	0.65	-82.1	0.02	9.7		0	0.01		0.01	1.39	1.38	1.39	1.4	-0.05	-1959.2	0.91
2/21 to 1/21	3	2.49	450	0.159	0.5	200	20.83	179.38	0.2669	133	20.46	180.71	0.2659	133.5	133.5	7.4	140.9	201.7	0.7	0.89	1.37	1.46	1.27	2.15	0.66	0.64	2.32	0.56	0		2.26	2.7	0.04	0.09	0.11	0.01	1.04	0.93	0.91	0.91	0.97	103.6	1.11
3/21 to 2/21	3	22	375	0.11	0.5	200	20.28	181.39	0.0946	47.7	20.19	181.72	0.0945	47.7	47.7	3	50.7	124	0.41	0.46	1.07	1.1	1.12	2.04	0.79	0.68	2.15	0.84	-88.9	0.02	1.52	1.85	0.01	0.02	0.02	0.02	1.05	1.03	1.02	1.04	0.05	2124.5	0.99
4/21 to 3/21	3	22.94	375	0.11	0.5	200	20.09	182.1	0.0664	33.6	20	182.42	0.0663	33.6	33.6	1.6	35.2	124	0.28	0.32	0.97	0.99	1.12	1.97	0.92	0.81	2.04	0.64	1.7	0.02	2.39	2.7	0.01	0.01	0.01	0.05	1.07	1.06	1.05	1.05	0.05	2141.8	0.89
5/21 to 4/21	3	10.55	375	0.11	0.5	199.8	20	182.42	0.0364	18.4	20	182.42	0.0364	18.4	18.4		18.4	124.1	0.15	0.17	0.81	0.82	1.12	1.97	0.99	0.94	1.97	0.6	83.7	0.02	9.7		0	0.01		0.04	1.1	1.09	1.07	1.07	0.19	515.2	0.87
1/22 to 3/21	3	10.45	375	0.11	1	100	20	182.42	0.0166	8.4	20	182.42	0.0166	8.4	8.4	1	9.4	175.4	0.05	0.08	0.84	0.68	1.59	2.02	0.99	0.88	2.04	0.66	74.3	0.099	9.7		0	0		0.03	1.06	1.06	1.05	1.05	0.1	1000.4	0.96
1/23 to 2/21	3	10.35	375	0.11	1	100	20	182.42	0.0266	13.5	20	182.42	0.0266	13.5	13.5	-0.2	13.2	175.4	0.08	0.12	0.93	0.75	1.59	2.13	1.09	0.99	2.15	0.67	-14.8	0.333	9.7		0	0.01		0.1	1.18	1.17	1.06	1.04	1.11	89.9	0.95

THIS DRAWING IS PRODUCED IN COLOUR. REPRODUCTION OR READING IN OTHER THAN FULL COLOUR MAY IMPART FALSE OR MISSING INFORMATION.

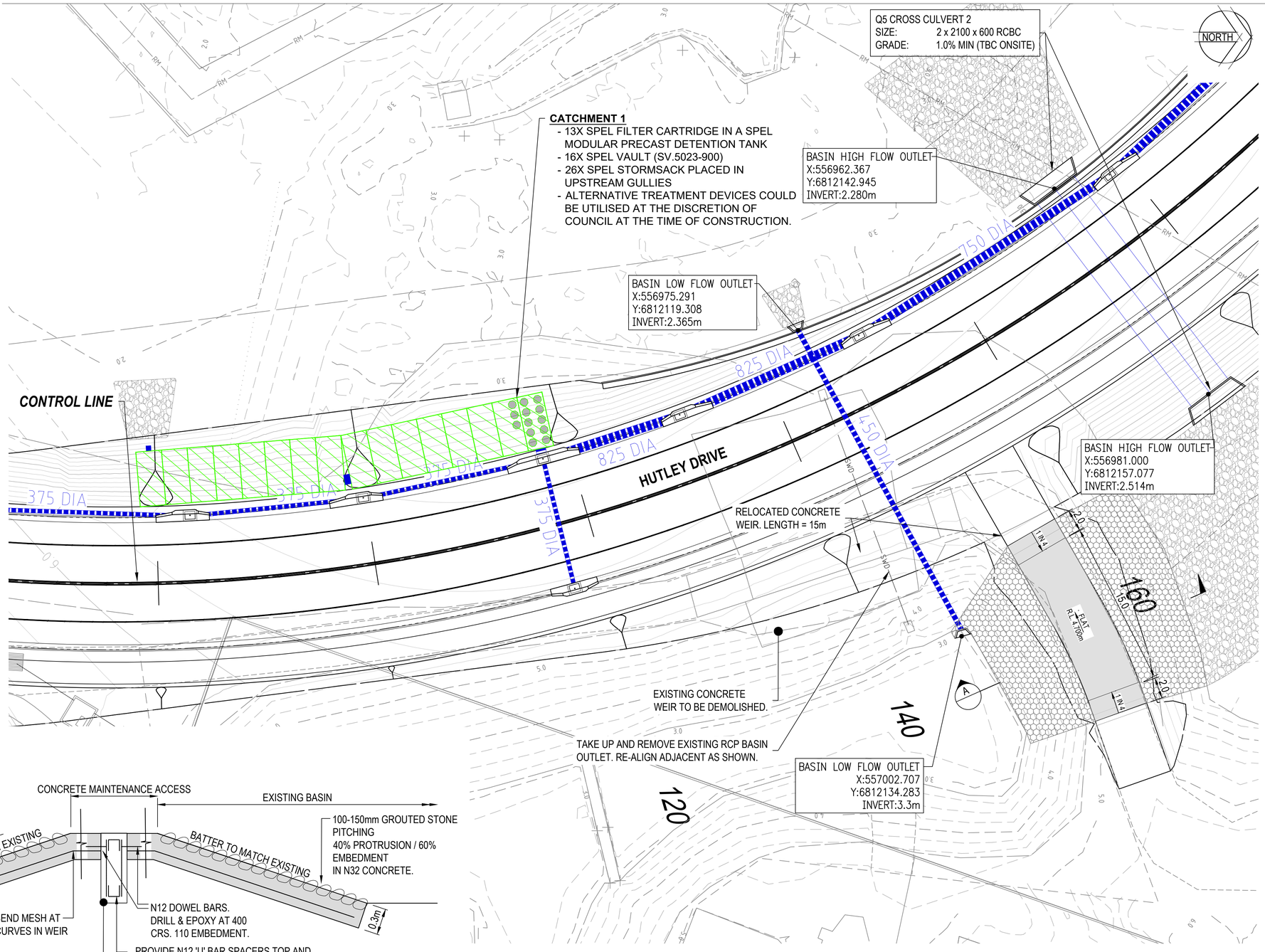
DRAFT
NOT TO BE USED F

LEGEND

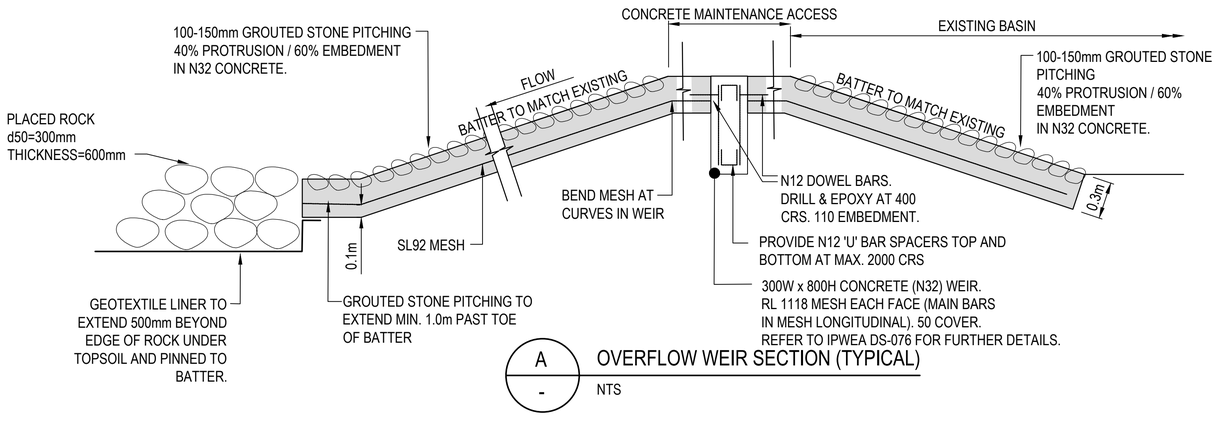
- EXISTING CONTOURS (0.25m INTERVALS)
- DESIGN CONTOURS (0.10m INTERVALS)
- PROPOSED STORMWATER PIPE
- PROPOSED STORMWATER GULLY PIT - SAG
- PROPOSED STORMWATER GULLY PIT - ON GRADE
- PROPOSED STORMWATER MANHOLE
- PROPOSED STORMWATER FIELD INLET PIT
- PROPOSED STORMWATER HEADWALL
- PROPOSED SPEL DETENTION TANK WITH FILTER SYSTEM. REFER TO SPEL FOR SPECIFICATIONS AND DETAILS
- PROPOSED CONCRETE WEIR
- EXISTING STORMWATER PIPE

NOTES

1. ROCK FOR RIP-RAP AND STONE PITCHED STORMWATER OUTLETS SHALL BE IGNEOUS ROCK.
2. ALL BATTERS TO BE TOPSOILED AND LANDSCAPED.
3. REFER TO PLAN CI-1301 TO 1303 FOR SCOUR PROTECTION DETAILS.
4. SPEL OR APPROVED EQUIVALENT TO PROVIDE SHOP DRAWINGS OF TANK AND TREATMENT DEVICES AT TIME OF CONSTRUCTION.
5. REFER TO TMR STANDARD DRAWING SET 1250 AND 1260 FOR ALL DETAILS REGARDING END STRUCTURES, APRONS, CUT OFF WALLS AND BASE SLABS.



NOTE:
INSITU MATERIAL TO BE TESTED AND APPROVED BY GEOTECHNICAL ENGINEER PRIOR TO WEIR CONSTRUCTION.



A / - OVERFLOW WEIR SECTION (TYPICAL)
NTS

LAYOUT PLAN
SCALE 1:200

0 5 10 15 20m
SCALE 1:200 @A1

THIS DRAWING IS PRODUCED IN COLOUR. REPRODUCTION OR READING IN OTHER THAN FULL COLOUR MAY IMPART FALSE OR MISSING INFORMATION.

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
D	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
C	16/12/2022	LH	100% DESIGN ISSUE	LH
B	30/07/2021	GT	85% DESIGN ISSUE	GH
A	23/04/2021	GT	50% DESIGN ISSUE	SW

Amendments

ballina shire council

CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1350-1351.dwg		

SHEET 40 OF 60

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
WATER QUALITY MANAGEMENT
CATCHMENT 1

Scale HORIZONTAL: 1:500
VERTICAL:

Plan No. 721982-01-CI-1350

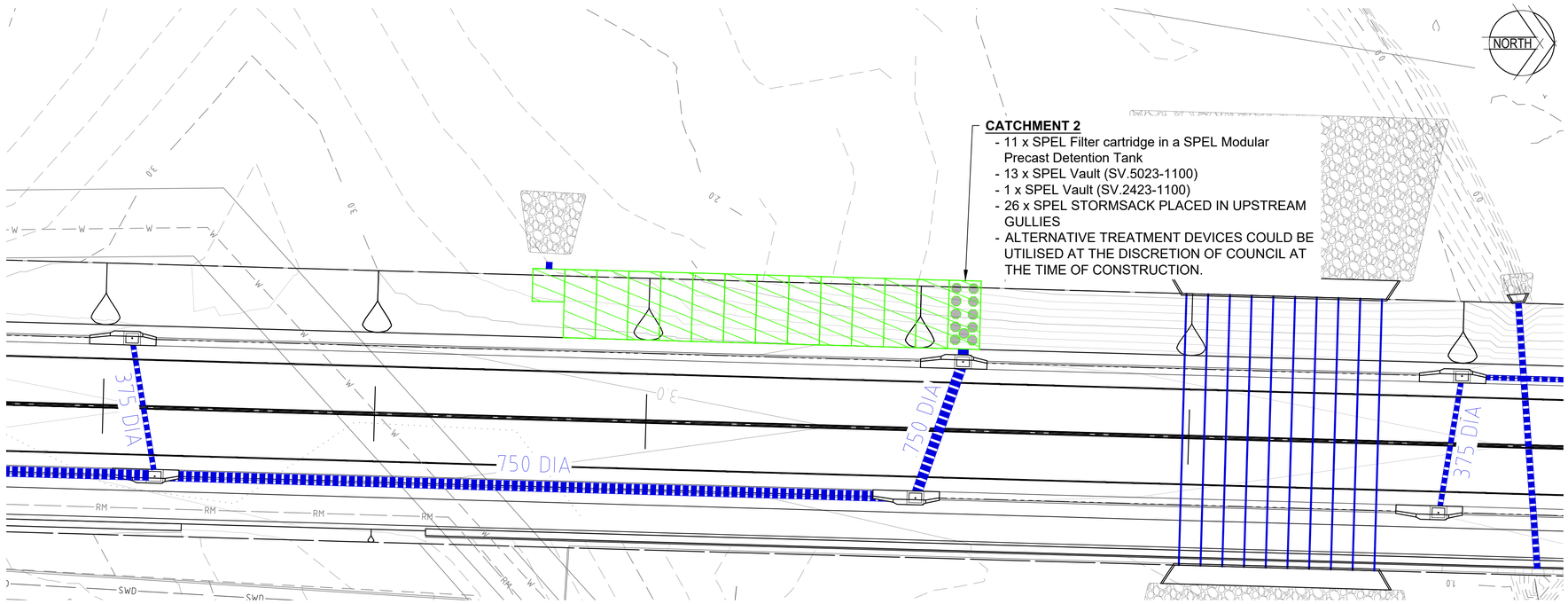
Rev D

LEGEND

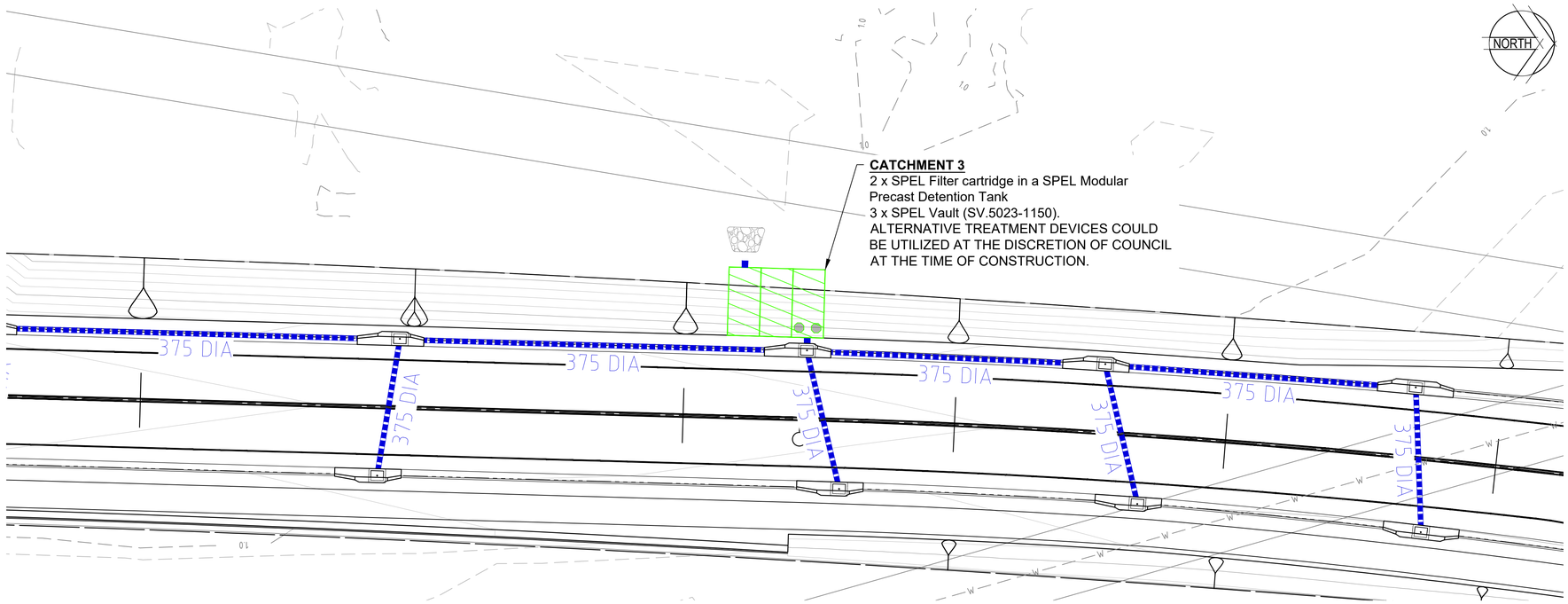
- EXISTING CONTOURS (0.25m INTERVALS)
- DESIGN CONTOURS (0.10m INTERVALS)
- PROPOSED STORMWATER PIPE
- PROPOSED STORMWATER GULLY PIT - SAG
- PROPOSED STORMWATER GULLY PIT - ON GRADE
- PROPOSED STORMWATER MANHOLE
- PROPOSED STORMWATER FIELD INLET PIT
- PROPOSED STORMWATER HEADWALL
- PROPOSED SPEL DETENTION TANK WITH FILTER SYSTEM. REFER TO SPEL FOR SPECIFICATIONS AND DETAILS
- PROPOSED CONCRETE WEIR
- EXISTING STORMWATER PIPE

NOTES

1. ROCK FOR RIP-RAP AND STONE PITCHED STORMWATER OUTLETS SHALL BE IGNEOUS ROCK.
2. ALL BATTERS TO BE TOPSOILED AND LANDSCAPED.
3. REFER TO PLAN CI-1301 TO 1303 FOR SCOUR PROTECTION DETAILS.
6. SPEL OR APPROVED EQUIVALENT TO PROVIDE SHOP DRAWINGS OF TANK AND TREATMENT DEVICES AT TIME OF CONSTRUCTION.



LAYOUT PLAN
SCALE 1:200



LAYOUT PLAN
SCALE 1:200

0 5 10 15 20m
SCALE 1:200 @A1

THIS DRAWING IS PRODUCED IN COLOUR. REPRODUCTION OR READING IN OTHER THAN FULL COLOUR MAY IMPART FALSE OR MISSING INFORMATION.

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
B	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
A	16/12/2022	LH	100% DESIGN ISSUE	LH

Amendments

ballina shire council

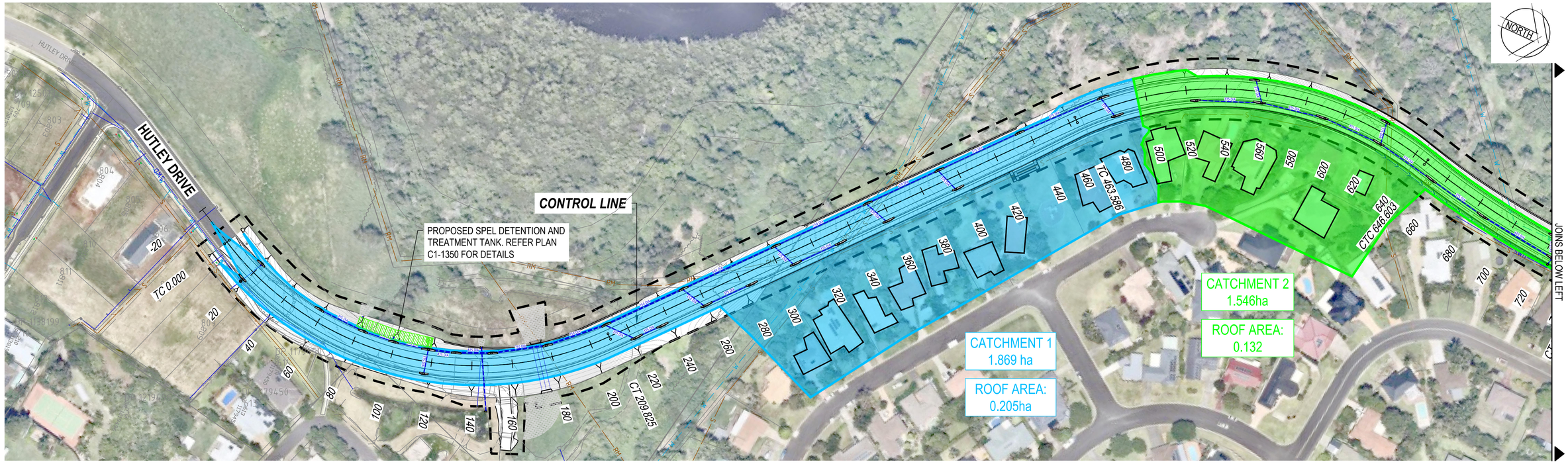
CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1350-1351.dwg		

SHEET 41 OF 60

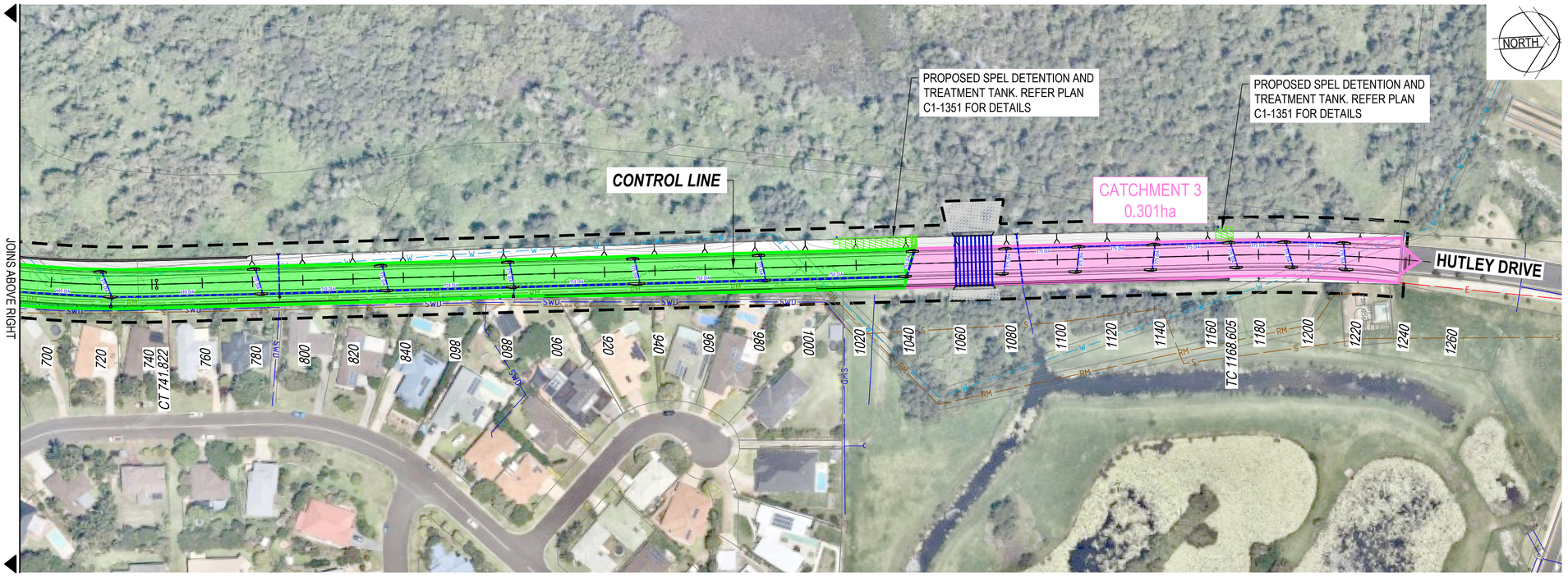
BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
WATER QUALITY MANAGEMENT
CATCHMENT 2 AND CATCHMENT 3

Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL:	721982-01-CI-1351	B



LAYOUT PLAN
SCALE 1:1000



LAYOUT PLAN
SCALE 1:1000

THIS DRAWING IS PRODUCED IN COLOUR. REPRODUCTION OR READING IN OTHER THAN FULL COLOUR MAY IMPART FALSE OR MISSING INFORMATION.

0 20 40 60 80 100m
SCALE 1:1000 @A1

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
B	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
A	16/12/2022	LH	100% DESIGN ISSUE	LH

Amendments

ballina shire council

CERTIFIED LH		DESIGNED GT / WS	
DATE 16/12/2022		DRAWN AH / TNDF	
F.B. - L.B. -		CHECKED LH	
DATUM GDA94		APPROVED LH	
DRAWING 721982-01-CI-1350-1351.dwg			
SHEET 42 OF 60			

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
WATER QUALITY MANAGEMENT
CATCHMENT PLAN

Scale	Plan No.	Rev
HORIZONTAL: 1:1000 VERTICAL:	721982-01-CI-1352	B

LEGEND

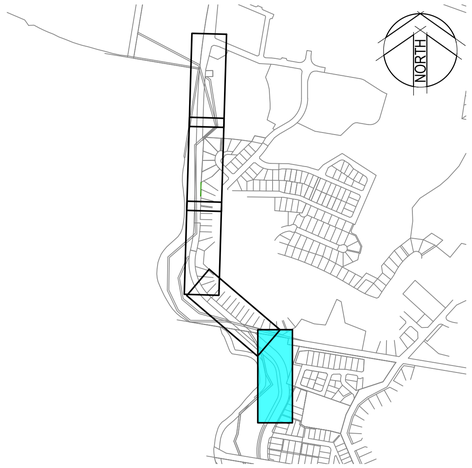
- EXTENT OF WORKS
- EXISTING SIGNAGE
- EXISTING PAVEMENT ARROW
- PROPOSED SIGNAGE
- PROPOSED PAVEMENT ARROW

PAVEMENT MARKING LEGEND

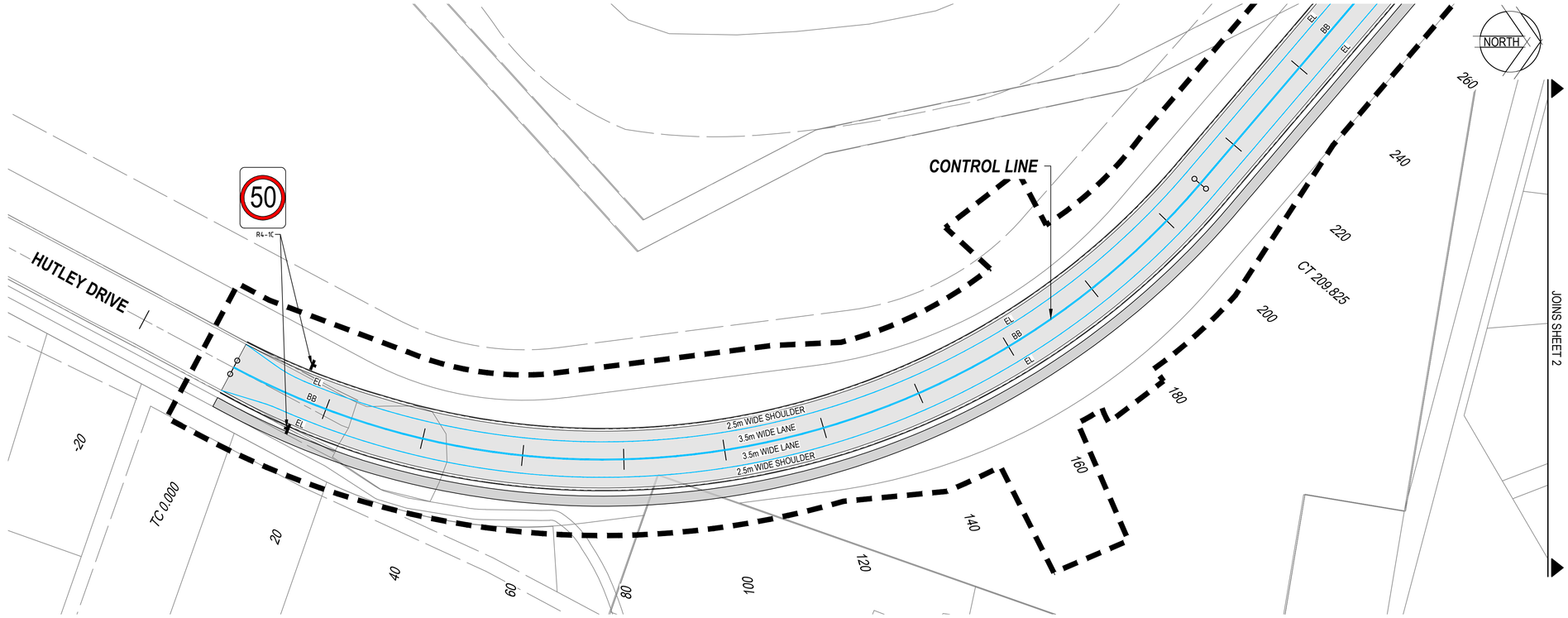
			WIDTH/ MATERIAL
CL	CONTINUITY LINE	L=1.0m, G=3.0m	150mm / WHITE PAINT
GWL	GIVE WAY LINE	L=0.6m, G=0.6m	300mm / WHITE PAINT
L1	LANE LINE (CONTINUOUS)		100mm / WHITE PAINT
L3	DIVIDING LINE	L=3.0m, G=9.0m	150mm / WHITE PAINT
BB	DOUBLE BARRIER LINE		100mm / WHITE PAINT
BS	BARRIER LINE BROKEN	L=3.0m, G=9.0m	100mm / WHITE PAINT
OL	OUT LINE		150mm / WHITE PAINT
TL	TURN LINE	L=0.6m, G=0.6m	100mm / WHITE PAINT
EL	EDGE LINE		150mm / WHITE PAINT
CH	CHEVRON	S=4.5m, B=1.5m (S, B, 100mm)	WHITE PAINT

SIGNS AND LINEMARKING NOTES:

1. FINAL SIGN LOCATIONS TO BE DETERMINED ON SITE BY THE SUPERINTENDENT.
2. EXISTING LINEMARKING SUPERSEDED BY NEW LINEMARKING IS TO BE REMOVED BY ROUTING OR OTHER METHOD APPROVED BY RTA.
3. LINEMARKING TO BE REFLECTORISED WHITE AS PER RTA SECTION 3, 4 AND 6.
4. REFLECTORISED PAVEMENT MARKERS TO BE AS PER RTA DELINEATION MANUAL SECTION 15.
5. GUIDE POST INSTALLATION AS PER REFER RTA DELINEATION MANUAL SECTION 16.
6. TRAFFIC SIGNS TO BE SIZE 'B' AS PER RTA DELINEATION MANUAL SECTION 17.
7. ALL ROAD SIGNS AND LINEMARKING TO BE IN ACCORDANCE WITH AS4049.1 AND AS1742 "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES".
8. FOR DETAILS OF LINETYPES SPECIFIED IN LEGEND, REFER FIGURE 4.1 ON PAGE 2-135 OF "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES".
9. ALL EXISTING SIGNAGE WITHIN THE LIMITS OF PROPOSED WORKS TO BE REMOVED AND STORED, AS DIRECTED BY SUPERVISING ENGINEER. THESE SIGNS TO BE REUSED WHERE SUITABLE.
10. ALL EXISTING LINEMARKING SURPLUS TO THIS DRAWING TO BE REMOVED BY THE CONTRACTOR.



KEY PLAN
SCALE 1:10000



LAYOUT PLAN
SCALE 1:500

THIS DRAWING IS PRODUCED IN COLOUR. REPRODUCTION OR READING IN OTHER THAN FULL COLOUR MAY IMPART FALSE OR MISSING INFORMATION.

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

0 10 20 30 40 50m
SCALE 1:500 @A1

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
D	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
C	16/12/2022	LH	100% DESIGN ISSUE	LH
B	30/07/2021	GT	85% DESIGN ISSUE	GH
A	23/04/2021	GT	50% DESIGN ISSUE	SW

Amendments

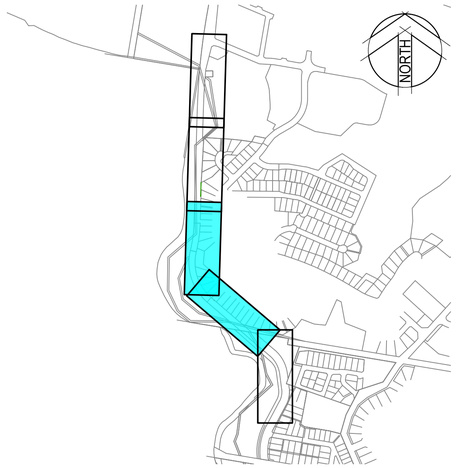
ballina shire council

CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1401-1403.dwg		
SHEET	43 OF 60		

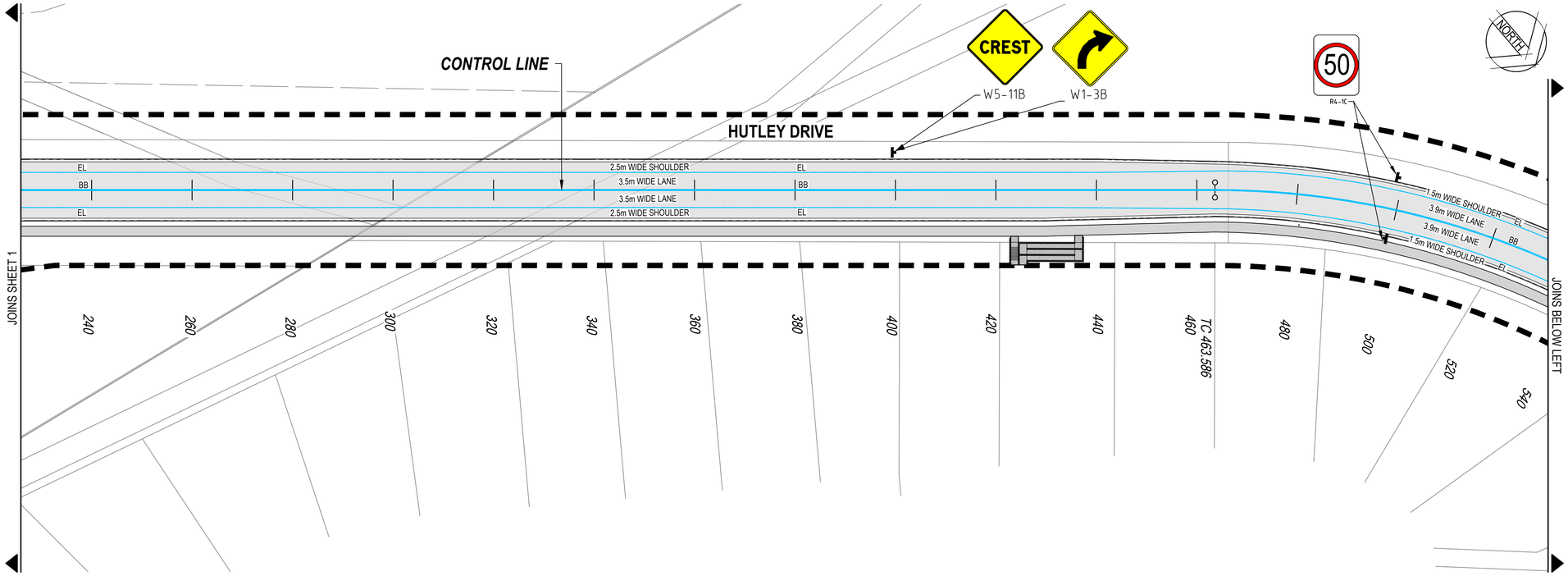
BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
SIGNS AND LINEMARKING PLAN
SHEET 1 OF 3

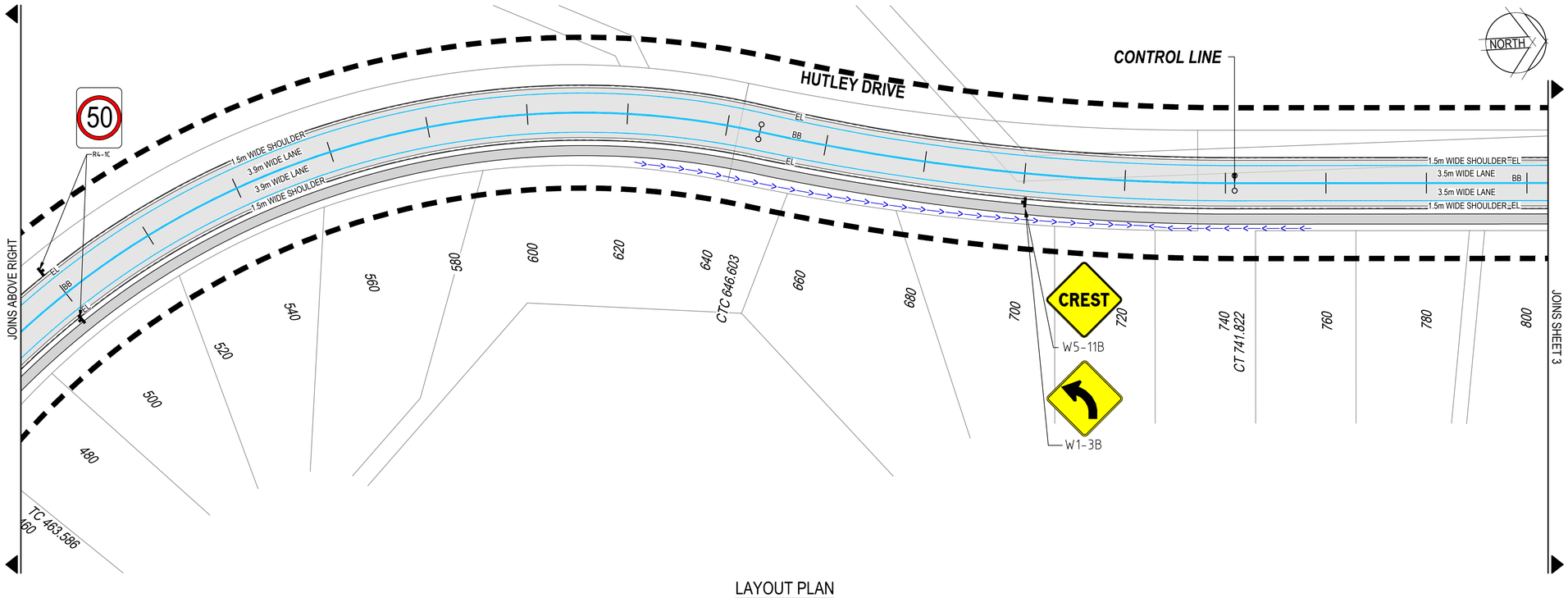
Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: -	721982-01-CI-1401	D



KEY PLAN
SCALE 1:10000



LAYOUT PLAN
SCALE 1:500



LAYOUT PLAN
SCALE 1:500

THIS DRAWING IS PRODUCED IN COLOUR. REPRODUCTION OR READING IN OTHER THAN FULL COLOUR MAY IMPART FALSE OR MISSING INFORMATION.

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

0 10 20 30 40 50m
SCALE 1:500 @A1

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
D	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
C	16/12/2022	LH	100% DESIGN ISSUE	LH
B	30/07/2021	GT	85% DESIGN ISSUE	GH
A	23/04/2021	GT	50% DESIGN ISSUE	SW

Amendments

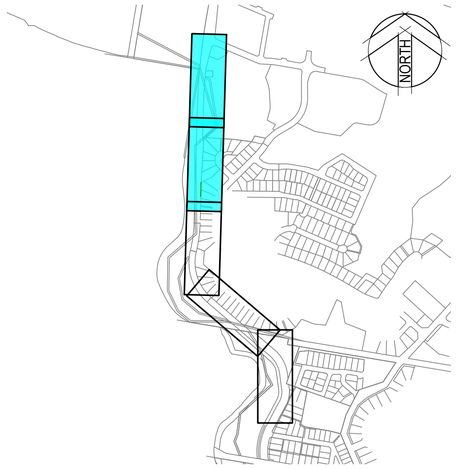
ballina shire council

CERTIFIED	LH	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	LH
DATUM	GDA94	APPROVED	LH
DRAWING	721982-01-CI-1401-1403.dwg		
SHEET	44 OF 60		

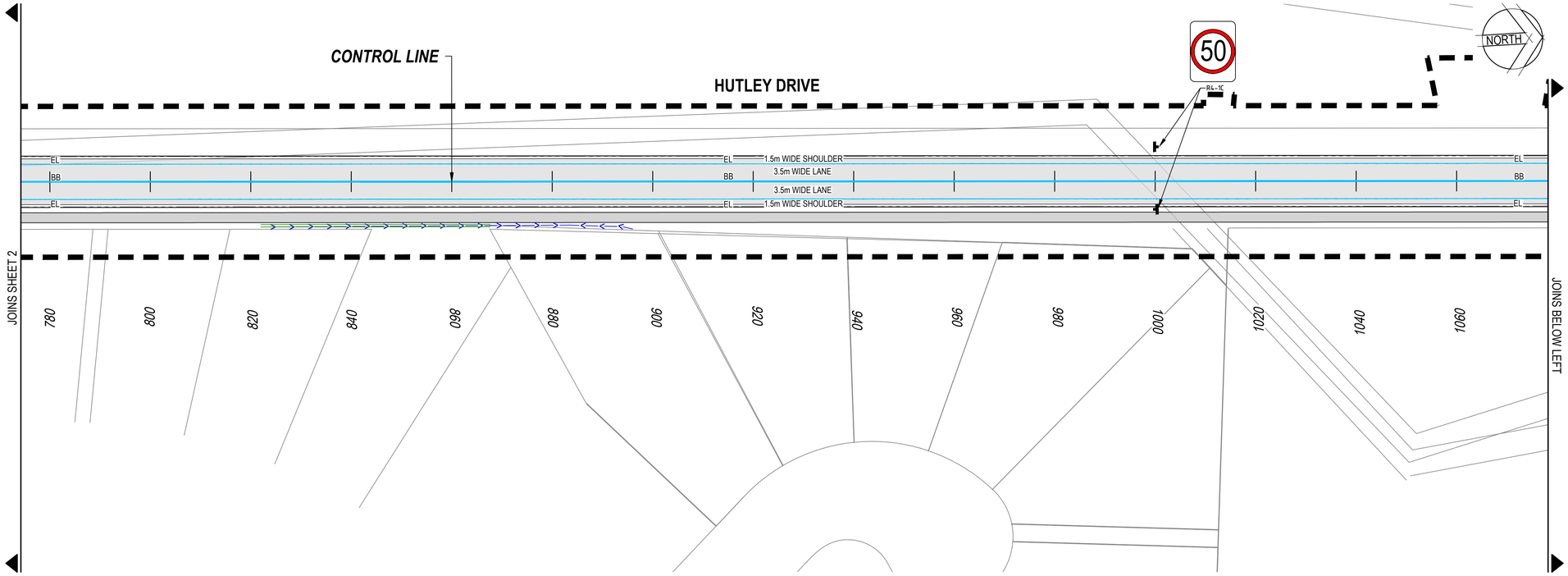
BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
SIGNS AND LINEMARKING PLAN
SHEET 2 OF 3

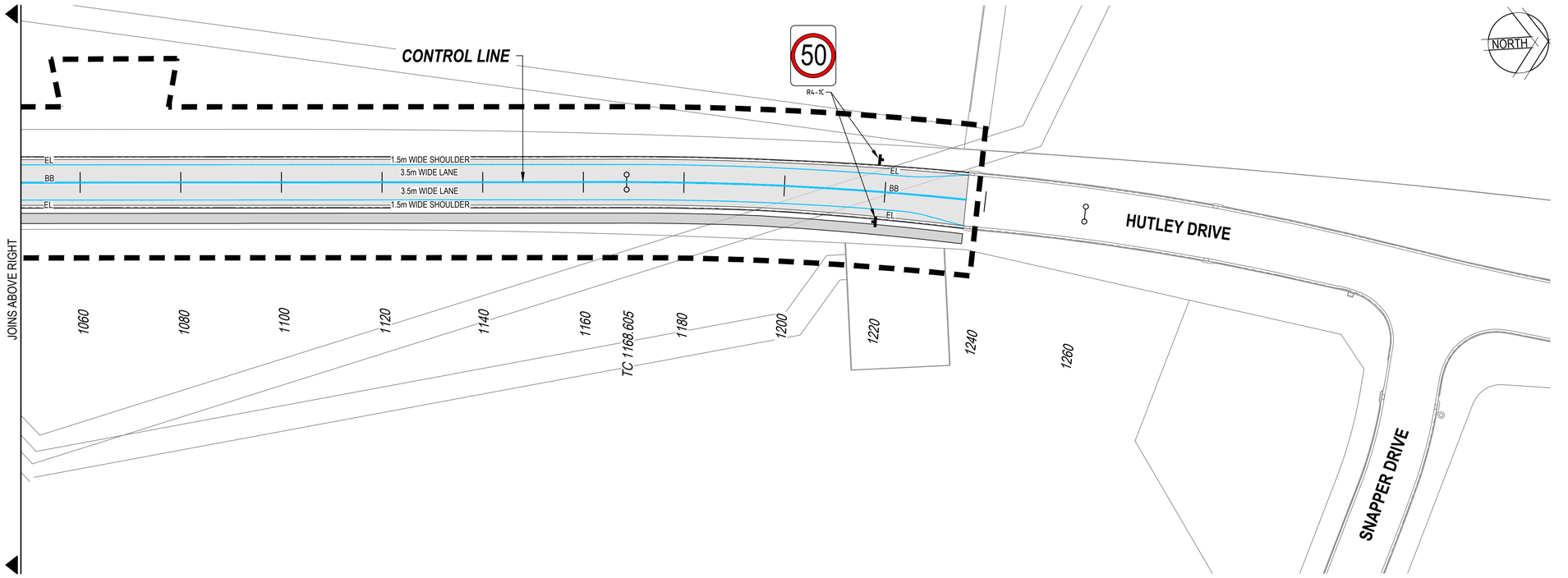
Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: -	721982-01-CI-1402	D



KEY PLAN
SCALE 1:10000



LAYOUT PLAN
SCALE 1:500



LAYOUT PLAN
SCALE 1:500

THIS DRAWING IS PRODUCED IN COLOUR. REPRODUCTION OR READING IN OTHER THAN FULL COLOUR MAY IMPART FALSE OR MISSING INFORMATION.

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

0 10 20 30 40 50m
SCALE 1:500 @A1

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
D	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
C	16/12/2022	LH	100% DESIGN ISSUE	LH
B	30/07/2021	GT	85% DESIGN ISSUE	GH
A	23/04/2021	GT	50% DESIGN ISSUE	SW

Amendments

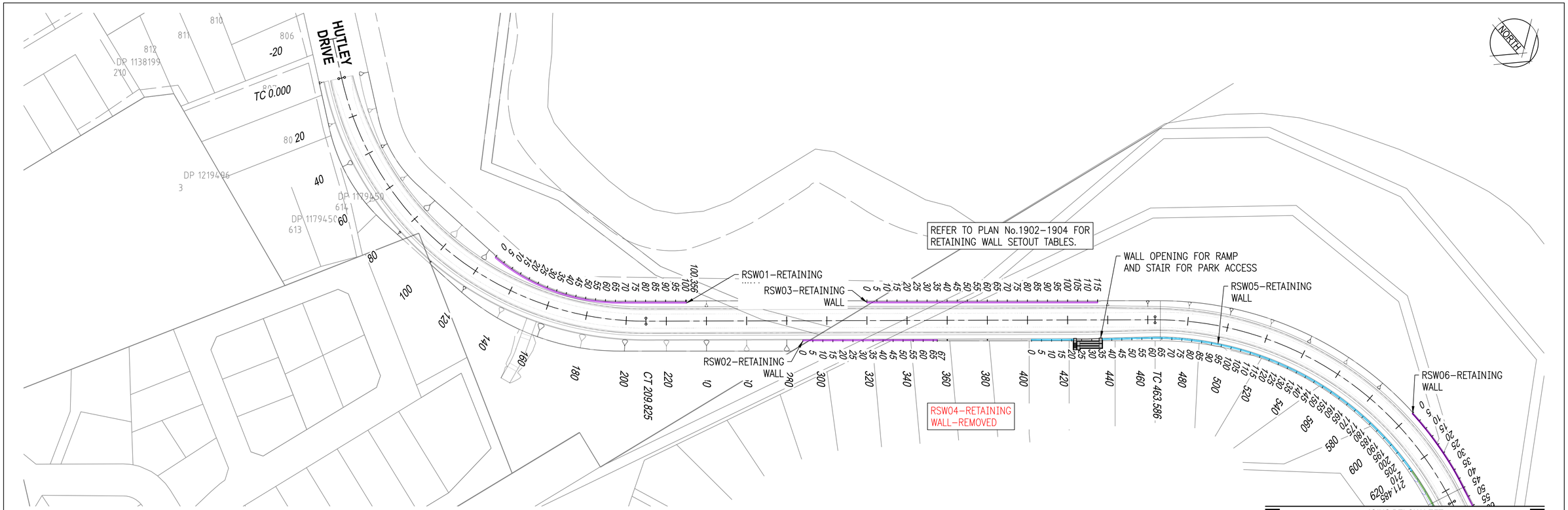
ballina shire council

CERTIFIED LH		DESIGNED GT / WS	
DATE 16/12/2022		DRAWN AH / TNDF	
F.B. -	L.B. -	CHECKED LH	
DATUM GDA94		APPROVED LH	
DRAWING 721982-01-CI-1401-1403.dwg			
SHEET 45 OF 60			

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
SIGNS AND LINEMARKING PLAN
SHEET 3 OF 3

Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: -	721982-01-CI-1403	D



HORIZONTAL CONTROL LINE
SCALE 1:1000



0 20 40 60 80 100m
SCALE 1:1000 @A1

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
C	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
B	16/12/2022	DF	100% DESIGN ISSUE	DF
A	30/07/2021	GT	85% DESIGN ISSUE	GH

Amendments

ballina shire council

CERTIFIED	DF	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. –	CHECKED	DF
DATUM	GDA94	APPROVED	DF
DRAWING	721982-01-CI-1901-1904.dwg		

SHEET 46 OF 60

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
RETAINING WALL
SETOUT PLAN

Scale	Plan No.	Rev
HORIZONTAL: 1:1000 VERTICAL: –	721982-01-CI-1901	C

RSW01-RETAINING WALL - SETOUT DETAILS

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING
IP 1	0.000	556980.074	6812101.247	3.077	350°30'50.59"
IP 2	0.939	556979.919	6812102.173	3.063	
IP 3	1.421	556979.836	6812102.648	3.055	
IP 4	2.818	556979.582	6812104.022	3.011	
IP 5	4.698	556979.209	6812105.865	2.886	
	5.000	556979.143	6812106.159	2.864	347°24'44.11"
IP 6	6.580	556978.799	6812107.701	2.750	
IP 7	8.464	556978.352	6812109.531	2.617	
	10.000	556977.958	6812111.016	2.583	345°09'06.96"
IP 8	10.349	556977.869	6812111.354	2.576	
IP 9	12.235	556977.350	6812113.167	2.738	
IP 10	14.123	556976.794	6812114.971	2.808	
	15.000	556976.520	6812115.804	2.810	341°45'18.86"
IP 11	16.012	556976.203	6812116.765	2.813	
IP 12	17.902	556975.576	6812118.548	2.780	
IP 13	19.793	556974.913	6812120.319	2.761	
	20.000	556974.837	6812120.512	2.761	338°21'08.13"
IP 14	21.685	556974.215	6812122.078	2.764	
IP 15	23.578	556973.482	6812123.823	2.743	
	25.000	556972.905	6812125.123	2.908	336°04'50.72"
IP 16	25.472	556972.714	6812125.554	2.963	
IP 17	27.367	556971.912	6812127.271	3.075	
IP 18	29.262	556971.075	6812128.971	3.021	
	30.000	556970.736	6812129.627	2.950	332°40'12.65"
IP 19	31.157	556970.205	6812130.655	2.839	
IP 20	33.054	556969.301	6812132.322	2.799	
IP 21	34.950	556968.364	6812133.971	2.783	
	35.000	556968.339	6812134.014	2.784	329°15'24.35"
IP 22	36.847	556967.394	6812135.602	2.805	
IP 23	38.744	556966.392	6812137.213	3.075	
	40.000	556965.708	6812138.265	3.164	326°58'48.74"
IP 24	40.642	556965.359	6812138.803	3.210	
IP 25	42.539	556964.293	6812140.374	2.926	
IP 26	44.436	556963.197	6812141.922	2.724	
	45.000	556962.862	6812142.376	2.729	323°33'53.59"
IP 27	46.334	556962.070	6812143.449	2.740	
IP 28	48.231	556960.913	6812144.952	2.722	
	50.000	556959.807	6812146.333	2.667	321°17'17.65"
IP 29	50.128	556959.727	6812146.433	2.663	
IP 30	52.025	556958.511	6812147.889	2.669	
IP 31	53.921	556957.267	6812149.320	2.681	
	55.000	556956.544	6812150.120	2.703	317°52'28.38"
IP 32	55.817	556955.996	6812150.726	2.719	
IP 33	57.712	556954.697	6812152.107	2.693	
IP 34	59.607	556953.371	6812153.460	2.745	
	60.000	556953.091	6812153.736	2.750	314°27'48.75"
IP 35	61.501	556952.019	6812154.787	2.768	
IP 36	63.395	556950.642	6812156.086	2.877	
	65.000	556949.453	6812157.164	2.934	312°11'29.96"
IP 37	65.287	556949.240	6812157.357	2.944	
IP 38	67.178	556947.814	6812158.600	2.849	
	70.000	556945.671	6812160.435	2.838	310°34'55.21"
	75.000	556941.873	6812163.688	2.775	310°34'55.21"
	80.000	556938.076	6812166.940	2.816	310°34'55.21"
	85.000	556934.279	6812170.193	2.975	310°34'55.21"
	90.000	556930.481	6812173.446	3.723	310°34'55.21"
	95.000	556926.684	6812176.698	4.200	310°34'55.21"
	100.000	556922.887	6812179.951	4.461	310°34'55.21"
IP 39	100.356	556922.616	6812180.183	4.485	310°34'55.21"

RSW02-RETAINING WALL - SETOUT DETAILS

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING
IP 1	0.000	556890.889	6812232.355	8.520	310°28'28.65"
	5.000	556887.085	6812235.600	8.836	310°28'28.65"
	10.000	556883.282	6812238.846	9.169	310°28'28.65"
	15.000	556879.478	6812242.092	9.520	310°28'28.65"
	20.000	556875.675	6812245.337	9.888	310°28'28.65"
	25.000	556871.871	6812248.583	10.274	310°28'28.65"
	30.000	556868.068	6812251.828	10.678	310°28'28.65"
IP 2	32.000	556866.547	6812253.126	10.844	
IP 3	32.000	556866.546	6812253.126	10.844	
	35.000	556864.264	6812255.074	11.099	310°28'28.65"
	40.000	556860.461	6812258.319	11.537	310°28'28.65"
	45.000	556856.657	6812261.565	11.993	310°28'28.65"
	50.000	556852.854	6812264.810	12.467	310°28'28.65"
	55.000	556849.051	6812268.056	12.957	310°28'28.65"
	60.000	556845.247	6812271.302	13.457	310°28'28.65"
	65.000	556841.444	6812274.547	13.957	310°28'28.65"
IP 4	67.000	556839.922	6812275.845	14.157	310°28'28.65"

RSW03-RETAINING WALL - SETOUT DETAILS

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING
IP 1	0.000	556854.263	6812238.731	9.486	310°34'55.21"
IP 2	3.000	556851.985	6812240.683	9.604	
IP 3	4.000	556851.225	6812241.334	9.645	
	5.000	556850.466	6812241.985	9.687	310°37'40.00"
	10.000	556846.671	6812245.240	9.918	310°37'40.00"
	15.000	556842.877	6812248.496	10.156	310°37'40.00"
	20.000	556839.082	6812251.752	10.391	310°37'40.00"
	25.000	556835.287	6812255.008	10.620	310°37'40.00"
	30.000	556831.492	6812258.263	10.979	310°37'40.00"
	35.000	556827.698	6812261.519	11.354	310°37'40.00"
IP 4	35.000	556827.698	6812261.519	11.354	
IP 5	35.000	556827.697	6812261.519	11.354	
	40.000	556823.903	6812264.775	11.648	310°37'40.00"
	45.000	556820.108	6812268.030	11.977	310°37'40.00"
	50.000	556816.313	6812271.286	12.229	310°37'40.00"
	55.000	556812.518	6812274.542	12.530	310°37'40.00"
	60.000	556808.724	6812277.798	12.903	310°37'40.00"
	65.000	556804.929	6812281.053	13.385	310°37'40.00"
	70.000	556801.134	6812284.309	14.083	310°37'40.00"
IP 6	74.989	556797.348	6812287.557	14.905	
	75.000	556797.339	6812287.565	14.907	310°37'40.00"
IP 7	75.000	556797.339	6812287.565	14.907	
	80.000	556793.545	6812290.820	15.328	310°37'40.00"
	85.000	556789.750	6812294.076	15.313	310°37'40.00"
	90.000	556785.955	6812297.332	15.907	310°37'40.00"
	95.000	556782.160	6812300.588	16.675	310°37'40.00"
	100.000	556778.365	6812303.843	17.442	310°37'40.00"
	105.000	556774.571	6812307.099	18.385	310°37'40.00"
	110.000	556770.776	6812310.355	19.129	310°37'40.00"
IP 8	110.000	556770.776	6812310.355	19.129	
IP 9	110.000	556770.776	6812310.355	19.129	
IP 10	113.000	556768.499	6812312.308	19.598	
IP 11	113.000	556768.499	6812312.308	19.598	
	115.000	556766.981	6812313.610	19.905	310°37'40.00"
IP 12	115.000	556766.981	6812313.611	19.905	310°37'40.00"

RSW09-RETAINING WALL - SETOUT DETAILS

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING
IP 1	0.000	556727.483	6812860.537	3.242	1°37'40.00"
	5.000	556727.625	6812865.535	2.866	1°37'40.00"
	10.000	556727.767	6812870.533	2.424	1°37'40.00"
	15.000	556727.909	6812875.531	1.956	1°37'40.00"
	20.000	556728.051	6812880.529	1.642	1°37'40.00"
	25.000	556728.193	6812885.527	1.421	1°37'40.00"
	30.000	556728.335	6812890.525	1.532	1°37'40.00"
	35.000	556728.477	6812895.523	1.550	1°37'40.00"
	40.000	556728.619	6812900.521	1.496	1°37'40.00"
	45.000	556728.761	6812905.519	1.376	1°37'40.00"
	50.000	556728.903	6812910.517	1.274	1°37'40.00"
	55.000	556729.045	6812915.515	1.203	1°37'40.00"
	60.000	556729.187	6812920.513	1.131	1°37'40.00"
	65.000	556729.329	6812925.511	1.115	1°37'40.00"
	70.000	556729.471	6812930.509	1.139	1°37'40.00"
	75.000	556729.613	6812935.507	1.000	1°37'40.00"
	80.000	556729.755	6812940.505	0.624	1°37'40.00"
	85.000	556729.897	6812945.503	0.661	1°37'40.00"
	90.000	556730.039	6812950.501	0.844	1°37'40.00"
	95.000	556730.181	6812955.499	0.894	1°37'40.00"
IP 2	98.000	556730.266	6812958.498	0.866	
IP 3	100.000	556730.323	6812960.497	0.858	
IP 4	102.000	556730.382	6812962.496	0.850	
IP 5	104.000	556730.443	6812964.495	0.842	
	105.000	556730.474	6812965.495	0.839	1°47'22.11"
IP 6	106.000	556730.505	6812966.494	0.836	
IP 7	108.000	556730.570	6812968.493	0.831	
	110.000	556730.636	6812970.492	0.826	1°53'42.90"
IP 8	110.000	556730.636	6812970.492	0.826	
IP 9	112.000	556730.704	6812972.491	0.820	
IP 10	114.000	556730.774	6812974.490	0.815	
	115.000	556730.809	6812975.489	0.810	2°03'14.09"
IP 11	116.000	556730.845	6812976.489	0.805	
IP 12	118.000	556730.919	6812978.487	0.812	
	120.000	556730.994	6812980.486	0.849	2°09'34.89"
IP 13	120.000	556730.994	6812980.486	0.849	
IP 14	122.000	556731.071	6812982.485	0.889	
IP 15	124.001	556731.150	6812984.483	0.929	
	125.000	556731.191	6812985.482	0.949	2°19'06.11"
IP 16	126.001	556731.231	6812986.482	0.969	
IP 17	128.001	556731.314	6812988.480	1.009	
	130.000	556731.399	6812990.477	1.049	2°25'26.93"
IP 18	130.001	556731.399	6812990.479	1.049	
IP 19	132.001	556731.485	6812992.477	1.089	
IP 20	134.002	556731.573	6812994.475	1.120	
	135.000	556731.618	6812995.473	1.124	2°34'58.18"
IP 21	136.002	556731.664	6812996.473	1.129	
IP 22	138.002	556731.756	6812998.472	1.136	
	140.000	556731.849	6813000.467	1.144	2°41'19.03"
IP 23	140.002	556731.849	6813000.470	1.144	
IP 24	142.003	556731.945	6813002.468	1.151	
IP 25	144.003	556732.043	6813004.466	1.158	
	145.000	556732.092	6813005.461	1.162	2°50'50.32"
IP 26	146.004	556732.142	6813006.464	1.165	
IP 27	148.004	556732.243	6813008.462	1.192	
	150.000	556732.346	6813010.455	1.234	2°57'11.20"
IP 28	150.005	556732.346	6813010.460	1.234	
IP 29	152.005	556732.451	6813012.457	1.279	
IP 30	154.006	556732.558	6813014.455	1.324	
	155.000	556732.612	6813015.448	1.347	3°06'42.56"
IP 31	156.007	556732.666	6813016.453	1.370	
IP 32	158.007	556732.777	6813018.451	1.415	
	160.000	556732.889	6813020.440	1.461	3°13'03.48"
IP 33	160.008	556732.889	6813020.448	1.462	
IP 34	162.009	556733.003	6813022.446	1.508	
IP 35	164.010	556733.119	6813024.443	1.551	3°19'24.42"

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
B	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
A	16/12/2022	DF	100% DESIGN ISSUE	DF

Amendments

ballina shire council

CERTIFIED DF	DESIGNED GT / WS
DATE 16/12/2022	DRAWN AH / TNDF
F.B. L.B. -	CHECKED DF
DATUM GDA95	APPROVED DF
DRAWING 721982-01-CI-1901-1904.dwg	
SHEET 47 OF 60	

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
RETAINING WALL
SETOUT TABLES - SHEET 1 OF 3

Scale HORIZONTAL: NTS
VERTICAL:

Plan No. 721982-01-CI-1902

Rev B

RSW05-RETAINING WALL - SETOUT DETAILS

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
IP 1	0.000	556804.170	6812306.353	18.833	310°28'28.92"			
IP 2	0.000	556804.170	6812306.354	18.833				
	5.000	556800.366	6812309.599	19.286	310°28'28.65"			
	10.000	556796.563	6812312.845	19.714	310°28'28.65"			
IP 3	10.000	556796.563	6812312.845	19.714				
IP 4	10.000	556796.563	6812312.845	19.714				
	15.000	556792.759	6812316.090	20.118	310°28'28.65"			
	20.000	556788.956	6812319.336	20.496	310°28'28.65"			
IP 5	22.000	556787.434	6812320.634	20.641				
IP 6	22.000	556787.434	6812320.634	20.641				
	25.000	556785.152	6812322.581	20.850	310°28'28.65"			
IP 7	28.000	556782.870	6812324.529	21.051				
IP 8	28.000	556782.870	6812324.529	21.051				
	30.000	556781.309	6812325.778	21.181	308°40'45.75"			
IP 9	31.002	556780.527	6812326.404	21.245				
IP 10	31.002	556780.527	6812326.404	21.245				
IP 11	33.002	556778.974	6812327.665	21.369				
IP 12	33.002	556778.974	6812327.665	21.369				
	35.000	556777.422	6812328.924	21.489	309°03'39.77"			
IP 13	38.004	556775.090	6812330.817	21.663				
IP 14	38.004	556775.090	6812330.817	21.663				
	40.000	556773.540	6812332.075	21.773	309°03'39.77"			
	45.000	556769.658	6812335.225	22.031	309°03'39.77"			
	50.000	556765.775	6812338.376	22.265	309°03'39.77"			
	55.000	556761.893	6812341.527	22.474	309°03'39.77"			
	60.000	556758.011	6812344.678	22.659	309°03'39.77"			
IP 15	61.511	556756.837	6812345.630	22.709				
IP 16	61.511	556756.837	6812345.630	22.709				
IP 17	61.597	556756.773	6812345.686	22.712				
IP 18	61.989	556756.476	6812345.943	22.725				
IP 19	62.936	556755.763	6812346.567	22.756				
IP 20	63.884	556755.054	6812347.195	22.786				
IP 21	64.831	556754.349	6812347.828	22.815				
	65.000	556754.224	6812347.941	22.820	312°14'13.87"			
IP 22	65.778	556753.648	6812348.464	22.843				
IP 23	66.725	556752.951	6812349.105	22.870				
IP 24	67.672	556752.257	6812349.750	22.896				
IP 25	68.619	556751.568	6812350.399	22.921				
IP 26	69.566	556750.883	6812351.053	22.945				
	70.000	556750.570	6812351.354	22.956	313°58'24.62"			
IP 27	70.513	556750.201	6812351.710	22.969				
IP 28	71.460	556749.524	6812352.372	22.991				
IP 29	72.406	556748.850	6812353.037	23.012				
IP 30	73.353	556748.181	6812353.707	23.032				
IP 31	74.300	556747.516	6812354.381	23.051				
	75.000	556747.027	6812354.882	23.064	315°42'35.38"			
IP 32	75.247	556746.855	6812355.058	23.069				
IP 33	76.193	556746.198	6812355.740	23.086				
IP 34	77.140	556745.545	6812356.425	23.102				
IP 35	78.087	556744.896	6812357.115	23.117				
IP 36	79.033	556744.252	6812357.808	23.132				
IP 37	79.980	556743.612	6812358.506	23.145				
	80.000	556743.598	6812358.521	23.145	317°47'36.29"			
IP 38	80.926	556742.976	6812359.207	23.157				
IP 39	81.873	556742.345	6812359.912	23.168				
IP 40	82.819	556741.717	6812360.620	23.178				
IP 41	83.765	556741.094	6812361.333	23.188				
IP 42	84.712	556740.476	6812362.049	23.196				
	85.000	556740.289	6812362.268	23.198	319°31'47.05"			
IP 43	85.658	556739.862	6812362.769	23.203				
IP 44	86.604	556739.252	6812363.492	23.209				
IP 45	87.550	556738.647	6812364.219	23.214				
IP 46	88.496	556738.046	6812364.950	23.219				
IP 47	89.442	556737.449	6812365.685	23.222				

RSW05-RETAINING WALL - SETOUT DETAILS (CONTINUED)

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
	90.000	556737.097	6812366.117	23.223	320°53'35.93"			
	95.000	556734.006	6812370.046	23.222	322°43'42.75"			
	100.000	556731.042	6812374.073	23.193	324°33'49.56"			
IP 48	102.214	556729.340	6812375.588	23.172		R = 156.100	25.544	9°22'32.42"
	105.000	556728.209	6812378.193	23.137	326°23'56.38"			
	110.000	556725.509	6812382.401	23.053	328°14'03.20"			
CC	114.986	556722.952	6812386.681	22.941	330°03'51.69"			
	115.000	556722.945	6812386.693	22.941	330°04'10.01"			
	120.000	556720.520	6812391.066	22.801	331°54'16.83"			
	125.000	556718.237	6812395.513	22.634	333°44'23.65"			
	130.000	556716.096	6812400.032	22.440	335°34'30.46"			
	135.000	556714.102	6812404.617	22.217	337°24'37.28"			
	140.000	556712.256	6812409.263	21.967	339°14'44.10"			
	145.000	556710.559	6812413.966	21.689	341°04'50.91"			
	150.000	556709.014	6812418.721	21.384	342°54'57.73"			
IP 49	152.829	556703.689	6812420.133	21.199		R = 156.100	75.685	27°46'47.18"
	155.000	556707.622	6812423.523	21.051	344°45'04.54"			
	160.000	556706.384	6812428.368	20.690	346°35'11.36"			
	165.000	556705.303	6812433.249	20.302	348°25'18.18"			
	170.000	556704.378	6812438.162	19.886	350°15'24.99"			
	175.000	556703.611	6812443.103	19.442	352°05'31.81"			
	180.000	556703.002	6812448.066	18.971	353°55'38.63"			
	185.000	556702.553	6812453.045	18.472	355°45'45.44"			
	190.000	556702.263	6812458.037	17.955	357°35'52.26"			
CC	190.671	556702.237	6812458.707	17.885	357°50'38.87"			
	195.000	556702.134	6812463.035	17.437	359°25'59.08"			
IP 50	197.766	556701.970	6812465.802	17.150		R = 156.100	14.191	5°12'31.35"
	200.000	556702.164	6812468.034	16.919	1°16'05.89"			
IP 51	204.862	556702.348	6812472.893	16.415				
	205.000	556702.355	6812473.031	16.401	2°49'21.82"			
IP 52	205.808	556702.394	6812473.838	16.317				
IP 53	207.700	556702.505	6812475.727	16.122				
IP 54	209.593	556702.638	6812477.614	15.926				
	210.000	556702.672	6812478.020	15.884	4°43'57.60"			
IP 55	211.485	556702.794	6812479.501	15.731	4°43'57.60"			

RSW07-RETAINING WALL - SETOUT DETAILS

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING
IP 1	0.000	556720.016	6812613.650	5.193	1°37'39.98"
	5.000	556720.158	6812618.648	5.016	1°37'39.98"
	10.000	556720.300	6812623.646	4.855	1°37'39.98"
	15.000	556720.442	6812628.644	4.712	1°37'39.98"
	20.000	556720.584	6812633.642	4.587	1°37'39.98"
IP 2	21.000	556720.613	6812634.641	4.563	
IP 3	21.000	556720.613	6812634.641	4.563	
	25.000	556720.727	6812638.640	4.478	1°37'39.98"
	30.000	556720.869	6812643.638	4.387	1°37'39.98"
	35.000	556721.011	6812648.636	4.312	1°37'39.98"
	40.000	556721.153	6812653.634	4.256	1°37'39.98"
	45.000	556721.295	6812658.632	4.216	1°37'39.98"
	50.000	556721.437	6812663.630	4.190	1°37'39.98"
	55.000	556721.579	6812668.628	4.165	1°37'39.98"
	60.000	556721.721	6812673.626	4.140	1°37'39.98"
IP 4	65.000	556721.863	6812678.623	4.115	1°37'39.98"

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
B	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
A	16/12/2022	DF	100% DESIGN ISSUE	DF

Amendments

ballina shire council

CERTIFIED DF		DESIGNED GT / WS	
DATE 16/12/2022		DRAWN AH / TNDF	
F.B. L.B. -		CHECKED DF	
DATUM GDA96		APPROVED DF	
DRAWING 721982-01-CI-1901-1904.dwg			
SHEET 48 OF 60			

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
RETAINING WALL
SETOUT TABLES - SHEET 2 OF 3

Scale	Plan No.	Rev
HORIZONTAL: NTS VERTICAL:	721982-01-CI-1903	B

RSW06-RETAINING WALL - SETOUT DETAILS

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING
IP 1	0.000	556684.190	6812458.028	16.658	358°49'07.56"
IP 2	2.111	556684.147	6812460.138	16.339	
IP 3	4.222	556684.129	6812462.249	16.010	
	5.000	556684.133	6812463.027	15.883	0°14'46.54"
IP 4	6.332	556684.139	6812464.359	15.667	
IP 5	8.442	556684.174	6812466.469	15.336	
	10.000	556684.219	6812468.026	15.083	1°40'24.11"
IP 6	10.552	556684.235	6812468.578	14.994	
IP 7	12.662	556684.323	6812470.686	14.641	
IP 8	14.771	556684.437	6812472.792	14.292	
	15.000	556684.452	6812473.021	14.247	3°38'05.80"
IP 9	15.825	556684.504	6812473.844	14.083	
IP 10	15.825	556684.504	6812473.844	14.083	
IP 11	16.880	556684.578	6812474.896	13.872	
IP 12	18.988	556684.744	6812476.998	13.468	
	20.000	556684.836	6812478.006	13.327	5°14'21.36"
IP 13	21.097	556684.937	6812479.098	13.175	
IP 14	23.204	556685.155	6812481.194	12.904	
IP 15	23.204	556685.155	6812481.194	12.904	
	25.000	556685.364	6812482.977	12.656	6°39'53.37"
IP 16	25.312	556685.400	6812483.287	12.613	
IP 17	27.419	556685.670	6812485.377	12.322	
IP 18	29.526	556685.967	6812487.463	12.047	
	30.000	556686.039	6812487.931	11.977	8°48'08.06"
IP 19	31.632	556686.289	6812489.544	11.736	
IP 20	33.738	556686.637	6812491.621	11.427	
	35.000	556686.861	6812492.863	11.244	10°13'35.52"
IP 21	35.844	556687.011	6812493.693	11.121	
IP 22	36.896	556687.208	6812494.728	10.970	
IP 23	36.896	556687.208	6812494.728	10.970	
IP 24	37.949	556687.422	6812495.758	10.810	
	40.000	556687.858	6812497.762	10.502	12°16'20.90"
IP 25	40.054	556687.869	6812497.815	10.494	
IP 26	42.158	556688.342	6812499.866	10.175	
IP 27	44.262	556688.840	6812501.909	9.867	
IP 28	44.262	556688.840	6812501.910	9.867	
	45.000	556688.992	6812502.632	9.786	11°53'17.82"
IP 29	46.365	556689.273	6812503.967	9.638	
IP 30	48.468	556689.731	6812506.020	9.422	
IP 31	49.103	556689.874	6812506.638	9.358	
	50.000	556690.076	6812507.513	9.271	12°59'04.35"
IP 32	50.473	556690.182	6812507.973	9.225	
IP 33	52.434	556690.616	6812509.886	9.036	
IP 34	54.395	556691.040	6812511.801	8.838	
	55.000	556691.168	6812512.392	8.777	12°14'32.30"
IP 35	56.356	556691.456	6812513.717	8.640	
IP 36	58.317	556691.863	6812515.635	8.445	
	60.000	556692.205	6812517.283	8.277	11°43'16.65"
IP 37	60.278	556692.261	6812517.555	8.249	
IP 38	62.238	556692.651	6812519.477	8.051	
IP 39	64.199	556693.032	6812521.400	7.815	
	65.000	556693.184	6812522.186	7.669	10°56'23.17"
IP 40	66.159	556693.404	6812523.324	7.459	
IP 41	68.119	556693.767	6812525.251	7.076	
	70.000	556694.107	6812527.100	6.802	10°25'07.52"
IP 42	70.079	556694.121	6812527.178	6.791	
IP 43	70.832	556694.255	6812527.919	6.712	
IP 44	71.059	556694.295	6812528.143	6.688	
IP 45	72.039	556694.467	6812529.107	6.585	
IP 46	72.039	556694.467	6812529.107	6.585	
IP 47	73.019	556694.636	6812530.073	6.488	
IP 48	73.999	556694.803	6812531.038	6.390	
IP 49	74.979	556694.968	6812532.004	6.275	
	75.000	556694.972	6812532.025	6.272	9°33'04.60"
IP 50	75.958	556695.131	6812532.970	6.141	
IP 51	76.938	556695.291	6812533.937	6.006	
IP 52	77.918	556695.449	6812534.903	5.871	
IP 53	78.898	556695.605	6812535.871	5.752	

RSW06-RETAINING WALL - SETOUT DETAILS (CONTINUED)

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING
IP 54	79.877	556695.759	6812536.838	5.647	
	80.000	556695.778	6812536.959	5.634	8°53'56.81"
IP 55	80.857	556695.910	6812537.806	5.541	
IP 56	81.836	556696.060	6812538.774	5.436	
IP 57	82.816	556696.207	6812539.742	5.335	
IP 58	83.795	556696.352	6812540.711	5.247	
IP 59	84.775	556696.494	6812541.680	5.159	
	85.000	556696.527	6812541.903	5.139	8°14'49.47"
IP 60	85.754	556696.635	6812542.649	5.070	
IP 61	86.733	556696.773	6812543.619	4.981	
IP 62	87.713	556696.909	6812544.589	4.892	
IP 63	88.692	556697.043	6812545.559	4.801	
IP 64	89.671	556697.175	6812546.529	4.711	
	90.000	556697.218	6812546.855	4.680	7°35'42.59"
IP 65	90.650	556697.304	6812547.500	4.619	
IP 66	91.630	556697.431	6812548.471	4.527	
IP 67	92.609	556697.556	6812549.442	4.436	
IP 68	93.588	556697.679	6812550.413	4.360	
IP 69	94.567	556697.800	6812551.385	4.290	
	95.000	556697.852	6812551.815	4.258	6°56'36.16"
IP 70	95.546	556697.918	6812552.356	4.219	
IP 71	96.525	556698.034	6812553.328	4.147	
IP 72	97.504	556698.148	6812554.301	4.075	
IP 73	98.483	556698.260	6812555.273	4.002	
IP 74	99.461	556698.369	6812556.246	3.929	
	100.000	556698.428	6812556.781	3.888	6°17'30.18"
IP 75	100.440	556698.477	6812557.219	3.855	
IP 76	101.419	556698.582	6812558.192	3.780	
IP 77	102.398	556698.684	6812559.165	3.705	
IP 78	103.377	556698.785	6812560.139	3.629	
IP 79	104.355	556698.883	6812561.113	3.550	
	105.000	556698.947	6812561.754	3.479	5°38'24.66"
IP 80	105.334	556698.980	6812562.086	3.442	
IP 81	106.312	556699.074	6812563.061	3.311	
IP 82	107.291	556699.165	6812564.035	3.191	
IP 83	108.269	556699.255	6812565.009	3.094	
IP 84	109.248	556699.342	6812565.984	3.032	
	110.000	556699.408	6812566.733	3.001	4°59'19.59"
IP 85	110.226	556699.427	6812566.959	2.992	
IP 86	111.205	556699.510	6812567.933	2.952	
IP 87	112.183	556699.591	6812568.908	2.911	
IP 88	113.161	556699.669	6812569.884	2.870	
IP 89	114.140	556699.745	6812570.859	2.829	
	115.000	556699.810	6812571.717	2.792	4°20'14.98"
IP 90	115.118	556699.819	6812571.834	2.787	
IP 91	116.096	556699.891	6812572.810	2.745	
IP 92	117.074	556699.961	6812573.786	2.702	
IP 93	118.053	556700.028	6812574.761	2.659	
IP 94	119.031	556700.093	6812575.737	2.615	
	120.000	556700.155	6812576.705	2.574	3°41'10.82"
IP 95	120.009	556700.156	6812576.713	2.573	
IP 96	120.987	556700.217	6812577.690	2.550	
IP 97	121.965	556700.275	6812578.666	2.530	
IP 98	122.943	556700.331	6812579.642	2.509	
IP 99	123.921	556700.385	6812580.619	2.487	
IP 100	124.898	556700.437	6812581.595	2.470	
	125.000	556700.442	6812581.696	2.469	2°54'18.43"
IP 101	125.876	556700.487	6812582.572	2.461	
IP 102	126.854	556700.534	6812583.548	2.452	
IP 103	127.832	556700.579	6812584.525	2.442	
IP 104	128.810	556700.622	6812585.502	2.433	
IP 105	129.787	556700.663	6812586.479	2.423	
	130.000	556700.671	6812586.691	2.421	2°15'15.27"
IP 106	130.765	556700.701	6812587.455	2.414	
IP 107	131.742	556700.737	6812588.432	2.404	
IP 108	132.720	556700.771	6812589.409	2.394	
IP 109	133.698	556700.803	6812590.386	2.381	
IP 110	134.675	556700.833	6812591.363	2.367	

RSW06-RETAINING WALL - SETOUT DETAILS (CONTINUED)

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING
	135.000	556700.842	6812591.688	2.364	1°37'59.81"
IP 111	135.653	556700.861	6812592.340	2.356	
IP 112	136.630	556700.888	6812593.317	2.346	
IP 113	137.607	556700.916	6812594.294	2.336	
IP 114	138.584	556700.944	6812595.271	2.325	
IP 115	139.562	556700.972	6812596.248	2.315	
	140.000	556700.984	6812596.686	2.310	1°37'38.48"
IP 116	140.539	556700.999	6812597.225	2.305	
IP 117	141.516	556701.027	6812598.202	2.294	
IP 118	142.319	556701.050	6812599.005	2.286	
	145.000	556701.126	6812601.684	2.258	1°37'40.00"
	150.000	556701.268	6812606.682	2.230	1°37'40.00"
	155.000	556701.410	6812611.680	2.303	1°37'40.00"
IP 119	157.497	556701.481	6812614.176	2.360	
IP 120	157.497	556701.481	6812614.177	2.360	
	160.000	556701.552	6812616.678	2.237	1°37'40.00"
	165.000	556701.694	6812621.676	2.019	1°37'40.00"
	170.000	556701.836	6812626.674	2.013	1°37'40.00"
	175.000	556701.978	6812631.672	2.209	1°37'40.00"
IP 121	178.497	556702.078	6812635.168	2.398	1°37'40.00"

RSW08-RETAINING WALL - SETOUT DETAILS

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING
IP 1	0.000	556723.965	6812752.594	3.745	1°37'39.98"
	5.000	556724.107	6812757.592	3.720	1°37'39.98"
	10.000	556724.249	6812762.590	3.695	1°37'39.98"
	15.000	556724.391	6812767.588	3.670	1°37'39.98"
	20.000	556724.533	6812772.586	3.645	1°37'39.98"
	25.000	556724.675	6812777.584	3.620	1°37'39.98"
	30.000	556724.817	6812782.582	3.595	1°37'39.98"
	35.000	556724.959	6812787.580	3.570	1°37'39.98"
	40.000	556725.101	6812792.578	3.545	1°37'39.98"
	45.000	556725.243	6812797.576	3.520	1°37'39.98"
	50.000	556725.385	6812802.574	3.495	1°37'39.98"
	55.000	556725.527	6812807.571	3.470	1°37'39.98"
	60.000	556725.669	6812812.569	3.445	1°37'39.98"
	65.000	556725.811	6812817.567	3.420	1°37'39.98"
	70.000	556725.953	6812822.565	3.395	1°37'39.98"
	75.000	556726.095	6812827.563	3.370	1°37'39.98"
	80.000	556726.237	6812832.561	3.345	1°37'39.98"
	85.000	556726.379	6812837.559	3.320	1°37'39.98"
IP 2	90.000	556726.521	6812842.557	3.295	1°37'39.98"

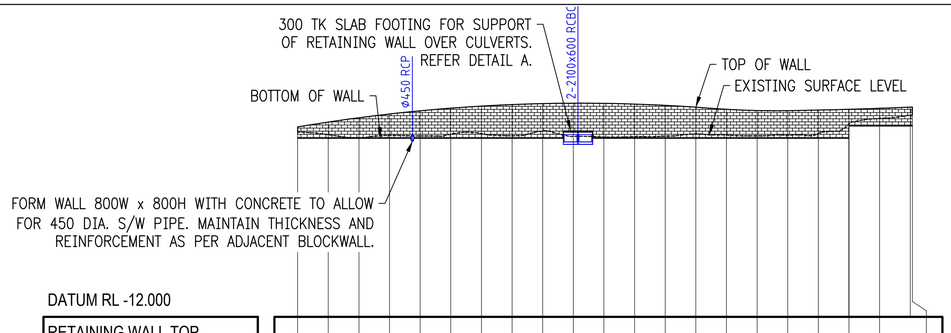
DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
B	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
A	16/12/2022	DF	100% DESIGN ISSUE	DF

Amendments

ballina shire council

CERTIFIED DF	DESIGNED GT / WS	BALLINA SHIRE COUNCIL	
DATE 16/12/2022	DRAWN AH / TNDF		
F.B. L.B. -	CHECKED DF	HUTLEY DRIVE SOUTHERN EXTENSION RETAINING WALL SETOUT TABLES - SHEET 3 OF 3	
DATUM GDA97	APPROVED DF		
DRAWING 721982-01-CI-1901-1904.dwg			
SHEET 49 OF 60		Scale HORIZONTAL: NTS VERTICAL:	Plan No. 721982-01-CI-1904 / Rev B

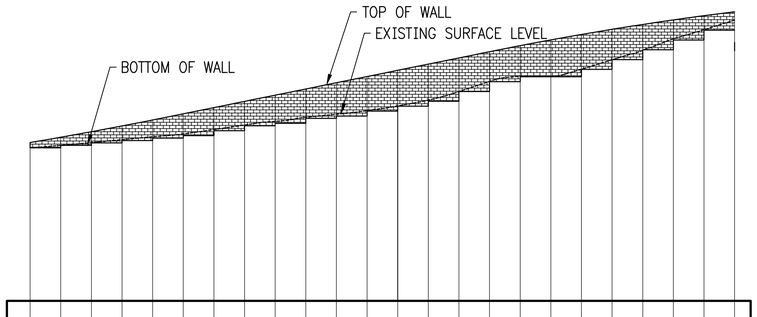


DATUM RL -12.000

RETAINING WALL TOP FINISHED SURFACE LEVEL		3.896	4.247	4.554	4.815	5.030	5.200	5.325	5.403	5.436	5.423	5.364	5.259	5.109	4.938	4.839	4.827	4.874	4.937	5.019	5.118	5.125
RETAINING WALL HEIGHT		1.320	1.671	1.978	2.239	2.454	2.624	2.749	2.827	2.350	2.847	2.791	2.683	2.846	2.362	2.263	2.251	2.298	2.361	1.443	1.542	1.549
BOTTOM OF RETAINING WALL		2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	2.576	3.576	3.576	3.576
EXISTING SURFACE LEVEL	3.077	2.864	2.583	2.810	2.761	2.908	2.950	2.784	3.164	2.729	2.667	2.703	2.750	2.934	2.838	2.775	2.816	2.975	3.723	4.200	4.461	4.485
CONTROL LINE CHAINAGE	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	65.000	70.000	75.000	80.000	85.000	90.000	95.000	100.000	100.356

RSW01 - RETAINING WALL

SCALE: HORIZONTAL - 1:500
VERTICAL - 1:250

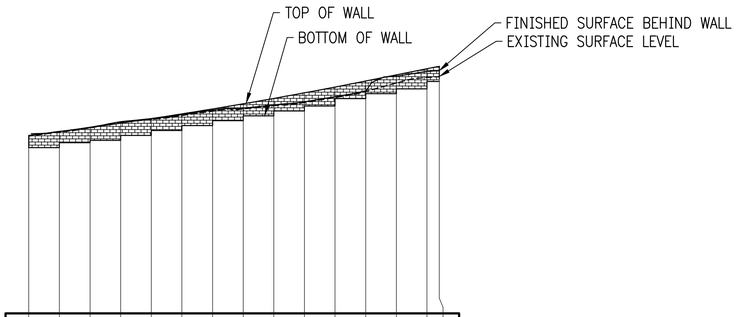


DATUM RL -3.000

RETAINING WALL TOP FINISHED SURFACE LEVEL		10.353	10.805	11.275	11.762	12.265	12.772	13.278	13.785	14.292	14.798	15.305	15.812	16.318	16.825	17.332	17.826	18.296	18.740	19.160	19.556	19.926	20.272	20.593
RETAINING WALL HEIGHT		0.867	1.119	1.389	1.676	1.979	2.086	2.192	2.499	2.806	2.912	3.219	3.326	3.432	3.539	3.246	2.940	3.010	3.454	3.274	2.870	2.440	1.986	1.507
BOTTOM OF RETAINING WALL		9.486	9.686	9.886	10.086	10.286	10.686	11.086	11.286	11.486	11.886	12.086	12.486	12.886	13.286	14.086	14.886	15.286	15.286	15.886	16.686	17.486	18.286	19.086
EXISTING SURFACE LEVEL	9.486	9.687	9.918	10.156	10.391	10.620	10.979	11.354	11.648	11.977	12.229	12.530	12.903	13.385	14.083	14.907	15.328	15.313	15.907	16.675	17.442	18.385	19.129	19.905
CONTROL LINE CHAINAGE	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	65.000	70.000	75.000	80.000	85.000	90.000	95.000	100.000	105.000	110.000	115.000

RSW03 - RETAINING WALL

SCALE: HORIZONTAL - 1:500
VERTICAL - 1:250



DATUM RL -5.000

FINISHED SURFACE LEVEL BEHIND RETAINING WALL	9.653	9.844	10.187	10.635	10.886	11.219	11.584	11.743	12.006	12.259	12.679	13.169	14.351	14.722	14.796	
RETAINING WALL TOP	9.52	9.836	10.169	10.52	10.888	11.274	11.678	12.099	12.537	12.993	13.467	13.957	14.457	14.957	15.157	
RETAINING WALL HEIGHT	1.134	1.325	1.268	1.516	1.367	1.300	1.265	1.024	0.887	0.740	0.760	0.650	1.432	1.403	0.877	
BOTTOM OF RETAINING WALL	8.519	8.519	8.919	9.119	9.519	9.919	10.319	10.719	11.119	11.519	11.919	12.519	12.919	13.319	13.919	
EXISTING SURFACE LEVEL	9.462	9.791	10.136	10.581	10.825	11.141	11.497	11.675	11.936	12.205	12.610	13.109	13.796	14.240	14.318	
DEPTH TO EXISTING SURFACE LEVEL	-0.942	-0.956	-0.966	-1.061	-0.937	-0.866	-0.819	-0.576	-0.399	-0.211	-0.144	-0.151	-0.339	-0.282	-0.161	
CONTROL LINE CHAINAGE	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	65.000	67.000	

RSW02 - RETAINING WALL

SCALE: HORIZONTAL - 1:500
VERTICAL - 1:250

0 5 10 15 20 25m
SCALE 1:250 @A1

0 10 20 30 40 50m
SCALE 1:500 @A1

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
C	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
B	16/12/2022	DF	100% DESIGN ISSUE	DF
A	30/07/2021	GT	85% DESIGN ISSUE	GH

Amendments

ballina shire council

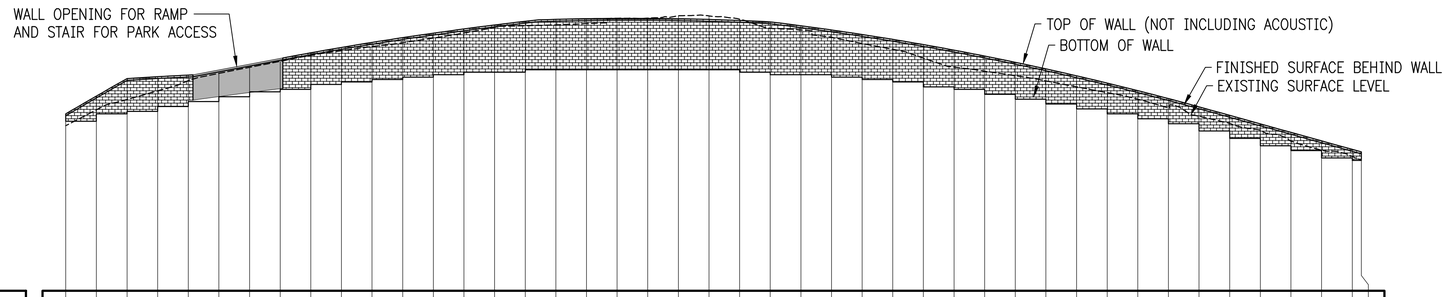
CERTIFIED	DF	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	DF
DATUM	GDA94	APPROVED	DF
DRAWING	721982-01-CI-1905-1907.dwg		

SHEET 50 OF 60

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
RETAINING WALL
LONGITUDINAL SECTION - SHEET 1 OF 3

Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: 1:250	721982-01-CI-1905	C

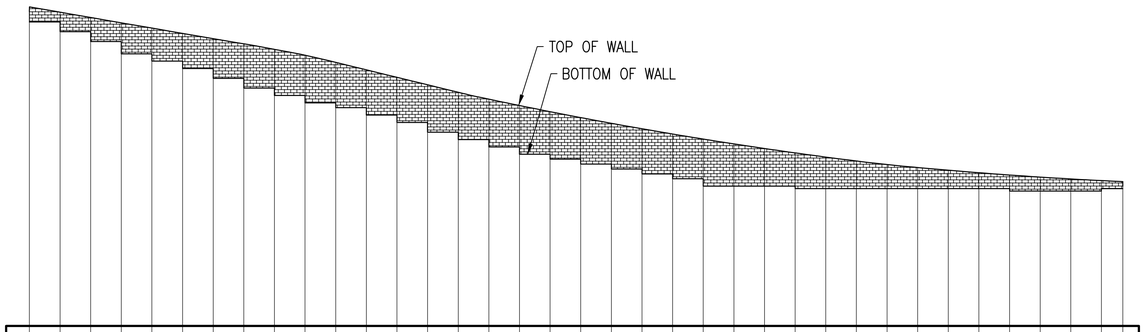


DATUM RL 5.000

CONTROL LINE CHAINAGE	FINISHED SURFACE LEVEL BEHIND RETAINING WALL	RETAINING WALL TOP	RETAINING WALL HEIGHT	BOTTOM OF RETAINING WALL	EXISTING SURFACE LEVEL	DEPTH TO EXISTING SURFACE LEVEL
0.000	19.01			18.833	18.471	0.362
5.000	20.736	20.886	1.453	19.433	19.765	-0.479
10.000	22.164	22.314	2.681	19.633	20.606	-0.892
15.000	22.318	22.468	2.435	20.033	21.311	-1.193
20.000	22.446	22.596	2.163	20.433	22.145	-1.648
25.000				20.833	22.737	-1.887
30.000				21.233	23.232	-2.051
35.000	20.014			21.433	23.716	-2.227
40.000	24.267	24.415	2.582	21.833	24.206	-2.433
45.000	24.704	24.853	2.820	22.033	24.588	-2.557
50.000	25.116	25.265	3.032	22.233	24.933	-2.668
55.000	25.504	25.652	3.219	22.433	25.237	-2.763
60.000	25.867	26.015	3.382	22.633	25.621	-2.962
65.000	26.212	26.362	3.529	22.833	26.030	-3.210
70.000	26.536	26.687	3.854	22.833	26.495	-3.538
75.000	26.833	26.984	4.151	22.833	26.623	-3.559
80.000	26.995	27.145	4.112	23.033	26.698	-3.553
85.000	27.048	27.198	4.165	23.033	26.800	-3.603
90.000	27.073	27.223	4.190	23.033	27.235	-4.012
95.000	27.072	27.222	4.189	23.033	27.239	-4.017
100.000	27.043	27.193	4.160	23.033	27.439	-4.246
105.000	26.987	27.137	4.104	23.033	27.413	-4.276
110.000	26.903	27.053	4.020	23.033	27.163	-4.110
115.000	26.79	26.94	4.107	22.833	26.412	-3.471
120.000	26.475	26.625	3.992	22.633	26.280	-3.478
125.000	26.131	26.281	3.648	22.633	25.678	-3.043
130.000	25.761	25.911	3.478	22.433	25.168	-2.728
135.000	25.362	25.512	3.279	22.233	24.688	-2.471
140.000	24.936	25.086	3.053	22.033	23.980	-2.013
145.000	24.482	24.632	2.999	21.633	23.241	-1.552
150.000	24	24.15	2.717	21.433	22.916	-1.532
155.000	23.491	23.641	2.608	21.033	22.537	-1.486
160.000	22.954	23.104	2.471	20.633	22.121	-1.431
165.000	22.39	22.54	2.277	20.233	21.631	-1.329
170.000	21.798	21.948	2.115	19.833	21.161	-1.275
175.000	21.178	21.328	1.895	19.433	20.619	-1.177
180.000	20.53	20.68	1.647	19.033	19.917	-0.946
185.000	19.855	20.005	1.372	18.633	19.240	-0.768
190.000	19.162	19.312	1.279	18.033	18.654	-0.700
195.000	18.468	18.618	1.185	17.433	18.095	-0.658
200.000	17.773	17.923	1.090	16.833	17.210	-0.291
205.000	17.079	17.229	0.796	16.433	16.467	-0.066
210.000	16.386	16.536	0.703	15.833	15.948	-0.063
211.485	15.672	16.331	0.698	15.633	15.653	0.078

RSW05 - RETAINING WALL

SCALE: HORIZONTAL - 1:500
VERTICAL - 1:250



DATUM RL -9.000

CONTROL LINE CHAINAGE	RETAINING WALL TOP FINISHED SURFACE LEVEL	BOTTOM OF RETAINING WALL	EXISTING SURFACE LEVEL	RETAINING WALL HEIGHT
0.000		15.810	16.658	
5.000	16.604	15.810	15.883	-0.720
10.000	16.169	15.010	15.083	-1.086
15.000	15.737	14.210	14.247	-1.490
20.000	15.306	13.210	13.327	-1.979
25.000	14.877	12.610	12.656	-2.221
30.000	14.449	12.010	11.977	-2.472
35.000	14.023	11.210	11.244	-2.779
40.000	13.573	10.410	10.502	-3.071
45.000	13.093	9.810	9.786	-3.307
50.000	12.513	9.210	9.271	-3.242
55.000	11.901	8.810	8.777	-3.124
60.000	11.290	8.210	8.277	-3.013
65.000	10.679	7.610	7.669	-3.010
70.000	10.070	6.810	6.802	-3.267
75.000	9.506	6.210	6.272	-3.234
80.000	8.988	5.610	5.634	-3.354
85.000	8.487	5.010	5.139	-3.348
90.000	8.004	4.610	4.680	-3.324
95.000	7.538	4.210	4.258	-3.280
100.000	7.091	3.810	3.888	-3.203
105.000	6.662	3.410	3.479	-3.183
110.000	6.250	3.010	3.001	-3.249
115.000	5.856	2.410	2.792	-3.064
120.000	5.481	2.410	2.574	-2.907
125.000	5.123	2.410	2.469	-2.654
130.000	4.783	2.210	2.421	-2.362
135.000	4.461	2.210	2.364	-2.097
140.000	4.172	2.210	2.310	-1.861
145.000	3.928	2.210	2.258	-1.671
150.000	3.708	2.210	2.230	-1.478
155.000	3.504	2.210	2.303	-1.201
160.000	3.318	2.210	2.237	-1.081
165.000	3.150	2.010	2.019	-1.130
170.000	2.998	2.010	2.013	-0.985
175.000	2.863	2.010	2.209	-0.654
178.497	2.780	2.210	2.398	-0.381

RSW06 - RETAINING WALL

SCALE: HORIZONTAL - 1:500
VERTICAL - 1:250

0 5 10 15 20 25m
SCALE 1:250 @A1

0 10 20 30 40 50m
SCALE 1:500 @A1

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
C	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
B	16/12/2022	DF	100% DESIGN ISSUE	DF
A	30/07/2021	GT	85% DESIGN ISSUE	GH

Amendments

ballina shire council

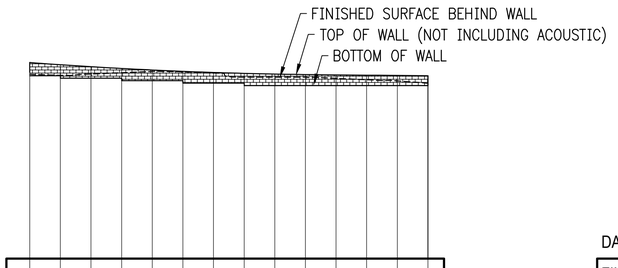
CERTIFIED	DF	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	DF
DATUM	GDA94	APPROVED	DF
DRAWING	721982-01-CI-1905-1907.dwg		

SHEET 51 OF 60

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
RETAINING WALL
LONGITUDINAL SECTION - SHEET 2 OF 3

Scale	Plan No.	Rev
HORIZONTAL: 1:500 VERTICAL: 1:250	721982-01-CI-1906	C



DATUM RL -10.000

| | | |

GENERAL NOTES:

1. THESE DRAWINGS AND NOTES ARE TO BE READ IN CONJUNCTION WITH THE DRAWINGS, SPECIFICATIONS, AND WITH SUCH FURTHER DETAILS, AND INSTRUCTIONS WHICH MAY BE ISSUED. REFER ALL DISCREPANCIES TO THE ENGINEER BEFORE PROCEEDING WITH WORK.
2. CONSTRUCTION OF ALL WORK SHALL COMPLY WITH CURRENT EDITIONS OF RELEVANT SAA CODES.
3. DIMENSIONS SHALL BE VERIFIED BEFORE COMMENCING CONSTRUCTION. DO NOT SCALE DRAWINGS TO OBTAIN DIMENSIONS.
4. THROUGHOUT CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVER STRESSED.
5. CONSTRUCTION SYSTEMS, PROCEDURES AND METHODOLOGY OF STRUCTURAL AND CIVIL WORK SHALL ENSURE COMPLIANCE WITH THE LOCAL AUTHORITY WORKPLACE HEALTH AND SAFETY LEGISLATION.

DESIGN CRITERIA:

1. THE RETAINING WALLS SHOWN ON THESE DRAWINGS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE EARTH RETAINING STRUCTURES CODE, AS4678:2002 AND FOR THE FOLLOWING:
   STRUCTURE CLASSIFICATION: B
   LIVE LOAD SURCHARGE: REFER TO SECTIONS

   WIND LOADS TO AS/NZS 1170.2

REGION	B
TERRAIN CATEGORY	2
BCA STRUCTURE IMPORTANCE LEVEL	2
Vdes,	52.9
Pult	1.7 * C_{fig}
Pserv	0.8 * C_{fig}

2. CONCRETE ELEMENTS HAVE BEEN DESIGNED FOR THE FOLLOWING DURABILITY EXPOSURE TO AS3600 (B1 EXPOSURE U.N.O.)

EXTERNAL	B1
FOOTINGS	A2

FOOTING NOTES:

1. THE BUILDER SHALL ALLOW TO PAY ALL ASSOCIATED COSTS TO ENGAGE AN APPROVED GEOTECHNICAL ENGINEER TO CARRY OUT ALL INSPECTIONS AND TESTING AS NECESSARY TO CERTIFY THAT THE FOUNDING MATERIAL FOR HIGH LEVEL FOOTINGS AND OR THE CAPACITY OF BORED PIERS COMPLIES WITH THAT NOMINATED IN THE DOCUMENTATION. THE CERTIFICATION IS TO BE SIGNED BY A REGISTERED PROFESSIONAL ENGINEER OF QUEENSLAND.
2. AN ALLOWABLE BEARING PRESSURE FOR HIGH LEVEL FOOTINGS OF 100kPa HAS BEEN ASSUMED IN THE DESIGN OF THE FOOTINGS. FOR BORED PIERS AN ALLOWABLE END BEARING PRESSURE OF 300kPa HAS BEEN ASSUMED.
3. WHERE REQUIRED FOUNDING MATERIAL IS DEEPER THAN THE UNDERSIDE OF THE HIGH LEVEL FOOTINGS AS DETAILED ALLOW TO BACKFILL ADDITIONAL EXCAVATION WITH N20 CONCRETE.
4. WHERE EXCAVATION WORK IS TO BE CARRIED OUT ADJACENT TO EXISTING FOOTINGS THE EXACT LEVEL OF THE UNDERSIDE OF THE FOOTINGS SHALL BE DETERMINED BY TEST PITS PRIOR TO EXCAVATION. UNDERPINNING SHALL BE CARRIED OUT AS DETAILED OR REQUIRED BY THE STRUCTURAL ENGINEER.
5. ALL FOOTING EXCAVATIONS SHALL BE FORMED AS NECESSARY WHEN EXCAVATED FACE IS NOT STABLE, DEWATERED AND CLEANED OF LOOSE AND SOFT MATERIAL PRIOR TO PLACING CONCRETE.
6. ALL WALLS AND COLUMNS SHALL BE CONCENTRIC WITH SUPPORTING FOOTINGS UNLESS NOTED OTHERWISE ON THE DRAWINGS.

PRECAST CONCRETE PANEL NOTES:

1. ALL WORKMANSHIP AND MATERIALS SHALL CONFORM WITH CURRENT EDITIONS OF AS3600 AND AS3850 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS AND SPECIFICATIONS.
2. ALL PRECAST PANELS ARE TO BE 150mm THICK, N50 CONCRETE U.N.O.
3. PRIOR TO COMMENCEMENT THE CONTRACTOR SHALL CONFIRM ADEQUATE SITE CONDITIONS TO ALLOW ERECTION AND INSTALLATION OF PRECAST PANELS. NOTIFY ARCHITECT IF INSUFFICIENT ACCESS / SITE CLEARANCES.
4. ALL PANEL CORNERS TO HAVE 20mm CHAMFER.
5. ALL LIFTING INSERTS ARE TO COMPLY WITH AS 3850 AND BE DESIGNED, MANUFACTURED AND INSTALLED TO ACHIEVE A MINIMUM GUARANTEED FACTOR OF SAFETY OF 2.5 AGAINST FAILURE OF THE ANCHOR, THE CONCRETE OR ANY REINFORCEMENT TO WHICH THE ANCHOR RELIES UPON FOR ANCHORAGE. LIFTING CLUTCHES SHALL HAVE A MINIMUM FACTOR OF SAFETY OF 5 AGAINST FAILURE.
6. ALL LIFTING INSERTS AND CLUTCHES SHALL BE PERMANENTLY MARKED WITH THE NOMINAL CAPACITY OF THE ANCHOR AND THE MANUFACTURER'S IDENTIFICATION MARK WHICH ARE TO BE VISIBLE WHEN THE ANCHOR IS PLACED IN CONCRETE.
7. THE PRECAST CONCRETE MANUFACTURER SHALL PROVIDE MANUFACTURER'S COMPLIANCE AND TEST CERTIFICATION BY A NATA ACCREDITED TESTING AUTHORITY OF THE PROPOSED LIFTING INSERTS AND CLUTCHES.
8. PRIOR TO LIFTING OF ANY PRECAST CONCRETE ELEMENT THE PRECAST CONCRETE MANUFACTURER'S ENGINEER SHALL VERIFY THAT EACH PRECAST CONCRETE ELEMENT HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE DESIGN FOR ERECTION AND THAT THE CONCRETE HAS REACHED THE REQUIRED STRENGTH FOR LIFTING.
9. PRECAST PANELS AS DRAWN HAVE BEEN DESIGNED FOR 'IN-SERVICE' CONDITIONS ONLY. THE PRECAST PANEL MANUFACTURER IS RESPONSIBLE FOR THE DESIGN AND DOCUMENTATION OF PANELS FOR FABRICATION, LIFTING, STORAGE, TRANSPORTATION AND ALL ASPECTS OF THE ERECTION PROCESS.
10. PRECAST PANELS AS DRAWN HAVE BEEN DESIGNED FOR 'IN-SERVICE' CONDITIONS ONLY. THE PRECAST PANEL MANUFACTURER IS RESPONSIBLE FOR THE DESIGN AND DOCUMENTATION OF PANELS FOR FABRICATION, LIFTING, STORAGE, TRANSPORTATION AND ALL ASPECTS OF THE ERECTION PROCESS.
11. IF PANELS ARE DESIGNED AS CRACKED SECTIONS UNDER ERECTION STRESSES THE MAX. CRACK WIDTH SHALL BE 0.2mm.
12. THE PRECAST PANEL MANUFACTURER SHALL SUBMIT TWO SETS OF FULLY DETAILED SHOP DRAWINGS OF ALL PANELS, INSERTS, FIXINGS, ANCHORS, BOLTS, FERRULES AND LIFTING DEVICES ETC, TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF FABRICATION.

BORED PIER NOTES:

1. ALL BORED PIERS TO BE IN ACCORDANCE WITH THE BORED PIER SPECIFICATION.
2. PRIOR TO COMMENCEMENT OF ANY BORED PIER WORK THE BUILDER SHALL LOCATE ALL NEW AND EXISTING SERVICES RELATIVE TO PIER LOCATIONS. THE ENGINEER IS TO BE NOTIFIED OF ANY POTENTIAL CLASHES.
3. THE BASE AND THE SHAFT OF THE BORED PIERS SHALL BE CLEANED OF ALL LOOSE MATERIAL BY THE USE OF A 'CLEAN-OUT' BUCKET.
4. ALLOW FOR PIER LINERS WHERE EXISTING SITE CONDITIONS REQUIRE IT.
5. AT COMPLETION OF BORED PIER INSTALLATION AND PRIOR TO COMMENCEMENT OF FURTHER WORK PROVIDE FOR APPROVAL FINAL SURVEY DETAILS OF THE AS CONSTRUCTED PIER LOCATIONS AND THE GEOTECHNICAL ENGINEERS CERTIFICATION OF THE BORED PIER LOAD CARRYING CAPACITIES IN ACCORDANCE WITH THE BORED PIER SPECIFICATION.

CONCRETE NOTES:

1. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM WITH CURRENT EDITIONS OF AS 1379, AS 3600 AND AS 3610 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS. REFER ALSO TO INSITU CONCRETE, FORMWORK AND REINFORCEMENT SECTION OF THE SPECIFICATIONS.
2. CONCRETE STRENGTH GRADE FOR PARTICULAR ELEMENTS SHALL BE AS NOTED ON THE DRAWINGS.
3. PROJECT ASSESSMENT OF STRENGTH IN ACCORDANCE WITH AS 1379 SHALL BE ADOPTED FOR SAMPLING AND TESTING. REFER TO SPECIFICATION FOR FREQUENCY OF TESTS.
4. SIZE OF ELEMENTS IS EXCLUSIVE OF APPLIED FINISHES. BEAMS DEPTHS INCLUDE SLAB THICKNESS AND ARE THE FIRST DIMENSION SPECIFIED, FOLLOWED BY WIDTH. UNLESS NOTED OTHERWISE ALL FORMED EDGES AND CORNERS OF CONCRETE MEMBERS SHALL HAVE 20mm CHAMFERS.
5. CONSTRUCTION JOINTS SHALL BE MADE ONLY AT APPROVED LOCATIONS, AND, IN BEAMS AND SLABS SHALL BE CONSTRUCTED WITH A SHEAR KEY TO ENGINEER'S DETAIL U.N.O. SURFACES OF CONCRETE AT ALL JOINTS SHALL BE THOROUGHLY MECHANICALLY SCABBLED, FULLY EXPOSING THE AGGREGATE MIX, UNLESS OTHERWISE NOTED.
6. ALL REINFORCEMENT SHALL BE TO AS/NZS 4671 AND REINFORCEMENT GRADE IS DESIGNATED AS FOLLOWS:-
   R: PLAIN ROUND BAR, GRADE 250
   N: DEFORMED BAR, GRADE 500
   SL/RL: WIRE REINFORCING FABRIC, GRADE 500
7. REINFORCEMENT SHALL BE BENT COLD IN ACCORDANCE WITH AS 3600 EXCEPT WHERE APPROVED BY THE STRUCTURAL ENGINEER. NO REBENDING SHALL BE PERMITTED.

CONCRETE NOTES (Cont.):

8. DO NOT CUT REINFORCEMENT ON SITE TO CLEAR PENETRATIONS. DISPLACE REINFORCEMENT SLIGHTLY AS NECESSARY TO CLEAR BLOCKOUTS.
9. CONCRETE COVER AND LAPS TO REINFORCEMENT SHALL BE AS NOTED ON THE DRAWINGS.
10. APPLY EVAPORATION RETARDER AND CURE ALL CONCRETE IN ACCORDANCE WITH THE CONCRETE SPECIFICATIONS
11. NO UNSPECIFIED HOLES, PIPES, CONDUITS OR CHASES ARE PERMITTED WITHOUT PRIOR WRITTEN APPROVAL FROM THE SUPERINTENDENT (SUPERVISING OFFICER).

REINFORCED CONCRETE MASONRY NOTES:

1. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM WITH THE CURRENT EDITION OF AS 3700 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS AND SPECIFICATIONS.
2. CONCRETE MASONRY UNITS SHALL HAVE A MINIMUM CHARACTERISTIC UNCONFINED COMPRESSIVE STRENGTH OF 15 MPa IN ACCORDANCE WITH THE REQUIREMENTS OF AS/NZS 4455.1.
3. PROVIDE ADEQUATE TEMPORARY PROPPING TO WALLS DURING CONSTRUCTION IN ACCORDANCE WITH AS 3700 AND THE WORK METHOD STATEMENT PREPARED BY THE BUILDER / CONTRACTOR.
4. PROVIDE VERTICAL CONTROL JOINTS IN WALLS AT STEPS IN FOOTINGS AND AT MAXIMUM 8 METRE CENTRES OR WHERE INDICATED ON DRAWINGS.
5. ALL WALLS SHALL BE FULLY BONDED OR TIED AT THEIR INTERSECTIONS UNLESS DETAILED OTHERWISE.
6. MORTAR SHALL BE MECHANICALLY MIXED AND TYPE M3 U.N.O. CONSISTING OF 1 PART CEMENT, 1 PART HYDRATED LIME AND 6 PARTS OF WELL GRADED SAND, AND SHALL COMPLY WITH THE REQUIREMENTS OF AS 3700.
7. CORES OF ALL BLOCKS SHALL BE CLEAN AND FREE FROM PROJECTING MORTAR. PROVIDE CLEAN OUT OPENINGS AT BASE OF EACH LIFT. FORM THE FACE OF CLEAN OUT BLOCKS. INFILL BLOCK SHELLS SHALL NOT BE USED WITHOUT APPROVAL BY THE STRUCTURAL ENGINEER.
8. CORE FILLING CONCRETE SHALL BE MIXED USING MAX 10mm AGGREGATE, SHALL HAVE F'C 20 MPa AND MAXIMUM SLUMP OF 230mm. CONCRETE SHALL BE PLACED TO COMPLETELY FILL CORES WITHOUT SEGREGATION OR VOIDS. COMPACT BY INTERNAL VIBRATION OR RODDING AND STRENGTH TEST IN ACCORDANCE WITH THE MASONRY SPECIFICATION.
9. FILL CORES TO MAXIMUM 2.4 METRE HIGH FREE DROP IN ANY ONE POUR.

STRUCTURAL STEEL NOTES:

1. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM WITH CURRENT EDITIONS OF AS 4100, AS/NZS 1554 - 1 AND 2 AND AS 4600 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS. REFER ALSO TO THE STRUCTURAL STEELWORK SECTION OF THE SPECIFICATIONS.
2. ALL STEEL SHALL COMPLY WITH THE FOLLOWING U.N.O. :-
   WELDED SECTION - GRADE 300 TO AS/NZS 3678.2
   ROLLED SECTION - GRADE 300 TO AS/NZS 3679.2
   SHS AND RHS - GRADE 350/GRADE 450 TO AS 1163
   CHS - GRADE 250/GRADE 350 TO AS 1163
   FLAT PLATE - GRADE 300 TO AS/NZS 3679.2
   STANDARD PLATE - GRADE 250 TO AS/NZS 3678
3. THE CONTRACTOR SHALL UNLESS SPECIFIED ELSEWHERE:
   (A) PROVIDE AND EMPLOY ANY ADDITIONAL TEMPORARY BRACING ETC. NECESSARY TO ADEQUATELY HOLD STEELWORK IN POSITION DURING CONSTRUCTION.
   (B) PROVIDE ALL PACKS, CLEATS, BOLTS (INCL. H.D. BOLTS) ETC. REQUIRED FOR TEMPORARY AND PERMANENT ERECTION OF STEELWORK AND FOR ATTACHMENT OF TIMBER AND MISCELLANEOUS FRAMING.
   (C) SUBMIT TWO (2) COPIES OF WORKSHOP DRAWINGS TO THE ENGINEER FOR PERUSAL. FABRICATION SHALL NOT COMMENCE WITHOUT A WRITTEN RESPONSE.
4. ALL STRUCTURAL STEEL SHALL BE HOT DIPPED GALVANISED TO AS/NZS 4680 AFTER FABRICATION.
5. ALL STRUCTURAL STEELWORK BELOW GROUND LEVEL TO BE PAINTED WITH 2 COATS OF HIGH QUALITY APPROVED BITUMEN PAINT AND ENCASED BY N25 CONCRETE 75mm ALL ROUND U.N.O.
6. MINIMUM WELDING REQUIREMENTS IF NOT OTHERWISE SPECIFIED SHALL BE AS FOLLOWS:-
   ALL WELDS CATEGORY S.P 6mm CONTINUOUS FILLET WELDS, OR WHERE NOTED, COMPLETE PENETRATION BUTT WELDS (C.P.B.W.) USING ELECTRODES WITH A MINIMUM WELD TENSILE STRENGTH OF 480 MPa WITH CATEGORY S.P. INSPECTION WITH ALL WELDS 100% VISUALLY SCANNED, ALL TO AS/NZS 1554.1 UNLESS NOTED OTHERWISE. ALL WELDING SHALL BE PERFORMED BY A QUALIFIED WELDER IN ACCORDANCE WITH AS/NZS 1554.1.
7. SITE WELDS WHERE NOTED IN THE DOCUMENTATION SHALL BE THOROUGHLY WIRE BRUSHED CLEANED AND PAINTED IN ACCORDANCE WITH THE SPECIFICATION.
8. THE ENGINEER MAY ORDER NON-DESTRUCTIVE TESTING OF SELECTED WELDS. WELDS PROVED TO BE BELOW THE SPECIFIED QUALITY SHALL BE CUT OUT, REWELDED AND RE-TESTED AT CONTRACTOR'S EXPENSE.
9. ALL BOLTS, NUTS AND WASHERS, INCLUDING HOLD DOWN BOLTS, CAST-IN FERRULES, CAST-IN PLATES AND MASONRY ANCHORS ARE TO BE HOT DIP GALVANISED U.N.O. ALL GALVANISED COMPONENTS TO BE CAST INTO CONCRETE MUST BE PASSIVATED.

STRUCTURAL STEEL NOTES (Cont.):

10. BOLT TYPES SHALL BE AS FOLLOWS:-
    * 4.6/S - COMMERCIAL BOLTS TO AS 1111 AND AS 1112, SNUG TIGHTENED
    * 8.8/S - HIGH STRENGTH STRUCTURAL BOLTS TO AS/NZS 1252, SNUG TIGHTENED ONLY.
11. ALL STRUCTURAL STEEL FIXING DETAILS ARE TO BE BASED ON AISC STANDARDIZED STRUCTURAL CONNECTIONS U.N.O
12. ALL PLATES TO BE FROM STANDARD SQUARE EDGE FLATS U.N.O.

RETAINING WALL NOTES:

1. WHERE REQUIRED FOUNDING MATERIAL IS DEEPER THAN THE UNDERSIDE OF THE RETAINING WALL FOOTINGS AS DETAILED, ALLOW TO BACKFILL ADDITIONAL EXCAVATION WITH N20 CONCRETE.
2. WHERE EXCAVATION WORK IS TO BE CARRIED OUT ADJACENT TO EXISTING FOOTINGS, THE EXACT LEVEL OF THE UNDERSIDE OF THE FOOTINGS SHALL BE DETERMINED BY TEST PITS PRIOR TO EXCAVATION. UNDERPINNING SHALL BE CARRIED OUT AS DETAILED OR REQUIRED BY THE STRUCTURAL ENGINEER.
3. ALL FOOTING EXCAVATIONS SHALL BE FORMED AS NECESSARY WHEN EXCAVATED FACE IS NOT STABLE, DEWATERED AND CLEARED OF LOOSE AND SOFT MATERIAL PRIOR TO PLACING CONCRETE.
4. NO ADDITIONAL LOADING, OTHER THAN THAT SPECIFIED ABOVE, MAY BE PLACED WITHIN 1.5 * RETAINED HEIGHT OF THE WALL MEASURED FROM THE REAR FACE OF THE WALL.
5. THE DESIGN OF THE RETAINING WALL HAS NOT CONSIDERED THE FOLLOWING:
   5.1. IMPOSED LOADS FROM ADJACENT STRUCTURES EG. HOUSES, DRIVEWAYS, WATERTANKS, SWIMMING POOLS ETC. FOOTINGS FOR THESE STRUCTURES ARE TO BE DESIGNED TO ENSURE THAT THEY DO NOT IMPOSE ANY ADDITIONAL LOADS ON ANY PART OF THE RETAINING WALL.
   5.2. IMPOSED LOADS FROM FENCING FIXED TO THE TOP OF THE WALL OR WITHIN 1.0m BEHIND THE WALL.
   5.3. IMPOSED LOADS FROM VEHICULAR CRASH BARRIERS FIXED TO THE TOP OF THE WALL OR WITHIN 1.5m BEHIND THE WALL.
6. SURCHARGE LOADING INDUCED FROM THE COMPACTION OF THE BACKFILL MATERIAL HAS BEEN ALLOWED FOR IN THE DESIGN OF THE RETAINING WALL BASED ON A 125kg HAND OPERATED VIBRATORY PLATE COMPACTOR EQUIVALENT TO 12kPa. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THAT THE PROPOSED COMPACTION EQUIPMENT DOES NOT EXCEED THE SURCHARGE LOADING SPECIFIED ABOVE.
7. AN EXCLUSION ZONE OF 1.5* RETAINED HEIGHT OF THE WALL FOR ALL OTHER PLANT AND MACHINERY SHALL BE MAINTAINED DURING CONSTRUCTION AND BACKFILLING OF THE RETAINING WALL.
8. DESIGN LOADS ARE BASED ON THE ACCEPTANCE THAT WATER PRESSURE IS NOT ALLOWED TO BUILD UP BEHIND THE WALL. LARGE VOLUMES OF WATER SHALL NOT BE CONCENTRATED TO FLOW TO ANY AREA BEHIND THE WALL.
9. RETAINING WALLS SHOULD NOT BE BACKFILLED UNTIL A MINIMUM OF 14 DAYS AFTER GROUT FILLING/CASTING IN CONCRETE.
10. BACKFILL RETAINING WALLS WITH CLEAN 20mm GRAVEL FILLING MINIMUM 300mm WIDE, FREE FROM CLAY OR OTHER ORGANIC MATTER AND WRAPPED IN GEOFABRIC. PROVIDE A 150mm THICK CLAY PLUG ON TOP OF THE DRAINAGE GRAVEL.
11. PROVIDE ALL AGRICULTURAL PIPES TO EARTH FACE OF ALL RETAINING WALLS. ALL AGRICULTURAL PIPES TO BE PROTECTED FROM SILTATION BY THE USE OF GEOFABRIC. AGRICULTURAL DRAINS TO BE CONNECTED TO THE STORMWATER SYSTEM.
12. PROVIDE A WATERPROOF MEMBRANE & D.P.C. TO THE EARTH FACE OF ALL RETAINING WALLS.
13. NO EXCAVATIONS IN FRONT OF THE RETAINING WALL SHALL BE PERMITTED WITHOUT QUALIFIED STRUCTURAL ENGINEERING ADVICE.

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NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
C	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
B	16/12/2022	DF	100% DESIGN ISSUE	DF
A	30/07/2021	GT	85% DESIGN ISSUE	GH

Amendments

ballina shire council

CERTIFIED DF		DESIGNED GT / WS	
DATE 16/12/2022		DRAWN AH / TNDF	
F.B. -	L.B. -	CHECKED DF	
DATUM GDA94		APPROVED DF	
DRAWING 721982-01-CI-1920.dwg			
SHEET 53 OF 60			

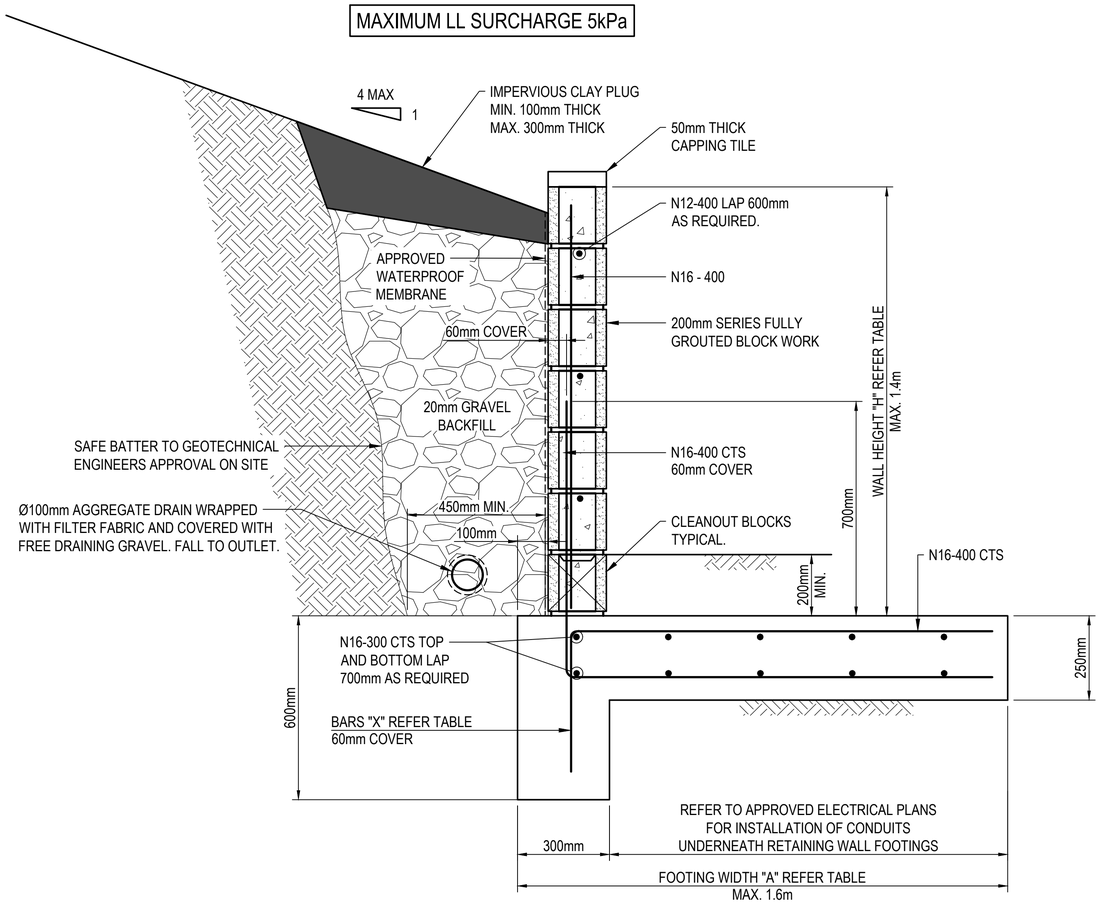
BALLINA SHIRE COUNCIL

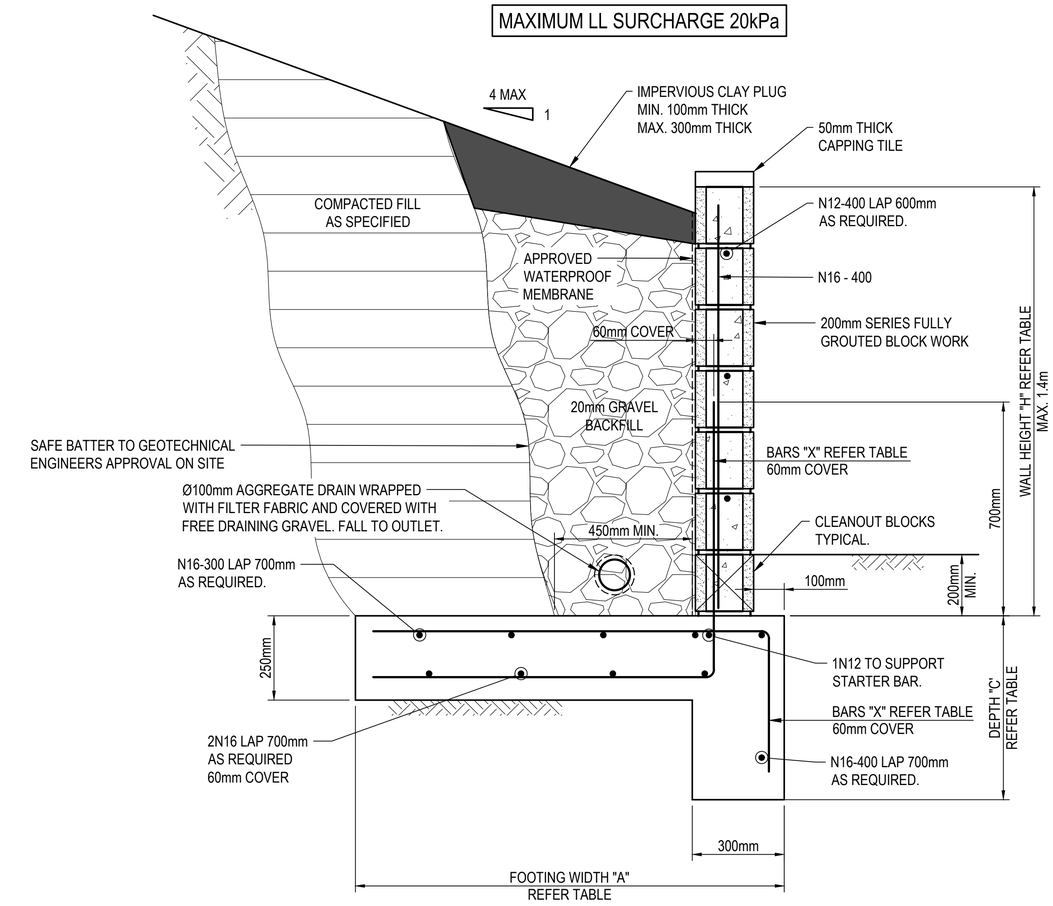
HUTLEY DRIVE SOUTHERN EXTENSION
RETAINING WALL
NOTES

Scale HORIZONTAL: NTS
VERTICAL: -

Plan No. 721982-01-CI-1920

Rev C





TYPICAL SECTION RETAINING WALL - TYPE 1
RSW02 & RSW08 ONLY

SCALE 1:10

RETAINING WALL TYPE 1 DIMENSIONS	
RETAINED HEIGHT "H"	FOOTING WIDTH "A"
1000	1200
1200	1400
1400	1600

NOTE: DIMENSIONS ARE SHOWN IN mm

TYPICAL SECTION RETAINING WALL - TYPE 2 (MAX HEIGHT 1.4m)
RSW01, RSW03, RSW06 & RSW09 ONLY

SCALE 1:10

RETAINING WALL TYPE 2 DIMENSIONS			
HEIGHT "H"	FOOTING WIDTH "A"	DEPTH "C"	BARS "X"
1000	1400	700	N16-400
1200	1600	800	N16-400
1400	1800	900	N16-200

NOTE: DIMENSIONS ARE SHOWN IN mm

0 200 400 600 800 1000mm
SCALE 1:10 @A1

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C	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
B	16/12/2022	DF	100% DESIGN ISSUE	DF
A	30/07/2021	GT	85% DESIGN ISSUE	GH

Amendments

ballina shire council

CERTIFIED	DF	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	DF
DATUM	GDA94	APPROVED	DF
DRAWING	721982-01-CI-1925-1927.dwg		
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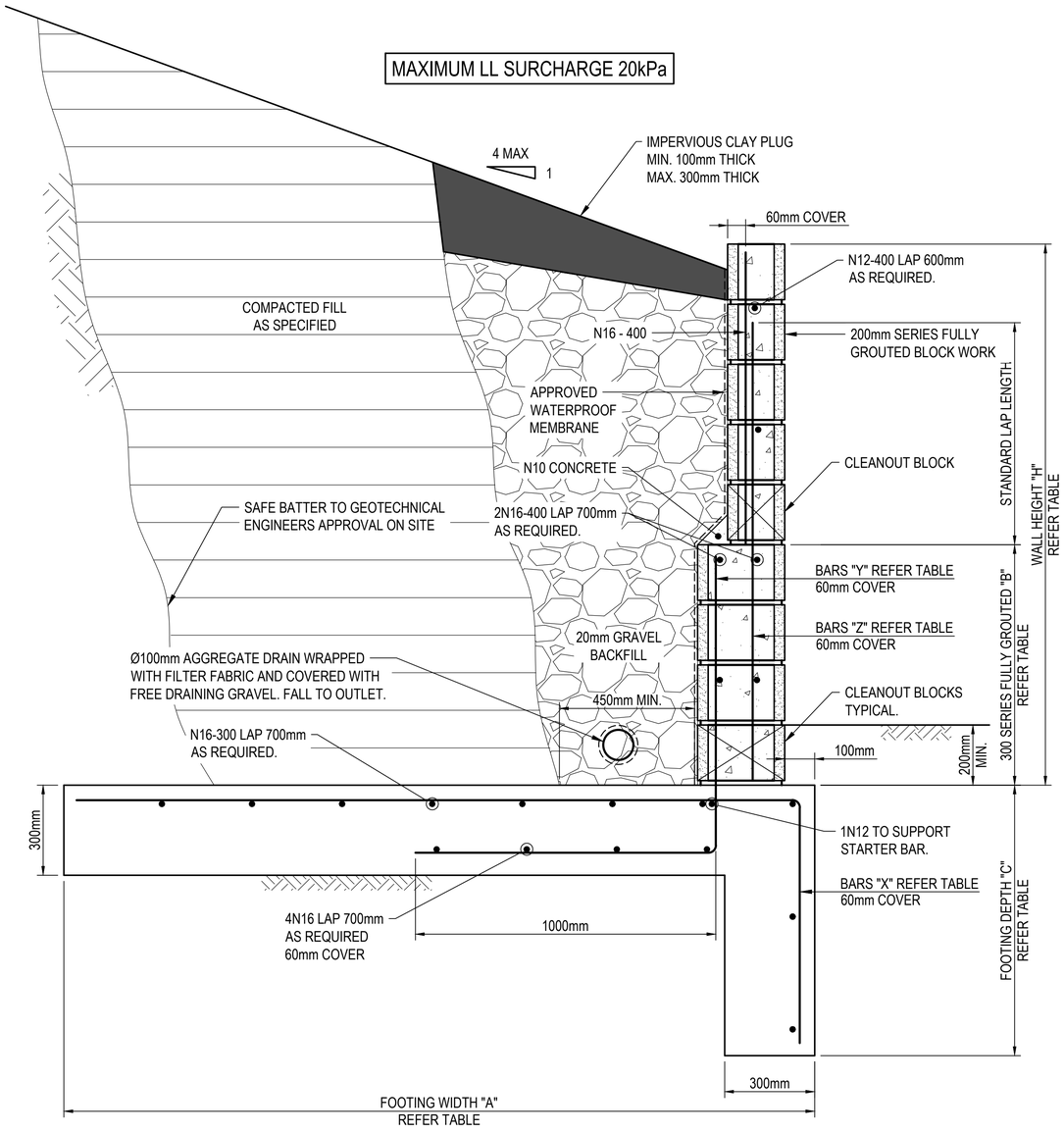
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HUTLEY DRIVE SOUTHERN EXTENSION
RETAINING WALL
BLOCKWORK - TYPICAL SECTION - TYPE 1 & TYPE 2

Scale	Plan No.	Rev
HORIZONTAL: AS SHOWN VERTICAL: -	721982-01-CI-1925	C

RETAINING WALL TYPE 3 DIMENSIONS						
HEIGHT "H"	WIDTH "A"	300 SERIES "B"	DEPTH "C"	BARS "X"	BARS "Y"	BARS "Z"
1600	2200	600	1000	N20-400	N20-400	N16-400
1800	2400	800	1100	N20-400	N20-400	N16-400
2000	2600	800	1200	N20-400	N20-400	N16-400
2200	2800	1000	1300	N20-200	N20-200	N16-400
2400	3000	1200	1400	N20-200	N20-200	N16-400

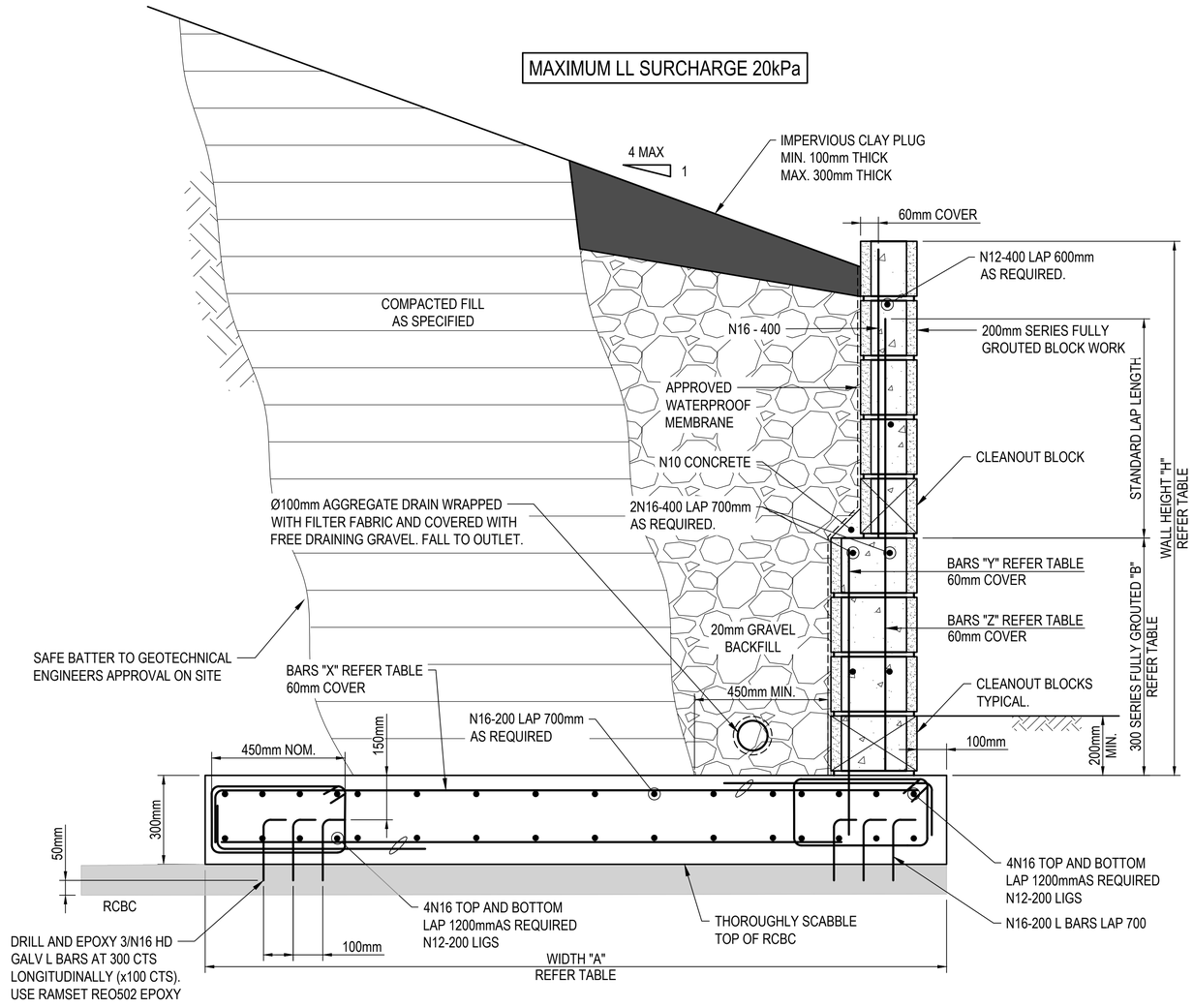
NOTE: DIMENSIONS ARE SHOWN IN mm



TYPICAL SECTION RETAINING WALL - TYPE 3 (MAX HEIGHT 2.4m)
RSW01, RSW03, RSW06 & RSW09 ONLY
SCALE 1:10

RETAINING WALL DIMENSIONS (REFER DETAIL A)							
RETAINING WALL	HEIGHT "H"	WIDTH "A"	300 SERIES "B"	DEPTH "C"	BARS "X"	BARS "Y"	BARS "Z"
RSW01	1600 MAX.	3000	600	1000	N16-200	N16-200	N16-400
RSW09	2200 MAX.	3600	1000	1300	N20-200	N20-200	N16-400

NOTE: DIMENSIONS ARE SHOWN IN mm



DETAIL A
SCALE N.T.S.

0 200 400 600 800 1000mm
SCALE 1:10 @A1

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A	30/07/2021	GT	85% DESIGN ISSUE	GH

Amendments

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CERTIFIED	DF	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	DF
DATUM	GDA94	APPROVED	DF
DRAWING	721982-01-CI-1925-1927.dwg		
SHEET	55 OF 60		

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
RETAINING WALL
BLOCKWORK - TYPICAL SECTION - TYPE 3

Scale HORIZONTAL: AS SHOWN
VERTICAL:

Plan No. 721982-01-CI-1926

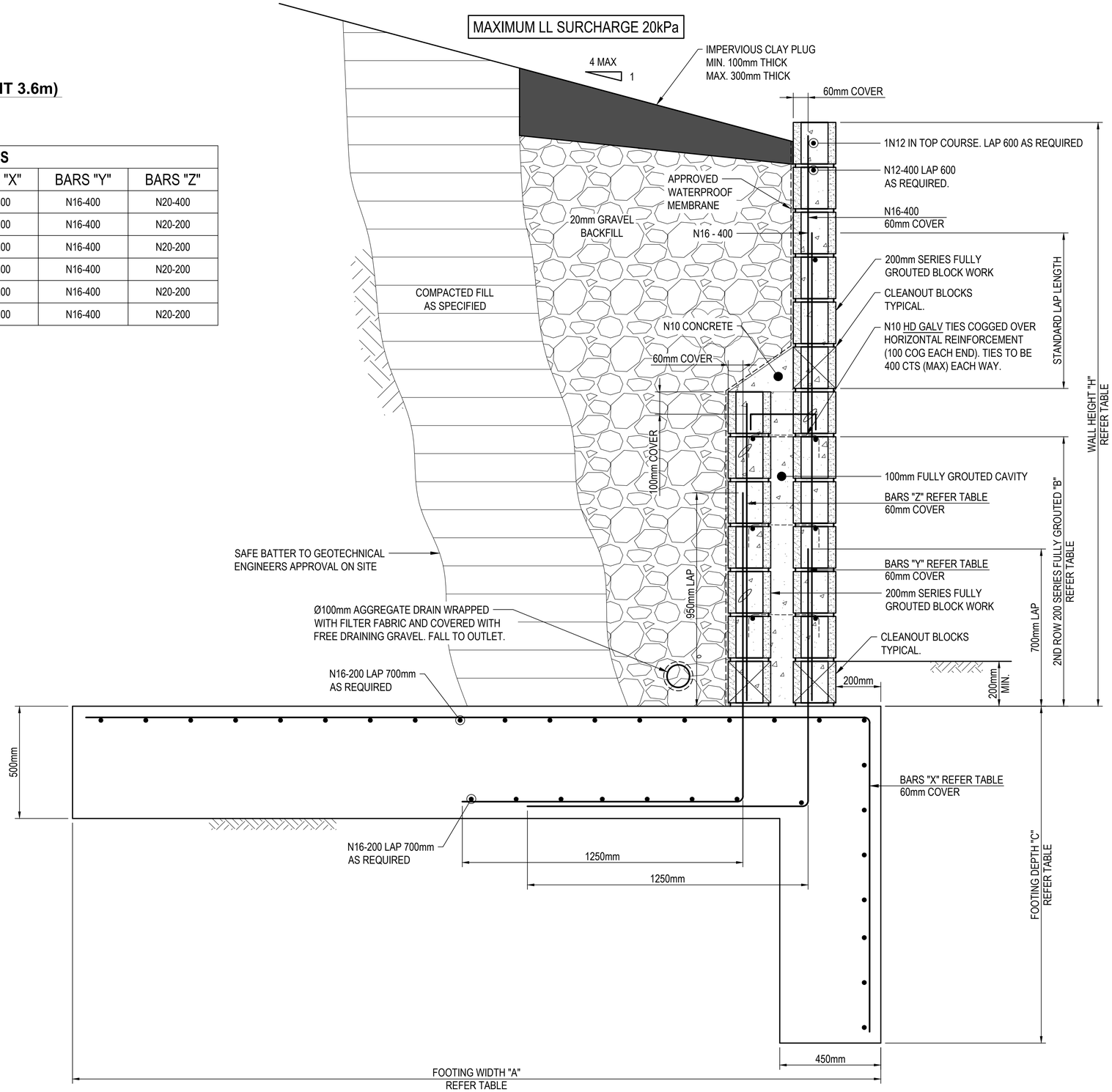
Rev C

TYPICAL SECTION RETAINING WALL - TYPE 4 (MAX HEIGHT 3.6m)

SCALE 1:10

RETAINING WALL TYPE 4 DIMENSIONS						
HEIGHT "H"	WIDTH "A"	2*200 SERIES "B"	DEPTH "C"	BARS "X"	BARS "Y"	BARS "Z"
2600	3200	1400	1600	N20-400	N16-400	N20-400
2800	3400	1600	1700	N20-200	N16-400	N20-200
3000	3600	1800	1800	N20-200	N16-400	N20-200
3200	3700	2000	2000	N20-200	N16-400	N20-200
3400	2800	2200	2200	N20-200	N16-400	N20-200
3600	3900	2400	2400	N20-200	N16-400	N20-200

NOTE: DIMENSIONS ARE SHOWN IN mm



0 200 400 600 800 1000mm

SCALE 1:10 @A1

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B	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
A	16/12/2022	DF	100% DESIGN ISSUE	DF

Amendments

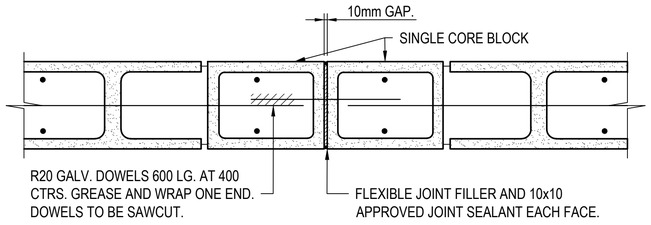
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CERTIFIED DF		DESIGNED GT / WS	
DATE 16/12/2022		DRAWN AH / TNDF	
F.B. - L.B. -		CHECKED DF	
DATUM GDA94		APPROVED DF	
DRAWING 721982-01-CI-1925-1927.dwg			
SHEET 56 OF 60			

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
RETAINING WALL
BLOCKWORK - TYPICAL SECTION - TYPE 4

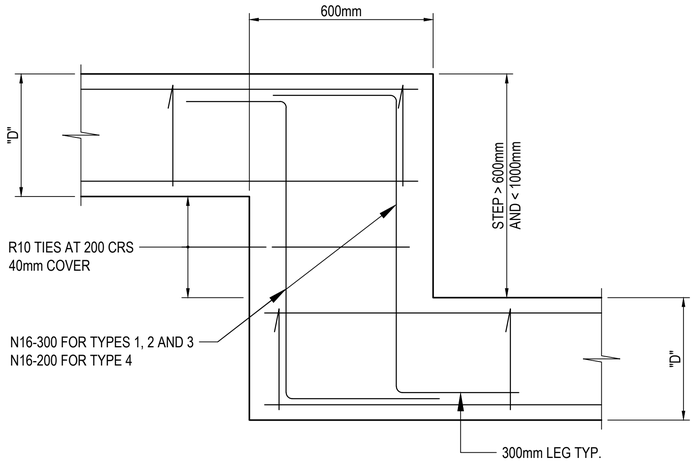
Scale	Plan No.	Rev
HORIZONTAL: AS SHOWN VERTICAL: -	721982-01-CI-1927	B



CONTROL JOINT (BCJ) - 290 BLOCK

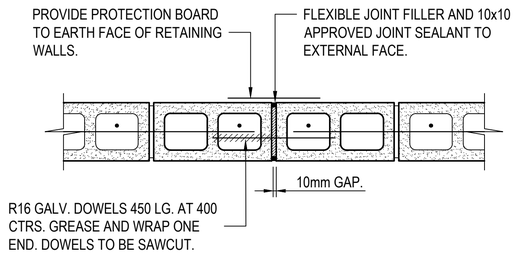
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NOTE: LOCATE CONTROL JOINTS AT FOOTING STEPS AND AT 8m CTS. MAX.



TYPICAL RETAINING WALL FOOTING STEP DETAIL STEP > 600 AND < 1000

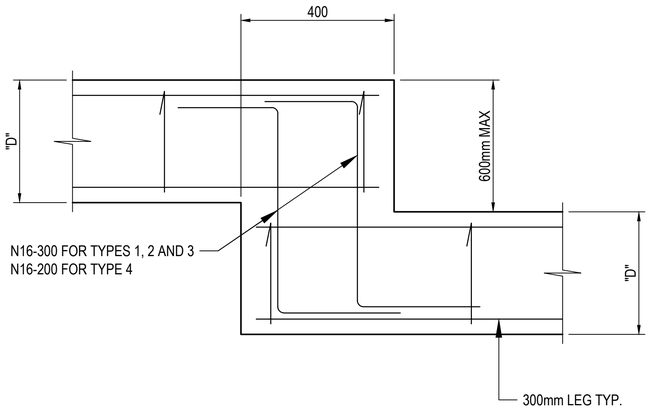
SCALE 1:10



CONTROL JOINT (BCJ) - 190 BLOCK

SCALE 1:10

NOTE: LOCATE CONTROL JOINTS AT FOOTING STEPS AND AT 8m CTS. MAX.



TYPICAL RETAINING WALL FOOTING STEP DETAIL (STEP < 600)

SCALE 1:10

0 200 400 600 800 1000mm

SCALE 1:10 @A1

DRAFT

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Amendments

ballina shire council

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F.B. L.B.	-	CHECKED	DF
DATUM	GDA94	APPROVED	DF
DRAWING	721982-01-CI-1930.dwg		
SHEET	57 OF 60		

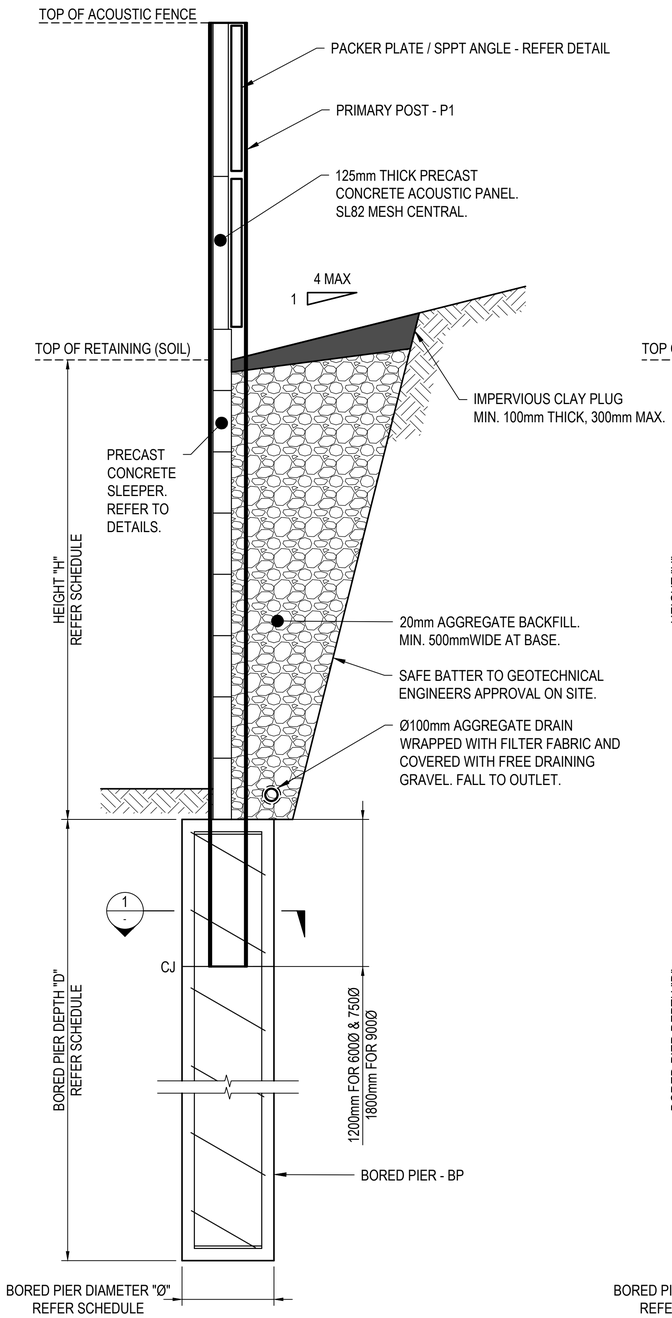
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HUTLEY DRIVE SOUTHERN EXTENSION
RETAINING WALL
BLOCKWORK - TYPICAL DETAILS

Scale HORIZONTAL: AS SHOWN
VERTICAL: -

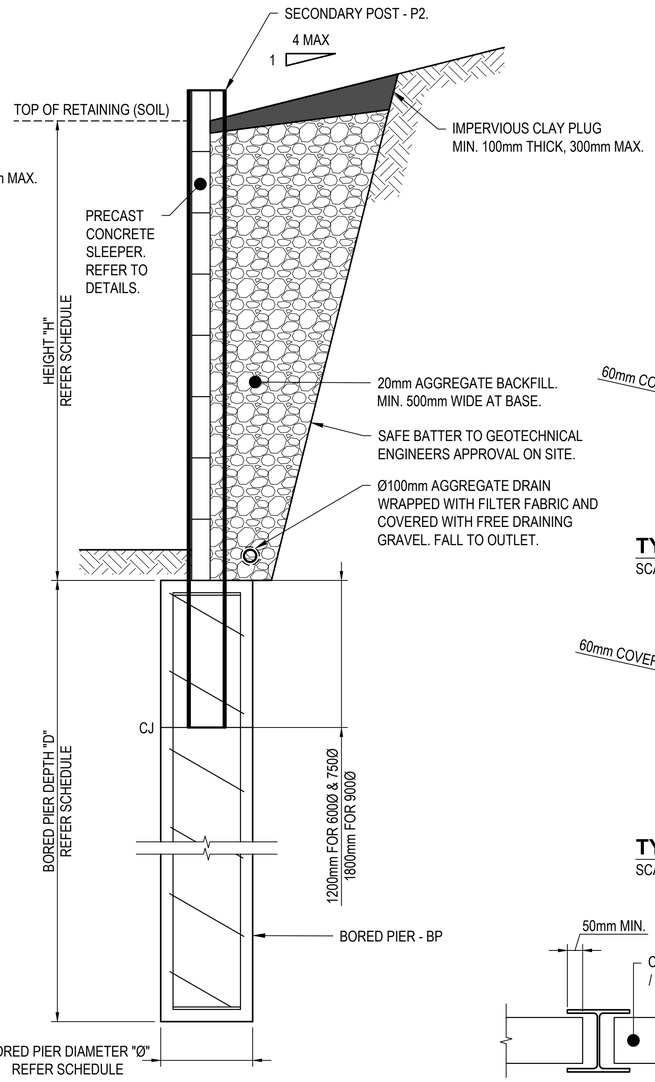
Plan No. 721982-01-CI-1930

Rev C



TYPICAL PRIMARY POST - P1

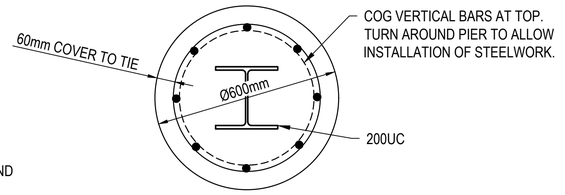
SCALE 1:25



TYPICAL SECONDARY POST - P2

SCALE 1:25

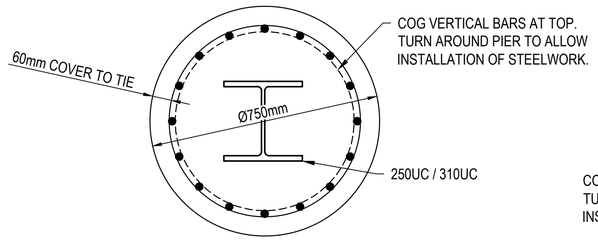
SLEEPER WALL POST SIZING					
HEIGHT "H" (mm)	COLUMN SIZE	BORED PIER DIAMETER "Ø" (mm)	BORED PIER DEPTH "D" (mm)	BORED PIER REINFORCEMENT	
				VERTICAL	TIES
PRIMARY POST "P1"					
<1500	200UC46	600	4000	8N24	W10-300
1500<H<2000	200UC52	600	5000	8N24	W10-300
2000<H<2500	250UC73	750	5500	10N24	W10-300
2500<H<3000	310UC97	750	6500	12N28	W10-300
3000<H<3500	310UC118	900	6500	12N28	N12-200 CTS
3500<H<4000	400WC270	900	7500	16N32	N12-200 CTS
4000<H<4500	400WC303	900	8500	16N32	N12-200 CTS
SECONDARY POST "P2"					
<1500	200UC46	600	3500	8N24	W10-300
1500<H<2000	200UC52	600	4500	8N24	W10-300
2000<H<2500	250UC73	750	5000	10N24	W10-300
2500<H<3000	310UC97	750	6000	12N28	W10-300
3000<H<3500	310UC118	900	6000	12N28	N12-200 CTS
3500<H<4000	400WC270	900	7000	16N32	N12-200 CTS
4000<H<4500	400WC303	900	8000	16N32	N12-200 CTS



TYPICAL SECTION Ø600 BORED PIER

1 / -

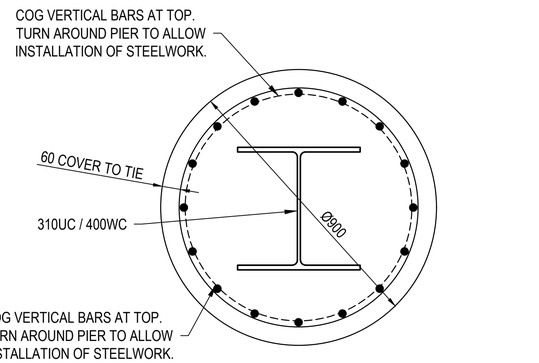
SCALE 1:10



TYPICAL SECTION Ø750 BORED PIER

1 / -

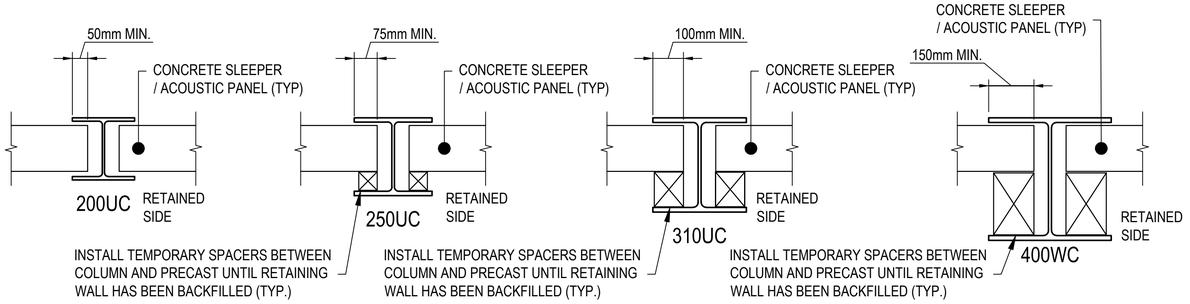
SCALE 1:10



TYPICAL SECTION Ø900 BORED PIER

1 / -

SCALE 1:10



0 200 400 600 800 1000mm
SCALE 1:10 @A1

0 500 1000 1500 2000 2500mm
SCALE 1:25 @A1

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

No.	Date	By	Change	X'd
C	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
B	16/12/2022	DF	100% DESIGN ISSUE	DF
A	30/07/2021	GT	85% DESIGN ISSUE	GH

Amendments

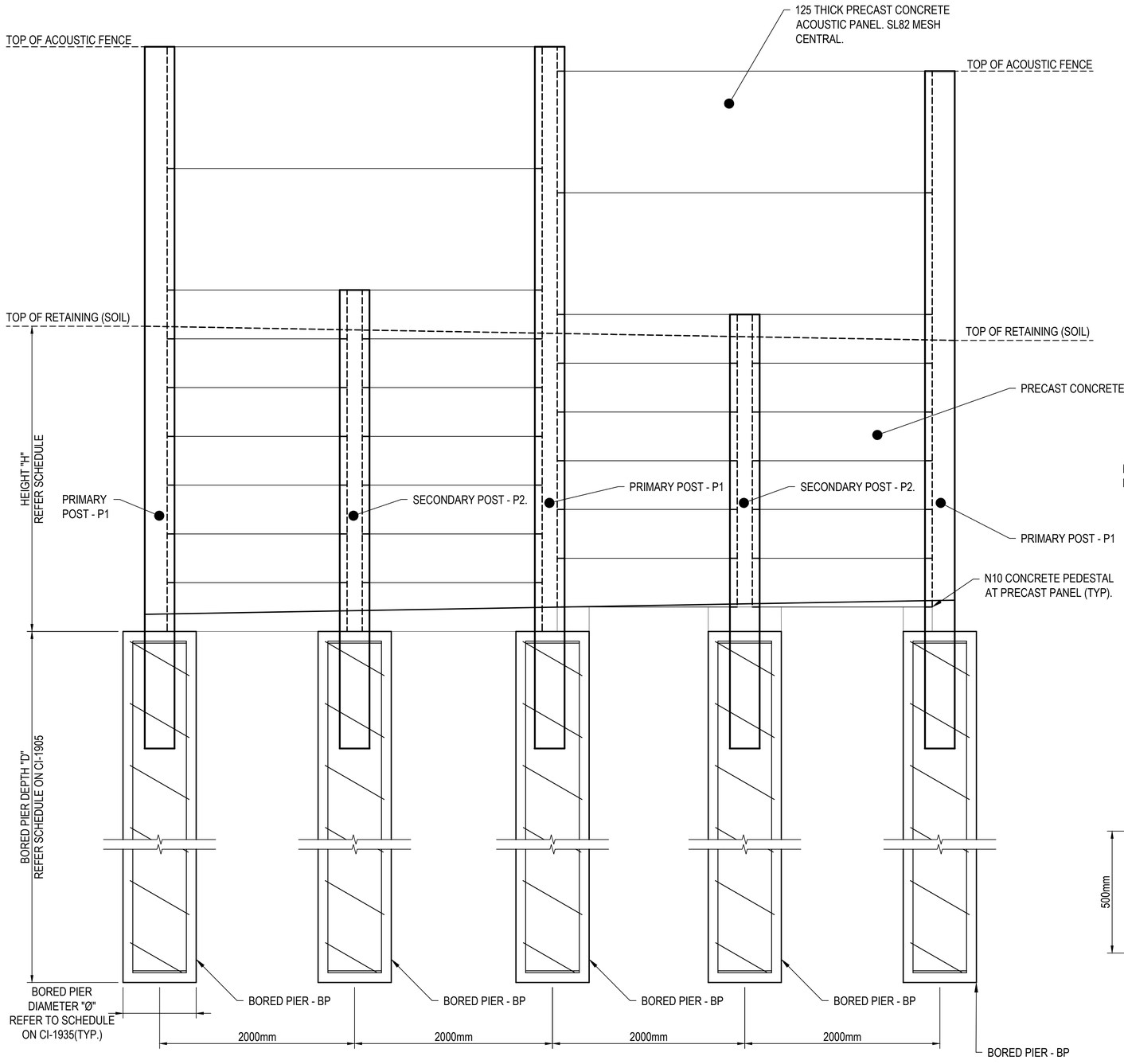
ballina shire council

CERTIFIED	DF	DESIGNED	GT / WS
DATE	16/12/2022	DRAWN	AH / TNDF
F.B.	L.B. -	CHECKED	DF
DATUM	GDA94	APPROVED	DF
DRAWING	721982-01-CI-1935.dwg		
SHEET	58 OF 60		

BALLINA SHIRE COUNCIL

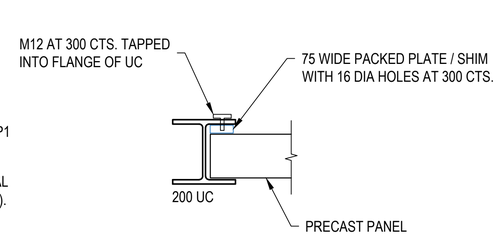
HUTLEY DRIVE SOUTHERN EXTENSION
RETAINING WALL
CONCRETE SLEEPER WALL - TYPICAL SECTION

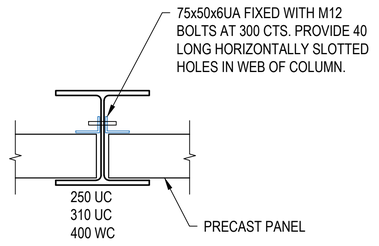
Scale	Plan No.	Rev
HORIZONTAL: AS SHOWN VERTICAL: -	721982-01-CI-1935	C



TYPICAL SLEEPER WALL ELEVATION

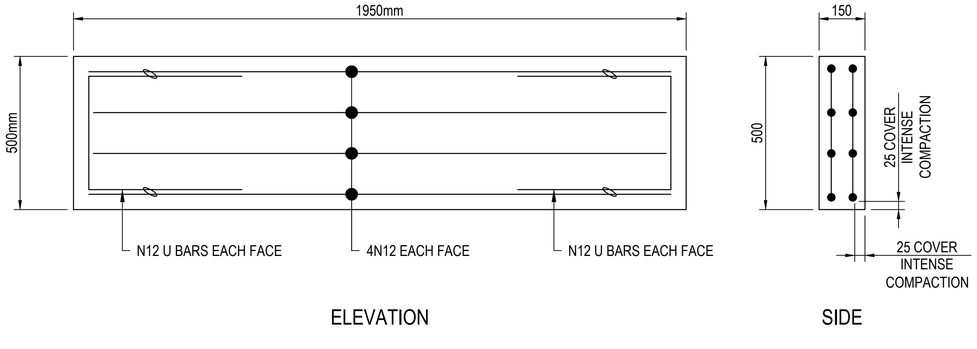
SCALE 1:25





TYPICAL ACOUSTIC WALL PANEL SUPPORT

NOT TO SCALE



TYPICAL PRECAST CONCRETE SLEEPER DETAIL

SCALE 1:10

CONCRETE STRENGTH = N50

0 0.2 0.4 0.6 0.8 1m
SCALE 1:10 @A1

0 500 1000 1500 2000 2500mm
SCALE 1:25 @A1

DRAFT
NOT TO BE USED FOR CONSTRUCTION PURPOSES

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Amendments

ballina shire council

CERTIFIED DF		DESIGNED GT / WS	
DATE 16/12/2022		DRAWN AH / TNDF	
F.B. L.B. -		CHECKED DF	
DATUM GDA94		APPROVED DF	
DRAWING 721982-01-CI-1936.dwg			
SHEET 59 OF 60			

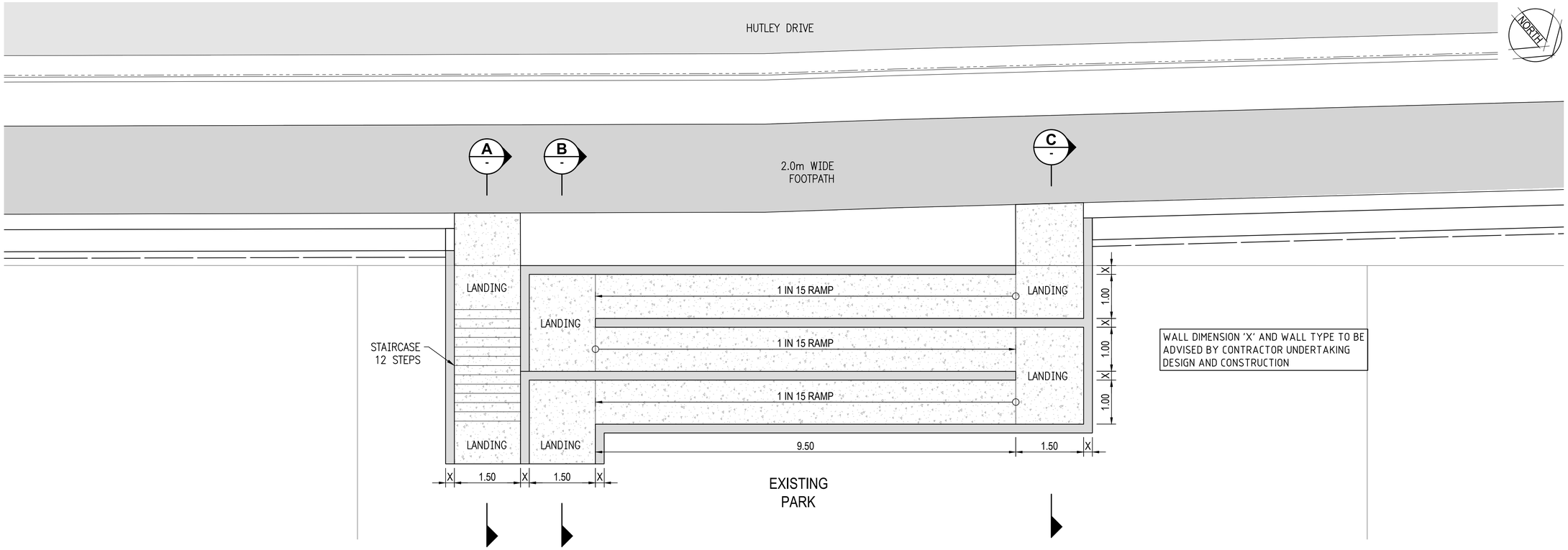
BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
RETAINING WALL
CONCRETE SLEEPER WALL - TYPICAL DETAIL

Scale HORIZONTAL: AS SHOWN
VERTICAL: -

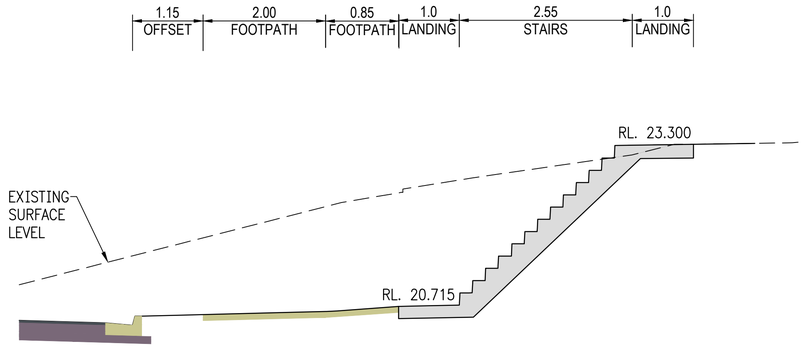
Plan No. 721982-01-CI-1936

Rev C

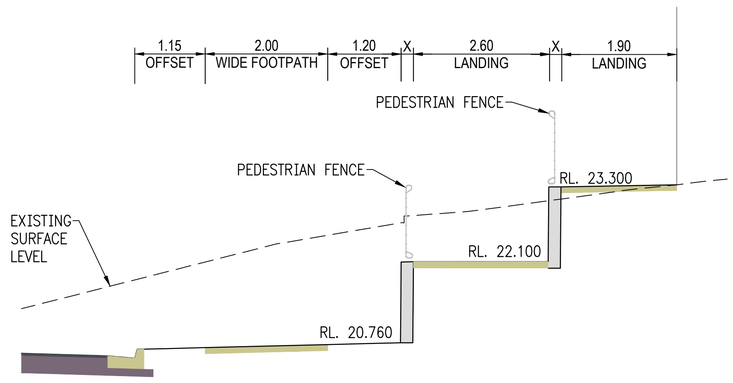


WALL DIMENSION 'X' AND WALL TYPE TO BE ADVISED BY CONTRACTOR UNDERTAKING DESIGN AND CONSTRUCTION

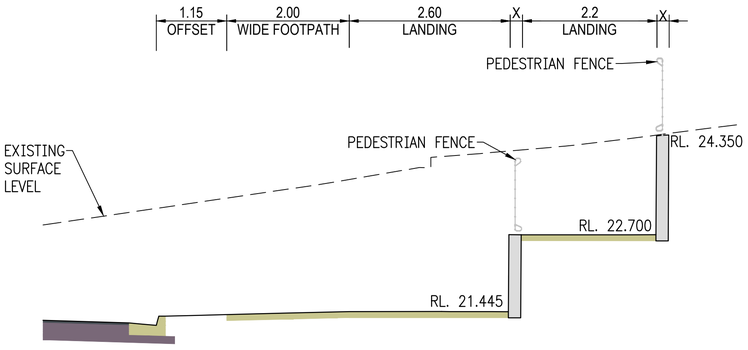
LAYOUT PLAN
SCALE 1:50



TYPICAL SECTION A
SCALE 1:50



TYPICAL SECTION B
SCALE 1:50



TYPICAL SECTION C
SCALE 1:50

0 1 2 3 4 5m
SCALE 1:50 @A1

NOT

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No.	Date	By	Change	X'd
B	30/05/2023	LH	AMENDED AS PER COUNCIL COMMENTS, FOR APPROVAL	LH
A	16/12/2022	DF	100% DESIGN ISSUE	DF

Amendments

ballina shire council

CERTIFIED DF		DESIGNED GT / WS	
DATE 16/12/2022		DRAWN AH / TNDF	
F.B. L.B. -		CHECKED DF	
DATUM GDA94		APPROVED DF	
DRAWING 721982-01-CI-1925-1927.dwg			
SHEET 60 OF 60		Scale HORIZONTAL: AS SHOWN VERTICAL: -	Plan No. 721982-01-CI-1940 / Rev B

BALLINA SHIRE COUNCIL

HUTLEY DRIVE SOUTHERN EXTENSION
RAMP AND STAIR PARK ACCESS LAYOUT PLAN