

PARADISE LAKES - STAGE 3

PARADISE ROAD, WILLAWONG

FOR 'UNILAND PTY LTD'

DRAWING LIST

EARTHWORKS, ROADWORKS AND DRAINAGE

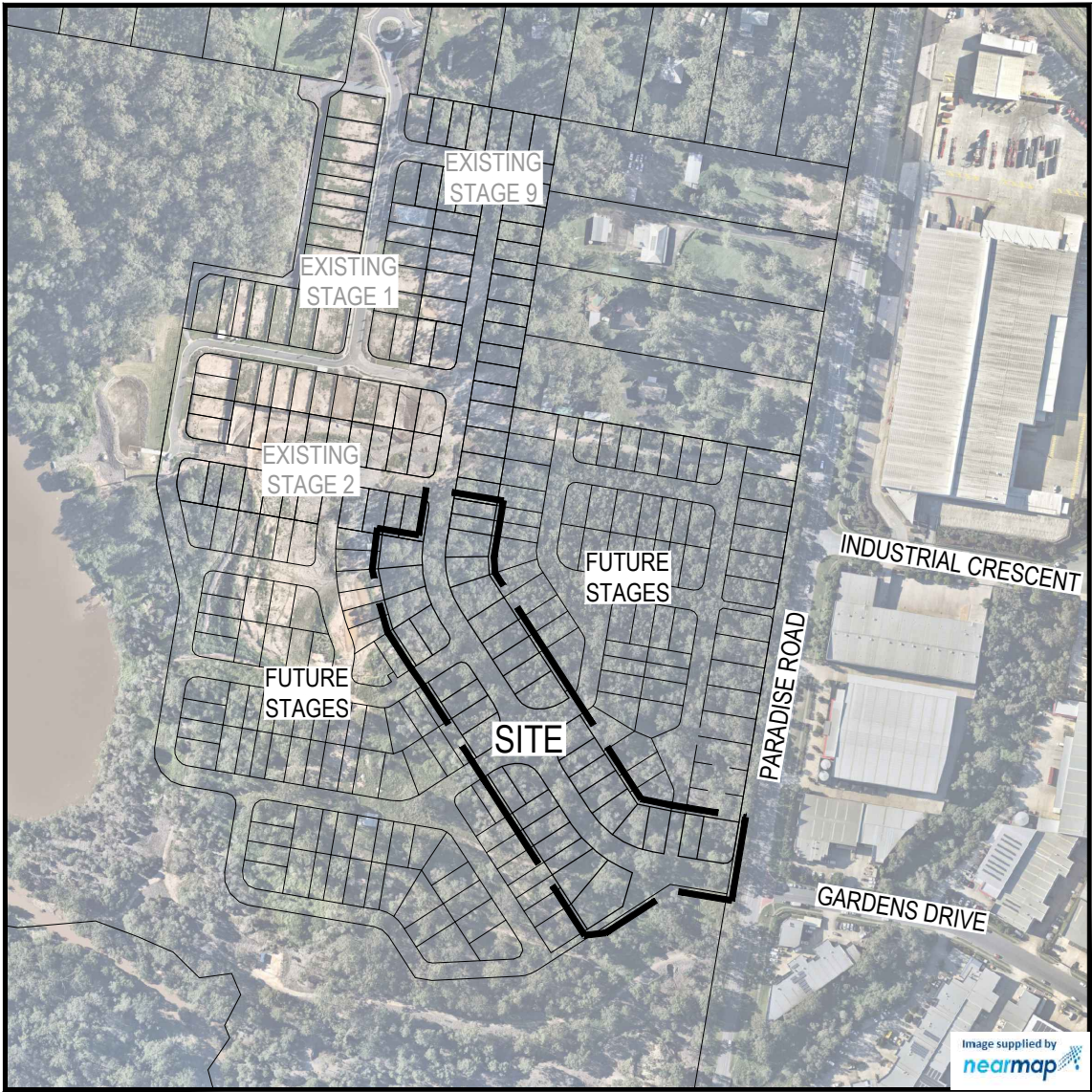
21-0075-100	COVER PLAN
21-0075-101	GENERAL NOTES
21-0075-102	BULK EARTHWORKS LAYOUT PLAN
21-0075-103	BULK EARTHWORKS TYPICAL SECTIONS
21-0075-104	BULK EARTHWORKS RETAINING WALL DETAILS
21-0075-105	ROADWORKS AND DRAINAGE LAYOUT PLAN
21-0075-106	SURVEY SETOUT AND KERB TYPES LAYOUT PLAN
21-0075-107	WATERS STREET LONGITUDINAL SECTION
21-0075-108	WATERS STREET CROSS SECTIONS SHEET 1 OF 2
21-0075-109	WATERS STREET CROSS SECTIONS SHEET 2 OF 2
21-0075-110	McDONALD STREET LONGITUDINAL SECTION AND CROSS SECTIONS
21-0075-111	LAKESHORE CRESCENT LONGITUDINAL SECTION AND CROSS SECTIONS
21-0075-112	HOOD STREET LONGITUDINAL SECTION AND CROSS SECTIONS
21-0075-113	INTERSECTION DETAILS LAYOUT PLAN SHEET 1 OF 2
21-0075-114	INTERSECTION DETAILS LAYOUT PLAN SHEET 2 OF 2
21-0075-115	KERB RETURN LONGITUDINAL SECTIONS
21-0075-116	SIGNS AND LINEMARKING LAYOUT PLAN
21-0075-117	STORMWATER DRAINAGE CATCHMENT LAYOUT PLAN SHEET 1 OF 2
21-0075-118	STORMWATER DRAINAGE CATCHMENT LAYOUT PLAN SHEET 2 OF 2
21-0075-119	STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 1 OF 2
21-0075-120	STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 2 OF 2
21-0075-121	STORMWATER DRAINAGE STRUCTURE DETAILS SHEET 1 OF 2
21-0075-122	STORMWATER DRAINAGE STRUCTURE DETAILS SHEET 2 OF 2
21-0075-123	STORMWATER DRAINAGE CALCULATIONS TABLE SHEET 1 OF 3
21-0075-124	STORMWATER DRAINAGE CALCULATIONS TABLE SHEET 2 OF 3
21-0075-125	STORMWATER DRAINAGE CALCULATIONS TABLE SHEET 3 OF 3
21-0075-126	ASSET REGISTER

STORMWATER QUALITY

21-0075-200	BIO RETENTION BASIN LAYOUT PLAN SHEET 1 OF 2
21-0075-201	BIO RETENTION BASIN LAYOUT PLAN SHEET 2 OF 2
21-0075-202	BIO RETENTION BASIN TYPICAL SECTIONS
21-0075-203	BIO RETENTION BASIN TYPICAL NOTES AND DETAILS
21-0075-204	BIO RETENTION BASIN DRAINAGE LONGITUDINAL SECTIONS AND ASSET DETAILS

SEWERAGE AND WATER RETICULATION

21-0075-300	SEWERAGE AND WATER RETICULATION COVER PLAN
21-0075-301	SEWER AND WATER GENERAL NOTES
21-0075-302	SEWER AND WATER LIVE WORK DETAILS
21-0075-303	SEWERAGE LAYOUT PLAN
21-0075-304	SEWERAGE LONGITUDINAL SECTIONS SHEET 1 OF 4
21-0075-305	SEWERAGE LONGITUDINAL SECTIONS SHEET 2 OF 4
21-0075-306	SEWERAGE LONGITUDINAL SECTIONS SHEET 3 OF 4
21-0075-307	SEWERAGE LONGITUDINAL SECTIONS SHEET 4 OF 4
21-0075-308	WATER RETICULATION LAYOUT PLAN
21-0075-309	FIRE HYDRANT REACH LAYOUT PLAN



LOCALITY PLAN
SCALE 1:2500 (A1)
SCALE 1:5000 (A3)

PROJECT INFORMATION SUMMARY:
No. OF LOTS = 36
AREA OF SITE = 2.60 ha
RP DESCRIPTION LOT 500 ON SP 315966
DATUM LEVEL AND LOCATION P.S.M. 59279 RL 18.006 AHD LOCATED IN DALMENY STREET
LOCAL AUTHORITY: BRISBANE CITY COUNCIL
COUNCIL REFERENCE NUMBER: A005778632

NOTE:
THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH: - VEGETATION MANAGEMENT PLAN - APPROVAL NALL PERMIT - LANDSCAPE ARCHITECT'S PLANS - ELECTRICAL, COMMUNICATIONS AND GAS CONSULTANT'S PLANS - SEDIMENT AND EROSION HAZARD ASSESSMENT - SAFETY IN DESIGN REPORT - EVERICK HERITAGE MITIGATION PLAN AND YUP AWARENESS TRAINING

REV	DATE	DESIGN	DRAWN	REVISION DETAILS	DRAWN	STATUS	SCALE	CLIENT	PROJECT NAME	DRAWING TITLE
1	15.05.23	KP	KP	ORIGINAL ISSUE	KP	NOT FOR CONSTRUCTION	1:2500 50 0 50 100 A1 1:5000	UNILAND PTY LTD	PARADISE LAKES STAGE 3	COVER PLAN
					DESIGN	APPROVED ANDREW NGO RPEQ 12329 DATE 15.05.23		ASSOCIATED CONSULTANT WOLTERS CONSULTING GROUP (07) 2666 5200	PARADISE ROAD WILLAWONG	PROJECT No. 21-0075 DRAWING No. 100 REVISION 1
FOR AND ON BEHALF OF COLLIER'S INTERNATIONAL ENGINEERING & DESIGN PTY LTD										

GENERAL NOTES:

1.

THE CONTRACTOR SHALL SUPPLY ALL LABOR, MATERIALS, PLANT AND EQUIPMENT TO CONSTRUCT THE WORKS AS DOCUMENTED AND STRICTLY IN ACCORDANCE WITH THE RELEVANT AUTHORITY STANDARDS, SPECIFICATIONS AND REQUIREMENTS.
2.

THE EXISTING SERVICES THAT ARE SHOWN ON THE DRAWINGS ARE PROVIDED FOR INFORMATION PURPOSES ONLY. NO RESPONSIBILITY IS TAKEN BY THE SUPERINTENDENT OR THE PRINCIPAL FOR INFORMATION THAT HAS BEEN SUPPLIED BY OTHERS, OR ANY EXISTING SERVICES THAT MAY BE PRESENT NOT SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL VERIFY THE POSITION OF ANY UNDERGROUND SERVICES WITHIN THE AREAS OF WORKS AND SHALL BE RESPONSIBLE FOR MAKING GOOD ANY DAMAGE THERETO. ANY ALTERATION WORKS TO SERVICES WILL BE CARRIED OUT ONLY BY THE SERVICE OWNER AUTHORITY UNLESS APPROVED OTHERWISE.
3.

ALL CONSTRUCTION ACTIVITIES UNDERTAKEN SHALL COMPLY WITH CURRENT WORKPLACE HEALTH AND SAFETY REQUIREMENTS AND LEGISLATION.
4.

PRIOR TO COMMENCING WORK, THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL RELEVANT LOCAL AUTHORITY PERMITS.
5.

THE CONTRACTOR SHALL NOT COMMENCE THE DEMOLITION OF ANY EXISTING BUILDINGS AND/OR STRUCTURES WITHOUT APPROVAL FROM THE SUPERINTENDENT.
6.

THE CONTRACTOR SHALL APPLY INDUSTRY BEST PRACTICE SO WORKS SHALL NOT DISTURB OR AFFECT NEARBY RESIDENTS EITHER BY DUST, NOISE, FLOODING OR DISCONNECTION OF SERVICES. CONTRACTOR TO ENSURE THAT ACCESS AND SERVICES TO EXISTING PROPERTIES ARE AVAILABLE AT ALL TIMES.
7.

THE CONTRACTOR SHALL VERIFY LEVELS OF EXISTING SERVICE CROSSINGS AND CONNECTION POINTS PRIOR TO COMMENCEMENT OF WORKS AND NOTIFY SUPERINTENDENT OF ANY DISCREPANCIES BETWEEN ACTUAL AND PROPOSED DESIGN LEVELS.
8.

THESE ENGINEERING DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE APPROVED VEGETATION MANAGEMENT PLAN, WHERE APPLICABLE. WHEN IN DOUBT, ALL EXISTING TREES ARE TO REMAIN UNLESS DIRECTED OTHERWISE.
9.

HOLD POINT: ONCE THE BASE OF MANHOLES, INSPECTION PITS, GULLIES AND FIELD INLETS FOR STORMWATER DRAINAGE AND SEWER RETICULATION HAVE BEEN POURED, CONSTRUCTION SHALL ONLY RE-COMMENCE ONCE THE SUPERINTENDENT AND/OR ENGINEER HAVE INSPECTED THE WORKS.
10.

THE CONTRACTOR SHALL NOTE DURING THE COURSE OF THE WORKS WHEN JOINT INSPECTIONS WITH THE AUTHORITY AND THE SUPERINTENDENT ARE REQUIRED. THESE INCLUDE PRE-STARTS, SUBGRADES, PRE-SEALS, CLEARING, AND OTHER SUCH INSPECTIONS AS NOMINATED IN THE APPROVAL AND THE SPECIFICATIONS. THE CONTRACTOR SHALL ENSURE NO WORKS PROCEED PAST THE INSPECTION POINT UNTIL THE JOINT INSPECTION HAS BEEN SUCCESSFULLY COMPLETED.
11.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A SAFE MOVEMENT OF TRAFFIC AND THE PROTECTION OF PERSON AND PROPERTY THROUGH AND AROUND THE SITE. THE CONTRACTOR IS RESPONSIBLE FOR ALL TRAFFIC MANAGEMENT INCLUDING THE DESIGN, CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ROADWAYS, DETOURS, SIGNS, LIGHTS AND BARRIER AS REQUIRED STRICTLY IN ACCORDANCE WITH THE RELEVANT AUTHORITY REQUIREMENTS.

BULK EARTHWORKS NOTES

1.

NOTWITHSTANDING THE EXTENTS OF CUTTING AND FILLING SHOWN ON DRAWINGS, THE SUPERINTENDENT RESERVES THE RIGHT TO ADJUST THE FINISHED SURFACE LEVELS AND EARTHWORKS EXTENTS THROUGH WRITTEN DIRECTION.
2.

THE CONTRACTOR SHALL UNDERTAKE ALL CLEARING USING INDUSTRY BEST PRACTICE INCLUDING CONSIDERATION OF FAUNA RELOCATION.
3.

THE CONTRACTOR SHALL UNDERTAKE ALL EARTHWORKS IN ACCORDANCE WITH AS3798-2007 AND LOCAL AUTHORITY REQUIREMENTS. LEVEL 1 SUPERVISION IS REQUIRED.
4.

THE CONTRACTOR SHALL CONSIDER LOADS GENERATED BY THE EARTHWORKS OPERATIONS SO AS TO AVOID DAMAGE TO ALL PIPES, SERVICES AND STRUCTURES.
5.

THE EARTHWORKS DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE PROJECT'S SEDIMENT AND EROSION CONTROL PLAN, WHERE APPLICABLE.
6.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PLANNING, DESIGN, CERTIFICATION, IMPLEMENTATION AND MAINTENANCE OF AN EROSION AND SEDIMENT CONTROL PLAN THAT IS COMPLIANT WITH THE INTERNATIONAL EROSION CONTROL ASSOCIATION (IECA) GUIDELINE 'BEST PRACTICE EROSION AND SEDIMENT CONTROL' AND RELEVANT COUNCIL POLICIES.
7.

ALLOTMENT FINISHED SURFACE LEVELS, SHOWN ON THE LAYOUT PLAN, INDICATE THE FINISHED SURFACE LEVEL AFTER TOPSOIL PLACEMENT.

ROADWORKS AND DRAINAGE NOTES

1.

ALL WORKS SHALL BE IN ACCORDANCE WITH THE RELEVANT AUTHORITY'S STANDARD DRAWINGS, METHODS AND SPECIFICATIONS.
2.

NOTWITHSTANDING THE EXTENTS OF CUTTING AND FILLING SHOWN ON DRAWINGS, THE SUPERINTENDENT RESERVES THE RIGHT TO ADJUST THE FINISHED SURFACE LEVELS AND EARTHWORKS EXTENTS THROUGH WRITTEN DIRECTION.
3.

NEW CONSTRUCTION SHALL BE NEATLY JOINED TO EXISTING FORMATION. WHERE REQUIRED, THE EXISTING FORMATION SHALL BE SAW CUT IN ACCORDANCE WITH IPWEAQ STD DRG RS-170. LEVELS AND GRADIENTS AT CONNECTIONS WITH EXISTING WORKS MAY BE VARIED AS REQUIRED TO ACHIEVE A SMOOTH CONNECTION.
4.

THE CONTRACTOR SHALL UNDERTAKE ALL EARTHWORKS IN ACCORDANCE WITH AS3798-2007 AND LOCAL AUTHORITY REQUIREMENTS. LEVEL 1 SUPERVISION IS REQUIRED.
5.

THE CONTRACTOR SHALL SUPPLY THE SUPERINTENDENT WITH THE SUBGRADE TEST RESULTS NECESSARY FOR ALL PAVEMENT DESIGN.
6.

THE CONTRACTOR SHALL ENSURE A MINIMUM OF 75mm TOPSOIL TO ALL VERGE AND BATTER AREAS (AND STABILISATION AS ORDERED)
7.

THE CONTRACTOR SHALL INSTALL ALL FOOTPATH AND PRAM RAMPS IN COMPLIANCE WITH THE AUTHORITY'S STANDARD DRAWINGS. PRAM RAMPS ARE TO BE LOCATED CLEAR OF DRAINAGE GULLY PITS AND FUTURE DRIVEWAY POSITIONS INDICATED ON THE LAYOUT PLANS.
8.

THE CONTRACTOR SHALL INSTALL SUBSOIL DRAINS UNDER ALL KERBS AS REQUIRED BY THE LOCAL AUTHORITY'S STANDARDS.
9.

THE CONTRACTOR SHALL ENSURE THAT ALL RETAINING WALL SUBSOIL DRAINS ARE TO CONNECT TO EITHER KERB ADAPTORS, KERB SUBSOIL DRAINS OR STORMWATER DRAINAGE STRUCTURES. CONTRACTOR TO DEMONSTRATE TO SUPERINTENDENT THAT SUITABLE CONNECTIONS HAVE BEEN PROVIDED FOR ALL WALLS.
10.

ALL STORMWATER DRAINAGE MATERIALS, BEDDING, JOINTING AND STEP IRON REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE RELEVANT AUTHORITIES STANDARD DRAWINGS, METHODS AND SPECIFICATIONS.
11.

THE STORMWATER PIPE CLASSES HAVE BEEN DESIGNED FOR SERVICE LOADS ONLY. THE CONTRACTOR SHALL ASSESS THE SUITABILITY OF MACHINERY USED ON SITE AND THE ANTICIPATED CONSTRUCTION LOADS, AND UPGRADE THE PIPE CLASSES IF NECESSARY IN ACCORDANCE WITH AS3725-2007.
12.

THE TERM D₅₀ DOCUMENTED ON THE DRAWINGS, IN RELATION TO ROCK ARMORING, CORRESPONDS TO THE REQUIRED MEDIAN DIAMETER OF THE PLACED ROCKS. THE ROCKS USED SHALL NOT VARY IN SIZE BY +/- 30% OF THE PROPOSED D₅₀ SIZE.

ROOFWATER NOTES

1.

THE GEOMETRIC CENTRE SHALL BE TAKEN AS THE SETOUT POINT FOR ALL STRUCTURES, UNLESS DETAILED OTHERWISE.
2.

ROOFWATER ALIGNMENT, COVER, MATERIALS, BEDDING, JOINTING AND STEP IRON REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE RELEVANT AUTHORITY'S STANDARD DRAWINGS, METHODS AND SPECIFICATIONS.
3.

ALL PVC PIPES ARE TO BE MINIMUM CLASS SN8.
4.

END CAPS SHALL BE INSTALLED ON ENDS OF ALL PIPES AND STUBS.
5.

WHERE ROOFWATER PIPES ARE ALIGNED BEHIND PROPOSED RETAINING WALLS, THE CONTRACTOR IS TO REFER TO THE SPECIFIC PROJECT DESIGN DETAILS AND CONFIRM CLEARANCES WITH THE SUPERINTENDENT PRIOR TO LAYING OF THE PIPES.
6.

PROPERTY CONNECTIONS SHALL BE 100Ø UNLESS SHOWN OTHERWISE. THE CONTRACTOR SHALL EXTEND CONNECTIONS A MINIMUM OF 1.0m BEYOND ADJACENT SEWER LINES, WHERE APPLICABLE.
7.

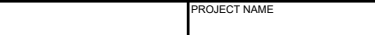
IN INSTANCES WHERE REAR ALLOTMENT DRAINAGE IS NOT PROVIDED, THE CONTRACTOR SHALL INSTALL A ROOFWATER CONNECTION TO EACH PROPERTY BY ONE OF THE FOLLOWING METHODS, AS SHOWN ON THE LAYOUT PLAN:

-

ONE ROOFWATER KERB ADAPTOR 500mm FROM THE DOWNSTREAM BOUNDARY (UNLESS SHOWN ON A DIFFERENT ALIGNMENT). WHERE THERE IS A CONCRETE FOOTPATH, A ROOFWATER PIPE SHALL BE INSTALLED FROM THE PROPERTY BOUNDARY CONNECTED TO THE KERB ADAPTOR AT 1.25% MINIMUM GRADE IN ACCORDANCE WITH COUNCIL'S STANDARDS.

-

ONE 150Ø ROOFWATER PIPE CONNECTED TO PROPOSED STORMWATER GULLY PIT OR MANHOLE AT MINIMUM 1.0% GRADE WITH 1.0m COVER.

REV	DATE	DESIGN	DRAWN	REVISION DETAILS		DRAWN	STATUS			SCALE	CLIENT	PROJECT NAME	DRAWING TITLE		
1	15.05.23	KP	KP	ORIGINAL ISSUE		KP	NOT FOR CONSTRUCTION						GENERAL NOTES		
											ASSOCIATED CONSULTANT WOLTERS CONSULTING GROUP (07) 2666 5200	PARADISE ROAD WILLAWONG	PROJECT No.	DRAWING No.	REVISION
						KP	APPROVED ANDREW NGO  RPEQ 12329 DATE 15.05.23 FOR AND ON BEHALF OF COLLIERS INTERNATIONAL ENGINEERING & DESIGN PTY LTD						21-0075	101	1

	PROPOSED AREA OF WORKS/STAGE BOUNDARY
	PROPOSED SURFACE CONTOUR
	EXISTING SURFACE CONTOUR
	PROPOSED EARTHWORKS PAD SETBACK LINE
	PROPOSED CONCRETE SLEEPER RETAINING WALL
	EXISTING CONCRETE SLEEPER RETAINING WALL
	RETAINING WALL SUBSOIL PIPE EXTENSION
	PROPOSED FINISHED SURFACE LEVEL (FSL) (AFTER TOPSOIL PLACEMENT)
	EXISTING SURFACE LEVEL (ESL)
	PROPOSED AREA OF CUT
	PROPOSED AREA OF FILL

INDICATIVE DRIVEWAY LOCATIONS

ZERO LOT BOUNDARY

EXISTING STORMWATER DRAINAGE PIPE

EXISTING SEWER MAIN

EXISTING WATER MAIN

EXISTING WATER CONDUIT

EXISTING ELECTRICAL CABLE U/G

EXISTING TELECOMMUNICATION CABLE U/G

EXISTING TREE TO REMAIN - REFER VMP

EXISTING TREE TO BE REMOVED - REFER VMP

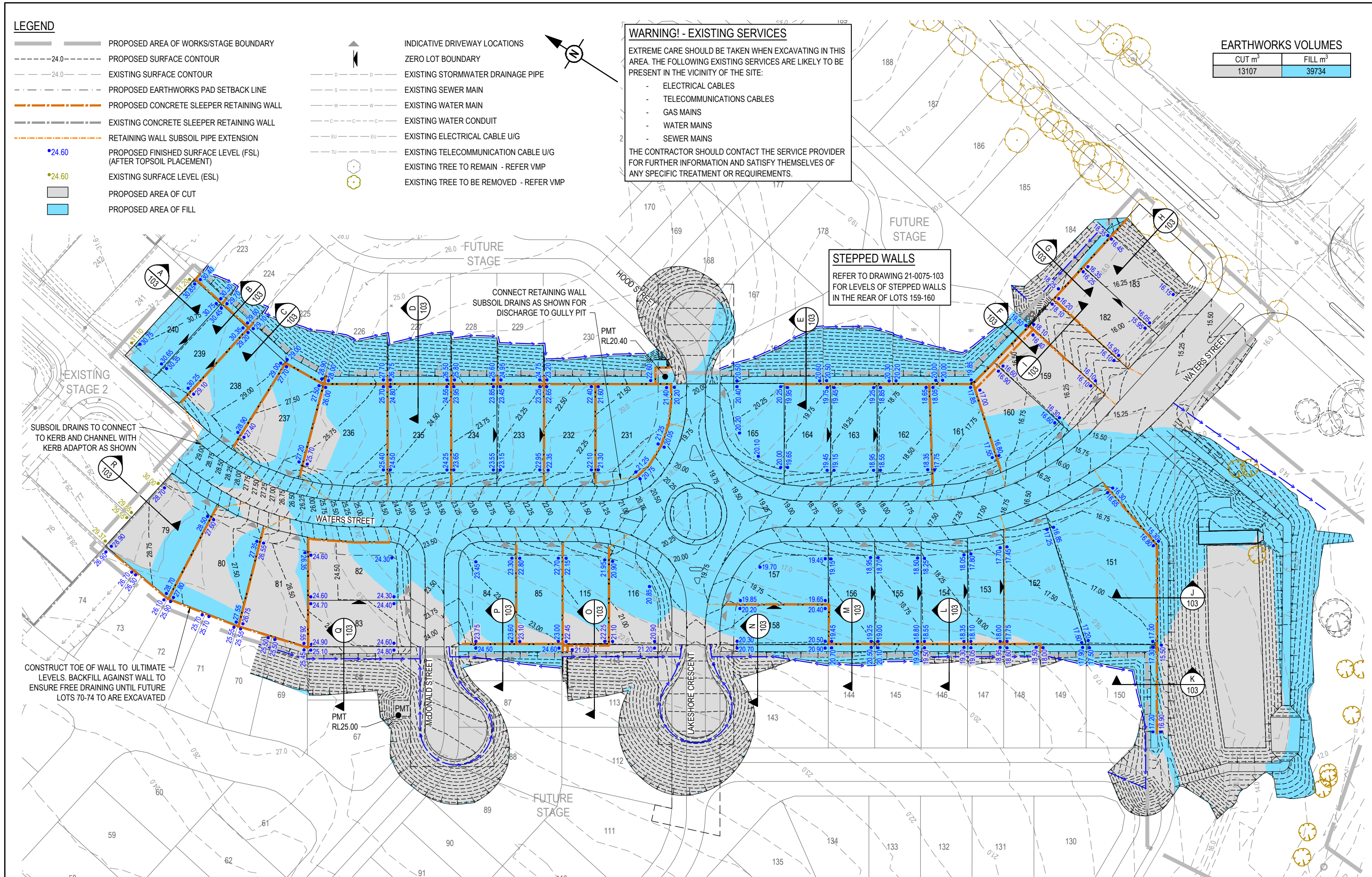
EXTREME CARE SHOULD BE TAKEN WHEN EXCAVATING IN THIS AREA. THE FOLLOWING EXISTING SERVICES ARE LIKELY TO BE PRESENT IN THE VICINITY OF THE SITE:

- ELECTRICAL CABLES
- TELECOMMUNICATIONS CABLES
- GAS MAINS
- WATER MAINS
- SEWER MAINS

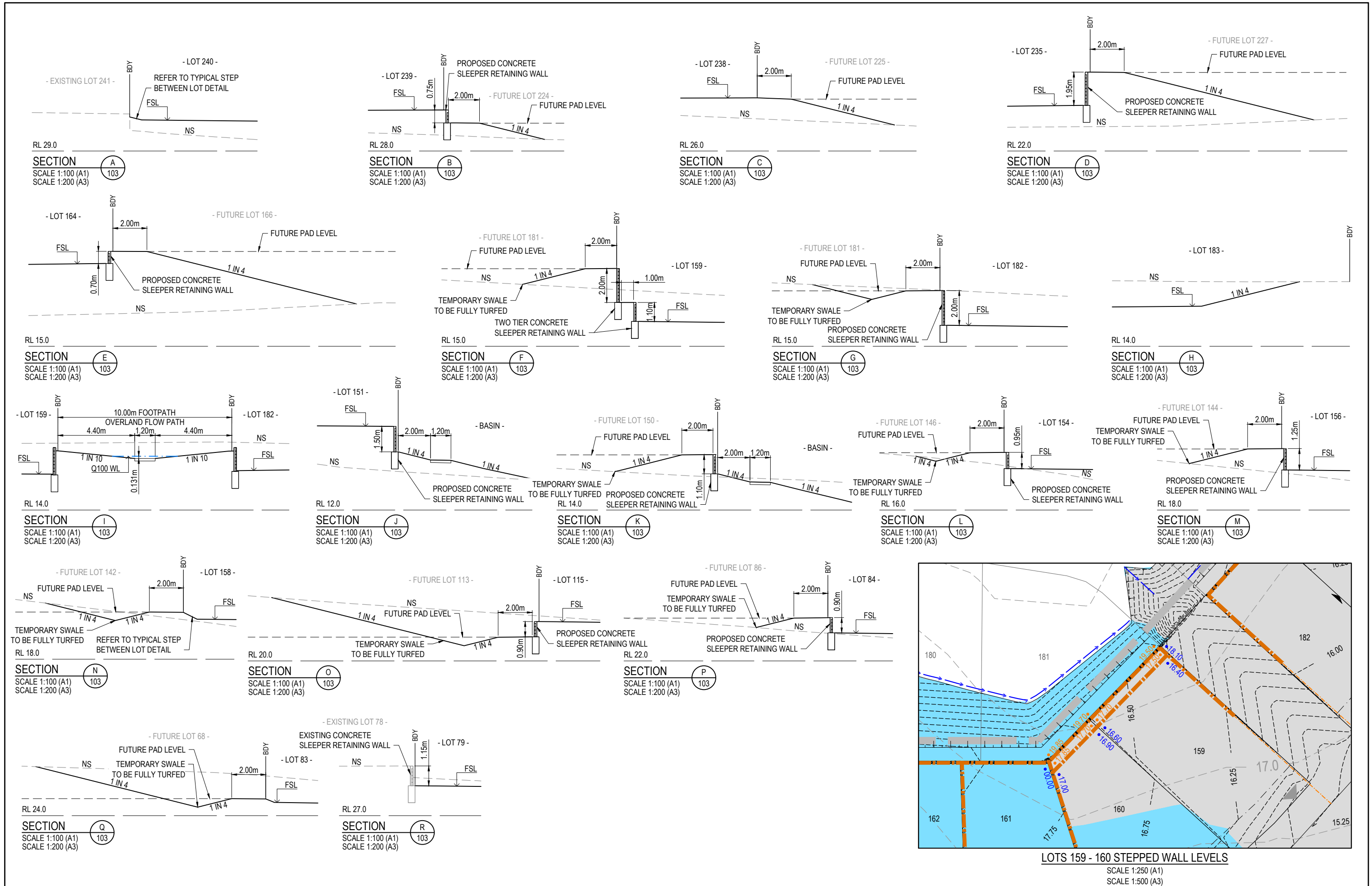
THE CONTRACTOR SHOULD CONTACT THE SERVICE PROVIDER FOR FURTHER INFORMATION AND SATISFY THEMSELVES OF ANY SPECIFIC TREATMENT OR REQUIREMENTS.

CUT m ³	FILL m ³
13107	39734

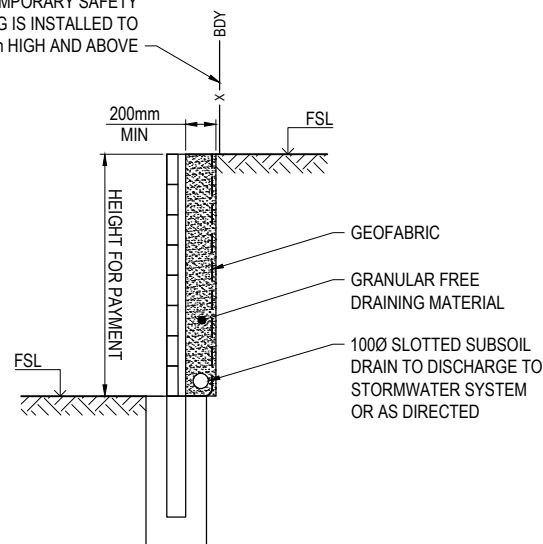
REFER TO DRAWING 21-0075-103
FOR LEVELS OF STEPPED WALLS
IN THE REAR OF LOTS 159-160



REV	DATE	DESIGN	DRAWN	REVISION DETAILS		DRAWN	STATUS		SCALE	CLIENT	PROJECT NAME	DRAWING TITLE		
1	15.05.23	KP	KP	ORIGINAL ISSUE		KP	NOT FOR CONSTRUCTION		1:500 10 5 0 10 20 A1 1:1000  A3	UNILAND PTY LTD	PARADISE LAKES STAGE 3	BULK EARTHWORKS LAYOUT PLAN		
						DESIGN	APPROVED ANDREW NGO RPEQ 12329 DATE 15.05.23			ASSOCIATED CONSULTANT WOLTERS CONSULTING GROUP (07) 2666 5200	PARADISE ROAD WILLAWONG	PROJECT No. 21-0075	DRAWING No. 102	REVISION 1
						KP	FOR AND ON BEHALF OF COLLIER'S INTERNATIONAL ENGINEERING & DESIGN PTY LTD 							



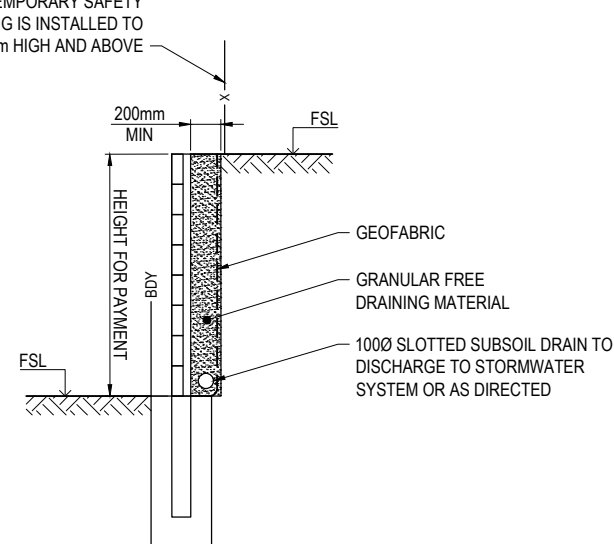
ENSURE TEMPORARY SAFETY
SAFETY FENCING IS INSTALLED TO
ALL WALLS 1.0m HIGH AND ABOVE



CONCRETE SLEEPER RETAINING WALL
TYPICAL DETAIL - SIDE AND REAR BOUNDARIES

SCALE 1:25 (A1)
SCALE 1:50 (A3)

ENSURE TEMPORARY SAFETY
SAFETY FENCING IS INSTALLED TO
ALL WALLS 1.0m HIGH AND ABOVE

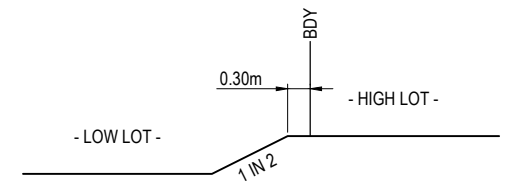


CONCRETE SLEEPER RETAINING WALL
TYPICAL DETAIL - ADJACENT ROAD RESERVE

SCALE 1:25 (A1)
SCALE 1:50 (A3)

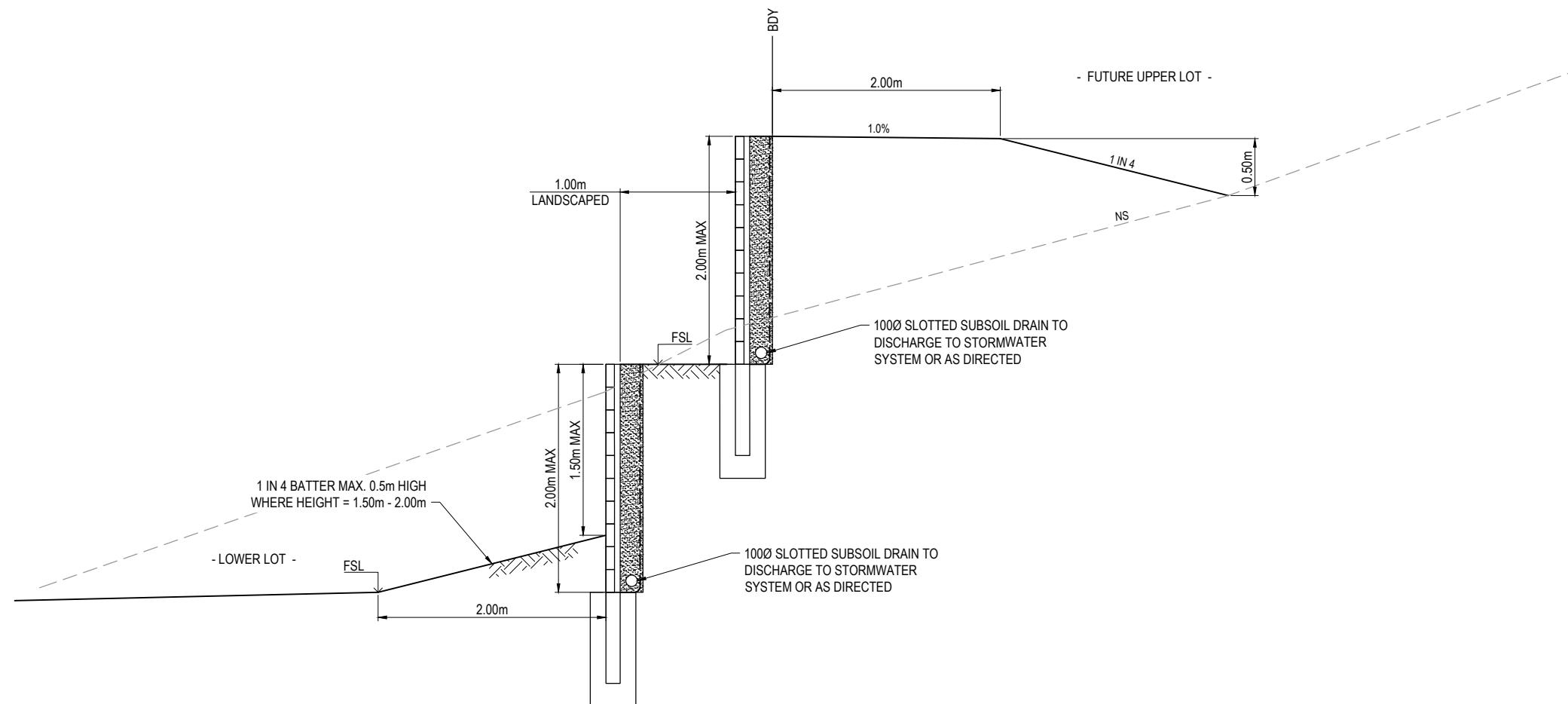
RETAINING WALL NOTES:

1. ALL RETAINING WALLS ARE TO BE DELIVERED UNDER DESIGN AND CONSTRUCTION ARRANGEMENT - FORMS 15 AND 12 CERTIFICATIONS ARE TO BE PROVIDED BY THE CONTRACTOR.
2. DESIGN OF WALLS TO CONSIDER ALL LOADS (FENCES, DWELLINGS ETC) AND ASSOCIATED IMPACTS FROM ANY ADJACENT SERVICES - FOOTING DEPTHS TO BE EXTENDED AS REQUIRED.
3. GEOTECHNICAL CONDITIONS ARE TO BE CONFIRMED AND APPROPRIATELY CONSIDERED FOR ALL WALLS.
4. REFER LANDSCAPE DRAWINGS FOR FURTHER INFORMATION ON RETAINING WALLS, PARTICULARLY RELATING TO FINISHES.
5. TEMPORARY SAFETY FENCING TO BE INSTALLED BEHIND ALL WALLS 1.0m HIGH AND GREATER.



TYPICAL STEP BETWEEN LOTS DETAIL

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



STEPPED CONCRETE SLEEPER RETAINING WALL
TYPICAL DETAIL - REAR BOUNDARIES

SCALE 1:25 (A1)
SCALE 1:50 (A3)

REV	DATE	DESIGN	DRAWN	REVISION DETAILS	DRAWN	STATUS	SCALE	CLIENT	PROJECT NAME	DRAWING TITLE
1	15.05.23	KP	KP	ORIGINAL ISSUE	KP	NOT FOR CONSTRUCTION	1:25 0.25 0 0.25 0.5 0.75 1.0 1.25 A1 1:50	UNILAND PTY LTD	PARADISE LAKES STAGE 3	BULK EARTHWORKS RETAINING WALL DETAILS
					DESIGN	APPROVED ANDREW NGO		ASSOCIATED CONSULTANT WOLTERS CONSULTING GROUP (07) 2666 5200	PARADISE ROAD WILLAWONG	PROJECT No. 21-0075
						RPEQ 12329				DRAWING No. 104
						DATE 15.05.23				REVISION 1
						FOR AND ON BEHALF OF COLLIERS INTERNATIONAL ENGINEERING & DESIGN PTY LTD				

LEGEND

- | | | | |
|--|--|--|--|
| | PROPOSED AREA OF WORKS | | PROPOSED CONCRETE SLEEPER RETAINING WALL |
| | PROPOSED ROAD CONTROL LINE | | EXISTING CONCRETE SLEEPER RETAINING WALL |
| | EXISTING ROAD CROWN | | PROPOSED SEWERAGE MAIN |
| | PROPOSED KERB INVERT LINE | | EXISTING SEWERAGE MAIN |
| | EXISTING EDGE OF BITUMEN | | EXISTING TRUNK SEWER MAIN |
| | PROPOSED KERB TRANSITION LOCATION | | PROPOSED WATER MAIN |
| | PROPOSED CONCRETE PATH AND PRAM RAMP | | EXISTING WATER MAIN |
| | PROPOSED NEW ROAD PAVEMENT | | PROPOSED WATER CONDUIT |
| | PROPOSED NEW ROAD PAVEMENT - CONCRETE | | EXISTING WATER CONDUIT |
| | INDICATIVE DRIVEWAY LOCATION | | EXISTING ELECTRICAL CABLE U/G |
| | ZERO LOT BOUNDARY | | EXISTING TELECOMMUNICATION CABLE U/G |
| | PROPOSED SURFACE CONTOUR | | EXISTING TREE - REFER VMP |
| | EXISTING SURFACE CONTOUR | | |
| | PROPOSED STORMWATER DRAINAGE PIPE | | |
| | EXISTING STORMWATER DRAINAGE PIPE | | |
| | PROPOSED DRAINAGE SWALE | | |
| | PROPOSED ROOFWATER KERB ADAPTOR | | |
| | PROPOSED ROOFWATER KERB ADAPTOR
WITH PIPE CONNECTION TO ALLOTMENT | | |
| | PROPOSED AREA OF FILTER MEDIA | | |
-
- KERB TYPES NOTE:**

KERB TYPES NOTE:

REFER TO THE SURVEY SETOUT ENGINEERING DRAWING
FOR KERB TYPES AND TRANSITION LOCATIONS

ROOFWATER CONNECTION NOTE:

THE CONTRACTOR SHALL INSTALL A ROOFWATER CONNECTION TO EACH PROPERTY BY ONE OF THE FOLLOWING METHODS, AS SHOWN ON THE LAYOUT PLAN:

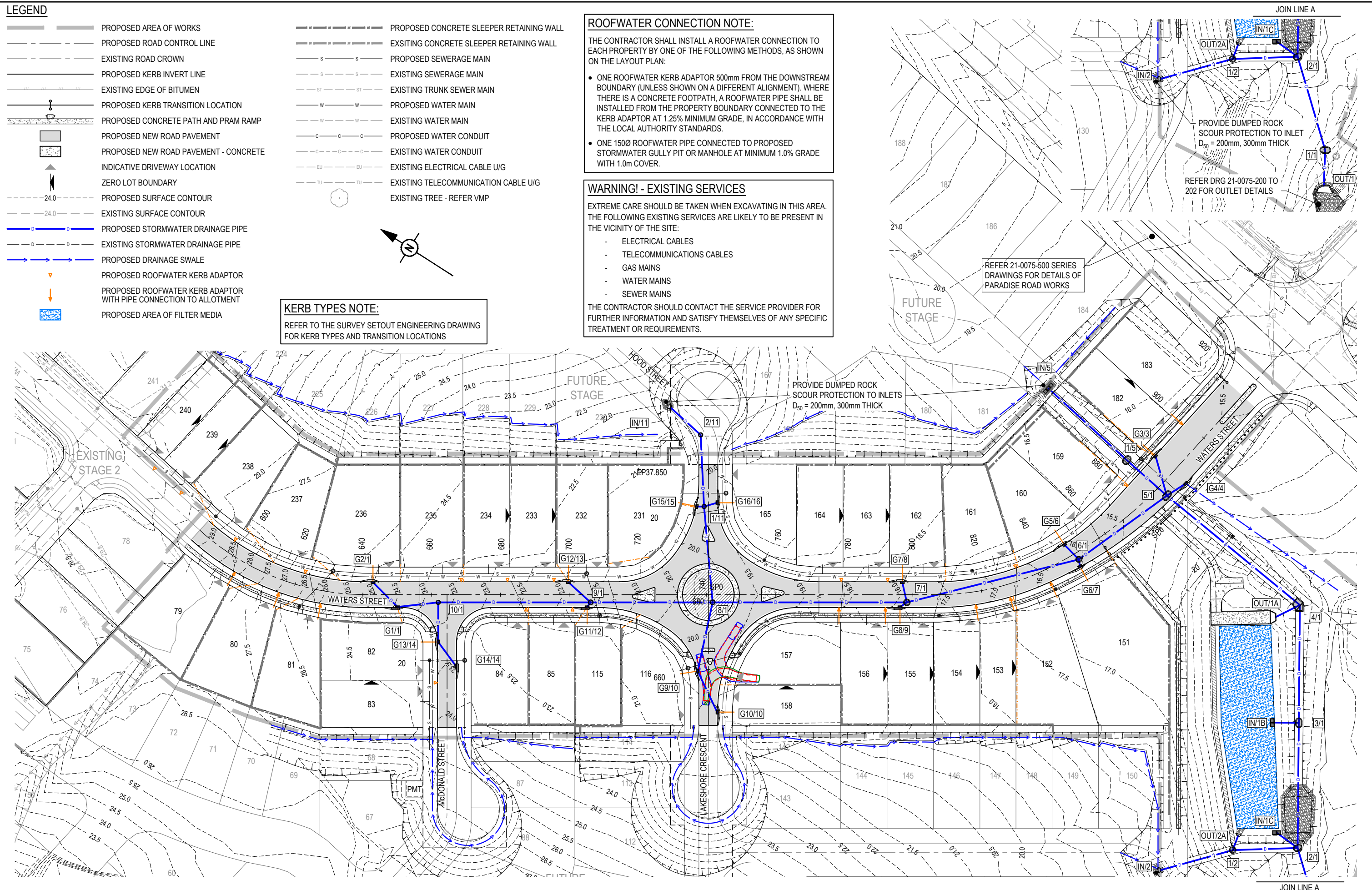
- ONE ROOFWATER KERB ADAPTOR 500mm FROM THE DOWNSTREAM BOUNDARY (UNLESS SHOWN ON A DIFFERENT ALIGNMENT). WHERE THERE IS A CONCRETE FOOTPATH, A ROOFWATER PIPE SHALL BE INSTALLED FROM THE PROPERTY BOUNDARY CONNECTED TO THE KERB ADAPTOR AT 1.25% MINIMUM GRADE, IN ACCORDANCE WITH THE LOCAL AUTHORITY STANDARDS.
- ONE 150Ø ROOFWATER PIPE CONNECTED TO PROPOSED STORMWATER GULLY PIT OR MANHOLE AT MINIMUM 1.0% GRADE WITH 1.0m COVER.

WARNING! - EXISTING SERVICES

EXTREME CARE SHOULD BE TAKEN WHEN EXCAVATING IN THIS AREA. THE FOLLOWING EXISTING SERVICES ARE LIKELY TO BE PRESENT IN THE VICINITY OF THE SITE:

- ELECTRICAL CABLES
- TELECOMMUNICATIONS CABLES
- GAS MAINS
- WATER MAINS
- SEWER MAINS

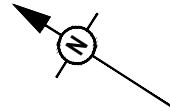
THE CONTRACTOR SHOULD CONTACT THE SERVICE PROVIDER FOR FURTHER INFORMATION AND SATISFY THEMSELVES OF ANY SPECIFIC TREATMENT OR REQUIREMENTS.



REV	DATE	DESIGN	DRAWN	REVISION DETAILS		DRAWN	STATUS			SCALE	CLIENT	PROJECT NAME	DRAWING TITLE		
1	15.05.23	KP	KP	ORIGINAL ISSUE		KP	NOT FOR CONSTRUCTION			1:500 10 5 0 10 20 A1	UNILAND PTY LTD	PARADISE LAKES STAGE 3	ROADWORKS AND DRAINAGE LAYOUT PLAN		
2	14.09.23	KP	KP	UPDATED TO SUIT EXTERNAL CATCHMENTS AND COUNCIL RFI						1:1000 					
						DESIGN	APPROVED	DATE		ASSOCIATED CONSULTANT					
						KP	ANDREW NGO	RPEQ 12329	14.09.23	WOLTERS CONSULTING GROUP		PARADISE ROAD WILLAWONG	PROJECT No.	DRAWING No.	REVISION
							FOR AND ON BEHALF OF COLLIER'S INTERNATIONAL ENGINEERING & DESIGN PTY LTD				(07) 2666 5200		21-0075	105	2

LEGEND

- PROPOSED AREA OF WORKS
- PROPOSED ROAD CONTROL LINE
- MKC PROPOSED KERB NFK LINE
BCC MOUNTABLE KERB AND CHANEL 'TYPE D'
- BKC(200) PROPOSED KERB NFK LINE
BCC BARRIER KERB AND CHANNEL 'TYPE E' (200 HIGH)
- MKO PROPOSED KERB NFK LINE
BCC KERB ONLY 'TYPE D'
- MKO(BS) PROPOSED KERB NFK LINE
BCC MOUNTABLE KERB ONLY (WITH BACKING STRIP)
- PROPOSED EDGE OF BITUMEN
- EXISTING EDGE OF BITUMEN
- PROPOSED KERB TRANSITION
- PROPOSED NEW ROAD PAVEMENT
- PROPOSED NEW ROAD PAVEMENT - CONCRETE
- ZERO LOT BOUNDARY



CONTROL LINE SETOUT - WATERS STREET

PT	CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
IP 1	587.837	502417.978	6946899.942	189°27'59.84"	R = -72.000	53.187	42°19'29.84"
IP 2	614.431	502413.393	6946872.449				
CT	641.024	502428.516	6946849.035	147°08'30.00"			
TC	807.010	502518.574	6946709.604	147°08'30.00"	R = -72.000	33.453	26°37'14.99"
IP 3	823.737	502527.816	6946695.296				
CC	840.463	502542.490	6946686.645	120°31'15.01"			
IP 4	862.669	502561.841	6946675.237		R = -120.000	44.412	21°12'18.33"
CT	884.875	502584.007	6946671.601	99°18'56.68"			
IP 5	939.027	502637.445	6946662.835	99°18'56.68"			

CONTROL LINE SETOUT - McDONALD STREET

PT	CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
IP 1	0.000	502441.248	6946829.323	237°08'30.00"	R = 15.000	11.129	42°30'30.24"
EP	38.583	502408.838	6946808.390	237°08'30.00"			
TC	63.232	502388.132	6946795.016	237°08'30.00"			
IP 2	68.796	502383.231	6946791.851		R = 15.000	11.129	42°30'30.24"
CT	74.360	502377.480	6946792.829	279°39'00.24"			
IP 3	209.937	502243.821	6946815.555	279°39'00.24"			

CONTROL LINE SETOUT - BASIN ACCESS DRIVEWAY 1

PT	CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
IP 1	0.000	502573.752	6946668.802	189°29'00.00"	R = 11.500	9.311	46°23'17.10"
TC	17.669	502570.841	6946651.374	189°29'00.00"			
IP 2	22.324	502570.029	6946646.514				
CT	26.980	502565.950	6946643.749	235°52'17.10"	R = 11.500	9.311	46°23'17.10"
IP 3	36.107	502558.395	6946638.629	235°52'17.10"			

CONTROL LINE SETOUT - LAKESHORECRESCENT

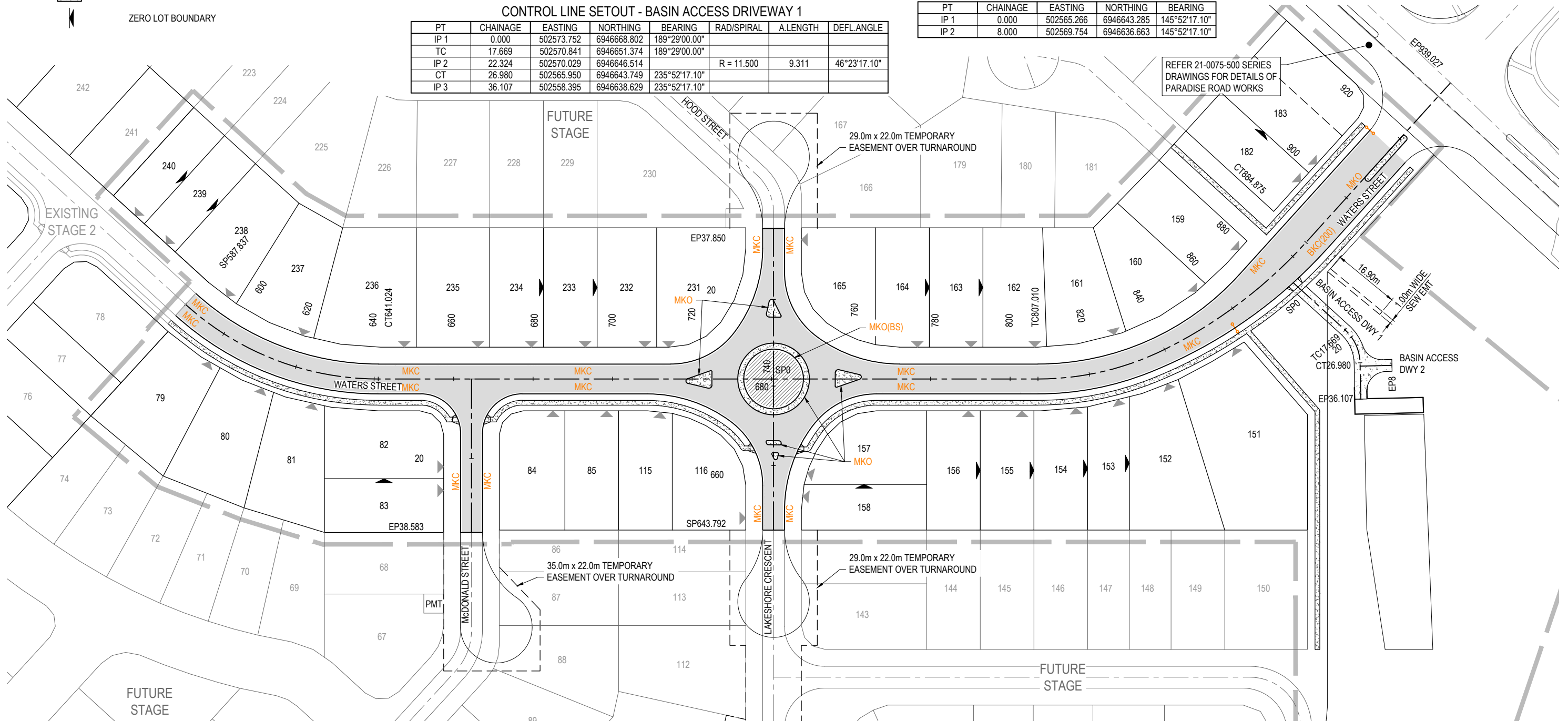
PT	CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
TC	572.576	502388.131	6946713.927	99°39'00.24"	R = -30.000	22.257	42°30'30.24"
IP 16	583.704	502399.634	6946711.971				
CT	594.833	502409.436	6946718.302	57°08'30.00"			
SP	643.792	502450.562	6946744.865	57°08'30.00"	R = -30.000	22.257	42°30'30.24"
IP 17	681.792	502482.483	6946765.482	57°08'30.00"			

CONTROL LINE SETOUT - HOOD STREET

PT	CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
IP 1	0.000	502482.483	6946765.482	57°08'30.00"	R = -12.750	10.583	47°33'30.00"
EP	37.850	502514.277	6946786.018	57°08'30.00"			
TC	41.823	502517.615	6946788.174	57°08'30.00"			
IP 2	47.115	502522.334	6946791.222		R = -12.750	10.583	47°33'30.00"
CT	52.407	502523.270	6946796.762	9°35'00.00"			
TC	85.639	502528.802	6946829.530	9°35'00.00"			
IP 3	90.361	502529.626	6946834.412		R = -12.750	9.445	42°26'30.00"
CT	95.084	502526.940	6946838.571	327°08'30.00"			

CONTROL LINE SETOUT - BASIN ACCESS DWY 2

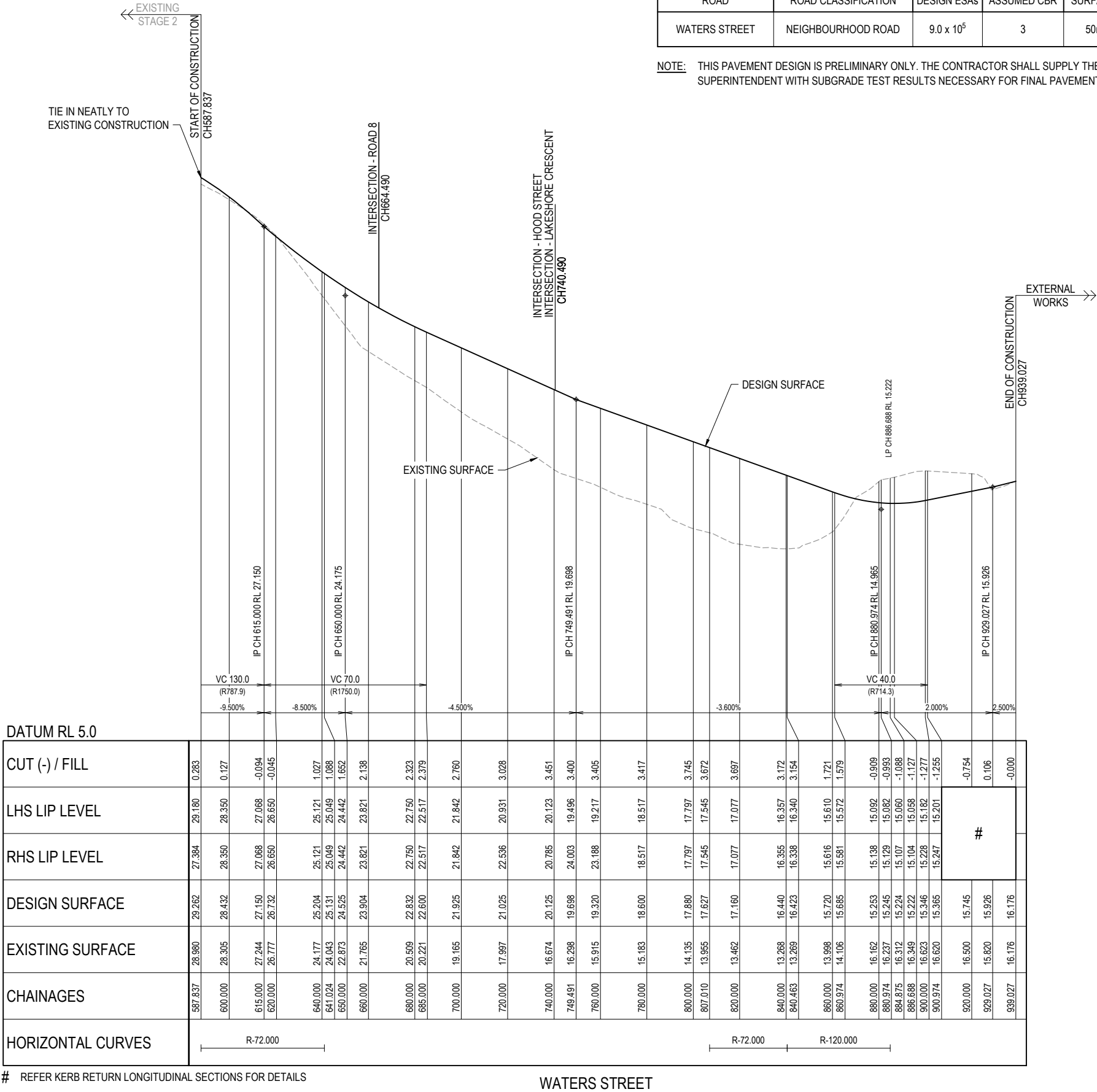
PT	CHAINAGE	EASTING	NORTHING	BEARING
IP 1	0.000	502565.266	6946643.285	145°52'17.10"
IP 2	8.000	502569.754	6946636.663	145°52'17.10"



REV	DATE	DESIGN	DRAWN	REVISION DETAILS	DRAWN	STATUS	SCALE	CLIENT	PROJECT NAME	DRAWING TITLE
1	15.05.23	KP	KP	ORIGINAL ISSUE	KP	NOT FOR CONSTRUCTION	1:500 1:1000	UNILAND PTY LTD	PARADISE LAKES STAGE 3	SURVEY SETOUT AND KERB TYPES LAYOUT PLAN
					DESIGN	APPROVED ANDREW NGO		ASSOCIATED CONSULTANT WOLTERS CONSULTING GROUP (07) 2666 5200	PARADISE ROAD WILLAWONG	PROJECT No. 21-0075
						RPEQ 12329				DRAWING No. 106
						DATE 15.05.23				REVISION 1
						FOR AND ON BEHALF OF COLLIER'S INTERNATIONAL ENGINEERING & DESIGN PTY LTD				

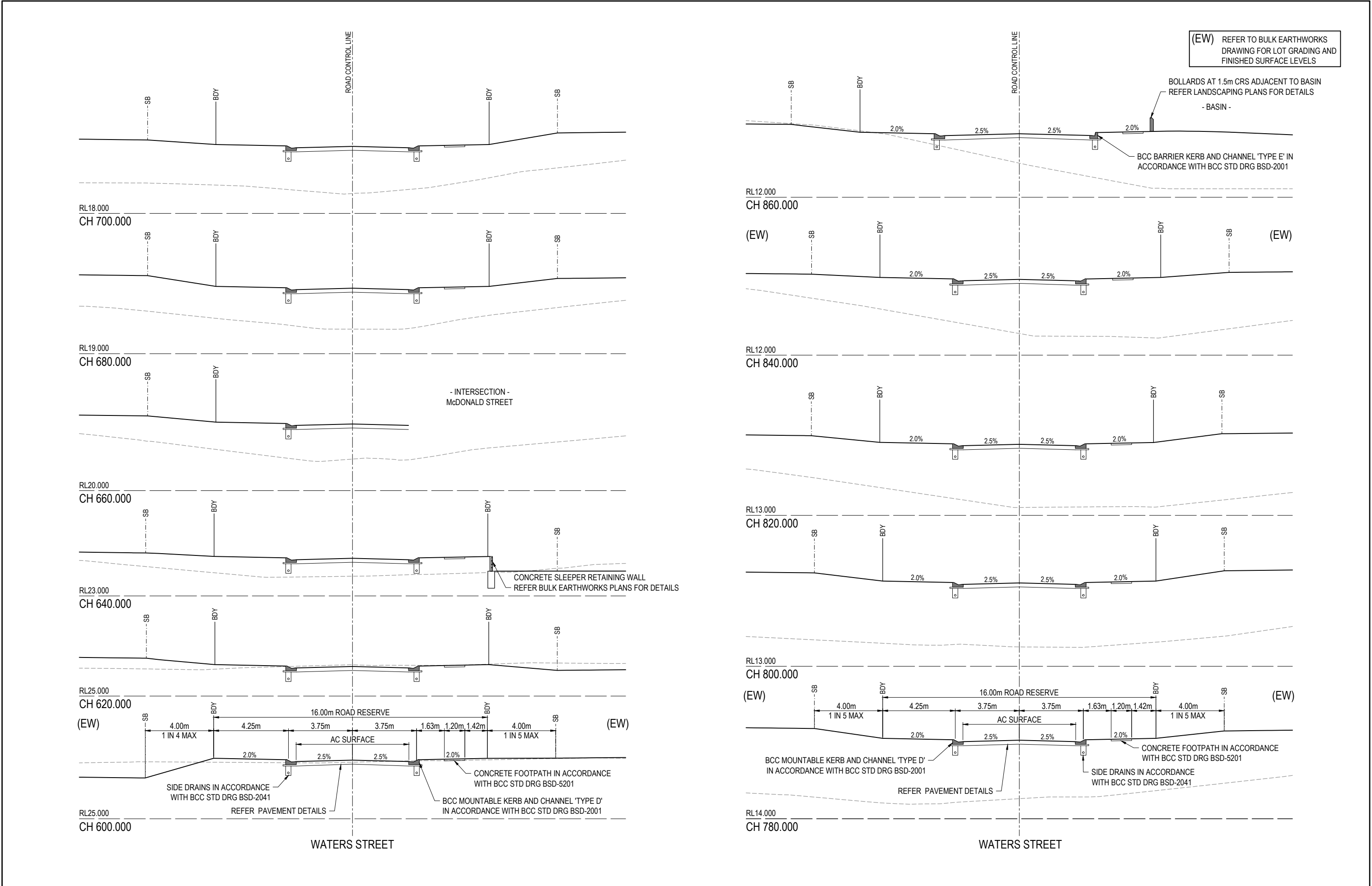
ASSUMED PAVEMENT DETAILS (SUBJECT TO CBR TESTING)								
ROAD	ROAD CLASSIFICATION	DESIGN ESAs	ASSUMED CBR	SURFACING	BASE	SUB BASE	LOWER SUB BASE	TOTAL DEPTH
WATERS STREET	NEIGHBOURHOOD ROAD	9.0 x 10 ⁵	3	50mm	100mm	100mm	300mm	550mm

NOTE: THIS PAVEMENT DESIGN IS PRELIMINARY ONLY. THE CONTRACTOR SHALL SUPPLY THE SUPERINTENDENT WITH SUBGRADE TEST RESULTS NECESSARY FOR FINAL PAVEMENT DESIGN



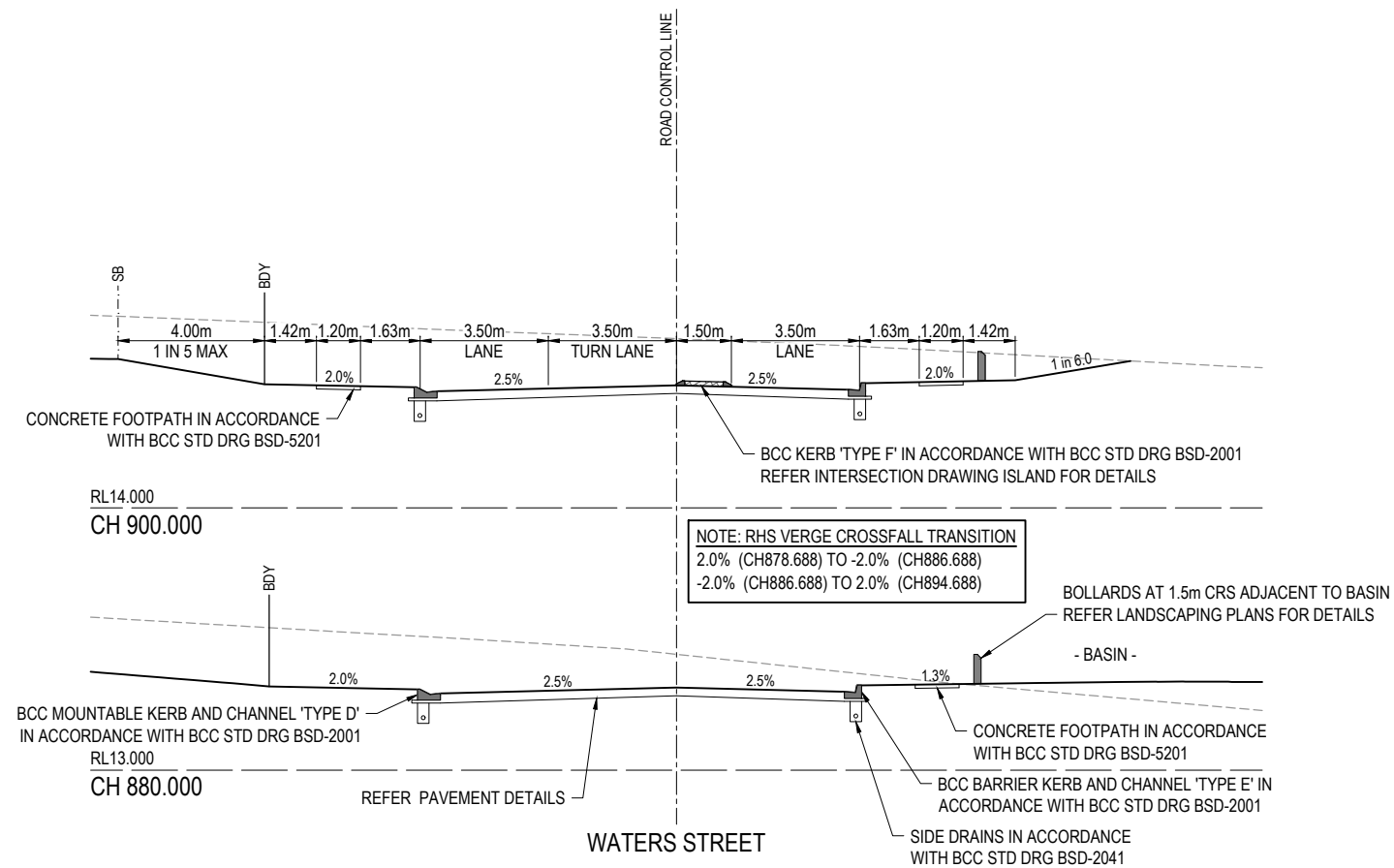
REFER KERB RETURN LONGITUDINAL SECTIONS FOR DETAILS

REV	DATE	DESIGN	DRAWN	REVISION DETAILS	DRAWN	STATUS	SCALE	CLIENT	PROJECT NAME	DRAWING TITLE
1	15.05.23	KP	KP	ORIGINAL ISSUE	KP	NOT FOR CONSTRUCTION	1:1000 1:2000 HORIZONTAL	UNILAND PTY LTD	PARADISE LAKES STAGE 3	WATERS STREET LONGITUDINAL SECTION
					DESIGN	APPROVED ANDREW NGO RPEQ 12329 DATE 15.05.23	1:100 1:200 VERTICAL	ASSOCIATED CONSULTANT WOLTERS CONSULTING GROUP (07) 2666 5200	PARADISE ROAD WILLAWONG	PROJECT No. 21-0075 DRAWING No. 107 REVISION 1
					KP	FOR AND ON BEHALF OF COLLIER'S INTERNATIONAL ENGINEERING & DESIGN PTY LTD				



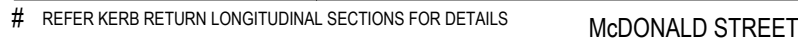
REV	DATE	DESIGN	DRAWN	REVISION DETAILS		DRAWN	STATUS			SCALE		CLIENT	PROJECT NAME	DRAWING TITLE									
1	15.05.23	KP	KP	ORIGINAL ISSUE		KP	NOT FOR CONSTRUCTION			1:100	1	0	1	2	3	4	5	A1	UNILAND PTY LTD	PARADISE LAKES STAGE 3	WATERS STREET CROSS SECTIONS SHEET 1 OF 2		
										1:200							A3						

(EW) REFER TO BULK EARTHWORKS
DRAWING FOR LOT GRADING AND
FINISHED SURFACE LEVELS



REV	DATE	DESIGN	DRAWN	REVISION DETAILS		DRAWN	STATUS				CLIENT	PROJECT NAME	DRAWING TITLE		
1	15.05.23	KP	KP	ORIGINAL ISSUE		KP	NOT FOR CONSTRUCTION						WATERS STREET CROSS SECTIONS SHEET 2 OF 2		
											UNILAND PTY LTD	PARADISE LAKES STAGE 3	PROJECT No. 21-0075 DRAWING No. 109 REVISION 1		

NOTE: THIS PAVEMENT DESIGN IS PRELIMINARY ONLY. THE CONTRACTOR SHALL SUPPLY THE SUPERINTENDENT WITH SUBGRADE TEST RESULTS NECESSARY FOR FINAL PAVEMENT DESIGN

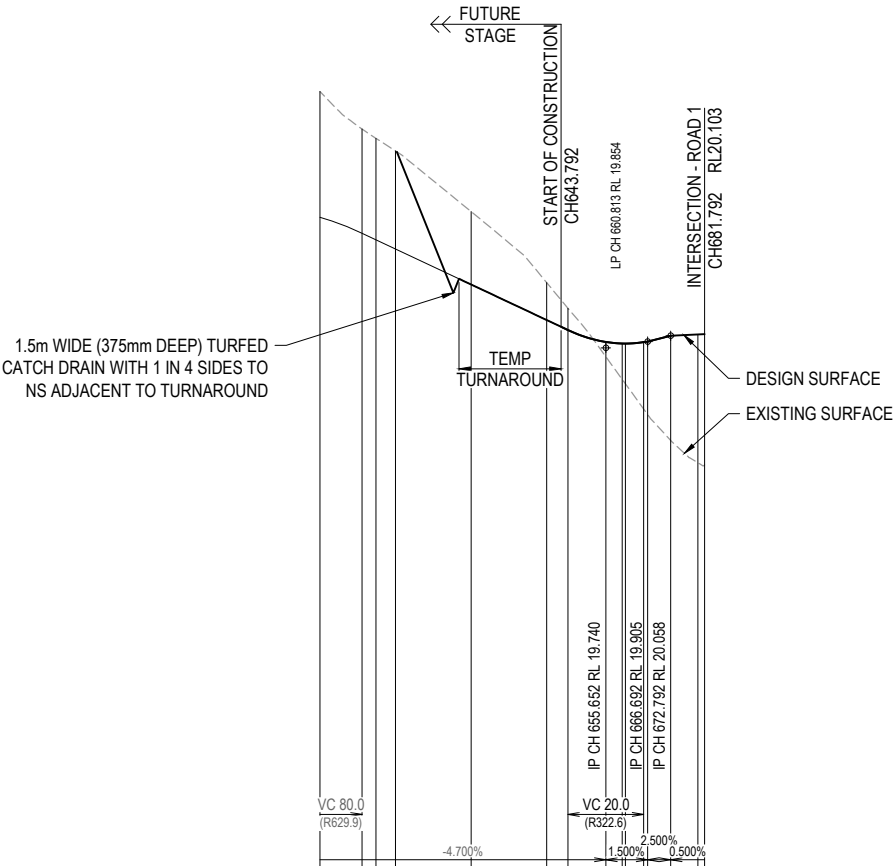


REV	DATE	DESIGN	DRAWN	REVISION DETAILS		DRAWN	STATUS		SCALE		CLIENT	PROJECT NAME PARADISE LAKES STAGE 3 PARADISE ROAD WILLAWONG	DRAWING TITLE McDONALD STREET LONGITUDINAL SECTION AND CROSS SECTIONS			
1	15.05.23	KP	KP	ORIGINAL ISSUE		KP	NOT FOR CONSTRUCTION		1:100 1:200 1:1000 1:2000 1:100 1:200		A1 A3 A1 A3 A1 A3		UNILAND PTY LTD	PROJECT No. 21-0075	DRAWING No. 110	REVISION 1
						DESIGN	APPROVED ANDREW NGO RPEQ 12329 15.05.23				ASSOCIATED CONSULTANT WOLTERS CONSULTING GROUP (07) 2666 5200					
						KP	 FOR AND ON BEHALF OF COLLIER'S INTERNATIONAL ENGINEERING & DESIGN PTY LTD									

ASSUMED PAVEMENT DETAILS (SUBJECT TO CBR TESTING)								
ROAD	ROAD CLASSIFICATION	DESIGN ESAs	ASSUMED CBR	SURFACING	BASE	SUB BASE	LOWER SUB BASE	TOTAL DEPTH
LAKESHORE CRESCENT	LOCAL ROAD	1.5 x 10 ⁵	3	30mm	100mm	100mm	250mm	480mm

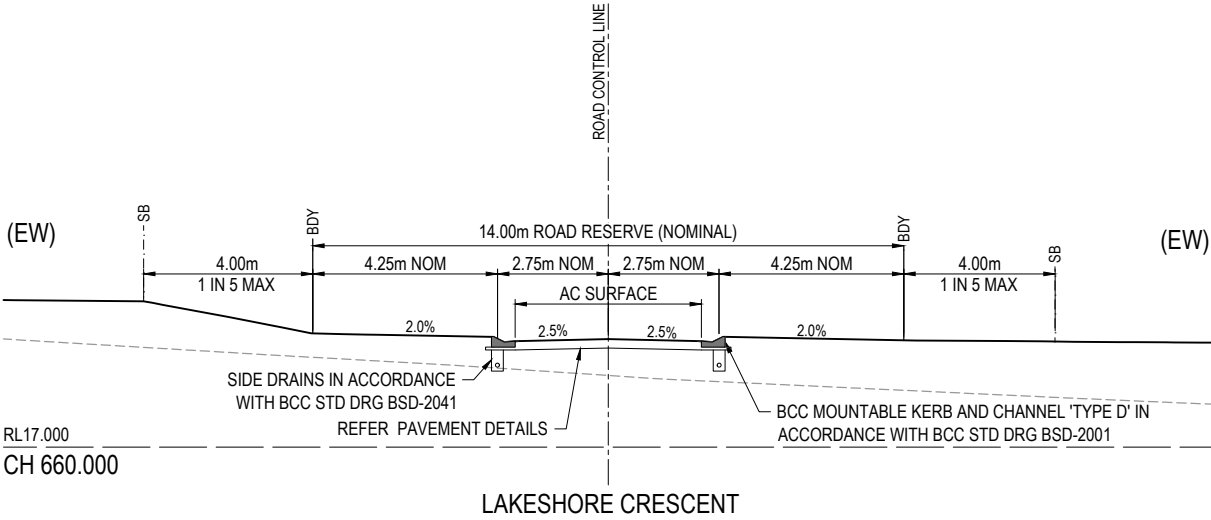
(EW) REFER TO BULK EARTHWORKS
DRAWING FOR LOT GRADING AND
FINISHED SURFACE LEVELS

NOTE: THIS PAVEMENT DESIGN IS PRELIMINARY ONLY. THE CONTRACTOR SHALL SUPPLY THE SUPERINTENDENT WITH SUBGRADE TEST RESULTS NECESSARY FOR FINAL PAVEMENT DESIGN



DATUM RL 5.0	
CUT (-) / FILL	-3.323 -2.757 -2.682 -2.592 -1.928 -0.989 -0.572 0.389 0.950 1.062 1.767 1.926 2.766 3.392 3.461
LHS LIP LEVEL	21.358
RHS LIP LEVEL	21.358
DESIGN SURFACE	23.197 22.771 22.598 22.356 21.416 20.476 20.210 19.895 19.855 19.854 19.890 19.905 20.058 20.094 20.103
EXISTING SURFACE	26.520 25.528 25.280 24.948 23.344 21.465 20.782 19.506 18.905 18.792 18.123 17.979 17.292 16.703 16.642
CHAINAGES	580.000 591.155 594.833 600.000 620.000 640.000 645.652 655.652 660.000 660.813 666.692 672.792 680.000 681.792
HORIZONTAL CURVES	R-30.000

REFER KERB RETURN LONGITUDINAL SECTIONS FOR DETAILS
LAKESHORE CRESCENT

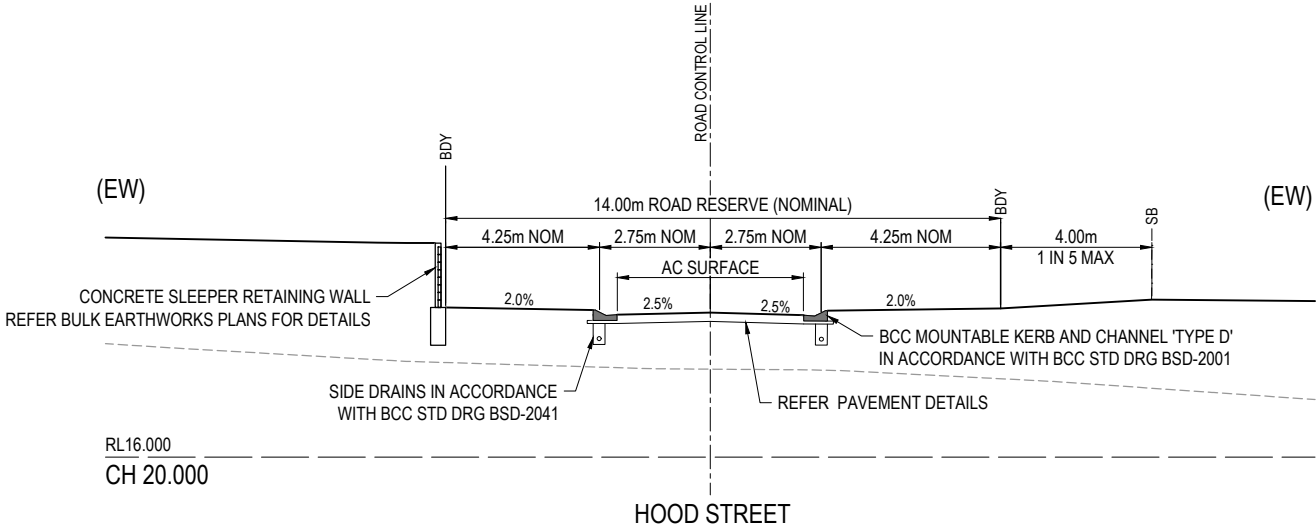
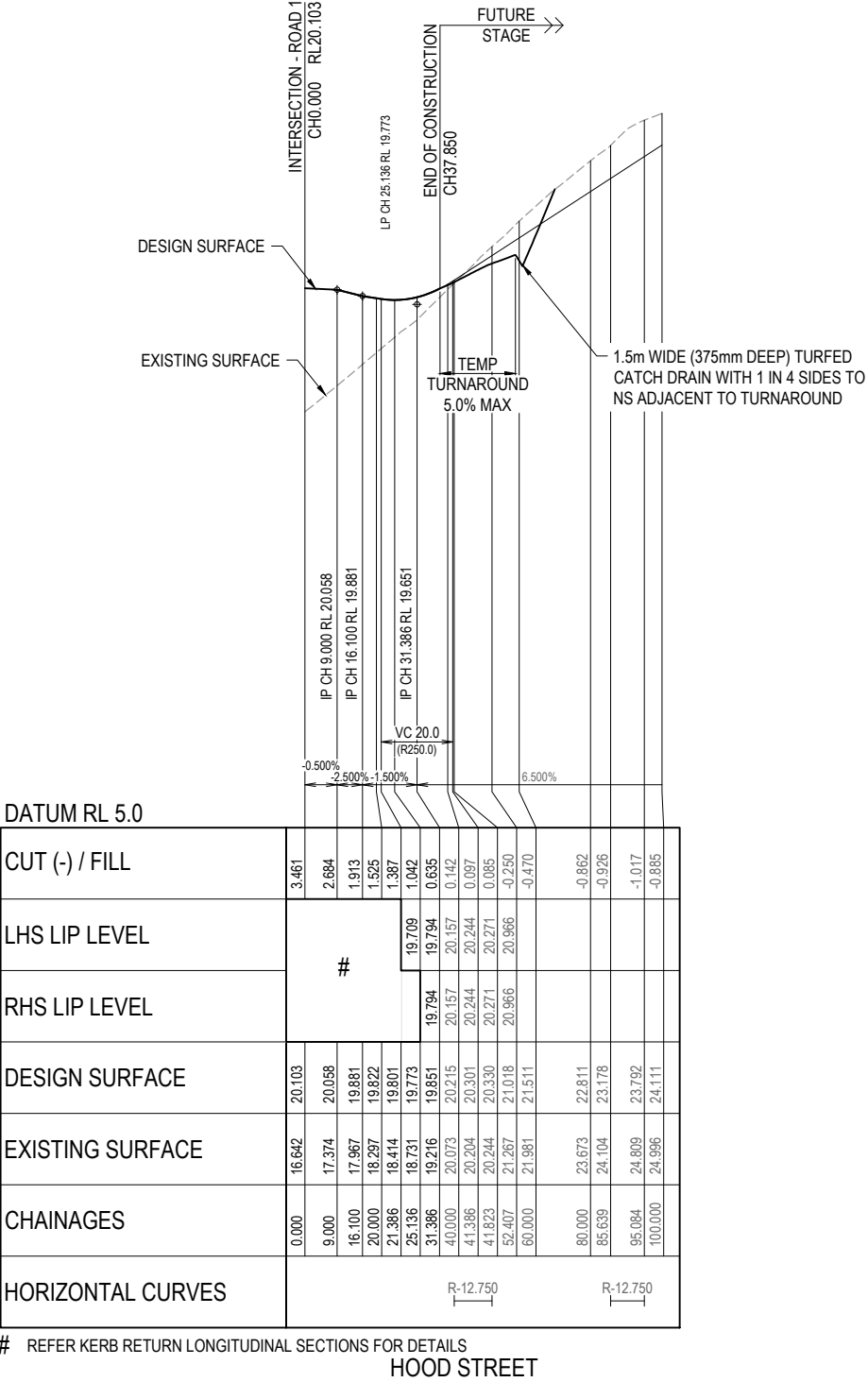


REV	DATE	DESIGN	DRAWN	REVISION DETAILS		DRAWN	STATUS			SCALE		CLIENT	PROJECT NAME	DRAWING TITLE					
1	15.05.23	KP	KP	ORIGINAL ISSUE		KP	NOT FOR CONSTRUCTION			1:100 1:200	 A1 A3				UNILAND PTY LTD	PARADISE LAKES STAGE 3	LAKESHORE CRESCENT LONGITUDINAL SECTION AND CROSS SECTIONS		
										1:1000 1:2000	10 0 10 20 30 40 50 A1 A3								
										1:100 1:200	1 0 1 2 3 4 5 A1 A3								
						KP	APPROVED ANDREW NGO  RPEQ 12329 DATE 15.05.23 FOR AND ON BEHALF OF COLLIER'S INTERNATIONAL ENGINEERING & DESIGN PTY LTD				ASSOCIATED CONSULTANT WOLTERS CONSULTING GROUP (07) 2666 5200	PARADISE ROAD WILLAWONG	PROJECT No. 21-0075	DRAWING No. 111	REVISION 1				

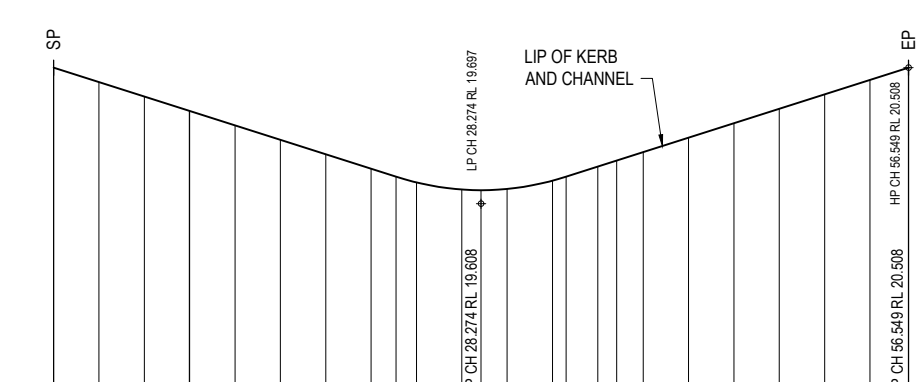
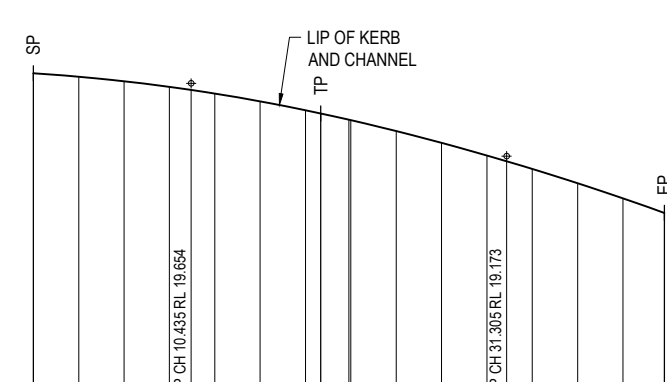
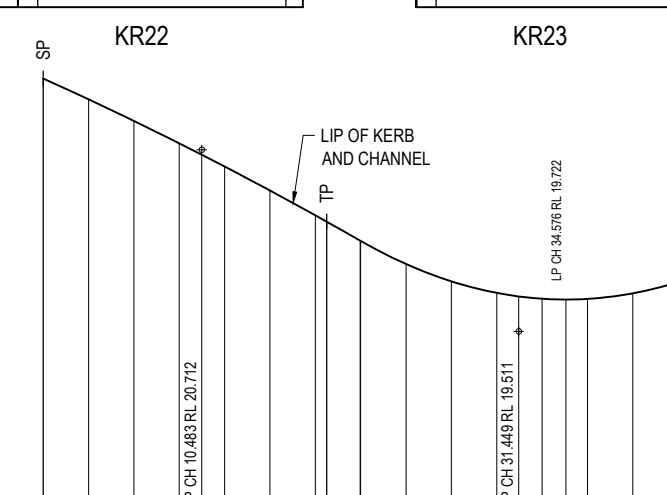
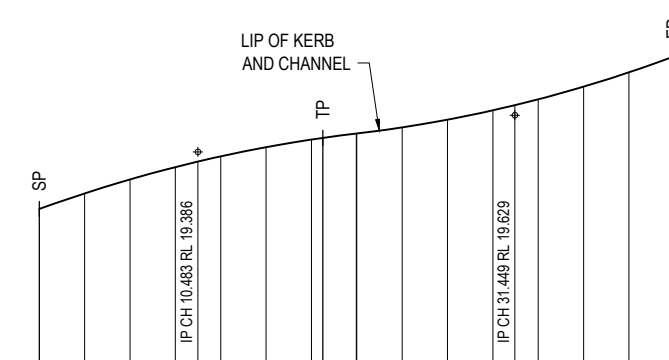
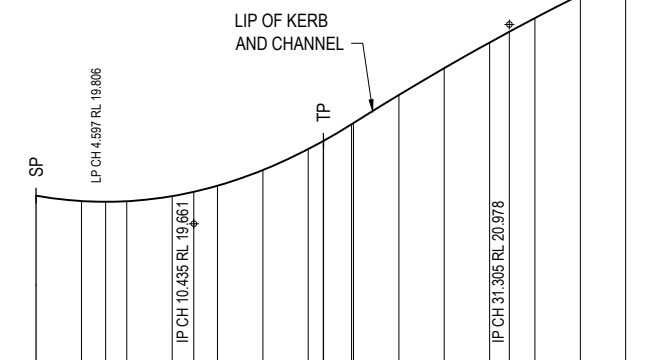
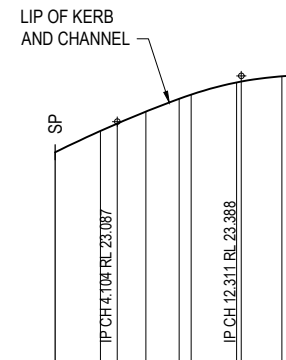
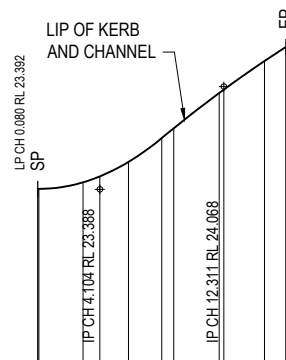
ASSUMED PAVEMENT DETAILS (SUBJECT TO CBR TESTING)								
ROAD	ROAD CLASSIFICATION	DESIGN ESAs	ASSUMED CBR	SURFACING	BASE	SUB BASE	LOWER SUB BASE	TOTAL DEPTH
HOOD STREET	LOCAL ROAD	1.5 x 10 ⁵	3	30mm	100mm	100mm	250mm	480mm

(EW) REFER TO BULK EARTHWORKS
DRAWING FOR LOT GRADING AND
FINISHED SURFACE LEVELS

NOTE: THIS PAVEMENT DESIGN IS PRELIMINARY ONLY. THE CONTRACTOR SHALL SUPPLY THE SUPERINTENDENT WITH SUBGRADE TEST RESULTS NECESSARY FOR FINAL PAVEMENT DESIGN



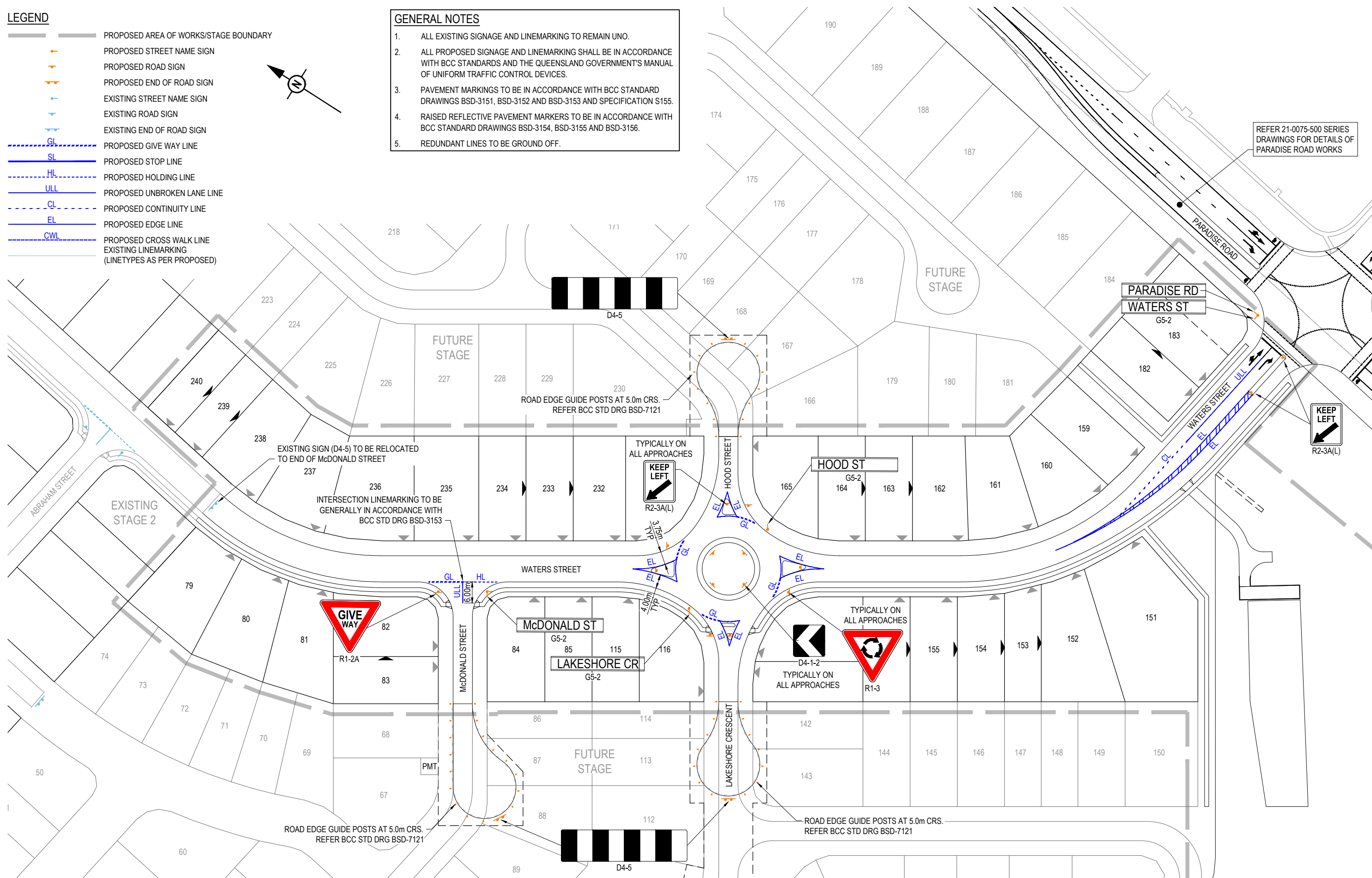
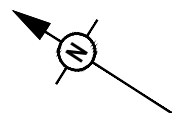
REV	DATE	DESIGN	DRAWN	REVISION DETAILS		DRAWN	STATUS			SCALE		CLIENT	PROJECT NAME	DRAWING TITLE			
1	15.05.23	KP	KP	ORIGINAL ISSUE		KP	NOT FOR CONSTRUCTION			1:100 1:200	  CROSS SECTIONS			A1 A3	HOOD STREET LONGITUDINAL SECTION AND CROSS SECTIONS		
										1:1000 1:2000	  HORIZONTAL			A1 A3			
										1:100 1:200	  VERTICAL			A1 A3			
						DESIGN	APPROVED ANDREW NGO		RPEQ 12329	DATE 15.05.23							
						KP			FOR AND ON BEHALF OF COLLIER'S INTERNATIONAL ENGINEERING & DESIGN PTY LTD								



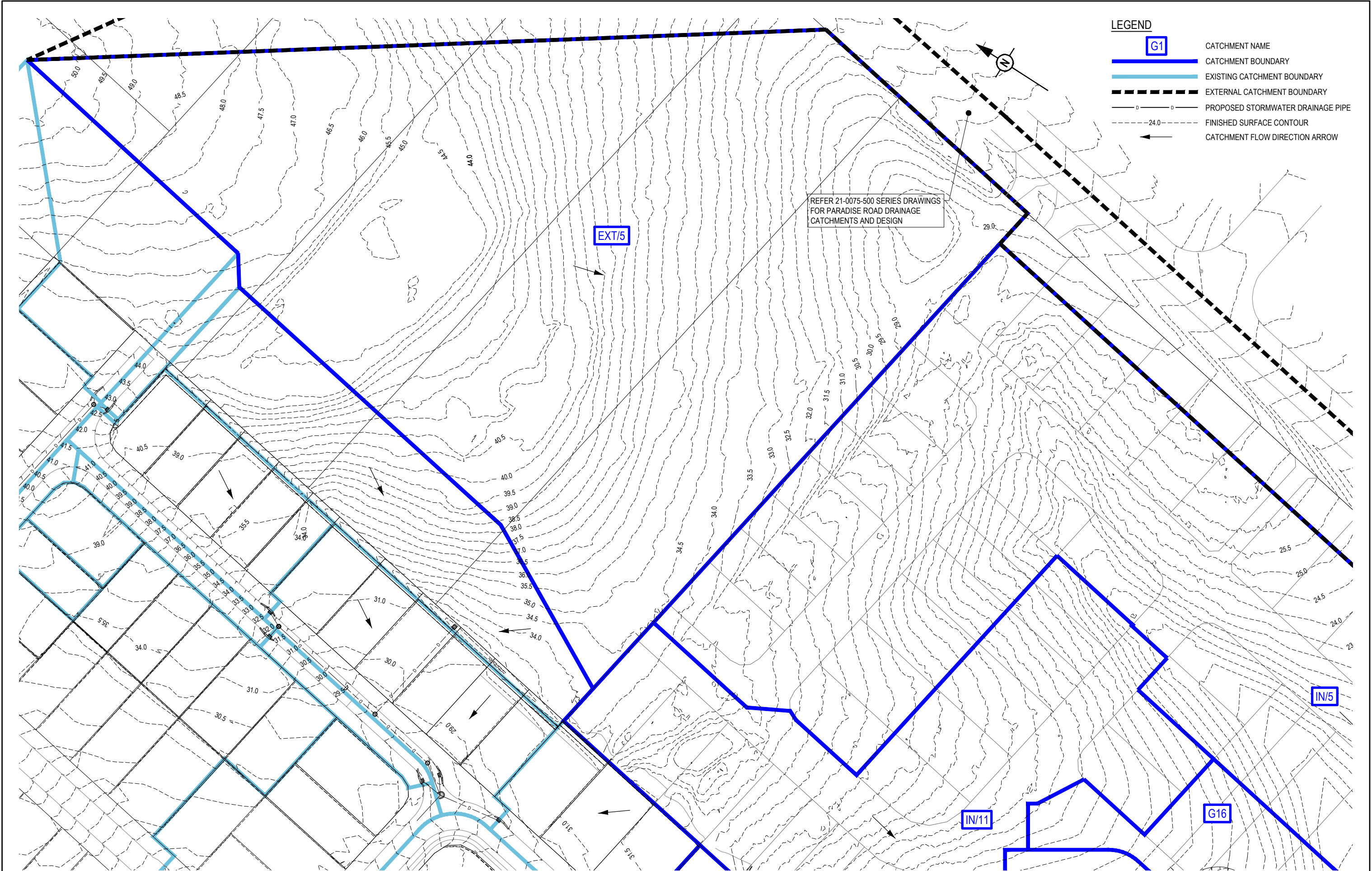
REV	DATE	DESIGN	DRAWN	REVISION DETAILS		DRAWN	STATUS		SCALE	CUSTOMER	PROJECT NAME	DRAWING TITLE				
1	15.05.23	KP	KP	ORIGINAL ISSUE		KP	NOT FOR CONSTRUCTION		1:25050510A1 1:500HORIZONTALA3 1:250.2500.250.50.7511.25A1 1:50VERTICALA3	UNILAND PTY LTD	PARADISE LAKES STAGE 3	KERB RETURN LONGITUDINAL SECTIONS				
						DESIGN	APPROVED									
							ANDREW NGO		RPEQ 12329				15.05.23			
						KP	 FOR AND ON BEHALF OF COLLIER'S INTERNATIONAL ENGINEERING & DESIGN PTY LTD									
										ASSOCIATED CONSULTANT WOLTERS CONSULTING GROUP (07) 2666 5200	PARADISE ROAD WILLAWONG	PROJECT No. 21-0075	DRAWING No. 115	REVISION 1		

	PROPOSED AREA OF WORKS/STAGE
	PROPOSED STREET NAME SIGN
	PROPOSED ROAD SIGN
	PROPOSED END OF ROAD SIGN
	EXISTING STREET NAME SIGN
	EXISTING ROAD SIGN
	EXISTING END OF ROAD SIGN
	PROPOSED GIVE WAY LINE
	PROPOSED STOP LINE
	PROPOSED HOLDING LINE
	PROPOSED UNBROKEN LANE LINE
	PROPOSED CONTINUITY LINE
	PROPOSED EDGE LINE
	PROPOSED CROSS WALK LINE
	EXISTING LINEMARKING
	(LINETYPES AS PER PROPOSED)

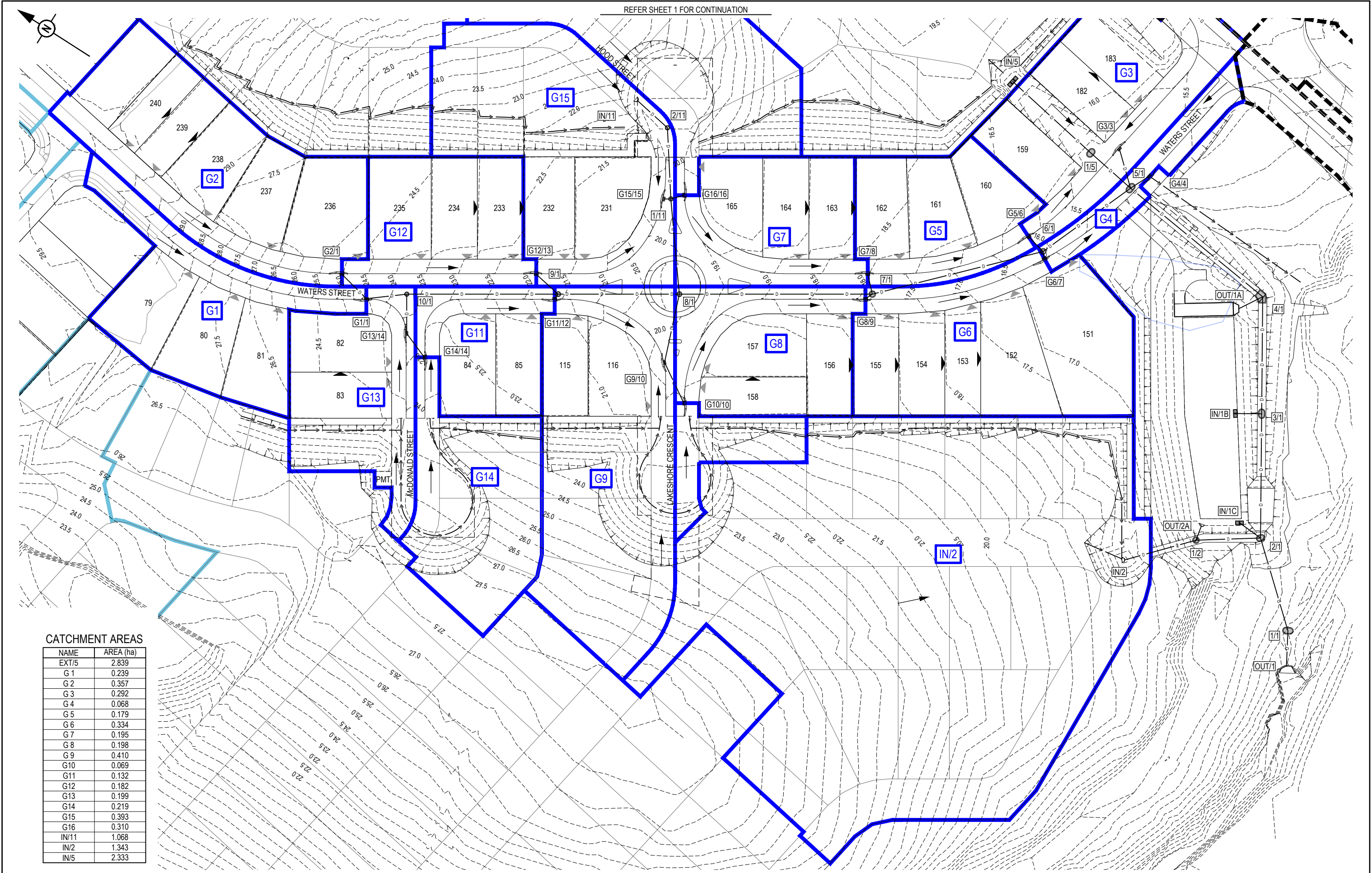
1. ALL EXISTING SIGNAGE AND LINEMARKING TO REMAIN UNO.
2. ALL PROPOSED SIGNAGE AND LINEMARKING SHALL BE IN ACCORDANCE WITH BCC STANDARDS AND THE QUEENSLAND GOVERNMENT'S MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
3. PAVEMENT MARKINGS TO BE IN ACCORDANCE WITH BCC STANDARD DRAWINGS BSD-3151, BSD-3152 AND BSD-3153 AND SPECIFICATION S155.
4. RAISED REFLECTIVE PAVEMENT MARKERS TO BE IN ACCORDANCE WITH BCC STANDARD DRAWINGS BSD-3154, BSD-3155 AND BSD-3156.
5. REDUNDANT LINES TO BE GROUND OFF.



REV	DATE	DESIGN	DRAWN	REVISION DETAILS		DRAWN	STATUS			SCALE 1:500 10 5 0 10 20 A1 1:1000  A3	CLIENT UNILAND PTY LTD	PROJECT NAME PARADISE LAKES STAGE 3	DRAWING TITLE SIGNS AND LINEMARKING LAYOUT PLAN			
1	15.05.23	KP	KP	ORIGINAL ISSUE		KP	NOT FOR CONSTRUCTION									
						DESIGN	APPROVED	DATE								
						KP	ANDREW NGO	RPEQ 12329	15.05.23							
						 FOR AND ON BEHALF OF COLLIER'S INTERNATIONAL ENGINEERING & DESIGN PTY LTD						ASSOCIATED CONSULTANT WOLTERS CONSULTING GROUP (07) 2666 5200	PARADISE ROAD WILLAWONG	PROJECT No. 21-0075	DRAWING No. 116	REVISION 1



REVISION DETAILS				DRAWN		STATUS		SCALE		CLIENT		PROJECT NAME		DRAWING TITLE		
REV	DATE	DESIGN	DRAWN	ORIGINAL ISSUE		NOT FOR CONSTRUCTION		1:500		UNILAND PTY LTD		PARADISE LAKES STAGE 3		STORMWATER DRAINAGE		
1	15.05.23	KP	KP	UPDATED TO SUIT EXTERNAL CATCHMENTS AND COUNCIL RFI		KP		1:1000		ASSOCIATED CONSULTANT		PARADISE ROAD		CATCHMENT LAYOUT PLAN		
2	14.09.23	KP	KP			DESIGN				WOLTERS CONSULTING GROUP		WILLAWONG		SHEET 1 OF 2		
						APPROVED								PROJECT No.		
						ANDREW NGO								DRAWING No.		
						RPEQ 12329								REVISION		
						DATE								21-0075		
						14.09.23								117		
						FOR AND ON BEHALF OF COLLIERS INTERNATIONAL ENGINEERING & DESIGN PTY LTD								2		



STORMWATER
STRUCTURE NOTE:
STANDARD ROUND MANHOLES LESS
THAN 3.0m DEEP:
CONSTRUCT IN ACCORDANCE WITH THE
LOCAL AUTHORITY STANDARDS.
STANDARD ROUND MANHOLES 3.0m >
5.3m DEEP:
CONSTRUCT IN ACCORDANCE WITH TMR
STD DRAWINGS 1307 AND 1308.
STANDARD ROUND MANHOLES GREATER
THAN 5.3m DEEP:
SHALL BE STRUCTURALLY DESIGNED
(CERTIFIED) AND CONSTRUCTED BY
CONTRACTOR ON A CASE BY CASE BASIS.
ROUND EXTENDED (900mm MAX)
MANHOLES:
CONSTRUCT IN ACCORDANCE WITH PEAK
URBAN STD DRAWINGS S-101 & S-102.
NON-STANDARD STRUCTURE (SPECIAL):
SHALL BE STRUCTURALLY DESIGNED
(CERTIFIED) AND CONSTRUCTED BY
CONTRACTOR ON A CASE BY CASE BASIS.

LINE

REV	DATE	DESIGN	DRAWN	REVISION DETAILS		DRAWN	STATUS		SCALE 1:1000 1:2000 01020304050 HORIZONTAL 1:100 1:200 21024 VERTICAL	CLIENT	UNILAND PTY LTD	PROJECT NAME	PARADISE LAKES STAGE 3	DRAWING TITLE STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 1 OF 2		
1	15.05.23	KP	KP	ORIGINAL ISSUE	KP	NOT FOR CONSTRUCTION										
2	14.09.23	KP	KP	UPDATED TO SUIT EXTERNAL CATCHMENTS AND COUNCIL RFI												

STRUCTURE NAME	STRUCTURE DESCRIPTION
----------------	-----------------------

STORMWATER STRUCTURE NOTE:
STANDARD ROUND MANHOLES LESS THAN 3.0m DEEP:
CONSTRUCT IN ACCORDANCE WITH THE LOCAL AUTHORITY STANDARDS.
STANDARD ROUND MANHOLES 3.0m > 5.3m DEEP:
CONSTRUCT IN ACCORDANCE WITH TMR STD DRAWINGS 1307 AND 1308.
STANDARD ROUND MANHOLES GREATER THAN 5.3m DEEP:
SHALL BE STRUCTURALLY DESIGNED (CERTIFIED) AND CONSTRUCTED BY CONTRACTOR ON A CASE BY CASE BASIS.
ROUND EXTENDED (900mm MAX) MANHOLES:
CONSTRUCT IN ACCORDANCE WITH PEAK URBAN STD DRAWINGS S-101 & S-102.
NON-STANDARD STRUCTURE (SPECIAL):
SHALL BE STRUCTURALLY DESIGNED (CERTIFIED) AND CONSTRUCTED BY CONTRACTOR ON A CASE BY CASE BASIS.

PIPE SIZEmm (Class)	450(3)
PIPE GRADE % PIPE SLOPE 1 in X	1.00% 100.00
FULL PIPE FLOW VELOCITY (m/s)	0.44
PART FULL FLOW VELOCITY (m/s)	
DATUM RL	4.0

WATER LEVEL IN STRUCTURE	HYDRAULIC GRADE LEVEL	PIPE FLOW (Cumecs)	DEPTH TO INVERT	INVERT LEVEL OF DRAIN	DESIGN SURFACE LEVEL	SETOUT	RUNNING CHAINAGE
--------------------------	-----------------------	--------------------	-----------------	-----------------------	----------------------	--------	------------------

LINE 3

G3/3	STD TYPE A GULLY - LIP IN LINE	2.4m UNTEL - SAG	14.702	14.702	15.028	E 502586.314	0.000
5/1	STD MANHOLE	1500mm DIA EXTENDED 1200mm REFER DETAIL	14.649	14.642	15.164	N 694678.035	11.918

G4/4	STD TYPE A GULLY - LIP IN LINE	2.4m UNTEL - SAG	14.678	14.678	15.079	E 502584.376	0.000
5/1	STD MANHOLE	1500mm DIA EXTENDED 1200mm REFER DETAIL	14.645	14.642	15.164	N 694686.376	6.529

IN/5	TEMPORARY FIELD INLET	3450mm x 900mm WITH DOME TOPS REFER DETAIL	16.406	16.406	16.661	E 502586.537	0.000
1/5	STD MANHOLE	1500mm DIA EXTENDED 900mm REFER DETAIL	15.286	14.826	15.582	N 6946714.976	30.963
5/1	STD MANHOLE	1500mm DIA EXTENDED 1200mm REFER DETAIL	14.752	14.642	15.164	E 502581.382	15.586

G5/6	STD TYPE A GULLY - LIP IN LINE	2.4m UNTEL - ON GRADE	15.237	15.237	16.031	E 502550.874	0.000
6/1	STD MANHOLE	1350mm DIAMETER - REFER DETAIL	15.159	15.155	16.046	N 694686.311	5.925

G6/7	STD TYPE A GULLY - LIP IN LINE	2.4m UNTEL - ON GRADE	15.318	15.318	16.002	E 502548.046	0.000
6/1	STD MANHOLE	1350mm DIAMETER - REFER DETAIL	15.158	15.155	16.046	N 694679.154	2.047

G7/8	STD TYPE A GULLY - LIP IN LINE	2.4m UNTEL - ON GRADE	16.784	16.784	17.678	E 502516.100	0.000
7/1	STD MANHOLE	1500mm DIAMETER - REFER DETAIL	16.714	16.710	17.887	N 694670.015	5.954

G8/9	STD TYPE A GULLY - LIP IN LINE	2.4m UNTEL - ON GRADE	16.763	16.763	17.802	E 502508.735	0.000
7/1	STD MANHOLE	1500mm DIAMETER - REFER DETAIL	16.712	16.710	17.887	N 6946716.710	2.363

G10/10	STD TYPE A GULLY - LIP IN LINE	2.4m UNTEL - ON GRADE	19.013	19.013	20.036	E 502455.196	0.000
G9/10	STD TYPE A GULLY - LIP IN LINE	2.4m UNTEL - SAG	19.011	19.010	19.776	N 6946744.796	13.186
8/1	STD MANHOLE	1200mm DIAMETER	18.856	18.856	20.342	E 502462.039	20.445

IN/11	TEMPORARY HEADWALL INLET		20.880	20.880	21.431	E 502522.250	0.000
2/11	STD MANHOLE	1050mm DIAMETER	20.257	19.444	19.807	N 6946804.263	11.864
1/11	STD MANHOLE	1050mm DIAMETER	19.406	19.208	19.752	E 502520.302	20.856

G11/12	STD TYPE A GULLY - LIP IN LINE	2.4m UNTEL - ON GRADE	20.916	20.916	21.576	E 502460.361	0.000
9/1	STD MANHOLE	1200mm DIAMETER - REFER DETAIL	20.882	20.881	20.988	N 6946793.152	1.637

G12/13	STD TYPE A GULLY - LIP IN LINE	2.4m UNTEL - ON GRADE	20.988	20.988	21.619	E 502463.429	0.000
9/1	STD MANHOLE	1200mm DIAMETER - REFER DETAIL	20.889	20.881	21.588	N 6946801.562	8.647

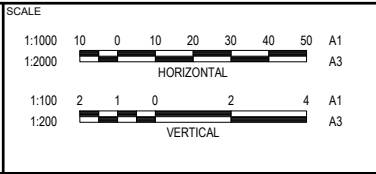
G14/14	STD TYPE A GULLY - LIP IN LINE	2.4m UNTEL - ON GRADE	22.763	22.763	23.435	E 502455.230	0.000
G13/14	STD TYPE A GULLY - LIP IN LINE	2.4m UNTEL - SAG	22.674	22.667	22.038	N 6946815.919	8.666
10/1	STD MANHOLE	1050mm DIAMETER	22.540	22.540	23.735	E 502428.304	11.500

G15/15	STD TYPE A GULLY - LIP IN LINE	2.4m UNTEL - SAG	19.405	19.405	19.582	E 502502.207	0.000
1/11	STD MANHOLE	1050mm DIAMETER	19.215	19.208	19.752	N 6946782.180	2.075

G16/16	STD TYPE A GULLY - LIP IN LINE	2.4m UNTEL - ON GRADE	19.312	19.312	19.691	E 502506.330	0.000
1/11	STD MANHOLE	1050mm DIAMETER	19.214	19.208	19.752	N 6946777.629	3.973

REV	DATE	DESIGN	DRAWN	REVISION DETAILS
1	15.05.23	KP	KP	ORIGINAL ISSUE
2	14.09.23	KP	KP	UPDATED TO SUIT EXTERNAL CATCHMENTS AND COUNCIL RFI

DRAWN	STATUS
KP	NOT FOR CONSTRUCTION
DESIGN	APPROVED
KP	ANDREW NGO
	RPEQ 12329
	DATE 14.09.23
	FOR AND ON BEHALF OF COLLIER'S INTERNATIONAL ENGINEERING & DESIGN PTY LTD



CLIENT	UNILAND PTY LTD
ASSOCIATED CONSULTANT	WOLTERS CONSULTING GROUP (07) 2666 5200

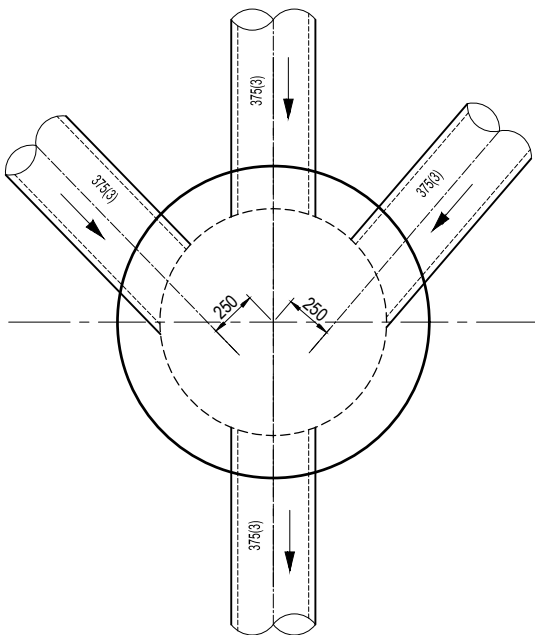
PROJECT NAME	PARADISE LAKES STAGE 3
PARADISE ROAD WILLAWONG	

DRAWING TITLE	STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 2 OF 2
PROJECT No.	21-0075
DRAWING No.	120
REVISION	2

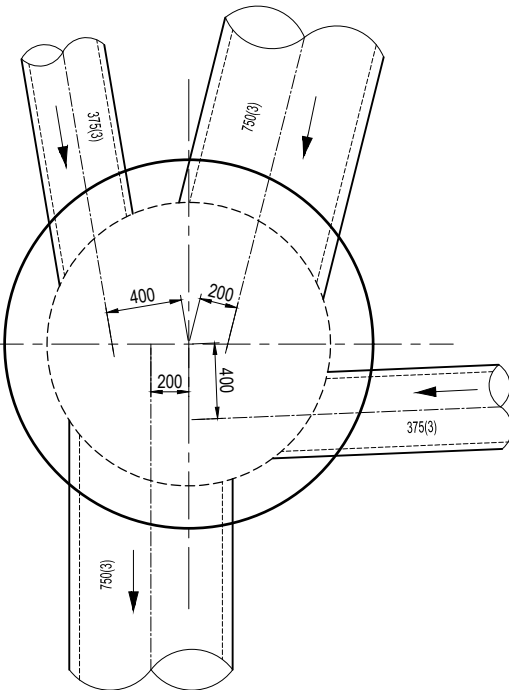
STRUCTURE SETOUT REFERENCE POINT

STRUCTURE TYPE	HORIZONTAL	VERTICAL
MANHOLE	 MAIN SHAFT	FINISHED SURFACE LEVEL
GULLY PIT	 INTERSECTION OF PIT AND KERB INVERT LNE # (INCLUDING MANHOLES UNDER GULLIES)	KERB INVERT LEVEL
HEADWALL	 INTERSECTION OF HEADWALL FACE & PIPE CENTRE LINE	TOP OF HEADWALL

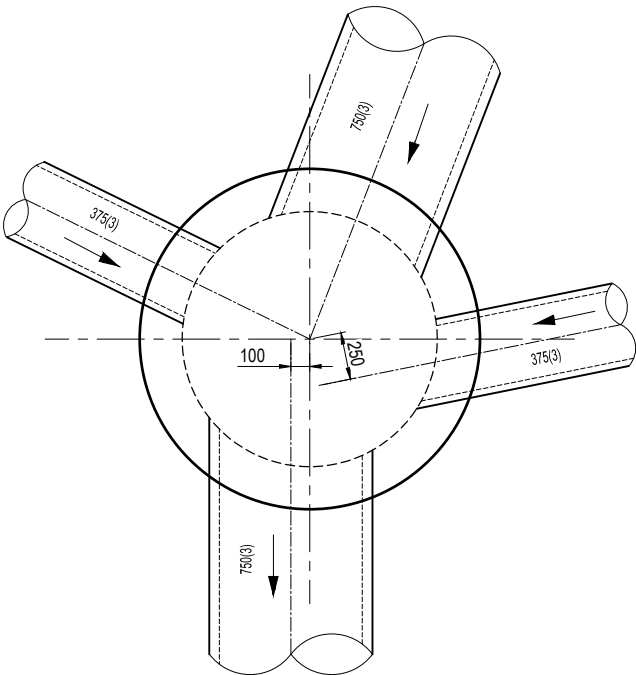
NOTE:
WITHIN GULLY PIT CHAMBER, CONTRACTOR TO ENSURE
STORMWATER PIPES ARE OFFSET AS REQUIRED SO
THAT PIPES ENTER WHOLLY WITHIN A SIDE WALL



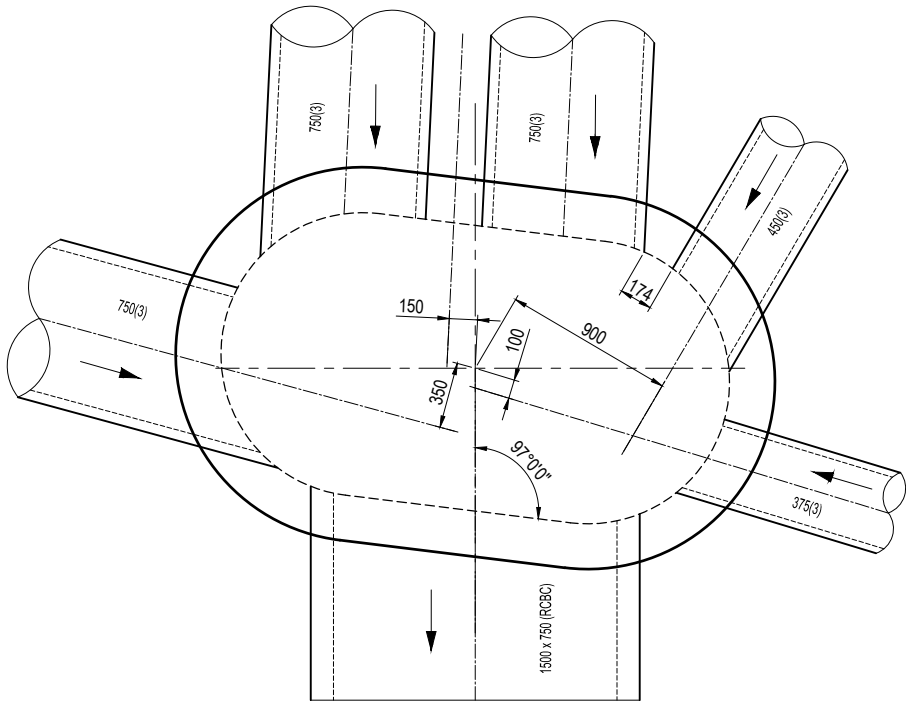
9/1 - 1200mm MANHOLE
1:20 (A1)
1:40 (A3)



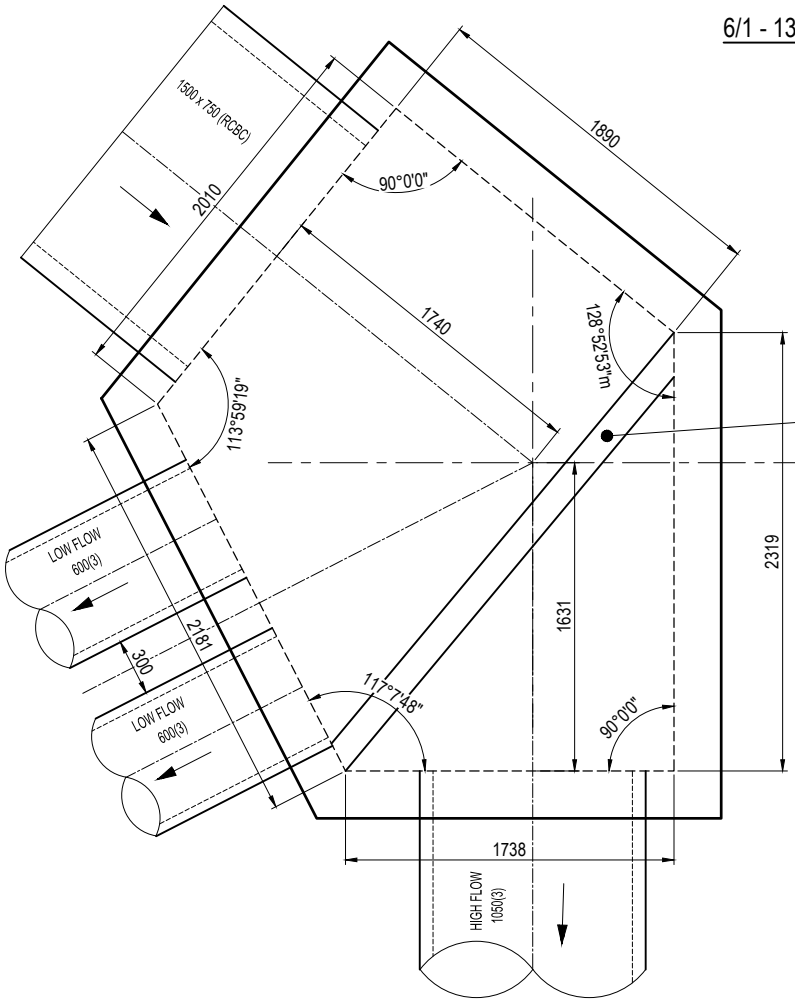
7/1 - 1500mm MANHOLE
1:20 (A1)
1:40 (A3)



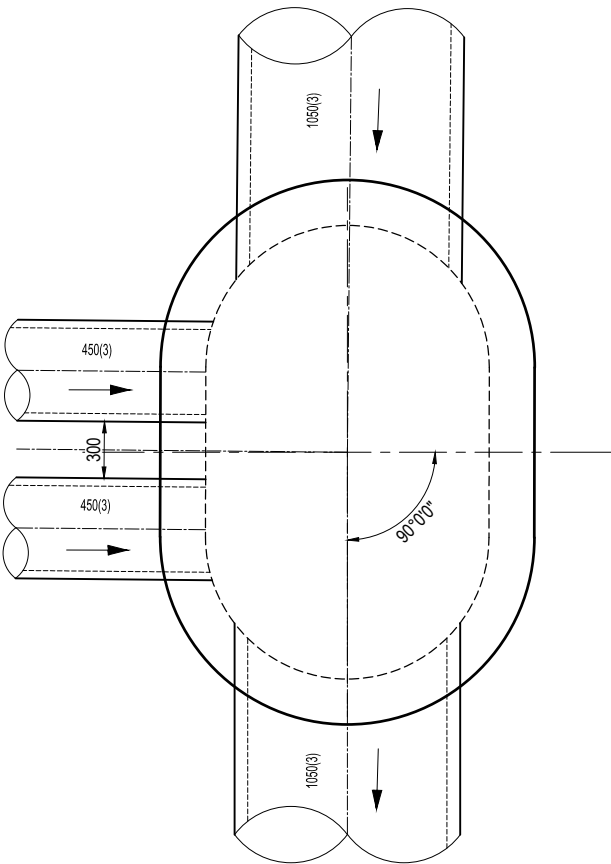
6/1 - 1350mm MANHOLE
1:20 (A1)
1:40 (A3)



5/1 - 1500mm MANHOLE EXTENDED 1200mm
1:20 (A1)
1:40 (A3)

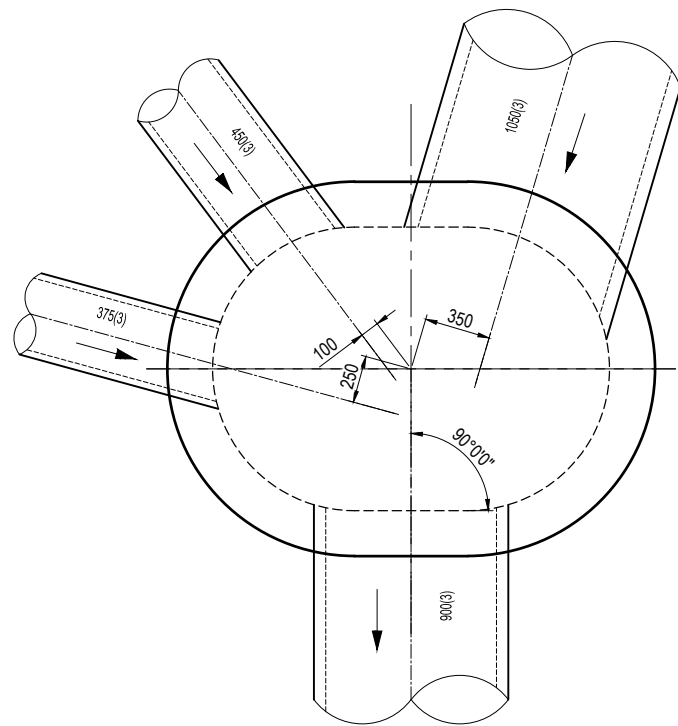


4/1 - CUSTOM STRUCTURE
1:20 (A1)
1:40 (A3)

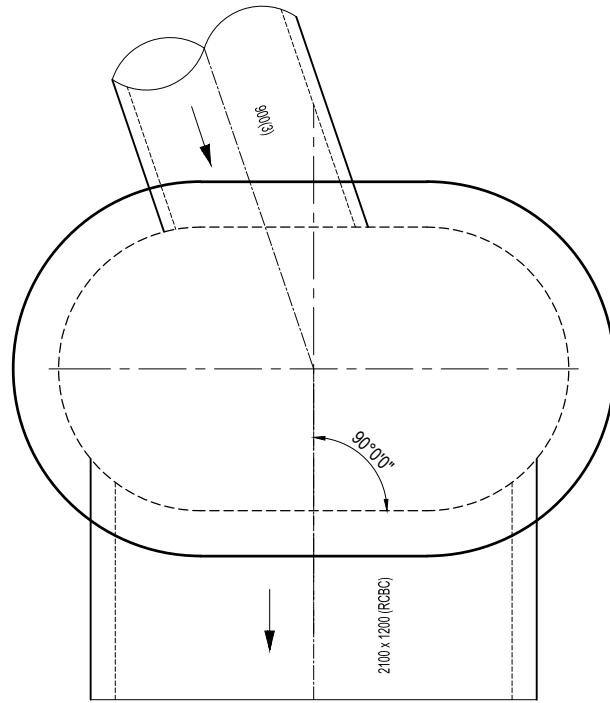


3/1 - 1500mm MANHOLE EXTENDED 900mm
1:20 (A1)
1:40 (A3)

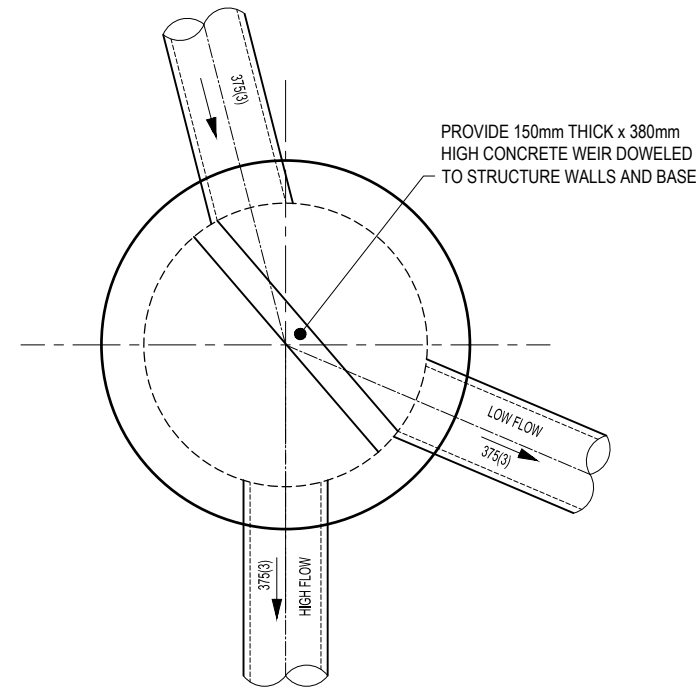
REV	DATE	DESIGN	DRAWN	REVISION DETAILS	DRAWN	STATUS	CLIENT	PROJECT NAME	DRAWING TITLE
1	15.05.23	KP	KP	ORIGINAL ISSUE	KP	NOT FOR CONSTRUCTION	UNILAND PTY LTD	PARADISE LAKES STAGE 3	STORMWATER DRAINAGE STRUCTURE DETAILS SHEET 1 OF 2
2	14.09.23	KP	KP	UPDATED TO SUIT EXTERNAL CATCHMENTS AND COUNCIL RFI	KP	APPROVED ANDREW NGO RPEQ 12329 DATE: 14.09.23	ASSOCIATED CONSULTANT WOLTERS CONSULTING GROUP (07) 2666 5200	PARADISE ROAD WILLAWONG	PROJECT No. 21-0075 DRAWING No. 121 REVISION 2



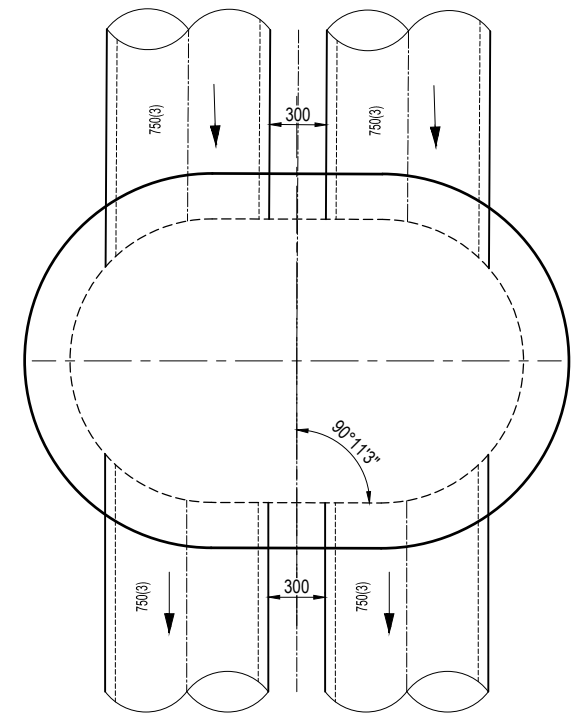
2/1 - 1500mm MANHOLE EXTENDED 600mm
1:20 (A1)
1:40 (A3)



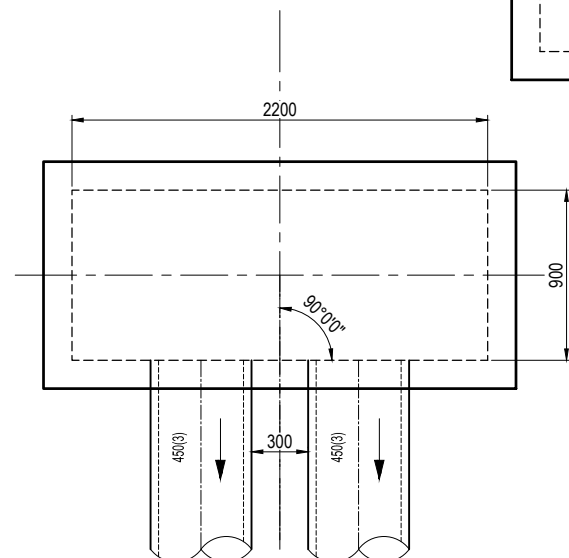
1/1 - 1500mm MANHOLE EXTENDED 1200mm
1:20 (A1)
1:40 (A3)



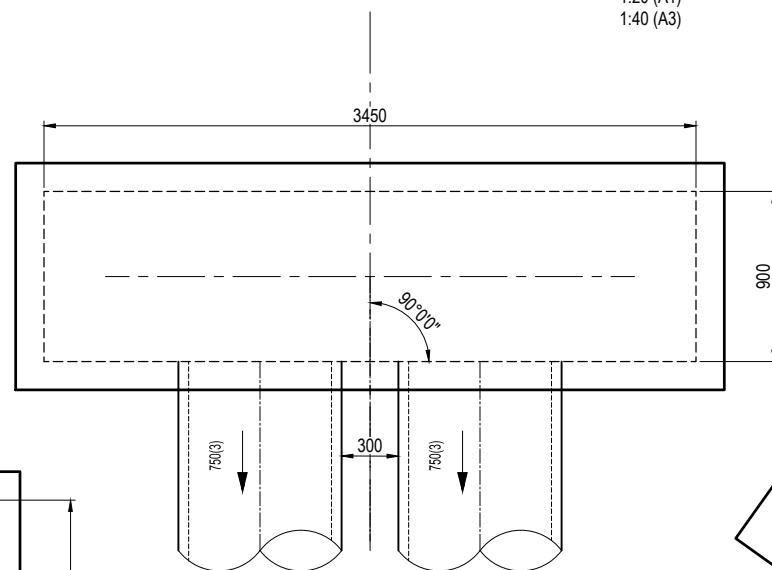
1/2 - 1500mm MANHOLE
1:20 (A1)
1:40 (A3)



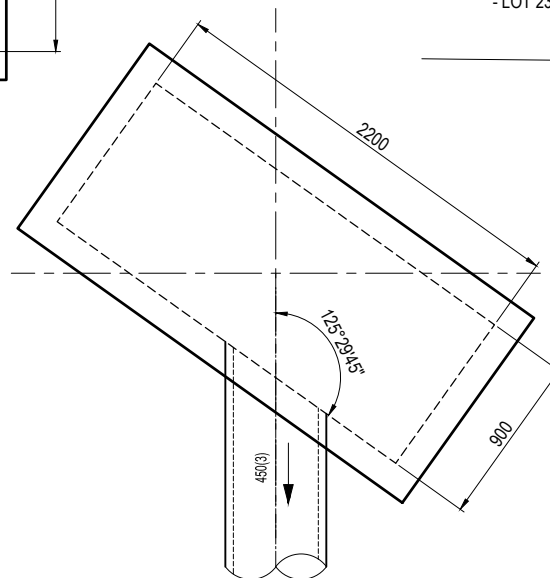
1/5 - 1500mm MANHOLE EXTENDED 900mm
1:20 (A1)
1:40 (A3)



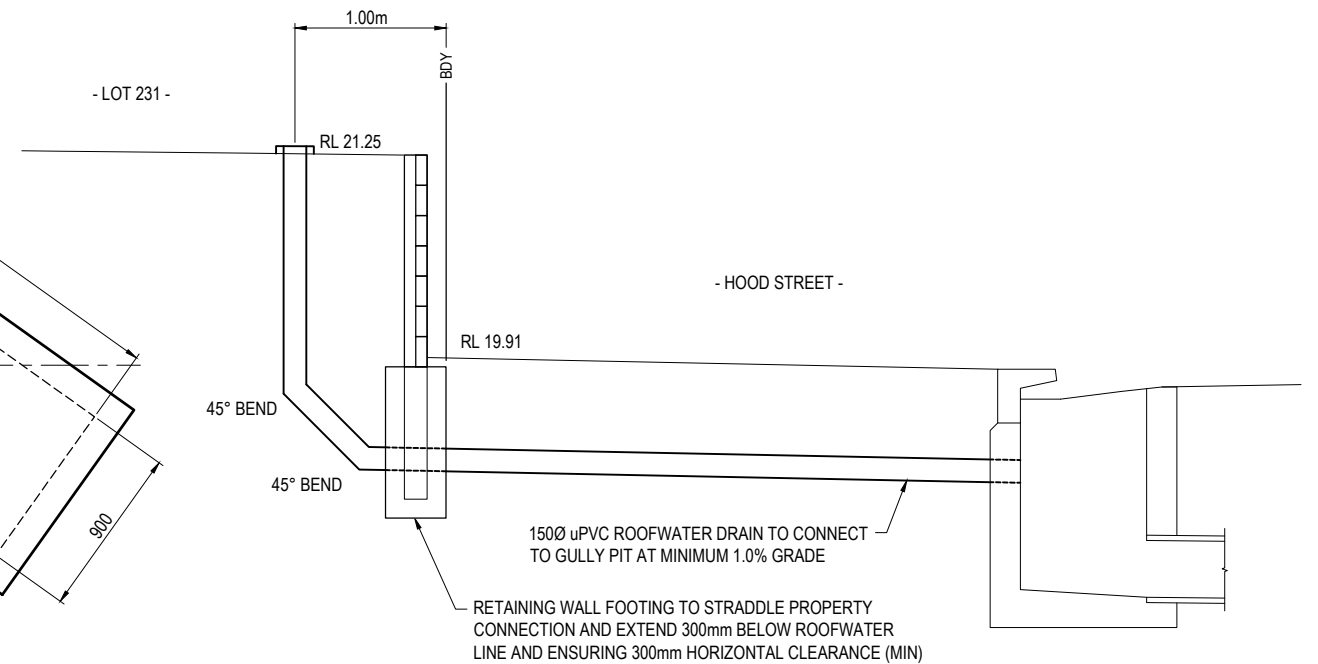
IN/1B - 2200mm x 900mm FIELD INLET WITH DOME TOP
1:20 (A1)
1:40 (A3)



IN/5 - 3450mm x 900mm FIELD INLET WITH DOME TOPS
1:20 (A1)
1:40 (A3)



IN/1C - 2200mm x 900mm FIELD INLET WITH DOME TOP
1:20 (A1)
1:40 (A3)



ROOFWATER CONNECTION UNDER RETAINING WALL TO LOT 231
1:25 (A1)
1:50 (A3)

REV	DATE	DESIGN	DRAWN	REVISION DETAILS	DRAWN	STATUS	SCALE	CLIENT	PROJECT NAME	DRAWING TITLE
1	15.05.23	KP	KP	ORIGINAL ISSUE	KP	NOT FOR CONSTRUCTION	1:20 0.2 0 0.2 0.4 0.6 0.8 1 A1	UNILAND PTY LTD	PARADISE LAKES STAGE 3	STORMWATER DRAINAGE STRUCTURE DETAILS SHEET 2 OF 2
2	14.09.23	KP	KP	UPDATED TO SUIT EXTERNAL CATCHMENTS AND COUNCIL RFI	KP	APPROVED ANDREW NGO RPEQ 12329 DATE 14.09.23	1:40	ASSOCIATED CONSULTANT WOLTERS CONSULTING GROUP (07) 2666 5200	PARADISE ROAD WILLAWONG	PROJECT No. 21-0075 DRAWING No. 122 REVISION 2
						FOR AND ON BEHALF OF COLLIER'S INTERNATIONAL ENGINEERING & DESIGN PTY LTD				

LOCATION				TIME		SUB-CATCHMENT RUNOFF						INLET DESIGN						DRAIN DESIGN										HEADLOSSES										PART FULL		DESIGN LEVELS														
DESIGN AEP	STRUCTURE No.	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	SUB-CATCHMENT TIME OF CONC.	RAINFALL INTENSITY	10yr RUNOFF CO-EFFICIENT	CO-EFFICIENT OF RUNOFF	SUB-CATCHMENT AREA	EQUIVALENT AREA	SUM OF (C * A)	SUB-CATCHMENT DISCHARGE	FLOW IN K&C (INC. BYPASS)	ROAD GRADE AT INLET	FLOW dv	MINOR FLOW ROAD CAPACITY	INLET TYPE	FLOW INTO INLET	BYPASS FLOW	BYPASS STRUCTURE No.	CRITICAL TIME OF CONC.	RAINFALL INTENSITY	TOTAL (C * A)	MAJOR TOTAL FLOW	MAJOR SURFACE FLOW CAPACITY	MAJOR SURFACE FLOW	PIPE FLOW	REACH LENGTH	PIPE GRADE	PIPE / BOX DIMENSIONS (CLASS)	FLOW VELOCITY FULL (PIPE GRADE VELOCITY)	TIME OF FLOW IN REACH	STRUCTURE CHART No.	STRUCTURE RATIOS FOR 'K' VALUE	CALCULATIONS	VELOCITY HEAD	UIS HEADLOSS COEFFICIENT	UIS PIPE STRUCT. HEADLOSS	LAT. HEADLOSS CO-EFFICIENT	LAT. PIPE STRUCT. HEADLOSS	W.S.E. CO-EFFICIENT	CHANGE IN W.S.E	PIPE FRICTION SLOPE	PIPE FRICTION HEADLOSS (L * S)	DEPTH	VELOCITY	OBVERT LEVELS	DRAIN SECTION H.G.L	UPSTREAM H.G.L	LAT. H.G.L	W.S.E.	SURFACE OR K&C INVERT LEVEL	STRUCTURE No.		
				min	mm/h			ha	ha	ha	l/s	l/s	%	m2/s	l/s		l/s	l/s		min	mm/h	ha	l/s	l/s	l/s	l/s	m	%	mm	m/s	min				m		m		l	hl	Kw	hw	Sf	hf	Dp	Vp	m	m	m	m	m	m	m	
10 50	G14/14	G14/14 to G13/14	G14	10.00 10.00	167 227	0.86 0.86	0.86 0.99	0.219 0.219	0.188 0.217	0.188 0.217	87 137	87 137	1.94 2.083m	0.09 1.32m	127	1	50 (UNLOCKED 0)	37		G11/12	10.00 10.00	167 227	0.188 0.217	137	1912	86 50	8.666 (Pipe flow= Grate flow)	1.00	375(3)	0.46 (1.59)	0.14		Qg 0.050 Qo 0.050 Do 375 CHART 32: Vc2QgDo 0.03 HDo 0.47 Kg side flow 8.23 and flow 5.91	0.011	8.23	0.089		m	8.23	0.089	0.08	0.007				22.500 22.413	22.674 22.667	22.763		22.763	23.435	G14/14		
10 50	G13/14	G13/14 to 10/1	G14/G13	10.00 10.00	167 227	0.86 0.86	0.86 0.99	0.199 0.199	0.171 0.197	0.171 0.197	79 124	126 124	0.00 2.480m	0.00	53	13S.062 (UNLOCKED 0)	53	72		G11/12	10.14 10.14	166 225	0.359 0.414	259	1700	155 103	11.500 (Pipe flow= Sum upstr atten flows)	1.00	375(3)	0.94 (1.59)	0.19		Qg 0.053 Qo 0.103 Do 375 CHART 33 Angle 0 SDo 2.5 DuDo 1.00 Qg/Qo 0.51 K 1.54 SDo 1.73 cor 0.40 Ku 1.94 Kw 1.94	0.045	1.94	0.087			1.94	0.087	0.35	0.040				22.383 22.278	22.580 22.540	22.667		22.667	23.362	G13/14		
10 50	G2/1	G2/1 to G1/1	G2	10.00 10.00	167 227	0.86 0.86	0.86 0.99	0.357 0.357	0.307 0.353	0.307 0.353	142 223	142 223	6.93 1.939m	0.16 1.41m	515	1	65 (UNLOCKED 0)	77		G12/13	10.00 10.00	167 227	0.307 0.353	223	2867	157 65	10.105 (Pipe flow= Grate flow)	4.50	375(3)	0.59 (3.36)	0.17		Qg 0.065 Qo 0.065 Do 375 CHART 32: Vc2QgDo 0.05 HDo 0.00 Kg side flow 9.41 and flow 6.81	0.018	9.41	0.167			9.41	0.167	0.14	0.014	0.106	2.53	23.898 23.443	23.898 23.331	24.065		24.065	24.885	G2/1			
10 50	G1/1	G1/1 to 10/1	G2-G1	10.00 10.00	167 227	0.86 0.86	0.86 0.99	0.239 0.239	0.206 0.237	0.206 0.237	96 149	96 149	6.47 1.612m	0.13 1.065m	497	1	49 (UNLOCKED 0)	46		G13/14	10.17 10.17	166 225	0.513 0.590	369	2906	255 114	11.899 (Pipe flow= Sum upstr atten flows)	4.50	375(3)	1.03 (3.36)	0.19		Qg 0.049 Qo 0.114 Do 375 Flow G2/1 made eqv grate flow CHART 32: Vc2QgDo 0.14 HDo 0.00 Kg side flow 7.07 and flow 5.54 K vals above for stepped pipes as grate flow grate flow decreased by 0.065 from G2/1	0.054	1.98	0.108		CHART 33 Angle 0 SDo 2.5 DuDo 1.00 Qg/Qo 0.43 K 1.38 SDo 1.29 cor 0.60 Ku 1.98 Kw 1.98 K vals step pipes as pipe flow Ku 1.98 Kw 1.98			1.98	0.108	0.42	0.050	0.142	2.96	23.223 22.688	23.223 22.540	23.331		23.331	24.406	G1/1	
10 50	10/1	10/1 to 8/1	G14/G13/G2/G1												245	24					10.36 10.36	164 224	0.872 1.004	625	2979	410 215	44.324 (Pipe flow= Sum upstr atten flows)	3.60	375(3)	1.94 (3.01)	0.38		Qo 0.215 Do 375 Flow G1/1 made eqv grate flow CHART 33 Angle 0 SDo 2.5 DuDo 1.00 Qg/Qo 0.52 K 1.56 SDo 1.93 cor 0.26 Ku 1.82 Kw 1.82 K vals above for stepped pipes as grate flow grate flow decreased by 0.113 from G1/1 Routine 2.15 Join Pipes: G13/14 and G1/1 Vel1 0.924 Vel2 1.019 Eq Dia 528 Angle 180 Flow 0.215 CHART 50 DuDo1.41 alpha 0 Kw 0.05 Vu 0.98 WSE 0.19 Ku 0.97 Kw 0.98 K vals step pipes as pipe flow Ku 0.97 Kw 0.98 Averaged Ku 1.52 Kw 1.52	0.192	1.52	0.292			1.52	0.292	1.50	0.665	0.219	3.20	22.248 20.653	22.248 20.881	22.540		22.540	23.735	10/1			
10 50	IN11	IN11 to 2/11	IN11	10.50 10.50	164 222	0.86 0.86	0.86 0.99	1.068 1.068	0.918 1.057	0.918 1.057	418 652	418 652	6.50 20.000m	0.00	245	30S.5 (UNLOCKED 0)	245	173	LOST	10.50 10.50	164 222	0.918 1.057	652			245 11.864 (Pipe flow= Grate flow)	7.00	450(3)	1.54 (4.74)	0.13		Qg 0.245 Qo 0.245 Do 450 CHART 32: Vc2QgDo 0.27 HDo 0.00 Kg side flow 5.16 and flow 4.33	0.121	5.16	0.623			5.16	0.623	0.74	0.088	0.176	4.23	20.257 19.426	20.257 19.444	20.880		20.880	21.431	IN11				
10 50	2/11	2/11 to 1/11	IN11												24						10.63 10.63	163 221	0.918 1.057	649	2380	404 245	20.856 (Pipe flow= Sum upstr atten flows)	4.00	450(3)	1.54 (3.58)	0.23		Qo 0.245 Do 450 CHART 50 DuDo1.00 alpha 0 Kw 0.05 Vu 1.54 WSE 0.04 Ku 0.31 Kw 0.36	0.121	0.31	0.038			0.36	0.044	0.74	0.154	0.206	3.45	19.406 16.572	19.406 19.208	19.444		19.450	20.643	2/11			
10 50	G10/10	G10/10 to G9/10	G10	10.00 10.00	167 227	0.86 0.86	0.86 0.99	0.069 0.069	0.059 0.068	0.059 0.068	27 43	27 43	4.13 0.871m	0.06 0.370m	185	1	16 (UNLOCKED 0)	11		G8/9	10.00 10.00	167 227	0.059 0.068	43	2550	27 16	13.186 (Pipe flow= Grate flow)	2.30	375(3)	0.15 (2.41)	0.22		Qo 0.016 Qo 0.016 Do 375 CHART 32: Vc2QgDo 0.00 HDo 0.00 Kg side flow 10.79 and flow 7.53 Part full downstream pipe	0.001	1.00	0.002		Upstream pipe obv 18.101 Set Kp to 1			1.00	0.002	0.01	0.001	0.063	1.33	19.101 18.798	19.011 19.010	19.013		19.013	20.036	G10/10	
10 50	G9/10	G9/10 to 8/1	G10/G9	10.00 10.00	167 227	0.86 0.86	0.86 0.99	0.410 0.410	0.353 0.406	0.353 0.406	164 256	293 293	0.00 2.480m	0.00	96	13S.062 (UNLOCKED 0)	96	197		G8/9	10.22 10.22	165 225	0.412 0.474	296	1500	185 111	20.444 (Pipe flow= Sum upstr atten flows)	0.50	375(3)	1.01 (1.12)	0.34		Qg 0.095 Qo 0.111 Do 375 CHART 33 Angle 0 SDo 2.5 DuDo 1.00 Qg/Qo 0.86 K 2.16 SDo 1.62 cor 0.80 Ku 2.96 Kw 2.96	0.052	2.96	0.154			2.96	0.154	0.40	0.082				18.778 18.676	18.856 18.774	19.010		19.010	19.776	G9/10		
10 50	G11/12	G11/12 to 9/1	G11	10.00 10.00	167 227	0.86 0.86	0.86 0.99	0.132 0.132	0.114 0.131	0.114 0.131	53 82	162 162	4.50 2.286m	0.15 2.059m	415	1	32 (UNLOCKED 0)	130		G9/10	10.00 10.00	167 227	0.114 0.131	83	3098	51 32	1.637 (Pipe flow= Grate flow)	1.01	375(3)	0.29 (1.60)	0.03		Qg 0.032 Qo 0.032 Do 375 CHART 32: Vc2QgDo 0.01 HDo 0.64 Kg side flow 7.97 and flow 5.85	0.004	7.97	0.034			7.97	0.034	0.03	0.001				20.641 20.624	20.882 20.881	20.916		20.916	21.576	G11/12		
10 50	G12/13	G12/13 to 9/1	G12	10.00 10.00	167 227	0.86 0.86	0.86 0.99	0.182 0.182	0.157 0.180	0.157 0.180	73 114	150 150	4.50 2.205m	0.14 1.785m	415	1	53 (UNLOCKED 0)	97		G15/15	10.00 10.00	167 227	0.157 0.180	114	3098	61 53	8.647 (Pipe flow= Grate flow)	1.00	375(3)	0.48 (1.59)	0.14		Qg 0.053 Qo 0.053 Do 375 CHART 32: Vc2QgDo 0.03 HDo 0.40 Kg side flow 8.41 and flow 6.05	0.012	8.41	0.099			8.41	0.099	0.09	0.008				20.739 20.653	20.889 20.881	20.988		20.988	21.819	G12/13		
10 50	9/1	9/1 to 8/1	G14/G13/G2/G1/G11/G12												25						10.74 10.74	162 221	1.143 1.315	807	3098	513 294	35.495 (Pipe flow= Sum upstr atten flows)	4.50	375(3)	2.67 (3.36)	0.22		Qo 0.294 Do 375 Flow 10/1 made eqv grate flow Flow G12/13 made eqv grate flow Angle 44 Chart 39 SDo 2.5 chartdeg DuDo 1.00 KO 1.80 KO.5 1.91 Qu/Qo 0.11 Cg 1.32 K 1.95 SDo 3.0 KO 1.63 KO.5 1.73 K 1.76 SDo 2.5 KO 1.80 KO.5 1.91 K 1.95 Interp val for SDo 2.78 Kw 1.84 CHART 38 SDo 3.0 KO 1.57 KO.5 1.59 K 1.59 SDo 2.5 KO 1.70 KO.5 1.66 K 1.64 Interp val for SDo 2.78 Ku 1.81 K vals above for stepped pipes as grate flow grate flow decreased by 0.212 from 10/1 grate flow decreased by 0.051 from G12/13 Routine 3.2 Join Pipes: G12/13 and 10/1 Vel1 0.485 Vel2 1.919 Eq Dia 452 Angle 187 Flow 0.263 Routine 2.1	0.363	0.91	0.329		CHART 53 8.900 In line Eqy G12/13 & 10/1 Lat1 G11/12 Determine KI DDoDo 1.00 BDo 2.40 Qu/Qo 0.89 DuDo 0.83 Do/Ci 1.00 K1 1.70 M10.45 K1-K1M10= 0.77 Determine Ku Ku 1.51 M10.45 Ku=Ku/Mu= 0.86 Kw/Ku= 0.86 Combined pipes in line case Join Pipes: Eqy G12/13 & 10/1 and G11/12 Vel1 1.641 Vel2 0.282 Eq Dia 500 Angle 181 Flow 0.294 CHART 50 DuDo1.33 alpha 0 Kw 0.05 Vu 1.50 WSE 0.34 Ku 0.93 Kw 0.95 Interpolate Kw= 0.90 Mw= 0.90 K vals step pipes as pipe flow Ku 0.90 Kw 0.90 Averaged Ku 0.91 Kw 0.91				0.91	0.330	2.82	1.002	0.252	3.73	20.552 18.955	20.552 18.832	20.881		20.882	21.588	9/1
10 50	G15/15	G15/15 to 1/11	G15	10.00 10.00	167 227	0.86 0.86	0.86 0.99	0.393 0.393	0.338 0.389	0.338 0.389	157 245	277 277	0.00 2.480m	0.00	101	13S.062 (UNLOCKED 0)	101	175		G7/8	10.00 10.00	167 227	0.338 0.389	245	3000	144 101	2.075 (Pipe flow= Grate flow)	1.00	375(3)	0.92 (1.59)	0.03		Qg 0.101 Qo 0.101 Do 375 CHART 32: Vc2QgDo 0.12 HDo 1.22 Kg side flow 4.41 and flow 3.57	0.043	4.41	0.190			4.41	0.190	0.33	0.007				18.757 18.736	19.215 19.208	19.405		19.405	19.692	G15/15		
10 50	G16/16	G16/16 to 1/11	G16	10.00 10.00	167 227	0.86 0.86	0.86 0.99	0.310 0.310	0.267 0.307	0.267 0.307	124 194	101 101	0.69 2.829m	0.08 1.649m	76	1	69 (UNLOCKED 0)	33		G7/8 Cm G15/15	10.00 10.00	167 227	0.267 0.307	194	1140	125 69	3.973 (Pipe flow= Grate flow)	1.00	375(3)	0.62 (1.59)	0.07		Qg 0.069 Qo 0.069 Do 375 CHART 32: Vc2QgDo 0.05 HDo 1.22 Kg side flow 5.02 and flow 3.88	0.020	5.02	0.098			5.02	0.098	0.15	0.006				18.756 18.716	19.214 19.208	19.312		19.312	19.691	G16/16		

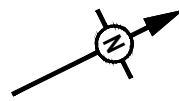
LOCATION				TIME		SUB-CATCHMENT RUNOFF					INLET DESIGN					DRAIN DESIGN										HEADLOSSES										PART FULL				DESIGN LEVELS													
DESIGN AEP	STRUCTURE No.	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	SUB-CATCHMENT TIME OF CONC.	RAINFALL INTENSITY	10yr RUNOFF COEFFICIENT	COEFFICIENT OF RUNOFF	SUB-CATCHMENT AREA	EQUIVALENT AREA	SUM OF (C * A)	SUB-CATCHMENT DISCHARGE	FLOW IN K&C (INC. BYPASS)	ROAD GRADE AT INLET	FLOW dV	MINOR FLOW ROAD CAPACITY	INLET TYPE	FLOW INTO INLET	BYPASS FLOW	BYPASS STRUCTURE No.	CRITICAL TIME OF CONC.	RAINFALL INTENSITY	TOTAL (C * A)	MAJOR TOTAL FLOW	MAJOR SURFACE FLOW CAPACITY	MAJOR SURFACE FLOW	PIPE FLOW	REACH LENGTH	PIPE GRADE	PIPE / BOX DIMENSIONS (CLASS)	FLOW VELOCITY FULL (PIPE GRADE VELOCITY)	TIME OF FLOW IN REACH	STRUCTURE CHART No.	STRUCTURE RATIOS FOR 'K' VALUE CALCULATIONS	VELOCITY HEAD	US HEADLOSS COEFFICIENT	US PIPE STRUCT. HEADLOSS	LAT. HEADLOSS CO-EFFICIENT	LAT. PIPE STRUCT. HEADLOSS	W.S.E COEFFICIENT	CHANGE IN W.S.E	PIPE FRICTION SLOPE	PIPE FRICTION HEADLOSS (L * S)	DEPTH	VELOCITY	OBVERT LEVELS	DRAIN SECTION H.G.L	UPSTREAM H.G.L	LAT. H.G.L	W.S.E.	SURFACE OR H&C INVERT LEVEL	STRUCTURE No.		
				min	mm/h			ha	ha	ha	l/s	l/s	%	m2/s	l/s		l/s	l/s		min	mm/h	ha	l/s	l/s	l/s	l/s	m	%	mm	m/s	min			m		m		m	%	m	m	m	m/s	m	m	m	m	m	m				
10 50	1/11	1/11 to 8/1	IN11/G15/G16													24					10.86 10.86	161 220	1.523 1.753	1071	3000	666 (Pipe flow= Sum upstr atten flows)	406	27.989	0.96	525(3)	1.92 (1.92)	0.24		Qo 0.406 Do 525 Flow G15/15 made eqv grate flow Flow G16/16 made eqv grate flow CHART 33 Angle 0 S/Do 2.5 Du/Do 0.86 Qg/Qo 0.40 K 1.16 S/Do 2.35 cor 0.05 Ku 1.21 Kw 1.21 K vals above for stepped pipes as grate flow grate flow decreased by 0.058 from G15/15 grate flow decreased by 0.066 from G16/16 Routine 3.4 Join Pipes: G16/16 and G15/15		0.188	0.88	0.166	Vel1 0.599 Vel2 0.884 Eq Dia 520 Angle 180 Flow 0.164 Routine 2.15 Join Pipes: Eqv G16/16 & G15/15 and 211 Vel1 0.771 Vel2 1.521 Eq Dia 651 Angle 180 Flow 0.406 CHART 30 Du/Do 1.24 Alpha 0 Kw 0.05 Ku 1.22 WSE 0.17 Ku 0.86 Kw 0.88 K vals step pipes as pipe flow Ku 0.86 Kw 0.88 Averaged Ku 0.88 Kw 0.90	0.90	0.170	0.96	0.268				18.572 18.304	19.042 18.774	19.208		18.212	19.752	1/11
10 50	8/1	8/1 to 7/1	G10/G9/G14/G13/G2/G1/G11/G12/IN11/G15/G16													25					11.10 11.10	160 218	3.078 3.542	2145	3098	1343 (Pipe flow= Sum upstr atten flows)	802	56.504	3.50	750(3)	1.79 (4.74)	0.53		Qo 0.802 Do 750 Flow G9/10 made eqv grate flow Flow 9/1 made eqv grate flow Angle 85 Chart 47 S/Do 2.5 chardeg Du/Do 0.70 K0 2.42 K0.5 2.33 Qu/Qo 0.50 Cg 0.99 K 2.33 S/Do 2.0 K0 2.58 K0.5 2.42 K 2.42 S/Do 1.5 K0 2.84 K0.5 2.79 K 2.79 Interp val for S/Do 1.59 Kw 2.72 CHART 46 S/Do 2.0 K0 1.82 K0.5 2.03 K 2.03 S/Do 1.5 K0 2.10 K0.5 2.31 K 2.31 Interp val for S/Do 1.59 Ku 2.26 K vals above for stepped pipes as grate flow grate flow decreased by 0.108 from G9/10 grate flow decreased by 0.291 from 9/1 Routine 3.1 Join Pipes: G9/10 and 9/1 Vel1 0.976 Vel2 2.632 Eq Dia 481 Angle 158 Flow 0.398 Routine 2.12 CHART 49		0.163	1.58	0.258	High vel1 Eqv G9/10 & 9/1 Dhw 481 Chw 0.398 Dhw/Dhw 0.9 Dhw/Do 0.64 Qhw/Qo 0.50 H 3.30 Low vel1 lat 1/11 Dv 525 Qhw 0.403 Dhw/Do 0.70 Qhw/Qo 0.50 L 1.12 H4 L2 18 No grate flow H4 L0.2 + 1.98 Ku=Kw= 1.98 CHART 52 B 900 In line Lat Determine KI D/Do 0.70 B/Do 1.20 Qu/Qo 0.59 Do/Du 1.56 Do/DI 1.43 KI 1.30 MI 0.52 KI-KI*MI= 0.68 Determine Ku Ku 1.94 MI 0.40 Ku=Ku*MI= 0.78 Kw=Ku= 0.78 Interpolated Ku= 1.07 Kw= 1.07 K vals step pipes as pipe flow Ku 1.07 Kw 1.07 Averaged Ku 1.58 Kw 1.77	1.77	0.290	0.50	0.281	0.322	4.40	18.516 16.539	18.516 16.710	18.774		18.806	20.342	8/1	
10 50	G7/8	G7/8 to 7/1	G7	10.00 10.00	167 227	0.86 0.86	0.86 0.99	0.195 0.195	0.168 0.193	0.168 0.193	78 122	286 FLOW WIDTH 3.108 m DOWNSTREAM 2.873m	3.60	0.19	371	1	47 (UNLOCKED 0)	239		G5/6	10.00 10.00	167 227	0.168 0.193	122	3003	75 (Pipe flow= Grate flow)	47	5.954	1.11	375(3)	0.42 (1.67)	0.10		Qg 0.047 Qo 0.047 Do 375 CHART 32 Vo2zgDo 0.02 HDiDo 0.00 Kg side flow 10.14 end flow 7.20 Part full downstream pipe		0.009	1.00	0.070	Upstream HGL 16.784 below outlet pipe obv 16.943 Set Kp to 1	1.00	0.070	0.07	0.004	0.129	1.39	16.943 16.877	16.714 16.710	16.784		16.784	17.878	G7/8	
10 50	G8/9	G8/9 to 7/1	G8	10.00 10.00	167 227	0.86 0.86	0.86 0.99	0.198 0.198	0.170 0.196	0.170 0.196	79 124	287 FLOW WIDTH 3.115 m DOWNSTREAM 2.892m	3.60	0.19	371	1	45 (UNLOCKED 0)	243		G6/7	10.00 10.00	167 227	0.170 0.196	124	3003	79 (Pipe flow= Grate flow)	45	2.383	1.88	375(3)	0.40 (2.06)	0.04		Qg 0.045 Qo 0.045 Do 375 CHART 32 Vo2zgDo 0.02 HDiDo 0.00 Kg side flow 10.21 end flow 7.23 Part full downstream pipe		0.008	1.00	0.051	Upstream HGL 16.783 below outlet pipe obv 16.929 Set Kp to 1	1.00	0.051	0.06	0.002	0.113	1.60	16.928 16.888	16.712 16.710	16.783		16.783	17.902	G8/9	
10 50	7/1	7/1 to 6/1	G10/G9/G14/G13/G2/G1/G11/G12/IN11/G15/G16/G7/G8													27					11.63 11.63	157 214	3.416 3.931	2337	3113	1464 (Pipe flow= Sum upstr atten flows)	872	51.545	3.50	750(3)	1.94 (4.74)	0.44		Qo 0.872 Do 750 Flow G7/8 made eqv grate flow Flow G9/9 made eqv grate flow Angle 14 Chart 36 S/Do 2.5 chardeg Du/Do 1.00 K0 1.51 K0.5 1.86 Qu/Qo 0.90 Cg 0.25 K 1.60 S/Do 2.0 K0 1.79 K0.5 2.07 K 1.86 S/Do 1.5 K0 2.11 K0.5 2.54 K 2.21 Interp val for S/Do 1.55 Kw 2.18 CHART 35 S/Do 2.0 K0 1.55 K0.5 1.74 K 1.60 S/Do 1.5 K0 1.75 K0.5 1.80 K 1.76 Interp val for S/Do 1.55 Ku 1.75 K vals above for stepped pipes as grate flow grate flow decreased by 0.044 from G7/8 Routine 2.8 CHART 48 Du/Do 1.00 Qu/Qo 0.90 K 0.50 dDo 2.0 chrn Qg/Qo 0.05 Kg 0.05 dDo 1.5 chrn Qg/Qo 0.05 Kg 0.05 dDo 1.00 Interp value Kg 0.04		0.192	1.00	0.191	Ku=Kw= 0.54 Combined pipes @ 90 deg def'n Join Pipes: 8/1 and G7/8 Vel1 1.788 Vel2 0.397 Eq Dia 788 Angle 197 Flow 0.830 Angle 90 Chart 47 S/Do 2.5 chardeg Du/Do 1.09 K0 1.91 K0.5 2.06 Qu/Qo 0.98 Cg 0.12 K 1.93 S/Do 2.0 K0 2.43 K0.5 2.40 K 2.42 S/Do 1.5 K0 2.66 K0.5 2.55 K 2.65 Interp val for S/Do 1.65 Kw 2.58 CHART 46 S/Do 2.0 K0 2.05 K0.5 1.87 K 2.03 S/Do 1.5 K0 2.09 K0.5 2.31 K 2.12 Interp val for S/Do 1.65 Ku 2.09 Interpolated Ku= 0.78 Kw= 0.86 K vals step pipes as pipe flow Ku 0.78 Kw 0.86 Averaged Ku 1.00 Kw 1.15	1.15	0.221	0.59	0.304	0.337	4.50	16.519 14.715	16.519 15.155	16.710		16.740	17.887	7/1	
10 50	G5/6	G5/6 to 6/1	G5	10.00 10.00	167 227	0.86 0.86	0.86 0.99	0.179 0.179	0.154 0.177	0.154 0.177	71 112	311 FLOW WIDTH 3.223 m DOWNSTREAM 3.016m	3.60	0.20	371	1	44 (UNLOCKED 0)	267		G3/3	10.00 10.00	167 227	0.154 0.177	112	3003	68 (Pipe flow= Grate flow)	44	5.925	1.00	375(3)	0.40 (1.59)	0.10		Qg 0.044 Qo 0.044 Do 375 CHART 32 Vo2zgDo 0.02 HDiDo 0.17 Kg side flow 9.56 end flow 6.76		0.008	9.56	0.078									15.096 15.037	15.159 15.155	15.237		15.237	16.031	G5/6
10 50	G6/7	G6/7 to 6/1	G6	10.00 10.00	167 227	0.86 0.86	0.86 0.99	0.334 0.334	0.287 0.331	0.287 0.331	133 208	376 FLOW WIDTH 2.272 m DOWNSTREAM 2.077m	3.60	0.35	976	1	65 (UNLOCKED 0)	311		G4/4	10.00 10.00	167 227	0.287 0.331	209	2022	144 (Pipe flow= Grate flow)	65	2.047	1.70	375(3)	0.58 (2.07)	0.03		Qg 0.065 Qo 0.065 Do 375 CHART 32 Vo2zgDo 0.05 HDiDo 0.03 Kg side flow 9.35 end flow 6.75		0.017	9.35	0.160									15.146 15.111	15.158 15.155	15.318		15.318	16.002	G6/7
10 50	6/1	6/1 to 5/1	G10/G9/G14/G13/G2/G1/G11/G12/IN11/G15/G16/G7/G8/G5/G6													26					12.07 12.07	155 211	3.857 4.439	2602	3003	1640 (Pipe flow= Sum upstr atten flows)	962	31.611	2.70	750(3)	2.14 (4.16)	0.25		Qo 0.962 Do 750 Flow G5/6 made eqv grate flow Flow G6/7 made eqv grate flow Angle 21 Chart 36 S/Do 2.5 chardeg Du/Do 1.00 K0 1.51 K0.5 1.86 Qu/Qo 0.90 Cg 0.26 K 1.60 S/Do 2.0 K0 1.79 K0.5 2.07 K 1.87 S/Do 1.5 K0 2.11 K0.5 2.54 K 2.22 Interp val for S/Do 1.84 Kw 1.98 CHART 35 S/Do 2.0 K0 1.55 K0.5 1.74 K 1.60 S/Do 1.5 K0 1.75 K0.5 1.80 K 1.76 Interp val for S/Do 1.84 Ku 1.85 K vals above for stepped pipes as grate flow grate flow decreased by 0.060 from G6/7 Routine 2.14 Equiv def'n 66 CHART 49 High vel lat 7/1 Dhw 750 Qhw 0.861		0.233	1.23	0.287	Dhw/Dhw 2.0 Dhw/Do 1.00 Qhw/Qo 0.90 H 2.86 Low vel lat 6/1 Dv 375 Qhw 0.060 Dhw/Do 0.50 Qhw/Qo 0.06 L -0.15 H4 3.01 Ku=Kw= 3.01 Combined pipes in line case Join Pipes: 7/1 and G6/7 Vel1 1.949 Vel2 0.543 Eq Dia 794 Angle 195 Flow 0.921 CHART 33 Angle 0 S/Do 2.5 Du/Do 1.09 Qg/Qo 0.04 K 0.35 S/Do 1.35 cor 0.05 Ku 0.40 Kw 0.40 Interpolated Ku= 1.10 Kw= 1.10 K vals step pipes as pipe flow Ku 1.10 Kw 1.10 Averaged Ku 1.23 Kw 1.31	1.31	0.305	0.72	0.226				14.695 13.841	14.868 14.642	15.155		15.173	16.046	6/1

[illegible]

ASSET DETAILS							DEVELOPMENT NAME - PARADISE LAKES					
							STAGE NAME - STAGE 3					
COUNCIL REF: A005778632							DATE OF CONSTRUCTION: 2023					
ROAD PAVEMENTS							STORMWATER MANHOLES / CHAMBERS					
ROAD CLASSIFICATION	SURFACE TYPE	SURFACE THICKNESS (mm)	PAVEMENT TYPE	UNIT	DESIGN QTY	AS CON QTY	SHAPE	MATERIAL	DIA / SIZE mm	UNIT	DESIGN QTY	AS CON QTY
LANEWAY	-	-	-	m²	-	-	ROUND	CONCRETE	1050	m	4	-
LOCAL STREET	AC	30	AC	m²	493	-	ROUND	CONCRETE	1200	m	2	-
NEIGHBOURHOOD ST	AC	50	AC	m²	2718	-	ROUND	CONCRETE	1500	m	4	-
DISTRICT ROAD	-	-	-	m²	-	-	ROUND EXPANDED	CONCRETE	1500 EXP 600	m	2	-
SUBURBAN ROUTE	-	-	-	m²	-	-	ROUND EXPANDED	CONCRETE	1500 EXP 900	m	-	-
FREIGHT NETWORK	-	-	-	m²	-	-	ROUND EXPANDED	CONCRETE	1500 EXP 1200	m	2	-
ARTERIAL ROAD	-	-	-	m²	-	-	RECTANGULAR	CONCRETE	 x	m	-	-
FOOTPATHS							STORMWATER GULLIES					
MATERIAL TYPE		WIDTH	UNIT	DESIGN QTY	AS CON QTY		TYPE	SUBTYPE	SIZE mm	UNIT	DESIGN QTY	AS CON QTY
CONCRETE		1.2	m²	587	-		LIP IN LINE TYPE A	SMALL	2400	No	16	-
CONCRETE		2	m²	-	-		LIP IN LINE TYPE A	MEDIUM	3600	No	-	-
CONCRETE		2.5	m²	-	-		LIP IN LINE TYPE A	LARGE	4800	No	-	-
KERB AND CHANNEL							ANTI PONDING PIT					
TYPE		SUBTYPE	UNIT	DESIGN QTY	AS CON QTY		FIELD INLET	DOME TOP	2200 x 900	No	2	-
MOUNTABLE		TYPE D	m	735	-		FIELD INLET	TYPE 1	900 x 900	No	-	-
BARRIER		TYPE E	m	-	-		FIELD INLET	TYPE 2	600 x 600	No	-	-
BARRIER		200 TYPE E	m	60	-		FIELD INLET	TYPE 2	900 x 600	No	-	-
INVERT			m	-	-		STORMWATER INLETS / OUTLETS					
KERB ONLY							TYPE	MATERIAL	DIA / SIZE mm	UNIT	DESIGN QTY	AS CON QTY
TYPE		SUBTYPE	UNIT	DESIGN QTY	AS CON QTY	<td>HEADWALL</td> <td>CONCRETE</td> <td>375</td> <td>No</td> <td>2</td> <td>-</td>	HEADWALL	CONCRETE	375	No	2	-
BARRIER		TYPE E	m	-	-		HEADWALL	CONCRETE	450	No	1	-
BARRIER		VERTICAL	m	-	-		HEADWALL	CONCRETE	600	No	1	-
MOUNTABLE		WITH BACKING STRIP	m	47	-		HEADWALL	CONCRETE	2 x 600	No	1	-
MOUNTABLE		TYPE D	m	148	-		HEADWALL	CONCRETE	2 x 900	No	1	-
MOUNTABLE		TYPE G	m	-	-		HEADWALL	CONCRETE	-	No	-	-
EDGE RESTRAINT		300 x 150	m	-	-		STORMWATER IMPROVEMENT DEVICE (SQID)					
EDGE RESTRAINT		150 x 150	m	-	-		TYPE		SUBTYPE	UNIT	DESIGN QTY	AS CON QTY
EDGE RESTRAINT		230 x 280	m	17	-		GPT			No	-	-
MEDIANS							BASIN		BIO-RETENTION	m²	850	-
TYPE			UNIT	DESIGN QTY	AS CON QTY	TREE PIT			No	-	-	
CONCRETE			m²	116	-	OPEN CHANNELS						
LANDSCAPED			m²	154	-		SHAPE	TYPE / LINING	WIDTH	UNIT	DESIGN QTY	AS CON QTY
BIKEWAYS							TRAPEZOID	-	-	m	-	-
CLASSIFICATION	SURFACE TYPE	WIDTH	UNIT	DESIGN QTY	AS CON QTY	FENCES						
BICYCLE PATH	CONCRETE	- m	m²	-	-		TYPE	MATERIAL	HEIGHT	UNIT	DESIGN QTY	AS CON QTY
SHARED USE PATH	CONCRETE	- m	m²	-	-		BARRIER PEDEST.	ALUMINIUM	-	m	-	-
RETAINING WALLS							POOL STYLE	ALUMINIUM	-	m	-	-
MATERIAL		MAX HEIGHT	UNIT	DESIGN QTY	AS CON QTY		BOLLARD	TIMBER	1.2	No	39	-
CONCRETE SLEEPER		- m	m²	-	-		CHAIN WIRE	TIMBER	-	m	-	-
ROCK		- m	m²	-	-		GUARD RAIL	STEEL	-	m	-	-
							PALING	TIMBER	-	m	-	-
STORMWATER PIPE / CULVERTS							EASEMENTS					
SHAPE	MATERIAL	DIA / SIZE mm	UNIT	DESIGN QTY	AS CON QTY	TYPE				UNIT	DESIGN QTY	AS CON QTY
ROUND	CONCRETE	300	m	-	-	UNDERGROUND PIPE DRAINAGE EASEMENT				m²	-	-
ROUND	CONCRETE	375	m	243	-	OPEN CUT DRAINAGE EASEMENT				m²	-	-
ROUND	CONCRETE	450	m	66	-	OVERLAND FLOW EASEMENT				m²	-	-
ROUND	CONCRETE	525	m	28	-	COMBINED U/G - A/G DRAINAGE EASEMENT				m²	-	-
ROUND	CONCRETE	600	m	60	-	TURNAROUND TO FACILITATE REFUSE COLLECTION				m²	2358	-
ROUND	CONCRETE	675	m	34	-	PARK - ACCESS						
ROUND	CONCRETE	750	m	173	-		TYPE	SURFACING	WIDTH	UNIT	DESIGN QTY	AS CON QTY
ROUND	CONCRETE	825	m	-	-		DRIVEWAY	CONCRETE	-	m²	-	-
ROUND	CONCRETE	900	m	104	-	PARK - BARRIER						
ROUND	CONCRETE	1050	m	-	-		TYPE	DETAILS		UNIT	DESIGN QTY	AS CON QTY
ROUND	CONCRETE	1200	m	-	-		BOLLARDS	-		m	-	-
ROUND	CONCRETE	1350	m	-	-	FAUNA CROSSING						
ROUND	CONCRETE	1500	m	-	-		TYPE	SUBTYPE	SIZE mm	UNIT	DESIGN QTY	AS CON QTY
RECTANGULAR	CONCRETE	 x					CULVERT	RCBC	 x	No	-	-

REV	DATE	DESIGN	DRAWN	REVISION DETAILS		DRAWN	STATUS			SCALE	CLIENT	PROJECT NAME		DRAWING TITLE			
1	15.05.23	KP	KP	ORIGINAL ISSUE		KP	NOT FOR CONSTRUCTION						UNILAND PTY LTD	PARADISE LAKES STAGE 3	ASSET REGISTER		

NOTE:
FUTURE STAGE 8 TO HAVE SEPARATE SEDIMENT BASIN AS
PART OF CONSTRUCTION WORKS TO PREVENT SEDIMENT
BEING DISCHARGED TO EXISTING BIO BASIN SHOWN



SPILLWAY SETOUT			
POINT	EASTING	NORTHING	RL
35	502515.541	6946586.982	13.000
36	502523.738	6946592.730	13.000
37	502528.160	6946592.195	13.765
38	502529.498	6946590.082	13.765
39	502528.091	6946585.856	13.000
40	502519.390	6946580.903	13.000
41	502515.769	6946581.389	13.600
42	502514.431	6946583.501	13.600

SUBSOIL PIPE SIZING	
FILTER DETAILS	
FILTER AREA	850m ²
KSAT	180mm/hr
EDD	0.3m
FILTER DEPTH	0.8m
INFLOW	0.058m ³ /s
SUBSOIL DETAILS	
SIZE	100mm
NO.	24
GRADE	0.5%
CAPACITY	0.088m ³ /s
COLLECTOR PIPE	
SIZE	225mm
NO.	2
GRADE	0.5%
CAPACITY	0.064m ³ /s

NOTE:
THE BASIN DRAWINGS ARE TO BE READ IN CONJUNCTION WITH
THE LANDSCAPE ARCHITECT'S DRAWINGS AND DOCUMENTATION,
SPECIFICALLY RELATING TO RETAINING WALLS, BARRIERS,
PLANTING AND VEGETATION

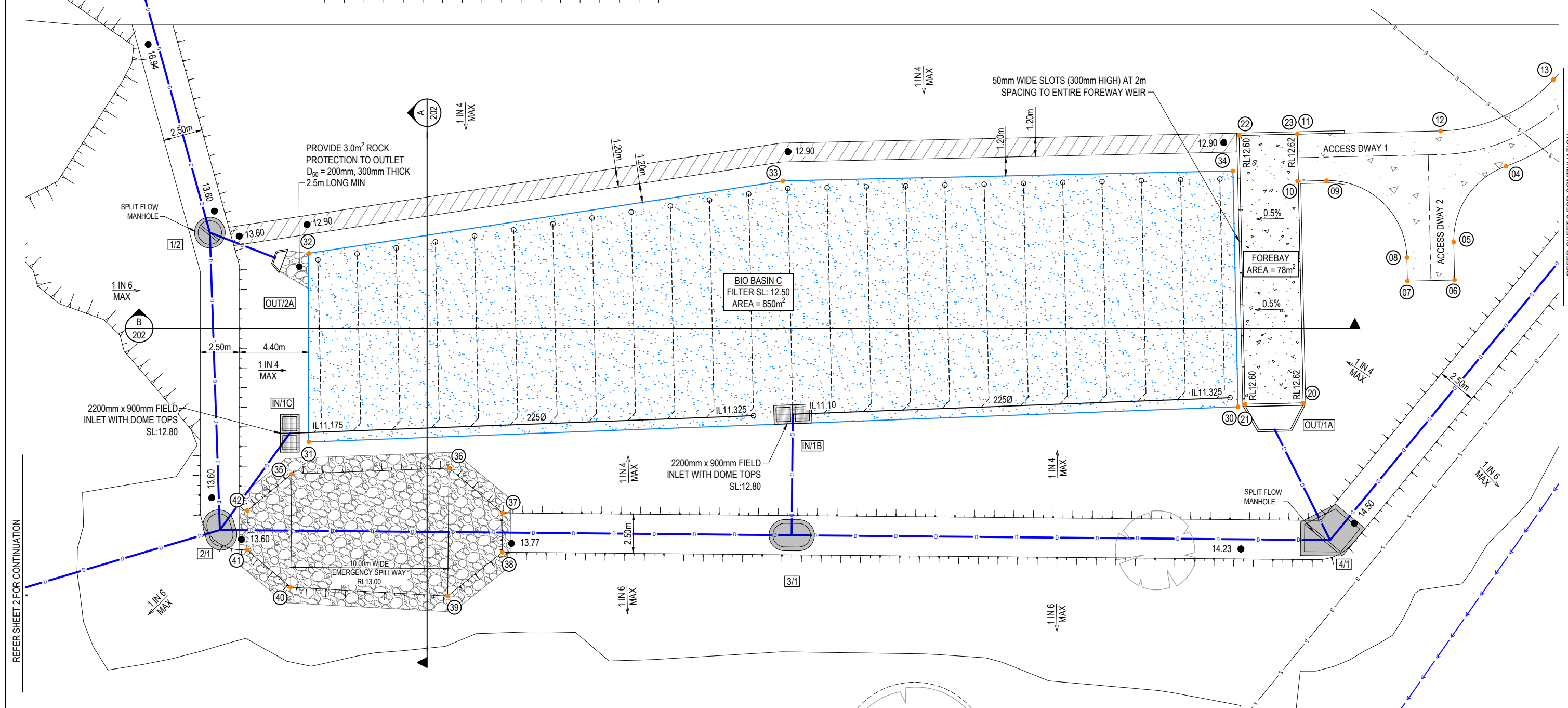
POINT	EASTING	NORTHING
20	502567.148	6946625.716
21	502564.084	6946623.639
22	502554.491	6946637.794
23	502557.553	6946639.870

BASIN ACCESS SETOUT		
POINT	EASTING	NORTHING
01	502572.915	6946672.895
02	502575.874	6946672.401
03	502572.320	6946651.127
04	502569.812	6946645.355
05	502569.639	6946639.506
06	502570.996	6946637.505
07	502568.512	6946635.821
08	502567.671	6946637.063
09	502560.728	6946638.396
10	502559.199	6946637.361
11	502557.553	6946639.870
12	502565.109	6946644.991
13	502569.361	6946651.621

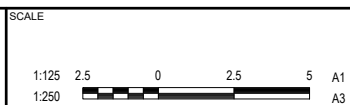
BASIN SETOUT		
POINT	EASTING	NORTHING
30	502563.789	6946623.264
31	502515.344	6946589.293
32	502508.834	6946599.368
33	502531.673	6946619.605
34	502555.383	6946635.675

BASIN ACCESS SETOUT		
POINT	EASTING	NORTHING
01	502572.915	6946672.895
02	502575.874	6946672.401
03	502572.320	6946651.127
04	502569.812	6946645.355
05	502569.639	6946639.506
06	502570.996	6946637.505
07	502568.512	6946635.821
08	502567.671	6946637.063
09	502560.728	6946638.396
10	502559.199	6946637.361
11	502557.553	6946639.870
12	502565.109	6946644.991
13	502569.361	6946651.621

- ## LEGEND
- | | |
|--|---|
| | PROPOSED BATTER LINE |
| | PROPOSED CONCRETE SLEEPER RETAINING WALL |
| | PROPOSED SETOUT POINT |
| | PROPOSED FINISHED SURFACE LEVEL |
| | PROPOSED STORMWATER DRAINAGE PIPE |
| | PROPOSED SWALE DRAIN |
| | PROPOSED 1000 SLOTTED SUB SOIL DRAINAGE PIPE WITH CLEAN-OUT POINT |
| | PROPOSED 2250 UN-SLOTTED COLLECTOR PIPE |
| | PROPOSED BIO RETENTION FILTER AREA |
| | PROPOSED PLANTED BATTER - BY LANDSCAPERS |
| | PROPOSED MAINTENANCE BENCH |
| | PROPOSED ROCK SCOUR PROTECTION |
| | PROPOSED LOCKABLE RAIL TO COUNCIL STANDARDS |

[illegible]

DRAWN	STATUS		
KP	NOT FOR CONSTRUCTION		
DESIGN	APPROVED ANDREW NGO	RPEQ 12329	DATE 14.09.23
KP	 FOR AND ON BEHALF OF COLLIERS INTERNATIONAL ENGINEERING & DESIGN PTY LTD		



CLIENT

UNILAND PTY LTD

ASSOCIATED CONSULTANT

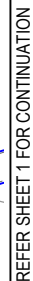
WOLTERS CONSULTING GROUP
(07) 2666 5200

PROJECT NAME

PARADISE LAKES STAGE 3

PARADISE ROAD
WILLAWONG

DRAWING TITLE		
BIO RETENTION BASIN LAYOUT PLAN SHEET 1 OF 2		
PROJECT No.	DRAWING No.	REVISION
21-0075	200	2



OUTLET PROTECTION SETOUT

- CONCRETE DRIVEWAY NOTES:

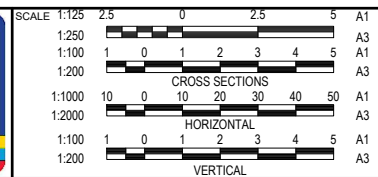
NOTE:

DATUM RL -3.0

ACCESS DWAY 1

[illegible]

DRAWN	STATUS		
KP	NOT FOR CONSTRUCTION		
DESIGN	APPROVED		DATE
	ANDREW NGO	RPEQ 12329	4.12.23
KP			
FOR AND ON BEHALF OF COLLIERIES INTERNATIONAL ENGINEERING & DESIGN PTY LTD			



CLIENT

UNILAND PTY LTD

ASSOCIATED CONSULTANT

WOLTERS CONSULTING GROUP
(07) 2666 5200

PROJECT NAME

PARADISE LAKES STAGE 3

PARADISE ROAD
WILLAWONG

DRAWING TITLE		
BIO RETENTION BASIN LAYOUT PLAN SHEET 2 OF 2		
PROJECT No.	DRAWING No.	REVISION
21-0075	201	3



A
200

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



$\frac{B}{200}$

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



C
201

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



D
201

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

REV	DATE	DESIGN	DRAWN	REVISION DETAILS		DRAWN	STATUS			SCALE 1:100 1 0 1 2 3 4 5 A1 1:200  A3	CLIENT	PROJECT NAME		DRAWING TITLE		
1	15.05.23	KP	KP	ORIGINAL ISSUE		KP	NOT FOR CONSTRUCTION				UNILAND PTY LTD	PARADISE LAKES STAGE 3		BIO RETENTION BASIN TYPICAL SECTIONS		
2	14.09.23	KP	KP	UPDATED TO SUIT EXTERNAL CATCHMENTS AND COUNCIL RFI												
3	04.12.23	KP	KP	MINOR AMENDMENTS												
						DESIGN	APPROVED		ASSOCIATED CONSULTANT	PARADISE ROAD		PROJECT No.				
						KP	ANDREW NGO		WOLTERS CONSULTING GROUP	WILLAWONG		DRAWING No.				
							RPEQ 12329		(07) 2666 5200			REVISION				
							DATE					21-0075				
						4.12.23		FOR AND ON BEHALF OF COLLIER'S INTERNATIONAL ENGINEERING & DESIGN PTY LTD					202			
													3			

STRUCTURE
NAME

STORMWATER
STRUCTURE NOTE:

PIPE SIZEmm (Class)

PIPE GRADE %
PIPE SLOPE 1 in X

WATER LEVEL
IN STRUCTURE

HYDRAULIC
GRADE LEVEL

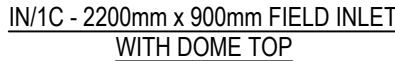
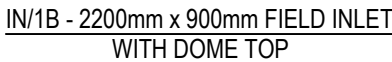
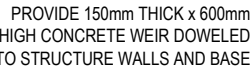
PIPE FLOW
(Cumecs)

DEPTH TO INVERTINVERT LEVEL
OF DRAINDESIGN SURFACE
LEVELSETOUT

RUNNING CHAINAGE

CUSTOM MANHOLE - SPLIT FLOW
4/11

IN/4

1

OUTLET PIT CALCULATIONS

[illegible]

DRA

Colliers

SCALE

1:1000	10	0	10	20	30	40	50	A1
1:2000								A3
	HORIZONTAL							
1:100	2	1	0	2	4			A1
1:200								A3
	VERTICAL							

CLIENT	UNILAND PTY LTD
ASSOCIATED CONSULTANT	WOLTERS CONSULTING GROUP (07) 2666 5200

PROJECT NAME

PARADISE LAKES STAGE 3

PARADISE ROAD
WILLAWONG

DRAWING TITLE		
BIO RETENTION BASIN DRAINAGE LONGITUDINAL SECTIONS AND ASSET DETAILS		
PROJECT No.	DRAWING No.	REVISION
21-0075	204	1

PROPOSED RESIDENTIAL DEVELOPMENT

PARADISE LAKES STAGE 3

PARADISE ROAD, WILLAWONG

FOR 'UNILAND PTY LTD'

DRAWING LIST

- 21-0075-300

SEWERAGE AND WATER RETICULATION COVER PLAN
- 21-0075-301

SEWER AND WATER GENERAL NOTES
- 21-0075-302

SEWER AND WATER LIVE WORK DETAILS
- 21-0075-303

SEWERAGE LAYOUT PLAN
- 21-0075-304

SEWERAGE LONGITUDINAL SECTIONS SHEET 1 OF 4
- 21-0075-305

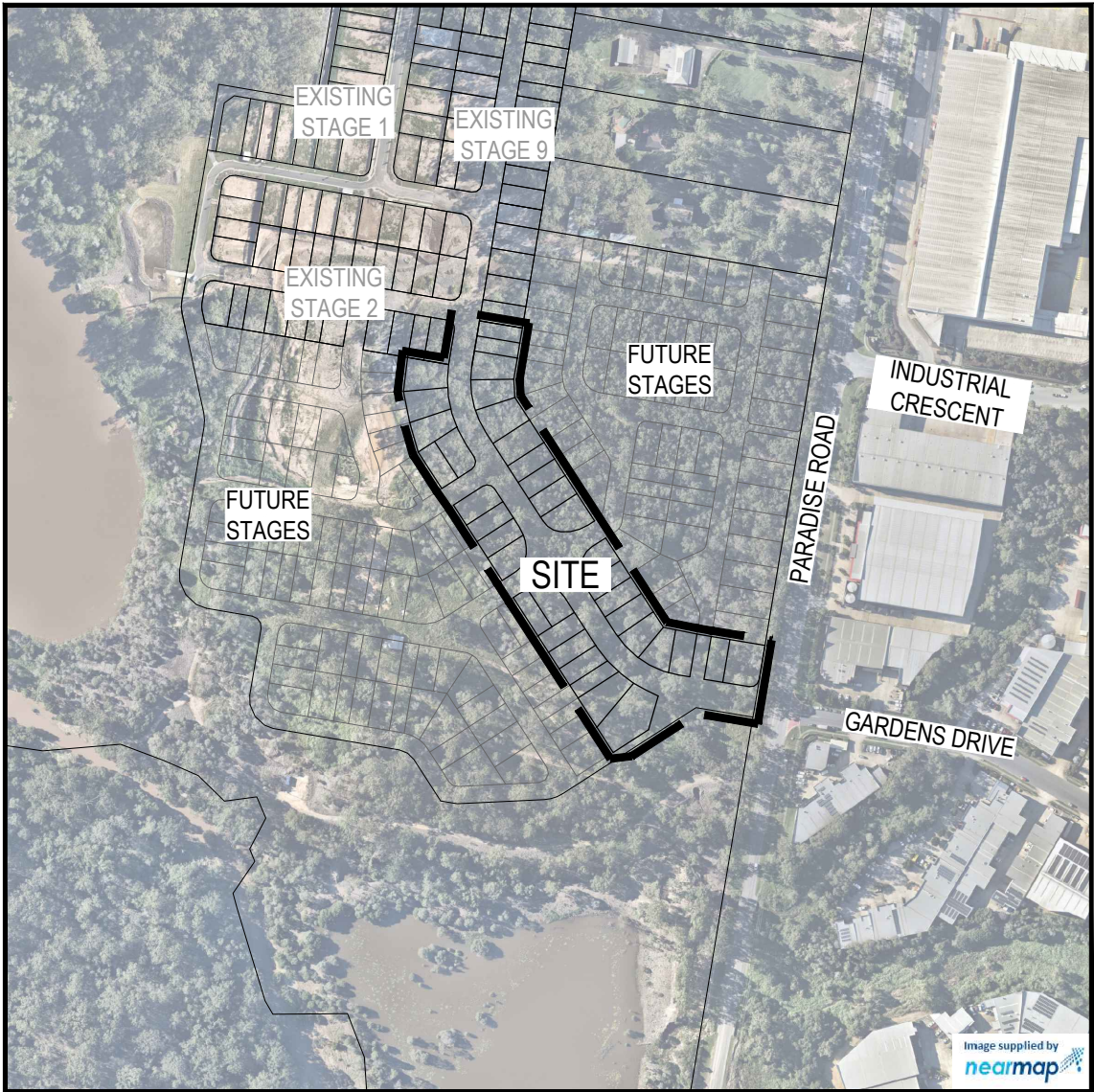
SEWERAGE LONGITUDINAL SECTIONS SHEET 2 OF 4
- 21-0075-306

SEWERAGE LONGITUDINAL SECTIONS SHEET 3 OF 4
- 21-0075-307

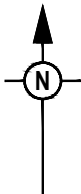
SEWERAGE LONGITUDINAL SECTIONS SHEET 4 OF 4
- 21-0075-308

WATER RETICULATION LAYOUT PLAN
- 21-0075-309

FIRE HYDRANT REACH LAYOUT PLAN



LOCALITY PLAN
SCALE 1:2500 (A1)
SCALE 1:5000 (A3)



ESTATE/STAGE		PARADISE LAKES STAGE 3 STAGE 3			
CLIENT		UNILAND PTY LTD			
URBAN UTILITIES APPLICATION No.		22-PNT-55343			
URBAN UTILITIES APPROVAL DATE		15.02.22			
No. OF ALLOTMENTS		36			
ASSET REGISTER - SEWERAGE					
MAINS	DIAMETER	MATERIAL		LENGTH	
		DESIGN	CONST	DESIGN	CONST
	DN110	PE100 PN16	-	100m	-
	DN160	PE100 PN16	-	947m	-
ASSET REGISTER - WATER RETICULATION					
MAINS	DIAMETER	MATERIAL		LENGTH	
		DESIGN	CONST	DESIGN	CONST
	DN125	PE100 PN16	-	80m	-
	DN180	PE100 PN16	-	458m	-
DN250	PE100 PN16	-	-	-	
SERVICES	DIAMETER	MATERIAL		LENGTH	
		DESIGN	CONST	DESIGN	CONST
	DN25	PE100 PN16	-	65m	-
	DN32	PE100 PN16	-	51m	-
DN40	PE100 PN16	-	93m	-	
METERS	DIAMETER	MATERIAL		NUMBER	
		DESIGN	CONST	DESIGN	CONST
	20Ø	PE100 PN16	-	37	-
	25Ø	PE100 PN16	-	-	-
32Ø	PE100 PN16	-	1	-	
WATER SERVICE DETAILS					
NO	SIZE	LOT NUMBERS			
23	DN25PE	68, 82-83, 142, 158-166, 182-183, 231-238			
14	DN32PE	○ 79-81, 84-85, 115-116, 151-157			
-	DN40PE	△			

URBAN UTILITIES REF. NUMBER. : 22-PNT-55343

REV	DATE	DESIGN	DRAWN	REVISION DETAILS	DRAWN	STATUS	SCALE	CLIENT	PROJECT NAME	DRAWING TITLE
A	14.09.23	KP	KP	ISSUED FOR CONSTRUCTION	KP	ISSUED FOR CONSTRUCTION	1:2500 50 0 50 100 A1 1:5000	UNILAND PTY LTD	PARADISE LAKES STAGE 3	SEWERAGE AND WATER RETICULATION COVER PLAN
					DESIGN	APPROVED ANDREW NGO RPEQ 12329 DATE 12.06.24		ASSOCIATED CONSULTANT WOLTERS CONSULTING GROUP (07) 2666 5200	PARADISE ROAD WILLAWONG	PROJECT No. 21-0075 DRAWING No. 300 REVISION A
FOR AND ON BEHALF OF COLLIER'S INTERNATIONAL ENGINEERING & DESIGN PTY LTD										

1. THE CONTRACTOR SHALL SUPPLY ALL LABOR, MATERIALS, PLANT AND EQUIPMENT TO CONSTRUCT THE WORKS AS DOCUMENTED AND STRICTLY IN ACCORDANCE WITH THE RELEVANT AUTHORITY STANDARDS, SPECIFICATIONS AND REQUIREMENTS.
2. EXISTING SERVICES RELEVANT TO THE PROJECT HAVE BEEN CONSIDERED THROUGHOUT DESIGN AND IS BASED ON SURVEY INFORMATION PROVIDED BY THE SURVEYOR AND THE CONTRACTOR. THE RPEQ WHO CERTIFIED THE DESIGN OR THE PRINCIPAL'S CONSTRUCTION RPEQ HAVE RELIED UPON THIS INFORMATION TO INFORM THE DESIGN. THE CONTRACTOR SHALL VERIFY THE POSITION OF ANY UNDERGROUND SERVICES WITHIN THE AREAS OF WORKS AND SHALL BE RESPONSIBLE FOR MAKING GOOD ANY DAMAGE THERETO. ANY ALTERATION WORKS TO SERVICES WILL BE CARRIED OUT ONLY BY THE SERVICE OWNER AUTHORITY UNLESS APPROVED OTHERWISE.
3. ALL DESIGN AND CONSTRUCTION ACTIVITIES UNDERTAKEN SHALL COMPLY WITH CURRENT WORKPLACE HEALTH AND SAFETY REQUIREMENTS AND LEGISLATION.
4. PRIOR TO COMMENCING WORK, THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL RELEVANT LOCAL AUTHORITY PERMITS.
5. THE CONTRACTOR SHALL NOT COMMENCE THE DEMOLITION OF ANY EXISTING BUILDINGS AND/OR STRUCTURES WITHOUT APPROVAL FROM THE SUPERINTENDENT.
6. THE CONTRACTOR SHALL APPLY INDUSTRY BEST PRACTICE SO WORKS SHALL NOT DISTURB OR AFFECT NEARBY RESIDENTS EITHER BY DUST, NOISE, FLOODING OR DISCONNECTION OF SERVICES. CONTRACTOR TO ENSURE THAT ACCESS AND SERVICES TO EXISTING PROPERTIES ARE AVAILABLE AT ALL TIMES.
7. THE CERTIFICATION OF THIS DESIGN IS BASED ON SURVEY AND POTHOLE INFORMATION PROVIDED BY THE SURVEYOR AND/OR CONTRACTOR AT THE TIME OF DESIGN. PRIOR TO COMMENCEMENT OF WORKS, THE CONTRACTOR SHALL VERIFY LEVELS OF EXISTING SERVICE CROSSINGS AND CONNECTION POINTS AND NOTIFY THE RPEQ WHO CERTIFIED THE DESIGN OR THE PRINCIPAL'S CONSTRUCTION RPEQ OF ANY DISCREPANCIES BETWEEN ACTUAL AND PROPOSED DESIGN LEVELS. THE CERTIFICATION OF THIS DESIGN IS BASED ON SURVEY AND POTHOLE INFORMATION PROVIDED BY THE SURVEYOR AND CONTRACTOR AT THE TIME OF DESIGN.
8. **HOLD POINT:** ONCE THE BASE OF MANHOLES HAVE BEEN POURED, CONSTRUCTION SHALL ONLY RE-COMMENCE ONCE THE SUPERINTENDENT AND/OR ENGINEER HAVE INSPECTED THE WORKS.
9. THE CONTRACTOR SHALL NOTE DURING THE COURSE OF THE WORKS WHEN JOINT INSPECTIONS WITH THE AUTHORITY AND THE SUPERINTENDENT ARE REQUIRED. THESE INCLUDE PRE-STARTS, SUBGRADES, PRE-SEALS, CLEARING, AND OTHER SUCH INSPECTIONS AS NOMINATED DURING THE PRE-START, IN THE APPROVAL AND THE SPECIFICATIONS. THE CONTRACTOR SHALL ENSURE NO WORKS PROCEED PAST THE INSPECTION POINT UNTIL THE JOINT INSPECTION HAS BEEN SUCCESSFULLY COMPLETED.
10. THE CONTRACTOR SHALL VERIFY LEVELS OF EXISTING SERVICE CROSSINGS AND CONNECTION POINTS PRIOR TO COMMENCEMENT OF WORKS AND NOTIFY THE RPEQ WHO CERTIFIED THE DESIGN OR THE PRINCIPAL'S CONSTRUCTION RPEQ OF ANY DISCREPANCIES BETWEEN ACTUAL AND PROPOSED DESIGN LEVELS. THE CERTIFICATION OF THIS DESIGN IS BASED ON SURVEY AND POTHOLE INFORMATION PROVIDED BY THE SURVEYOR AND CONTRACTOR AT THE TIME OF DESIGN.
11. THESE ENGINEERING DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE APPROVED VEGETATION MANAGEMENT PLAN, WHERE APPLICABLE. WHEN IN DOUBT, ALL EXISTING TREES ARE TO REMAIN UNLESS DIRECTED OTHERWISE.

- A. TREES LOCATED ALONG THE FOOTPATH SHALL BE TRANSPLANTED PRIOR TO CONSTRUCTION, OR REPLACED IF DESTROYED.
- B. WHEN WORKING WITHIN 4m OF TREES, RUBBER OR HARDWOOD GIRDLES SHALL BE CONSTRUCTED WITH 1.8m BATTENS CLOSELY SPACED AND ARRANGED VERTICALLY FROM GROUND LEVEL. GIRDLES SHALL BE STRAPPED TO TREES PRIOR TO CONSTRUCTION AND REMAIN UNTIL COMPLETION.
- C. TREE ROOTS SHALL BE TUNNELED UNDER, RATHER THAN SEVERED. IF ROOTS ARE SEVERED THE DAMAGED AREA SHALL BE TREATED WITH A SUITABLE FUNGICIDE. CONTACT RELEVANT COUNCIL ARBORIST FOR FURTHER ADVICE.
- D. ANY TREE LOPPING REQUIRED SHOULD BE UNDERTAKEN BY AN APPROVED ARBORIST.

- A. TOPSOIL AND SUBSOIL SHALL BE STOCKPILED SEPARATELY.
- B. CARE SHALL BE TAKEN TO PREVENT SEDIMENT FROM ENTERING THE STORMWATER SYSTEM. THIS MAY INVOLVE PLACING APPROPRIATE SEDIMENT CONTROLS AROUND STOCKPILES.
- C. ACID SULPHATE SOILS EXIST IN THE WORKS AREA. THE OUTPUTS FROM THE RISK ASSESSMENT BASED ON THE QUEENSLAND ACID SULPHATE SOIL TECHNICAL MANUAL REQUIRES THAT ACID SULPHATE SOILS BE MANAGED AS FOLLOWS:

- A. SILTATION CONTROL MEASURES SHALL BE PLACED DOWNSTREAM OF ANY EXCAVATION WORK.
- B. APPROPRIATE SEDIMENT CONTROLS SHALL BE USED TO PREVENT SEDIMENT FROM ENTERING THE CREEK.
- C. NO SOIL SHALL BE STOCKPILED WITHIN 5m OF THE CREEK.

- A. PREDISTURBANCE SOIL PROFILES AND COMPACTION LEVELS SHALL BE REINSTATED.
- B. PREDISTURBANCE VEGETATION PATTERNS SHALL BE RESTORED.

ALL WATER AND SEWERAGE CONSTRUCTION SHALL COMPLY WITH ALL QUEENSLAND LEGISLATION	ALL ENVIRONMENTAL PROTECTION MEASURES SHALL BE IMPLEMENTED PRIOR TO ANY CONSTRUCTION WORK COMMENCING, INCLUDING CLEARING
SEWER PROPERTY CONNECTIONS HAVE BEEN DESIGNED TO CONTROL THE REQUIRED SERVICE AREA OF EACH LOT AT A GRADE OF 1:60 AND A MAXIMUM DEPTH OF PROPERTY CONNECTION AT 1.5m UNLESS OTHERWISE STATED. FOR JUNCTION DETAILS REFER SEQ-SEW-1106-1 TO SEQ-SEW-1106-6.	THIS DESIGN PACKAGE SHOWS CONNECTIONS TO INFRASTRUCTURE THAT HAS NOT BEEN ACCEPTED 'ON-MAINTENANCE' BY URBAN UTILITIES. LIVE WORKS CANNOT COMMENCE UNTIL THE PRECEDING WORKS HAVE BEEN ACCEPTED 'ON MAINTENANCE' BY URBAN UTILITIES.
DURING ANY CONSTRUCTION ACTIVITY AT LEAST ONE PERSON ON SITE MUST HAVE COMPLETED A PIPE LAYING TRAINING COURSE APPROVED BY THE PIPE SUPPLIER OR MANUFACTURER AND APPROPRIATE TO THE PIPELINE UNDER CONSTRUCTION. THE TRAINING COURSE MUST HAVE BEEN COMPLETED WITHIN THE LAST TEN YEARS.	
ALL SITE AND FACTORY PE WELDING SHALL BE CARRIED OUT BY A PERSON WHO HAS COMPLETED RELEVANT NATIONALLY ACCREDITED COURSES FOR BUTT WELDING/ELECTROFUSION AND HOLD A VALID WELDING CERTIFICATE IN ACCORDANCE WITH AS/NZS 2033.	
THE CONTRACTOR SHALL PROVIDE DOCUMENTED EVIDENCE OF ACCEPTABLE QUALIFICATIONS TO URBAN UTILITIES.	

1. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT WSAA GRAVITY SEWERAGE CODE OF AUSTRALIA SPECIFICATIONS AND STANDARD - SOUTH EAST QUEENSLAND SERVICE PROVIDERS EDITION.
2. UNLESS SPECIFIED OTHERWISE ALL MATERIALS AND WORK SHALL COMPLY WITH THE RELEVANT AUSTRALIAN STANDARDS.
3. THE DESIGN HAS BEEN UNDERTAKEN TO COMPLY WITH CURRENT URBAN UTILITIES STANDARDS AND THE WSAA GRAVITY SEWERAGE CODE OF AUSTRALIA SPECIFICATIONS AND STANDARD - SOUTH EAST QUEENSLAND SERVICE PROVIDERS EDITION.
4. THE CONSTRUCTION OF THE SEWERAGE WORK SHOWN ON THIS DRAWING SHALL BE SUPERVISED BY AN ENGINEER WHO HAS RPEQ REGISTRATION. SEWERAGE WORKS NOT COMPLYING WITH THIS REQUIREMENT WILL NOT BE PERMITTED TO CONNECT INTO THE URBAN UTILITIES SEWERAGE SYSTEM.
5. ALL LIVE WORK SHALL BE UNDERTAKEN BY THE CONTRACTOR IN ACCORDANCE WITH A VALID NETWORK ACCESS PERMIT, UNDER THE SUPERVISION OF URBAN UTILITIES, AT THE DEVELOPER'S COST.
6. ALL PIPES AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE "ACCEPTED PRODUCTS AND MATERIALS" LIST, UNLESS APPROVED BY URBAN UTILITIES.
7. BENCH MARK AND LEVELS TO AHD.
8. WHERE PIPES ARE LAID IN FILL, THE FILLING SHALL BE CARRIED OUT IN LAYERS NOT EXCEEDING 300mm (LOOSE) IN DEPTH AND SHALL BE COMPACTED UNTIL THE COMPACTION IS NOT LESS THAN 95% OF THE MATERIALS MAXIMUM COMPACTION WHEN TESTED IN ACCORDANCE WITH A.S.1289 (MODIFIED COMPACTION). TESTING SHALL BE CARRIED OUT AFTER EACH ALTERNATE LAYER. TESTING AND CERTIFICATION BY A NATA CERTIFIED TEST LABORATORY IN ACCORDANCE WITH THE SEQ CODE. IN ALL SUCH CASES APPROVAL OF CONSTRUCTED SEWERS WILL NOT BE ISSUED BY URBAN UTILITIES UNLESS CERTIFICATES ARE PRODUCED CERTIFYING THAT THE REQUIRED COMPACTION HAS BEEN ACHIEVED.
9. SEWERS SHALL BE DISUSED/ABANDONED IN ACCORDANCE WITH PROCEDURE SET OUT IN THE GRAVITY SEWER CODE.
10. CONSTRUCT EMBEDMENT AND TRENCHFILL TO SEQ-SEW-1200-1, 1200-2, 1201-1 TO 1205-1 AND COUNCIL STANDARDS FOR ROADWAYS. TYPE 4 MINIMUM UNLESS GEOTECHNICAL INVESTIGATIONS INDICATE TYPE 3 IS ADEQUATE.
11. ON SEWERS WITH A GRADE STEEPER THAN 1 IN 20, CONSTRUCT BULKHEADS AND/OR TRENCH STOPS TO SEQ-SEW-1206-1. CONSTRUCT TRENCH DRAINS TO SEQ-SEW-1207-1.
12. EACH ALLOTMENT SHALL BE SERVED BY A DN110 PE PROPERTY CONNECTION. FOR ALLOTMENTS OTHER THAN SINGLE RESIDENTIAL, A DN160 PE PROPERTY CONNECTION SHALL BE PROVIDED. PROPERTY CONNECTIONS SHALL BE LOCATED WITHIN THE PROPERTY AS SHOWN IN THE DRAWINGS AND SHALL EXTEND INTO THE PROPERTY A MINIMUM OF 300mm AND A MAXIMUM OF 750mm. REFER SEQ-SEW-1106-1 TO 1106-6.
13. CONSTRUCT MH'S TO SEQ-SEW-1301-1 TO 1301-5 (TYPE G), 1301-8 TO 1301-11 (TYPE F), 1301-14 TO 1301-25 (TYPE X), 1301-26 (TOP SLAB), 1301-27 (LADDERS), 1304-1, 1305-1, 1307-4 (STUB CUT IN), 1313-1 (CONNECTION).
14. CONSTRUCT INSERTIONS AND REPAIRS TO 1501-1 (JUNCTIONS) AND 1502-1 (INSERT MH/MS).
15. CONSTRUCT MAINTENANCE SHAFTS AND TERMINAL ENTRY POINTS TO SEQ-SEW 1315-1, 1316-1 AND 1502-1 (INSERT MS).
16. INSTALL MH/MS TYPE B COVERS TO SEQ-SEW-1308-2 TO 1308-7.
17. INSTALL MH/MS TYPE D COVERS TO SEQ-SEW-1308-8 TO 1308-11.
18. INSTALL DETECTABLE MARKER TAPE ON ALL SEWER MAINS AND PROPERTY CONNECTIONS.
19. THE UNDERSIDE OF ALL MAINTENANCE HOLE ASPROS MUST BE PE LINED AS PER STD DRG SEQ-SEW-1301-26.
20. CONCRETE FOR MH CONSTRUCTION SHALL BE SPECIAL CLASS TO WSA PS-358 WITH REQUIREMENTS FOR CALCAREOUS AGGREGATE.
21. ALL SEWERS AND MAINTENANCE STRUCTURES SHALL BE INSPECTED BY CCTV. THE FIRST CCTV INSPECTIONS SHALL BE MADE PRIOR TO COMMISSIONING AFTER ALL BACKFILLING OPERATIONS HAVE BEEN SATISFACTORILY COMPLETED AND ALL JUNCTIONS HAVE BEEN INSTALLED. A SECOND CCTV INSPECTION IS REQUIRED PRIOR TO, BUT NOT MORE THAN 2 WEEKS BEFORE, THE ON-SITE INSPECTION FOR OFF MAINTENANCE CERTIFICATION.

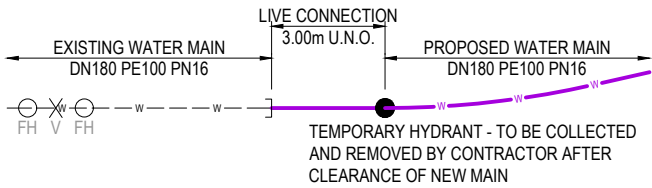
No.	SEQ CODE CLAUSE	DETAILS FOR PROPOSED VARIATION	REASONS OF PROPOSED VARIATION
1	5.4.5	WATERS STREET, LAKESHORE CRESCENT, McDONALD DTREET - SEWER MAINS PROPOSED ON BOTH SIDES OF ROAD, THEREFORE PARALLEL TO WATER MAIN ON ONE SIDE AND INSIDE NON-SEWER CORRIDOR ON THE OTHER.	THE SEWER HAS BEEN DESIGNED IN THE MOST EFFICIENT LOCATION I.E. TO AVOID LARGE SCALE ROAD CROSSINGS AND DEEP SYSTEMS TO GET UNDER STORMWATER NOTE 1 - COUNCIL'S ACCEPTANCE OF THE DUAL SEWER PROPOSAL IS PROVIDED. NOTE 2 - WHERE SEWER IS PARALLEL TO THE WATER MAIN, THE MINIMUM VERTICAL CLEARANCE HAS BEEN OBTAINED IN ACCORDANCE WITH CL. 5.4.5.2. TABLE 5.4, NOTE 6.

No.	SEQ CODE CLAUSE	DETAILS FOR PROPOSED VARIATION	REASONS OF PROPOSED VARIATION
1	5.4.2.1 & 5.4.2.2	WATERS STREET, LAKESHORE CRESCENT, McDONALD STREET - WATER MAIN PROPOSED ON SAME SIDE OF ROAD AS SEWER AND ELECTRICAL	AS PER CLAUSE 5.4.2.1 (a) THE WATER MAIN HAS BEEN DESIGNED IN THE MOST EFFICIENT LOCATION, ON THE SIDE OF THE ROAD WHICH HAS SERVES THE MOST PROPERTIES AND MINIMISES THE LENGTH OF PROPERTY CONNECTIONS. NOTE 1 - COUNCIL'S STANDARD SERVICE CORRIDORS ALLOW FOR EACH SERVICE WITHIN THE SAME VERGE, SO NO IMPACT TO OTHER SERVICE CORRIDORS IS PROPOSED. NOTE 2 - WHERE WATER MAIN IS PARALLEL TO THE SEWER, THE MINIMUM VERTICAL CLEARANCE HAS BEEN OBTAINED IN ACCORDANCE WITH CL. 5.12.5.2. TABLE 5.5, NOTES 1 & 5.

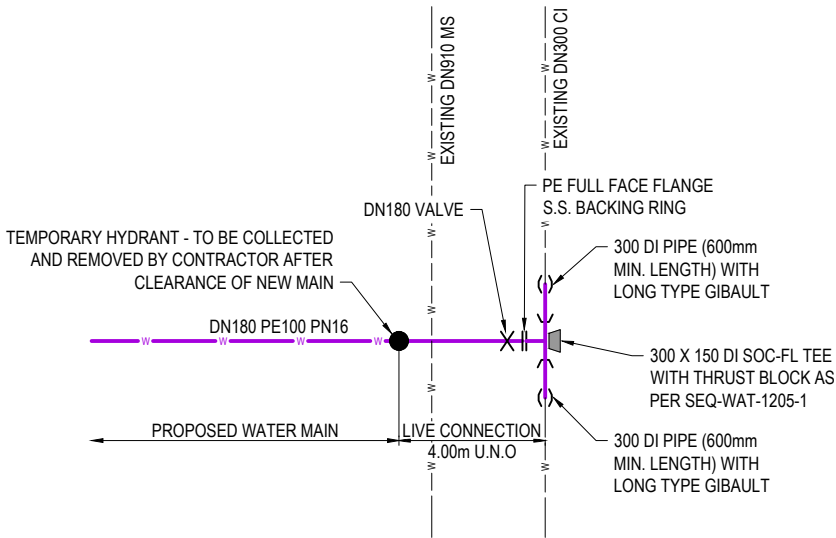
1. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT WSAW WATER SUPPLY CODE OF AUSTRALIA SPECIFICATIONS AND STANDARD - SOUTH EAST QUEENSLAND SERVICE PROVIDERS EDITION.
2. UNLESS SPECIFIED OTHERWISE ALL MATERIALS AND WORK SHALL COMPLY WITH THE RELEVANT AUSTRALIAN STANDARDS.
3. THE DESIGN HAS BEEN UNDERTAKEN TO COMPLY WITH CURRENT SOUTH EAST QUEENSLAND WATER CODE AND URBAN UTILITIES STANDARDS.
4. THE CONSTRUCTION OF THE WATER RETICULATION WORK SHOWN ON THIS DRAWING MUST BE SUPERVISED BY AN ENGINEER WHO HAS RPEQ REGISTRATION. WORKS NOT COMPLYING WITH THIS REQUIREMENT WILL NOT BE PERMITTED TO CONNECT TO THE RETICULATION SYSTEM.
5. ALL MATERIALS USED IN THE WORKS SHALL COMPLY WITH URBAN UTILITIES ACCEPTED PRODUCTS AND MATERIALS LIST OR BE APPROPRIATELY SHOWN, LISTED AND DEFINED IN THE ENGINEERING SUBMISSION SO THAT THE ALTERNATIVE PRODUCT OR MATERIAL CAN BE ASSESSED AND IF APPROPRIATE, APPROVED BY URBAN UTILITIES.
6. ADOPT LIP OF KERB OR SHOULDER OF ROAD AS PERMANENT LEVEL.
7. COVER ON MAINS FROM PERMANENT LEVEL TO BE AS SHOWN IN SEQ-WAT-1200-2.
8. CONSTRUCT EMBEDMENT AND TRENCH FILL TO SEQ-WAT-1200-1 TO 1204-1 AND COUNCIL STANDARDS FOR ROADWAY CROSSINGS. TYPE D MINIMUM UNLESS GEOTECHNICAL INVESTIGATIONS INDICATE TYPE C IS ADEQUATE.
9. PROVIDE BULKHEADS / TRENCH STOPS IN ACCORDANCE WITH SEQ WATER SUPPLY CODE TABLE 7.5 AND SEQ-WAT-1209-1 AND 1210-1.
10. CONSTRUCT THRUST BLOCKS ON ALL UNRESTRAINED VALVES, BENDS, TEES, TAPERS, DEAD ENDS TO SEQ-WAT-1205-1, 1206-1 AND 1207-1 AND WHERE OTHER PIPES CONNECT TO PE PIPE.
11. INSTALL DETECTABLE MARKER TAPE ON ALL WATER MAINS AND PROPERTY SERVICES.
12. CONSTRUCT FIRE HYDRANTS AND STOP VALVES TO SEQ-WAT-1301-1, 1302-1, 1303-2, 1305-1, 1306-1 AND 1409-1.
13. CONSTRUCT SCOURS TO SEQ-WAT-1307-2 (ONLY MAINS DN315 AND LARGER). SCOURS MUST DISCHARGE INTO AN OPEN STORMWATER GULLY PIT. DISCHARGE TO THE FACE OF KERB AND CHANNEL IS NOT ACCEPTABLE TO URBAN UTILITIES.
14. INSTALL ROAD AND PAVEMENT MARKERS TO SEQ-WAT-1107-1, 1107-2, 1300-1 AND 1300-2.
15. CONSTRUCT HYDRANTS AT THE ENDS OF ALL NEW MAINS BEFORE THE SCOUR AND WHERE REQUIRED FOR COMMISSIONING PURPOSES. URBAN UTILITIES PREFERENCE IS TO AVOID TAPPING BANDS FOR TEST POINTS AND PROVIDE EITHER A TEMPORARY DUCKFOOT HYDRANT OR FLANGED SHORT PIPE WITH A TEMPORARY TAPPED BLANK FLANGE. TESTING AGAINST LIVE MAINS AND VALVES IS NOT PERMITTED.
16. TESTING LOCATIONS AND TEMPORARY FITTINGS ARE REQUIRED ON SERVICES OVER 10m LONG UNLESS APPROVED IN WRITING FOR WORKS TO BE UNDERTAKEN AS LIVE WORKS. TESTING AND AS - CONSTRUCTED REQUIREMENTS TO BE DOCUMENTED ON DRAWINGS.
17. 316SS BACKING RINGS SHALL BE USED WITH FULL-FACE PE FLANGES. PE STUB-FLANGES ARE NOT ACCEPTED. WHEN JOINING TO EXISTING UNRESTRAINED PIPELINES, PROVIDE A DICL SHORT PIPE WITH THRUST FLANGE AND THRUST BLOCK BOLT ON UNI FLANGES SHALL NOT BE USED AS THRUST FLANGES. THRUST (PUDDLE) FLANGES SHALL BE AN APPROVED PREFABRICATED DICL/MSCl SHORT PIPE WITH PREFABRICATED THRUST FLANGE.
18. ALL DISUSED SERVICES SHALL BE SEALED AT THE MAIN AND FERRULE CLOSED OR TAPPING BAND REMOVED AND SECTION OF MAIN SUBSTITUTED AS LIVE WORKS. LARGE DIAMETER SERVICES SHALL BE DISUSED BY REMOVING ANY PROPERTY SERVICE PIPEWORK AT THE POINT OF CONNECTION TO THE MAIN, AND INSTALLING A BLANK FLANGE DIRECTLY ON THE TEE.
19. AC MAINS SHALL BE REPLACED COLLAR-COLLAR.
20. CONSTRUCT PROPERTY SERVICES TO SEQ-WAT-1107-1 AND 1107-3.
21. PROVIDE DN40 PE100 WATER SERVICES FOR ROAD CROSSINGS SERVICING TWO DWELLINGS. PROVIDE DN32 PE100 WATER SERVICES FOR ROAD CROSSINGS SERVICING A SINGLE DWELLING. IF THE LONG TERM STATIC HEAD OF THE PROPERTY SERVICE IS LESS THAN 350 kPa (35m) OR IF PRIVATE BOOSTER IS REQUIRED, THE MINIMUM SIZE OF PROPERTY SERVICE SHALL BE DN40 PE100.
22. WATER SERVICE UNDER ROADS AND DRIVEWAYS MUST BE PLACED WITHIN 100mm DIA. CONDUITS, REFER SEW-WAT-1107-1.
23. A WATER METER SUPPLIED AT THE DEVELOPER'S COST, IS TO BE INSTALLED AT THE SERVICE POINT OF EACH LOT IN ACCORDANCE WITH THE URBAN UTILITIES STANDARD DRAWING.
24. WATER METER AND FIRE HYDRANTS MUST BE LOCATED MINIMUM 1.1m CLEAR OF ENERGEX PILLARS.

URBAN UTILITIES REF. NUMBER. : 22-PNT-55343

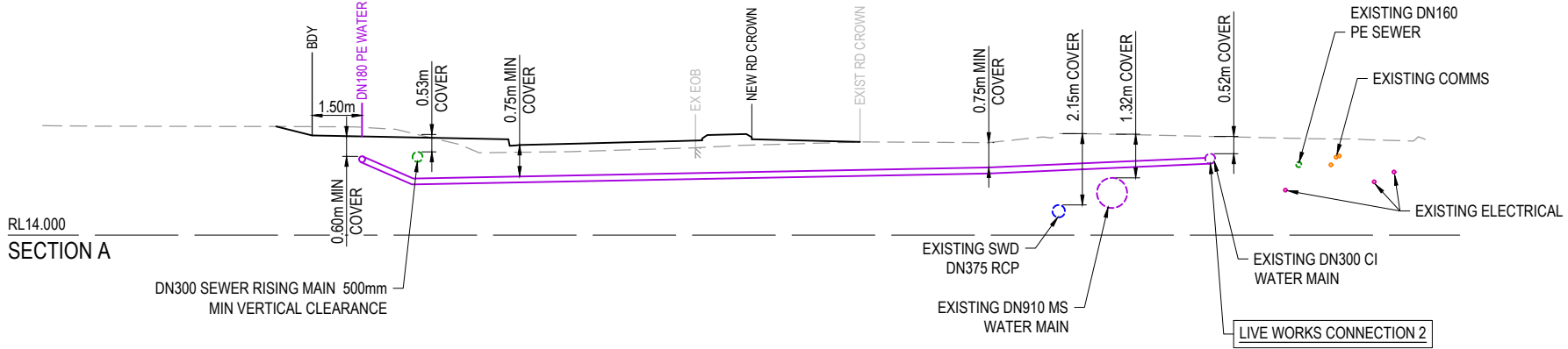
REV	DATE	DESIGN	DRAWN	REVISION DETAILS			DRAWN	STATUS		SCALE	CLIENT	PROJECT NAME	DRAWING TITLE		
A	14.09.23	KP	KP	ISSUED FOR CONSTRUCTION			KP	ISSUED FOR CONSTRUCTION			UNILAND PTY LTD	PARADISE LAKES STAGE 3	SEWER AND WATER GENERAL NOTES		
							DESIGN	APPROVED ANDREW NGO RPEQ 12329 DATE 12.06.24							
							KP	 FOR AND ON BEHALF OF COLLIERS INTERNATIONAL ENGINEERING & DESIGN PTY LTD		ASSOCIATED CONSULTANT WOLTERS CONSULTING GROUP (07) 2666 5200	PARADISE ROAD WILLAWONG	PROJECT No. 21-0075	DRAWING No. 301	REVISION A	



LIVE CONNECTION 1 DETAIL
NOT TO SCALE



LIVE CONNECTION 2 DETAIL
NOT TO SCALE



LIVE SEWER WORKS

No.	DESCRIPTION	DIA. SEWER	EXISTING ASSET ID AT CONNECTION	MH/MS TYPE	COVER TYPE	LOT & PLAN No.	F.S.L.	E.S.L.	CONNECTION I.L.	CONNECTION DEPTH TO INVERT	ALTERATION TO EXISTING MH BENCHING REQUIRED (Y/N)
1 (A)	CONSTRUCTOR, UNDER URBAN UTILITIES SUPERVISION, TO CONSTRUCT A 2.0m LONG, 160mm STUB (TEMPORARY END CAPPED) IN MH13/X.	DN160	MH96086	MH	D(BD)	-	11.059	11.059	6.456	4.603	Y
1 (B)	0.50m FROM EXISTING STUB, CONSTRUCTOR TO LAY NEW SEWERS. AFTER CLEANSING, TESTING AND INSPECTION, NOTIFY URBAN UTILITIES.										
1 (C)	CONSTRUCTOR, UNDER URBAN UTILITIES SUPERVISION, TO REMOVE TEMPORARY END CAP ON EXISTING STUB AND MAKE LIVE CONNECTION AFTER SUCCESSFUL 'ON MAINTENANCE' INSPECTION.										

LIVE WORKS NOTES:

- ALL LIVE WORKS SHALL BE UNDERTAKEN BY THE CONTRACTOR IN ACCORDANCE WITH AN APPROVED NETWORKS ACCESS PERMIT, UNDER THE SUPERVISION OF URBAN UTILITIES, AT THE DEVELOPERS EXPENSE.
- PRE-CHLORINATED FITTINGS SHALL BE USED FOR ALL DRINKING WATER LIVE WORKS CONNECTIONS.

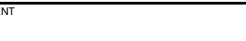
LIVE WORKS NOTES:

- ALL LIVE WORKS SHALL BE UNDERTAKEN BY THE CONTRACTOR IN ACCORDANCE WITH AN APPROVED NETWORKS ACCESS PERMIT, UNDER THE SUPERVISION OF URBAN UTILITIES, AT THE DEVELOPERS EXPENSE.
- LIVE WORKS CANNOT COMMENCE UNTIL ALL RELEVANT TEST CERTIFICATES HAVE BEEN PROVIDED AND ACCEPTED BY URBAN UTILITIES.

WATER RETICULATION LIVE CONNECTIONS

CONNECTION 1				CONNECTION 2			
STREET	WATERS STREET			STREET	PARADISE ROAD		
LOCATION	LOT 238			LOCATION	OPPOSITE LOT 183		
LENGTH	3.00m	TYPE OF MAIN	DN180 PE100	LENGTH	3.00m	TYPE OF MAIN	DN180 PE100
DATE COMMENCED		DATE COMPLETED		DATE COMMENCED		DATE COMPLETED	
SIGNATURE				SIGNATURE			

URBAN UTILITIES REF. NUMBER : 22-PNT-55343

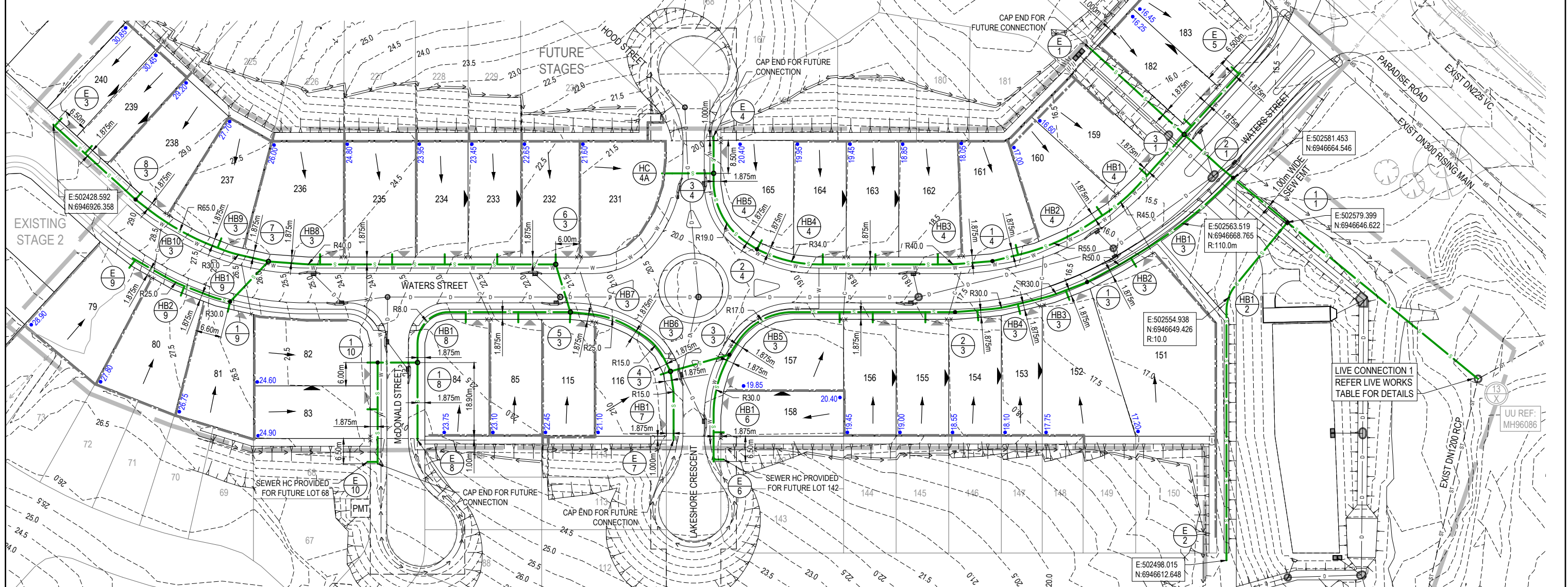
REV	DATE	DESIGN	DRAWN	REVISION DETAILS				DRAWN	STATUS			SCALE	CLIENT	PROJECT NAME	DRAWING TITLE		
A	14.09.23	KP	KP	ISSUED FOR CONSTRUCTION				KP	ISSUED FOR CONSTRUCTION						SEWER AND WATER LIVE WORK DETAILS		
B	30.05.24	KP	KP	LIVE WORKS TABLE AMENDED													

	PROPOSED STAGE BOUNDARY
	PROPOSED SEWER MAIN
	EXISTING SEWER MAIN
	EXISTING SEWER TRUNK MAIN
	SEWER LOT CONTROL SURFACE LEVEL
	INDICATIVE DRIVEWAY LOCATION
	ZERO LOT BOUNDARY
	FINISHED SURFACE CONTOUR
	EXISTING SURFACE CONTOUR
	PROPOSED STORMWATER DRAINAGE PIPE
	EXISTING STORMWATER DRAINAGE PIPE
	PROPOSED SWALE DRAIN
	EXISTING SWALE DRAIN
	PROPOSED WATER MAIN
	EXISTING WATER MAIN
	PROPOSED WATER SERVICE POINT
	PROPOSED RETAINING WALL
	EXISTING RETAINING WALL
	EXISTING ELECTRICAL CABLE U/G
	EXISTING TELECOMMUNICATION CABLE U/G

P.S.M. 59279 RL 18.006 AHD
LOCATED IN DALMENY STREE

- ELECTRICAL CABLES
- TELECOMMUNICATIONS CABLES
- GAS MAINS
- WATER MAINS
- SEWER MAINS
- FIBRE OPTIC CABLES

REFER TO THE LONGITUDINAL SECTIONS
FOR EASTING AND NORTHING SETOUT OF
SEWER STRUCTURES, ENDS AND BENDS.



REV	DATE	DESIGN	DRAWN	REVISION DETAILS		DRAWN	STATUS			SCALE 1:500 10 5 0 10 20 A1 1:1000  A3	CLIENT	PROJECT NAME		DRAWING TITLE		
A	14.09.23	KP	KP	ISSUED FOR CONSTRUCTION		KP	ISSUED FOR CONSTRUCTION				UNILAND PTY LTD	PARADISE LAKES STAGE 3		SEWERAGE LAYOUT PLAN		
						DESIGN	APPROVED	RPEQ 12329	DATE		ASSOCIATED CONSULTANT	PARADISE ROAD		PROJECT No.	DRAWING No.	REVISION
						KP	ANDREW NGO		12.06.24		WOLTERS CONSULTING GROUP	WILLAWONG		21-0075	303	A
						FOR AND ON BEHALF OF COLLIER'S INTERNATIONAL ENGINEERING & DESIGN PTY LTD										

STRUCTURE TYPES
G = CONCRETE 0.900Ø
F = CONCRETE 1.200Ø
X = CONCRETE 1.200Ø
MS = PE 0.600Ø
MH DROP TYPES:
AS PER SEQ STD DRG SEQ-SEW-1303-1
MS DROP TYPES:
MS-A = 20mm DROP THROUGH BULB
MS-B = >750mm DROP INTO RISER
LID TYPES
B = NON-TRAFFICABLE
D = TRAFFICABLE
D(BD) = TRAFFICABLE WITH BOLT DOWN

EMBEDMENT NOTE:
PIPE EMBEDMENT & TRENCHFILL SHALL BE IN ACCORDANCE WITH SEQ-SEW-1200-2, 1201-1 TO 1201-5. AS PER URBAN UTILITIES MAJOR WORKS TECHNICAL GUIDELINE, SECTION 6.5.1, TYPE 4 SUPPORT IS PROPOSED UNTIL FINAL GEOTECHNICAL INVESTIGATIONS ARE COMPLETED AND PROVIDED TO URBAN UTILITIES PRIOR TO CONSTRUCTION.

LAND USE
DIAMETER
GRADE
EMBEDMENT

JUNCTION INVERT LEVEL
DEPTH TO INVERT
SEWER INVERT LEVEL
DESIGN SURFACE LEVEL
SETOUT
RUNNING CHAINAGE

X (EXISTING)

0 000 F-502397 608 9 519

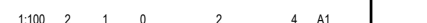
— * SWD BRIDGING REQUIRED
REFER NOTE

11.50m

5 BULKHEADS
AT 11.50m SPACING

LIVE CONNECTION 1 -
REFER LIVE WORKS
TABLE FOR DETAILS

1

REV	DATE	DESIGN	DRAWN	REVISION DETAILS		DRAWN	STATUS			SCALE		CLIENT	PROJECT NAME		DRAWING TITLE			
A	14.09.23	KP	KP	ISSUED FOR CONSTRUCTION		KP	ISSUED FOR CONSTRUCTION			1:1000 1:2000	 HORIZONTAL	A1 A3	UNILAND PTY LTD	PARADISE LAKES STAGE 3		SEWERAGE LONGITUDINAL SECTIONS SHEET 1 OF 4		
									1:100 1:200	 VERTICAL	A1 A3	ASSOCIATED CONSULTANT WOLTERS CONSULTING GROUP (07) 2666 5200						
						DESIGN	APPROVED	DATE										
						KP	ANDREW NGO	RPEQ 12329	12.06.24									
						FOR AND ON BEHALF OF COLLIER'S INTERNATIONAL ENGINEERING & DESIGN PTY LTD												

STRUCTURE / BEND / END NAME
STRUCTURE TYPE
STRUCTURE LID TYPE
STRUCTURE DROP TYPE
JUNCTION LINE
DEPTH TO HC
HC INVERT LEVEL
HC TYPE
HC LOT No
CH. FROM D/S STRUC / BEND

STRUCTURE TYPES
G = CONCRETE 0.900Ø
F = CONCRETE 1.200Ø
X = CONCRETE 1.200Ø
MS = PE 0.600Ø
MH DROP TYPES:
AS PER SEQ STD DRG SEQ-SEW-1303-1
MS DROP TYPES:
MS-A = 20mm DROP THROUGH BULB
MS-B = >750mm DROP INTO RISER
LID TYPES
B = NON-TRAFFICABLE
D = TRAFFICABLE
D(BD) = TRAFFICABLE WITH BOLT DOWN

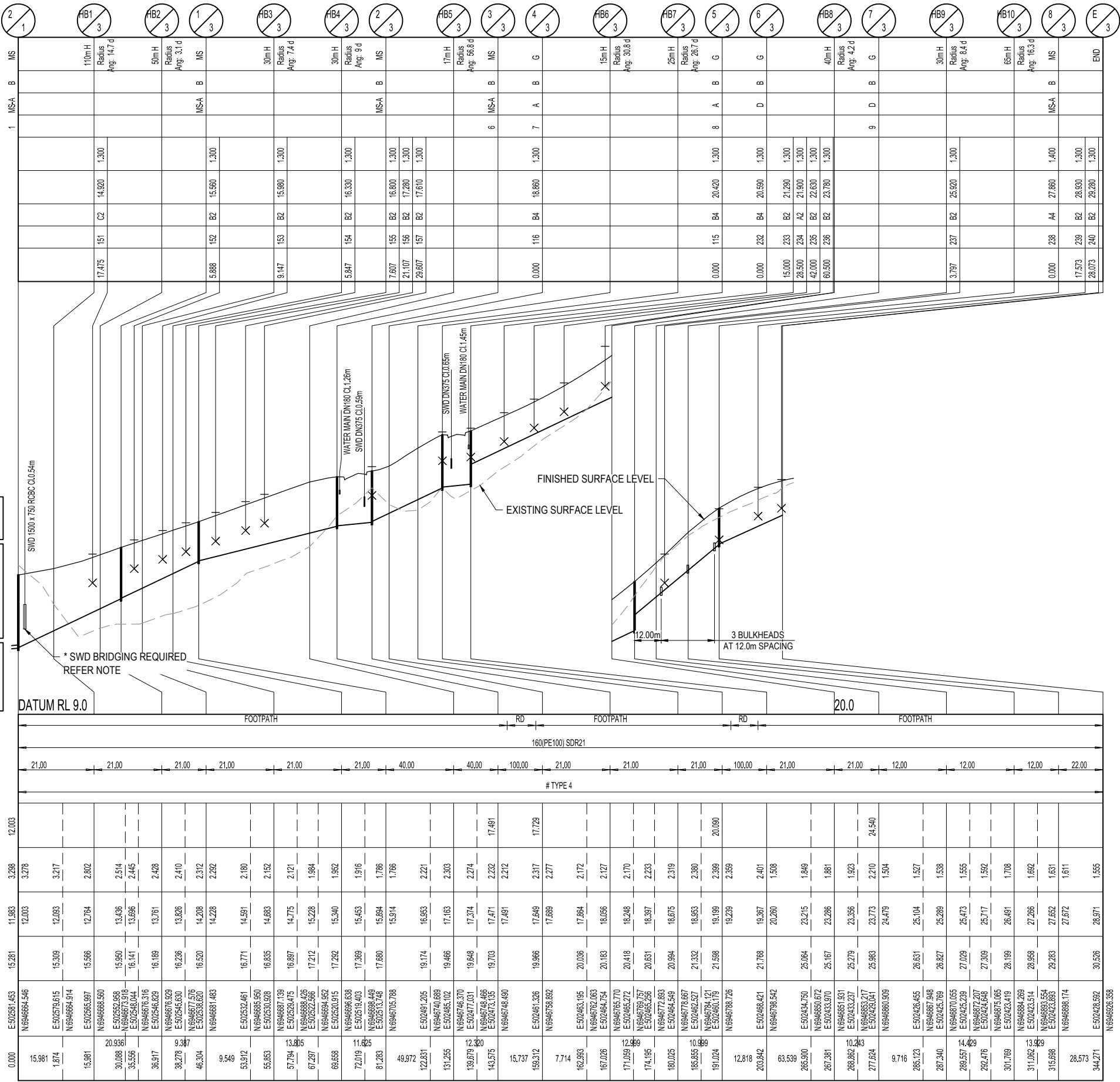
NOTE: PE LINING OF MANHOLES:
MAINTENANCE HOLES ≥ 1500Ø IN DIA OR ≥ 4.0m IN DEPTH,
REQUIRE PE LINED PROTECTIVE COATING

EMBEDMENT NOTE:
PIPE EMBEDMENT & TRENCHFILL SHALL BE IN ACCORDANCE
WITH SEQ-SEW-1200-2, 1201-1 TO 1201-5. AS PER URBAN
UTILITIES MAJOR WORKS TECHNICAL GUIDELINE, SECTION
6.5.1, TYPE 4 SUPPORT IS PROPOSED UNTIL FINAL
GEOTECHNICAL INVESTIGATIONS ARE COMPLETED AND
PROVIDED TO URBAN UTILITIES PRIOR TO CONSTRUCTION.

* STORMWATER BRIDGING NOTE:
WHERE A STORMWATER PIPE ≥ 600mm DIA CROSSES OVER
A SEWER, THE STORMWATER PIPE SHALL BE SUPPORTED
BY A BRIDGE STRUCTURE THAT SPANS THE SEWER
TRENCH. REFER PEAK URBAN STD DRG S-100.

LAND USE
DIAMETER
GRADE
EMBEDMENT
JUNCTION INVERT LEVEL
DEPTH TO INVERT
SEWER INVERT LEVEL
DESIGN SURFACE LEVEL
SETOUT
RUNNING CHAINAGE

LINE

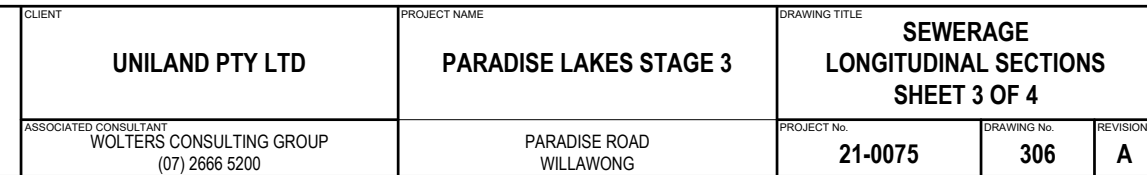
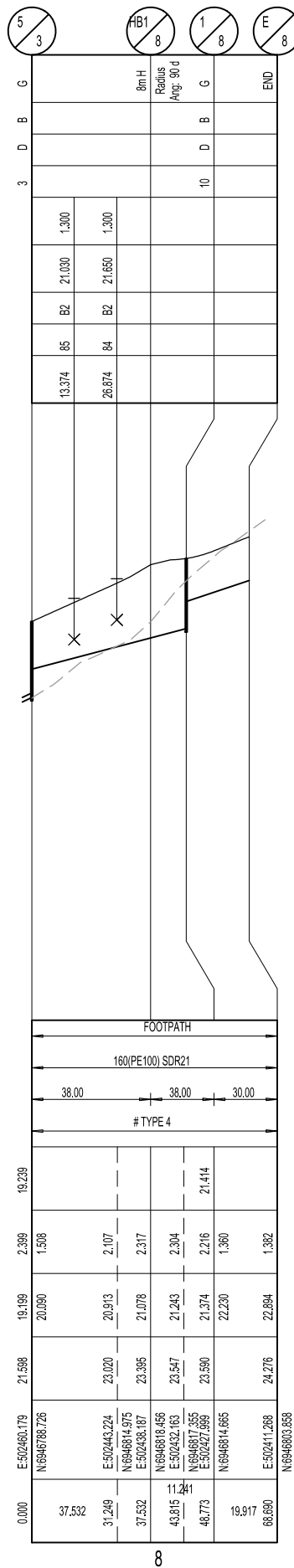
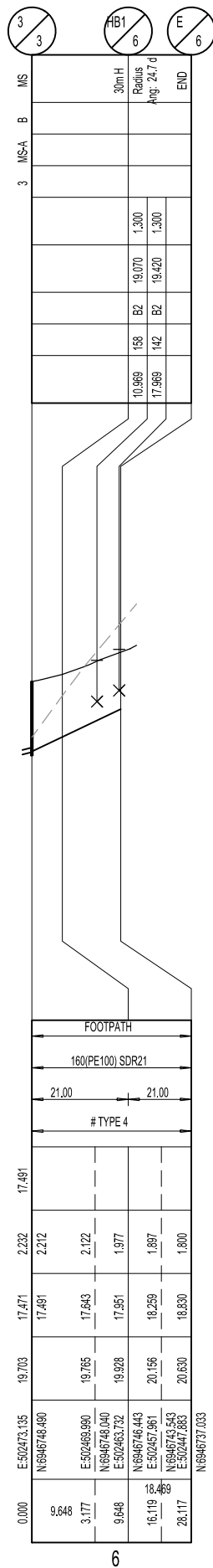
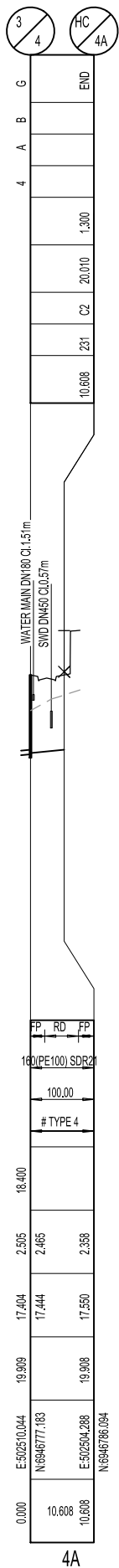


REV	DATE	DESIGN	DRAWN	REVISION DETAILS	DRAWN	STATUS	SCALE	CLIENT	PROJECT NAME	DRAWING TITLE
A	14.09.23	KP	KP	ISSUED FOR CONSTRUCTION	KP	ISSUED FOR CONSTRUCTION	1:1000 1:2000 HORIZONTAL 1:100 1:200 VERTICAL	UNILAND PTY LTD	PARADISE LAKES STAGE 3	SEWERAGE LONGITUDINAL SECTIONS SHEET 2 OF 4
					DESIGN	APPROVED ANDREW NGO RPEQ 12329 DATE 12.06.24		ASSOCIATED CONSULTANT WOLTERS CONSULTING GROUP (07) 2666 5200	PARADISE ROAD WILLAWONG	PROJECT No. 21-0075 DRAWING No. 305 REVISION A

STRUCTURE TYPES
G = CONCRETE 0.900Ø
F = CONCRETE 1.200Ø
X = CONCRETE 1.200Ø
MS = PE 0.600Ø
MH DROP TYPES:
AS PER SEQ STD DRG SEQ-SEW-1303-1
MS DROP TYPES:
MS-A = 20mm DROP THROUGH BULB
MS-B = >750mm DROP INTO RISER
LID TYPES
B = NON-TRAFFICABLE
D = TRAFFICABLE
D(BD) = TRAFFICABLE WITH BOLT DOWN

EMBEDMENT NOTE:
PIPE EMBEDMENT & TRENCHFILL SHALL BE IN ACCORDANCE WITH SEQ-SEW-1200-2, 1201-1 TO 1201-5. AS PER URBAN UTILITIES MAJOR WORKS TECHNICAL GUIDELINE, SECTION 6.5.1, TYPE 4 SUPPORT IS PROPOSED UNTIL FINAL GEOTECHNICAL INVESTIGATIONS ARE COMPLETED AND PROVIDED TO URBAN UTILITIES PRIOR TO CONSTRUCTION.

LAND USE
DIAMETER
GRADE
EMBEDMENT
JUNCTION INVERT LEVEL
DEPTH TO INVERT
SEWER INVERT LEVEL
DESIGN SURFACE LEVEL
SETOUT
RUNNING CHAINAGE

[illegible]

STRUCTURE TYPES
G = CONCRETE 0.900Ø
F = CONCRETE 1.200Ø
X = CONCRETE 1.200Ø
MS = PE 0.600Ø
MH DROP TYPES:
AS PER SEQ STD DRG SEQ-SEW-1303-1
MS DROP TYPES:
MS-A = 20mm DROP THROUGH BULB
MS-B = >750mm DROP INTO RISER
LID TYPES
B = NON-TRAFFICABLE
D = TRAFFICABLE
D(BD) = TRAFFICABLE WITH BOLT DOWN

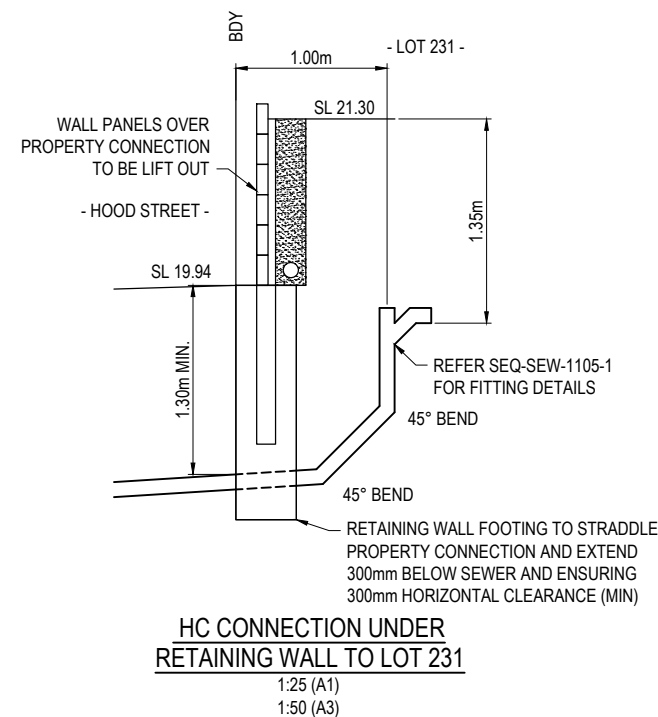
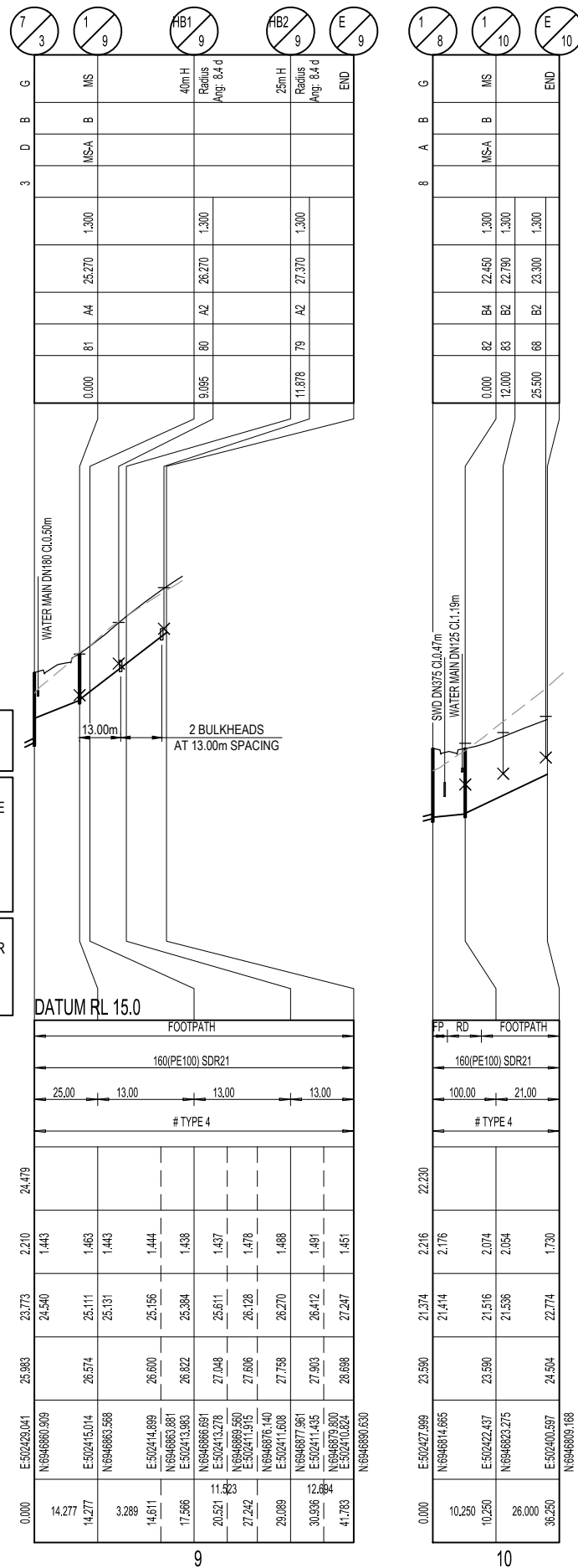
NOTE: PE LINING OF MANHOLES:
MAINTENANCE HOLES $\geq 1500\varnothing$ IN DIA OR $\geq 4.0\text{m}$ IN DEPTH,
REQUIRE PE LINED PROTECTIVE COATING

EMBEDMENT NOTE:
PIPE EMBEDMENT & TRENCHFILL SHALL BE IN ACCORDANCE WITH SEQ-SEW-1200-2, 1201-1 TO 1201-5. AS PER URBAN UTILITIES MAJOR WORKS TECHNICAL GUIDELINE, SECTION 6.5.1, TYPE 4 SUPPORT IS PROPOSED UNTIL FINAL GEOTECHNICAL INVESTIGATIONS ARE COMPLETED AND PROVIDED TO URBAN UTILITIES PRIOR TO CONSTRUCTION.

*** STORMWATER BRIDGING NOTE:**
WHERE A STORMWATER PIPE $\geq$ 600mm DIA CROSSES OVER
A SEWER, THE STORMWATER PIPE SHALL BE SUPPORTED
BY A BRIDGE STRUCTURE THAT SPANS THE SEWER
TRENCH. REFER PEAK URBAN STD DRG S-100.

LAND USE
DIAMETER
GRADE
EMBEDMENT
JUNCTION INVERT LEVEL
DEPTH TO INVERT
SEWER INVERT LEVEL
DESIGN SURFACE LEVEL
SETOUT
RUNNING CHAINAGE

LINE



REV	DATE	DESIGN	DRAWN	REVISION DETAILS		DRAWN	STATUS			SCALE 1:10001001020304050A1 1:2000HORIZONTALA3 1:10021024A1 1:200VERTICALA3	CLIENT	PROJECT NAME	DRAWING TITLE		
A	14.09.23	KP	KP	ISSUED FOR CONSTRUCTION		KP	ISSUED FOR CONSTRUCTION				UNILAND PTY LTD	PARADISE LAKES STAGE 3	SEWERAGE LONGITUDINAL SECTIONS SHEET 4 OF 4		
						DESIGN	APPROVED	DATE			ASSOCIATED CONSULTANT		PROJECT No.	DRAWING No.	REVISION
						KP	ANDREW NGO	RPEQ 12329	12.06.24		WOLTERS CONSULTING GROUP (07) 2666 5200	PARADISE ROAD WILLAWONG	21-0075	307	A
						FOR AND ON BEHALF OF COLLIER'S INTERNATIONAL ENGINEERING & DESIGN PTY LTD									

LEGEND

	PROPOSED AREA OF WORKS
	PROPOSED WATER MAIN DN125
	PROPOSED WATER MAIN DN180
	EXISTING WATER MAIN
	PROPOSED WATER MAIN REQUIRING TRENCHSTOPS IN ACCORDANCE WITH SEQ-WAT-1209-1
	PROPOSED WATER CONDUIT
	EXISTING WATER CONDUIT
	HIGH POINT / LOW POINT
	PROPOSED ROAD CONTOUR
	INDICATIVE DRIVEWAY LOCATION
	ZERO LOT BOUNDARY
	PROPOSED STORMWATER DRAINAGE PIPE
	EXISTING STORMWATER DRAINAGE PIPE
	PROPOSED SWALE DRAIN
	PROPOSED SEWER MAIN
	EXISTING SEWER MAIN
	EXISTING ELECTRICAL CABLE U/G
	EXISTING TELECOMMUNICATION CABLE U/G

WATER FITTINGS LEGEND

PROPOSED:	
	FIRE HYDRANT
	ISOLATION VALVE
	DEAD END
	WATER SERVICE POINT
EXISTING:	
	FIRE HYDRANT
	ISOLATION VALVE
	DEAD END
	WATER SERVICE POINT

NOTE:
MARKERS FOR PROPERTY SERVICES SHALL BE IN ACCORDANCE WITH SEQ-WAT-1106-1108. MARKERS FOR WATER MAIN CROSSINGS, HYDRANTS AND VALVES SHALL BE IN ACCORDANCE WITH SEQ-WAT-1300-1

NOTE:

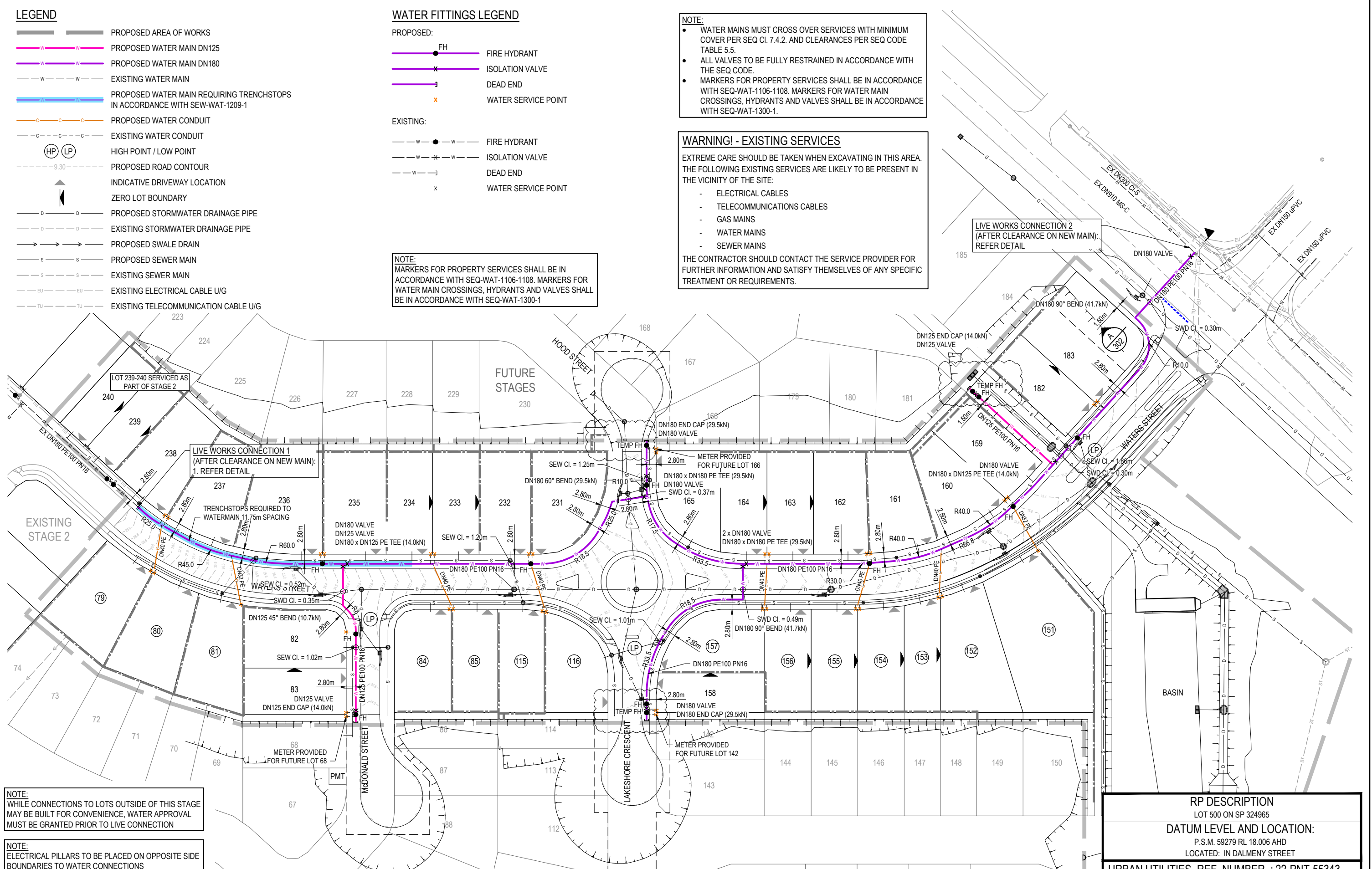
- WATER MAINS MUST CROSS OVER SERVICES WITH MINIMUM COVER PER SEQ CL 7.4.2. AND CLEARANCES PER SEQ CODE TABLE 5.5.
- ALL VALVES TO BE FULLY RESTRAINED IN ACCORDANCE WITH THE SEQ CODE.
- MARKERS FOR PROPERTY SERVICES SHALL BE IN ACCORDANCE WITH SEQ-WAT-1106-1108. MARKERS FOR WATER MAIN CROSSINGS, HYDRANTS AND VALVES SHALL BE IN ACCORDANCE WITH SEQ-WAT-1300-1.

WARNING! - EXISTING SERVICES

EXTREME CARE SHOULD BE TAKEN WHEN EXCAVATING IN THIS AREA. THE FOLLOWING EXISTING SERVICES ARE LIKELY TO BE PRESENT IN THE VICINITY OF THE SITE:

- ELECTRICAL CABLES
- TELECOMMUNICATIONS CABLES
- GAS MAINS
- WATER MAINS
- SEWER MAINS

THE CONTRACTOR SHOULD CONTACT THE SERVICE PROVIDER FOR FURTHER INFORMATION AND SATISFY THEMSELVES OF ANY SPECIFIC TREATMENT OR REQUIREMENTS.



NOTE:
WHILE CONNECTIONS TO LOTS OUTSIDE OF THIS STAGE MAY BE BUILT FOR CONVENIENCE, WATER APPROVAL MUST BE GRANTED PRIOR TO LIVE CONNECTION

NOTE:
ELECTRICAL PILLARS TO BE PLACED ON OPPOSITE SIDE BOUNDARIES TO WATER CONNECTIONS

RP DESCRIPTION LOT 500 ON SP 324965
DATUM LEVEL AND LOCATION: P.S.M. 59279 RL 18.006 AHD LOCATED: IN DALMENY STREET
URBAN UTILITIES REF. NUMBER : 22-PNT-55343

REV	DATE	DESIGN	DRAWN	REVISION DETAILS	DRAWN	STATUS	CLIENT	PROJECT NAME	DRAWING TITLE
A	14.09.23	KP	KP	ISSUED FOR CONSTRUCTION	KP	ISSUED FOR CONSTRUCTION	UNILAND PTY LTD	PARADISE LAKES STAGE 3	WATER RETICULATION LAYOUT PLAN
B	30.05.24	KP	KP	HYDRANTS UPDATED	KP	DESIGN APPROVED ANDREW NGO RPEQ 12329 DATE 12.06.24	ASSOCIATED CONSULTANT WOLTERS CONSULTING GROUP (07) 2666 5200	PARADISE ROAD WILLAWONG	PROJECT No. 21-0075 DRAWING No. 308 REVISION B

LEGEND

- PROPOSED AREA OF WORKS
- PROPOSED WATER MAIN
- EXISTING WATER MAIN
- PROPOSED HYDRANT REACH (WORST CASE ALLOTMENT)
- INDICATIVE DRIVEWAY LOCATION

NOTE:

ALL FIRE HYDRANT LOCATIONS SHALL MEET CLASS 1 BUILDING COVERAGE REQUIREMENTS OF THE SEQ CODE. FIRE HYDRANT COVERAGE IS AS SHOWN AND DEMONSTRATES THE WORST POSSIBLE LOCATION OF ANY PROPOSED CLASS 1 BUILDING WITHIN 90m OF HYDRANT REACH.

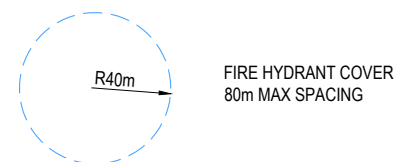
WATER FITTINGS LEGEND

PROPOSED:

FIRE HYDRANT

EXISTING:

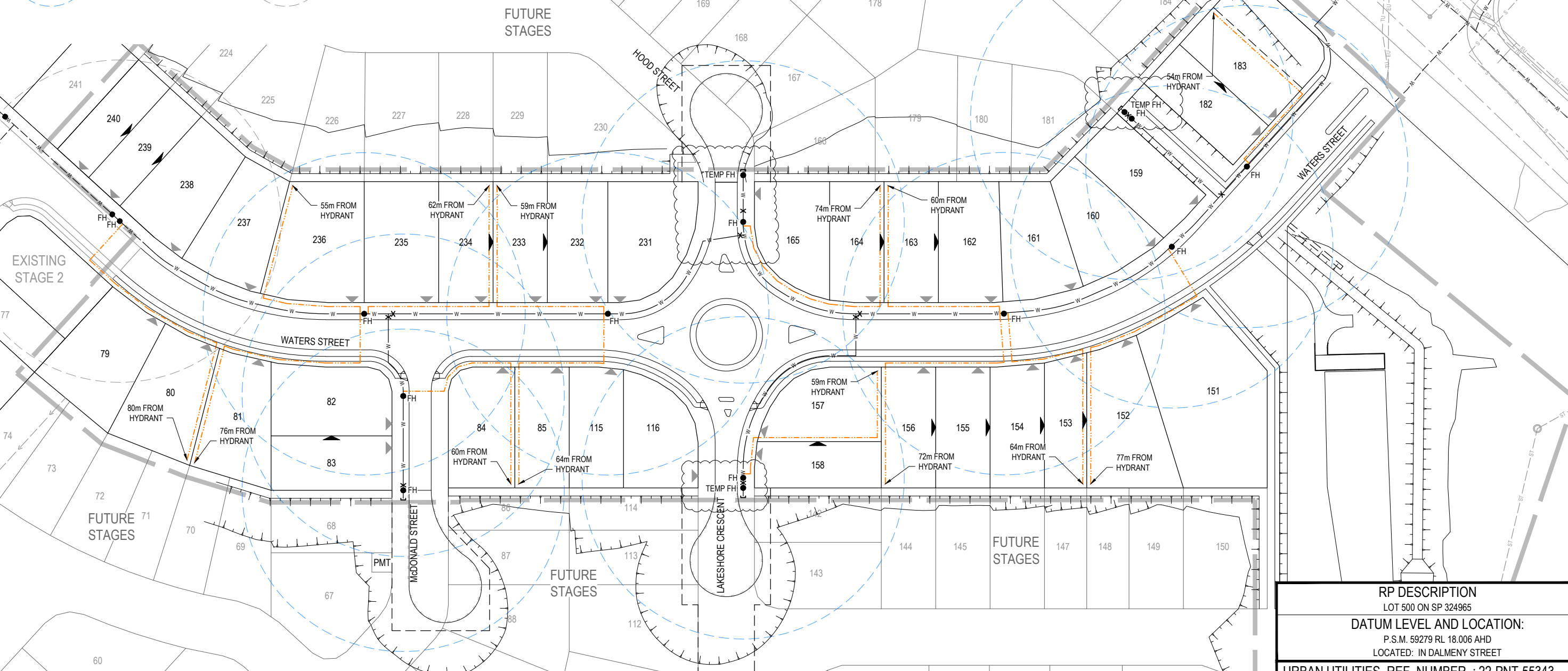
FIRE HYDRANT



FIRE HYDRANT COVER
80m MAX SPACING



EXISTING FIRE HYDRANT COVER
80m MAX SPACING



RP DESCRIPTION	
LOT 500 ON SP 324965	
DATUM LEVEL AND LOCATION:	
P.S.M. 59279 RL 18.006 AHD	
LOCATED: IN DALMENY STREET	
URBAN UTILITIES REF. NUMBER : 22-PNT-55343	

REV	DATE	DESIGN	DRAWN	REVISION DETAILS
A	14.09.23	KP	KP	ISSUED FOR CONSTRUCTION
B	30.05.24	KP	KP	HYDRANTS UPDATED

DRAWN	STATUS
KP	ISSUED FOR CONSTRUCTION
DESIGN	APPROVED
KP	ANDREW NGO
	RPEQ 12329
	DATE 12.06.24
FOR AND ON BEHALF OF COLLIER'S INTERNATIONAL ENGINEERING & DESIGN PTY LTD	



SCALE
1:500 10 5 0 10 20 A1
1:1000 A3

CLIENT
UNILAND PTY LTD
ASSOCIATED CONSULTANT
WOLTERS CONSULTING GROUP
(07) 2666 5200

PROJECT NAME
PARADISE LAKES STAGE 3
PARADISE ROAD
WILLAWONG

DRAWING TITLE
FIRE HYDRANT REACH LAYOUT PLAN
PROJECT No.
21-0075
DRAWING No.
309
REVISION
B