



THE GABLES
BOX HILL
PRECINCT H

STAGE 3
PRESSURE SEWER & RECYCLED WATER



LOCALITY PLAN
(NOT TO SCALE)

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No.	REVISION DESCRIPTION	BY	DATE
04	WORK-AS-CONSTRUCTED	D.S.	2/2/18
03	ISSUE FOR FLOW SYSTEMS APPROVAL	K.G.	2/6/17
02	UPDATE TO REFLECT CURRENT ENGINEERING	K.G.	28/4/17
01	ORIGINAL ISSUE	K.G.	3/2/17

SERVICE	DATE	REF.	WORK-AS-CONSTRUCTED CERTIFICATION	ROSE ATKINS RIMMER (Infrastructure) Pty. Ltd. RAR WATER RELATED INFRASTRUCTURE DESIGN AND MANAGEMENT 142 SUNNYHOLT ROAD, BLACKTOWN P.O. BOX 6745, BLACKTOWN N.S.W. 2148 PH: (02) 9853 0200 FAX: (02) 9671 7399	CLIENT: Box Hill + Water CELESTINO	TITLE: PLAN OF PROPOSED WATER INFRASTRUCTURE SERVICES THE GABLES DEVELOPMENT - PRECINCT H (STAGE 3) BOUNDARY ROAD, BOX HILL NORTH L.G.A. THE HILLS	COVER SHEET DRAWN: K.GAO DESIGNED: K.GAO REVIEWED: V.VIKSNE VERIFIED: D.SHEATHER SCALE: - DATE: - DATE OF ISSUE: 2/2/2018		SHEET 1 OF 12 WAC 4/23645/H3
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GENERAL NOTES

- THIS DRAWING SET SHALL BE READ IN CONJUNCTION WITH THE HILLS SHIRE COUNCIL STANDARDS, FLOW SYSTEMS SUPPLEMENTARY MANUAL TO W.S.A.A. & OTHER ASSOCIATED DRAWINGS AND TECHNICAL SPECIFICATIONS.
- ALL PRESSURE SEWER LATERALS & RECYCLED WATER PROPERTY SERVICE CONNECTIONS CROSSING CARRIAGEWAYS SHALL BE INSTALLED WITHIN INDIVIDUAL SERVICE CONDUITS.
- THE CONTRACTOR SHALL LOCATE AND IDENTIFY ALL UNDERGROUND SERVICES PRIOR TO COMMENCEMENT OF WORKS AND SHALL REPAIR ANY DAMAGE CAUSED TO SUCH SERVICES DURING THE COURSE OF WORKS. ANY SERVICE LOCATIONS ON THE FOLLOWING DRAWINGS ARE INDICATIVE ONLY.
- MAKE SMOOTH TRANSITION TO EXISTING WORKS (i.e. ROAD PAVEMENTS AND FOOTPATHS TO P.C.A. AND SUPERINTENDENTS REQUIREMENTS.
- SUITABLE PROTECTION OF EXISTING ROAD PAVEMENT, KERB AND GUTTER, FOOTPATHS AND ANY EXISTING FEATURES SHALL BE PROVIDED UNTIL THE CONSTRUCTION WORKS ARE COMPLETED.

CLEARANCES BETWEEN PIPELINES & UNDERGROUND SERVICES

Utility (Existing or proposed service)	Minimum horizontal clearance mm		Minimum vertical clearance ¹ mm
	New main size		
	≤DN200	>DN200	
Water mains ¹ > DN375	600	600	300
Water mains ² ≤ DN375	300 ⁴	600	150
Gas mains	300 ⁴	600	150
Telecommunication conduits and cables	300 ⁴	600	150
Electricity conduits and cables	500	1000	225 ⁴
Stormwater drains	300 ⁴	600	150 ⁴
Sewers - gravity	1000 ⁴ / 600	1000 ⁴ / 600	500 ⁴
Sewers - pressure and vacuum	600	600	300 ⁴
Kerbs	150	600 ⁴	150 (where possible)

NOTES:
 1. Vertical clearances apply where pipelines cross other utility services, except in the case of water/sewer mains when a vertical separation shall always be maintained, even when the pressure sewer and water main are parallel. The pressure sewer should always be located below the water main to minimise the possibility of backflow contamination in the event of a pressure main break.
 2. Water mains include mains supplying both potable and recycled water.
 3. For areas with existing water reticulation, clearances can be further reduced to 600mm with the approval of the water authority.
 4. Clearances can be further reduced to 150mm for distances up to 2m when passing installations such as poles, pits, and small structures, providing the structures is not destabilised in the process.
 5. Clearances from kerbs shall be measured from the nearest joint of the kerb. For water/sewer <DN375, clearances from kerbs can be progressively reduced until the minimum of 150mm is reached for water/sewer <DN200.
 6. Where a parallel sewer is of minimum vertical clearance (over the water main 1500mm), maintain a minimum horizontal of 1000mm. This minimum clearance can be progressively reduced to 600mm as the vertical clearance is increased to 750mm.
 7. For pressure sewer laterals, minimum vertical clearances may be reduced to 150mm providing there is no joint in the lateral within 500mm of either side of the service being crossed.
 8. An additional clearance from high voltage electrical installations should be maintained above the conduits or cables to allow for a protective barrier and marking to be provided.
 9. Water mains should always cross over sewers and stormwater drains. For cases where this is no alternative and the main must cross under the sewer, the design shall nominate an appropriate protection treatment (joint-free in the vicinity of the sewer).

⁴ SHOULD THE RECOMMENDED CLEARANCES NOT BE ACHIEVED, NOTIFICATION SHALL BE CONVEYED TO THE BOX HILL WATER REPRESENTATIVE IN WRITING.

PRESSURE SEWER PIPE SCHEDULE

SIZE	TYPE	CLASS	LENGTH
DN75	PE100	PN16	144.1
DN63	PE100	PN16	240.9
DN50	PE100	PN16	402.9
DN40	PE100	PN16	265
		TOTAL	1,052.9

RECYCLED WATER PIPE SCHEDULE

SIZE	TYPE	CLASS	LENGTH
DN200	PE100	PN16	197.7
DN150	D.I.C.L.	PN35	25.4
DN150	m.P.V.C.	PN16	2
DN100	m.P.V.C.	PN16	758.1
		TOTAL	983.2

FLOW SYSTEMS STANDARD DRAWINGS CAN BE FOUND AT THE FOLLOWING ADDRESS:

<https://askus.flowsystems.com.au/hc/en-us/articles/210615383--Standard-Drawings>

SEWER NOTES

- ALL WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN DRAWINGS, FLOW SYSTEMS SUPPLEMENTARY MANUAL TO W.S.A.A., PRESSURE SEWERAGE CODE OF AUSTRALIA WSA 07-2007 VERSION 1.1 & POLYETHYLENE PIPELINE CODE WSA 01-2004.
- ALL EQUIPMENT, MATERIALS & ACCESSORIES USED IN THIS CONTRACT SHALL BE NEW & SHALL COMPLY WITH FLOW SYSTEMS REQUIREMENTS. BUTT FUSION FITTINGS DENOTED HEREWITH HAVE BEEN DERIVED FROM THE GEORG FISCHER PIPING SYSTEMS BUTT FUSION PRODUCT RANGE. ELECTROFUSION FITTINGS DENOTED HEREWITH HAVE BEEN DERIVED FROM THE PLASSON "POLYETHYLENE PIPING SYSTEMS" PRODUCT RANGE.
- ALL SERVICES SHOWN ARE INDICATIVE ONLY. A CURRENT SERVICES SEARCH & SITE CHECK OF ALL EXISTING SERVICES WILL BE REQUIRED PRIOR TO COMMENCEMENT OF ANY WORKS. THE CONTRACTOR IS TO DETERMINE LEVELS & LOCATIONS EXISTING SERVICES IN THE VICINITY OF THE CONSTRUCTION SITE AND ANY CONSTRUCTED STRUCTURES FOR PROPOSED SERVICES, SUCH AS DUCTING FOR WATER OR ELECTRICITY WITHIN THE SUBDIVISION. THE CONTRACTOR MUST ENSURE ALL SERVICES ARE LOCATED BY THE RELEVANT AUTHORITY PRIOR TO COMMENCEMENT OF WORKS.
- PRESSURE SEWER MAINS SHALL BE BLACK POLYETHYLENE (PE100 PN16) WITH A CREAM STRIPE AS PER WSA 07-2007 & FLOW SYSTEMS SUPPLEMENTARY MANUAL TO W.S.A.A.
- ALL POLYETHYLENE MAINS ≤DN200 SHALL BE JOINED BY ELECTROFUSION TECHNIQUES IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS. ALL POLYETHYLENE MAINS >DN200 SHALL BE JOINED BY BUTTWELD TECHNIQUES IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS
- MAIN TO BE LAID GENERALLY AS INDICATED IN SERVICE ALLOCATION DIAGRAMS. INSTRUCTION NOTES SHALL TAKE PRECEDENCE OVER DIAGRAMS WHERE PROVIDED. 600mm HORIZONTAL CLEARANCE TO BE MAINTAINED BETWEEN ALL SEWER & WATER MAINS. MINIMUM PIPE COVER SHALL BE 800mm IN FOOTWAYS & FOR ROADWAYS. MAXIMUM PIPE COVER SHALL GENERALLY BE 15m, WHERE COVER FOR A TRENCHED INSTALLATION EXCEEDS 15m, BUT LESS THAN 2.5m, THE MAIN AS A MINIMUM SHALL BE EMBEDDED IN STABILISED SAND. THE CONTRACTOR SHALL ENSURE THAT ALL PRESSURE SEWER & RECYCLED WATER MAINS HAVE SUFFICIENT VERTICAL SEPARATION AS PER THE CLEARANCE TABLE ADJACENT.
- MAINS CROSSING UNDER EXISTING DRIVEWAYS (SEALED, PAVED OR DECORATIVE) SHALL BE CONDUCTED BY UNDER BORING ONLY UNLESS PERMISSION IS GRANTED BY THE AFFECTED PROPERTY OWNER.
- MAINS WITHIN 2m OF ELECTRICITY OR POWER POLES SHALL BE CONDUCTED BY BORING TECHNOLOGY (UNLESS AGREED TO BY THE BOX HILL WATER REPRESENTATIVE).
- ALL PIPE BEDDING MATERIAL SHALL COMPLY WITH WSAA PRODUCT SPECIFICATION WSA-PS350 & WSA-PS351.
- ALL BENDS SHALL BE ELECTROFUSION OR BUTTWELD SWEEP BENDS. FABRICATED BENDS SHALL NOT BE USED IN LIEU OF KNUCKLE ELBOWS ARE NOT PERMITTED.
- MINIMUM BENDING RADIUS FOR PN16 PE100 (SDR11) SHALL BE 20 x DN (ie. DN400-R8.0m, DN250-R5.0m, DN200- R4.0m, DN160-R3.2m, DN125-R2.5m, DN90-R1.8m, DN75-R1.5m, DN63-R1.3m, DN50- R1.0m, DN40- R0.8m)
- ALL HOUSE SERVICE LATERALS SHALL BE DN40 (PE100 PN16).
- FLUSHING PITS SHALL CONFORM WITH FLOW SYSTEMS STANDARD DRAWINGS. REFER TO FLOW SYSTEMS WEBSITE FOR CURRENT VERSION. SMALL MAINS (<DN110) http://flowsystems.com.au/governance/Land_Housing/PSS-1017A-FS.pdf LARGE MAINS (>DN110) http://flowsystems.com.au/governance/Land_Housing/PSS-1017B-FS.pdf
- LOCALISED DEEPENING OF MAINS MAY BE REQUIRED TO FACILITATE AIR VALVE INSTALLATION. THE CONTRACTOR SHALL ENSURE THAT THE AIR VALVE OFFTAKE IS LOCATED AT A HIGH POINT (NATURAL OR ARTIFICIAL) IN THE MAIN (i.e. MAIN SHALL GRADE DOWNWARDS EITHER SIDE OF THE AIR VALVE).
- DETECTABLE MARKING TAPE SHALL BE LAID ON TOP OF THE PIPE EMBEDMENT MATERIAL BEFORE BACKFILLING & CONNECTED TO SURFACE VALVES.
- ALL SURFACE FITTINGS LOCATED IN TRAFFICABLE AREAS (ie ROADWAYS, PATHS etc) SHALL HAVE HEAVY DUTY SURROUNDS INSTALLED.
- DURING CONSTRUCTION, ALL OPEN ENDS OF PIPE SHALL BE CAPPED OFF TO PREVENT ENTRY OF FOREIGN MATTER.
- ALL VALVES SHALL BE RESILIENT SEATED SLUICE VALVES (CLOCKWISE CLOSING), SHALL BE RESTRAINED IN ACCORDANCE WITH WAT-1207 & SHALL COMPLY WITH FLOW SYSTEMS STANDARD DRAWING PSS-1015-FS.
- ALL MAINS SHALL BE TESTED IN ACCORDANCE WITH WSA 07-2007 Version 1.1.
- FOR LOTS WITH TANKS IN THE REAR, 1 x 25mm INSTRUMENTATION CONDUIT (ORANGE) AND 1 x 25mm ELECTRICAL CONDUIT (ORANGE) (WITH DRAW WIRES) SHALL BE INSTALLED FROM THE COLLECTION TANK TO WATER METERS. THE CONDUITS SHALL BE LAID IN A COMMON TRENCH WITH THE SEWERAGE AND MAINTAIN A MINIMUM HORIZONTAL CLEARANCE OF 400mm.
- THE CONTRACTOR SHALL PROVIDE BOX HILL WATER WITH MINIMUM OF 7 DAYS NOTICE IN WRITING OF INTENT TO CONNECT NEW MAINS TO EXISTING INFRASTRUCTURE. CONNECTIONS ARE NOT PERMITTED UNTIL COMPLIANT TEST RESULTS HAVE BEEN PROVIDED & CONFIRMATION IS PROVIDED BY THE BOX HILL WATER REPRESENTATIVE.
- UPON COMPLETION OF WORKS, ALL SURFACES MUST BE RESTORED AS CLOSE AS POSSIBLE, TO THE CONDITION THAT EXISTED PRIOR TO COMMENCEMENT OF WORK.
- PERMISSION OF ENTRY MUST BE OBTAINED BY THE CONTRACTOR FROM THE OWNER/OCCUPIER PRIOR TO COMMENCEMENT OF WORK IN PRIVATE PROPERTY.
- BURIED FITTINGS ARE NOT TO BE BACKFILLED UNTIL W.A.C. DETAILS HAVE BEEN OBTAINED & APPROVAL FOR BACKFILLING GIVEN BY THE BOX HILL WATER REPRESENTATIVE. THE CONTRACTOR SHALL PROVIDE M.G.A. COORDINATED WORK-AS-COINSTRUCTED INFORMATION REGARDING THE INSTALLATION OF ALL BURIED FITTINGS.
- THE MINIMUM NUMBER OF COMPACTION TESTS REQUIRED TO SATISFY THE PRESSURE SEWER CODE OF AUSTRALIA (CLAUSE 21.3.4) ARE:
 TRAFFICABLE:
 PIPE EMBEDMENT ZONE: NIL TRENCH FILL ZONE: 1 TEST / CROSSING (3 Tests)
 NON-TRAFFICABLE:
 PIPE EMBEDMENT ZONE: NIL TRENCH FILL ZONE: 1 TEST / 100m (8 Tests)
- BOUNDARY KITS (COMPLETE) SHALL BE NOV SUPPLIED (NOV PSS-BK4). NOV 900L COLLECTION TANK (PSS-VMS150-PRIL) SHALL BE INSTALLED WITH BOUNDARY KIT (REFER FLOW SYSTEMS STANDARD DRAWINGS PSS-1112-FS & PSS-1113-FS). PUMP TO BE INSTALLED BY OTHERS.
- ALL MAINS (UP TO THE BOUNDARY KIT) SHALL BE PRESSURE TESTED TO 1600 kPa.
- ALL MAINS SHALL BE FLUSHED WITH WATER TO REMOVE ANY DEBRIS PRIOR TO COMMISSIONING.
- SURFACE IDENTIFICATION MARKERS ARE TO BE PROVIDED TO BOX HILL WATER REQUIREMENTS.
- ROPE OFF ALL PRESSURE SEWER UNITS & FLUSHING POINTS TO LIMIT DAMAGE DURING CONSTRUCTION.
- PRESSURE TRANSMITTER TO BE MEASUREX MRB21 GENERAL PURPOSE TRANSMITTER WITH MICROSPIDER LOGGING TELEMETRY AND ALARM PER FLOW SYSTEMS REQUIREMENTS.
- WORK-AS-COINSTRUCTED DOCUMENTATION SHALL BE PROVIDED BY THE CONTRACTOR STRICTLY IN ACCORDANCE WITH THE FLOW SYSTEMS Q.A. SUBMISSION CHECKLIST.

RECYCLED WATER NOTES

WORK-AS-COINSTRUCTED

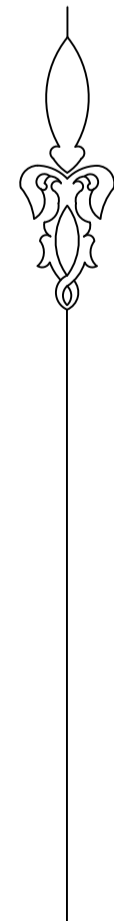
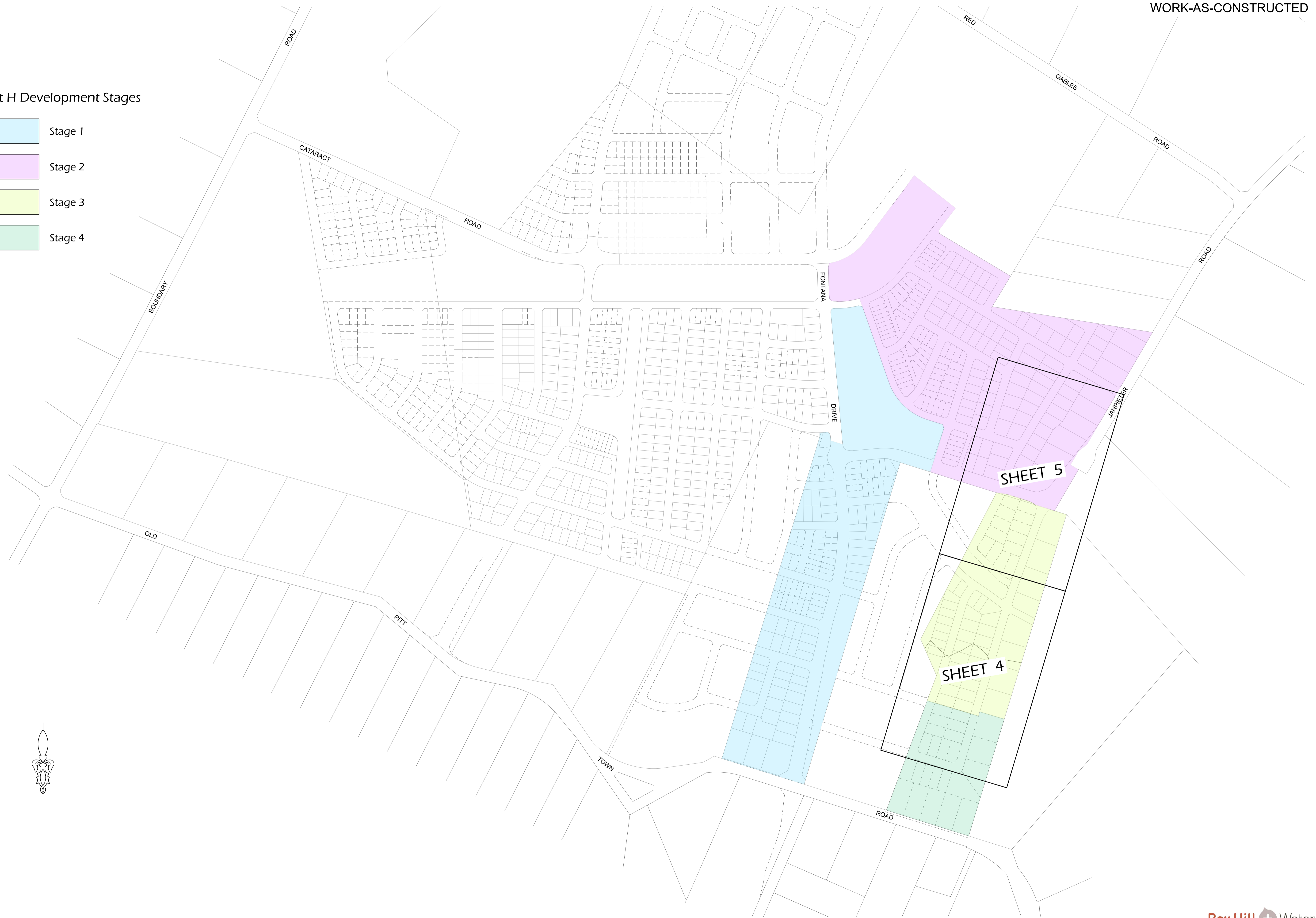
- ALL WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN DRAWINGS, FLOW SYSTEMS SUPPLEMENTARY MANUAL TO W.S.A.A. & WSA 03-2011-3.1 (SYDNEY WATER WATER EDITION - 2014).
- POTABLE WATER SHALL BE UTILISED FOR FIRE FIGHTING PURPOSES.
- ALL EQUIPMENT, MATERIALS & ACCESSORIES USED IN THIS CONTRACT SHALL BE NEW, SHALL CONFORM WITH THE APPROPRIATE CURRENT AUSTRALIAN STANDARDS & SHALL COMPLY WITH FLOW SYSTEMS REQUIREMENTS.
- ALL SERVICES SHOWN ARE INDICATIVE ONLY. A CURRENT SERVICES SEARCH & SITE CHECK OF ALL EXISTING SERVICES WILL BE REQUIRED PRIOR TO COMMENCEMENT OF ANY WORKS. THE CONTRACTOR IS TO DETERMINE LEVELS & LOCATIONS EXISTING SERVICES IN THE VICINITY OF THE CONSTRUCTION SITE AND ANY CONSTRUCTED STRUCTURES FOR PROPOSED SERVICES, SUCH AS DUCTING FOR WATER OR ELECTRICITY WITHIN THE SUBDIVISION. THE CONTRACTOR MUST ENSURE ALL SERVICES ARE LOCATED BY THE RELEVANT AUTHORITY PRIOR TO COMMENCEMENT OF WORKS.
- THE CONTRACTOR SHALL VERIFY WITH THE SITE SURVEYOR THE POSITION & LEVEL OF ALL EXISTING & PROPOSED BOUNDARIES PERTINENT TO THE INFRASTRUCTURE INSTALLATIONS.
- MAINS TO BE LAID GENERALLY AS INDICATED IN SERVICE ALLOCATION DIAGRAMS. INSTRUCTION NOTES SHALL TAKE PRECEDENCE OVER DIAGRAMS WHERE PROVIDED. 600mm HORIZONTAL CLEARANCE TO BE MAINTAINED BETWEEN ALL SEWER & WATER MAINS. MINIMUM PIPE COVER SHALL BE 600mm IN FOOTWAYS (TYPE B EMBEDMENT- WAT-1202-VI) & FOR ROADWAYS (TYPE L EMBEDMENT- WAT-1204-VI). MAXIMUM PIPE COVER SHALL GENERALLY BE 15m, WHERE COVER FOR A TRENCHED INSTALLATION EXCEEDS 15m, BUT IS LESS THAN 2.5m, THE MAIN AS A MINIMUM SHALL BE EMBEDDED IN STABILISED SAND. THE CONTRACTOR SHALL ENSURE THAT ALL RECYCLED WATER & PRESSURE SEWER MAINS HAVE SUFFICIENT VERTICAL SEPARATION AS PER THE CLEARANCE TABLE ADJACENT.
- ALL RECYCLED WATER MAINS SHALL BE LILAC mPVC (PN16). DIFFERENTIATION OF POTABLE & RECYCLED WATER SYSTEMS SHALL BE AS PER TABLE 4.1 WSA03-2011 WITH BOTH SERVICES BEING CLASSIFIED AS WATERMAINS. RECYCLED WATER MAINS SHALL ALWAYS BE LOWER THAN POTABLE MAINS. 150mm VERTICAL CLEARANCE BETWEEN POTABLE WATER & RECYCLED WATER MAINS SHALL BE PROVIDED.
- MAXIMUM JOINT DEFLECTION SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
- LOCALLY LOWER PIPEWORK IN VICINITY OF STOP VALVES TO ENSURE SUFFICIENT COVER IS MAINTAINED OVER VALVES. LOWERING OF PIPEWORK SHALL ACHIEVED OVER A NUMBER OF PIPE LENGTHS EITHER SIDE OF VALVES TO ELIMINATE ANY SHARP DEFLECTIONS.
- ALL PIPE BEDDING MATERIAL SHALL COMPLY WITH WSAA PRODUCT SPECIFICATION PS-350, 368 & 369. GEOTECHNICAL CONDITIONS SHOULD BE ASSESSED DURING CONSTRUCTION BY THE CONTRACTOR IN ASSOCIATION WITH THE BOX HILL WATER REPRESENTATIVE TO DETERMINE THE NEED TO MODIFY EMBEDMENT/TRENCHFILL TYPE & THE ROAD FOR TRENCH DRAINAGE/BULKHEADS.
- DURING CONSTRUCTION, ALL OPEN ENDS OF PIPES SHALL BE CAPPED OFF TO PREVENT ENTRY OF FOREIGN MATTER.
- HYDRANTS, STOP VALVES & ALL OTHER FITTINGS SHALL BE THE SAME SIZE AS THROUGH WATER MAIN & ANTICLOCKWISE CLOSING.
- HYDRANTS MUST NOT BE INSTALLED IN POTENTIAL DRIVEWAY LOCATIONS. HYDRANTS & WATER SERVICES SHALL BE NOMINALLY AT LEAST 5m FROM EACH BOUNDARY OR ON BOUNDARIES. WHERE POSSIBLE, FITTINGS SHALL BE LOCATED BEHIND KERB INLET PITS.
- THRUST BLOCKS SHALL BE INSTALLED IN ACCORDANCE WITH WAT-1205.
- ALL PROPERTY (MAIN TO METER) SERVICE CONNECTIONS SHALL BE CONSTRUCTED STRICTLY IN ACCORDANCE FLOW SYSTEMS REQUIREMENTS. REFER TO FLOW SYSTEMS WEBSITE FOR CURRENT VERSIONS. SINGLE SERVICE http://flowsystems.com.au/governance/Land_Housing/WAT-1854-FS.pdf DUAL SERVICE http://flowsystems.com.au/governance/Land_Housing/WAT-1855-FS.pdf
- PROPERTY SERVICE CONNECTIONS SHALL BE FLUSHED & LOCKED (BY THE BOX HILL WATER REPRESENTATIVE) FOLLOWING SUCCESSFUL PRESSURE TESTING.
- SURFACE FITTINGS LOCATED IN TRAFFICABLE AREAS (ie ROADWAYS, PATHS etc) SHALL HAVE HEAVY DUTY SURROUNDS INSTALLED.
- ALL MAINS SHALL BE TESTED IN ACCORDANCE WITH WSA 03-2011-3.1 (SYDNEY WATER EDITION - 2014).
- ALL MAINS SHALL BE FLUSHED WITH WATER TO REMOVE ANY DEBRIS PRIOR TO COMMISSIONING.
- WATER QUALITY TESTING SHALL BE IN ACCORDANCE WITH WSA 03-2011-3.1 (SYDNEY WATER EDITION - 2014- CLAUSE 19.7).
- THE CONTRACTOR SHALL PROVIDE BOX HILL WATER WITH MINIMUM OF 7 DAYS NOTICE IN WRITING OF INTENT TO CONNECT NEW MAINS TO EXISTING INFRASTRUCTURE. CONNECTIONS ARE NOT PERMITTED UNTIL COMPLIANT TEST RESULTS HAVE BEEN PROVIDED & CONFIRMATION IS PROVIDED BY THE BOX HILL WATER REPRESENTATIVE.
- UPON COMPLETION OF WORKS, ALL SURFACES MUST BE RESTORED AS CLOSE AS POSSIBLE, TO THE CONDITION THAT EXISTED PRIOR TO COMMENCEMENT OF WORK.
- PERMISSION OF ENTRY MUST BE OBTAINED BY THE CONTRACTOR FROM THE OWNER/OCCUPIER PRIOR TO COMMENCEMENT OF WORK IN PRIVATE PROPERTY.
- BURIED FITTINGS ARE NOT TO BE BACKFILLED UNTIL W.A.C. DETAILS HAVE BEEN OBTAINED & APPROVAL FOR BACKFILLING GIVEN BY THE BOX HILL WATER REPRESENTATIVE. THE CONTRACTOR SHALL PROVIDE M.G.A. COORDINATED WORK-AS-COINSTRUCTED INFORMATION REGARDING THE INSTALLATION OF ALL BURIED FITTINGS.
- THE MINIMUM NUMBER OF COMPACTION TESTS REQUIRED TO SATISFY THE WATER SUPPLY CODE OF AUSTRALIA ARE:
 TRAFFICABLE:
 PIPE EMBEDMENT ZONE: NIL TRENCH FILL ZONE: 1 TEST / CROSSING (3 Tests)
 NON-TRAFFICABLE:
 PIPE EMBEDMENT ZONE: NIL TRENCH FILL ZONE: 1 TEST / 100m (10 Tests)
 TESTING SHALL BE IN ACCORDANCE WITH TABLE 16.1 & 17.1 OF THE WATER SUPPLY CODE OF AUSTRALIA
- SURFACE IDENTIFICATION MARKERS ARE TO BE PROVIDED TO BOX HILL WATER REQUIREMENTS.
- PRESSURE TRANSMITTER TO BE MEASUREX MRB21 GENERAL PURPOSE TRANSMITTER WITH MICROSPIDER LOGGING TELEMETRY AND ALARM PER FLOW SYSTEMS REQUIREMENTS.
- WORK-AS-COINSTRUCTED DOCUMENTATION SHALL BE PROVIDED BY THE CONTRACTOR STRICTLY IN ACCORDANCE WITH THE FLOW SYSTEMS Q.A. SUBMISSION CHECKLIST.



ROSE ATKINS RIMMER (Infrastructure) Pty. Ltd. WATER RELATED INFRASTRUCTURE DESIGN AND MANAGEMENT 142 SUNNYHOLT ROAD, BLACKTOWN P.O. BOX 6745, BLACKTOWN N.S.W. 2148 PH: (02) 9853 0200 FAX: (02) 9671 7399				GENERAL NOTES SHEET 2 OF 12 WAC			
DRAWN: K.GAO SCALE: -	REVISIONS: K.GAO DATE: -	CHECKED: V.VIKSNE DATE: -	DESIGNED: D.SHEATHER DATE OF ISSUE: 2/2/2018	4/23645/H3			

Precinct H Development Stages

- Stage 1
- Stage 2
- Stage 3
- Stage 4

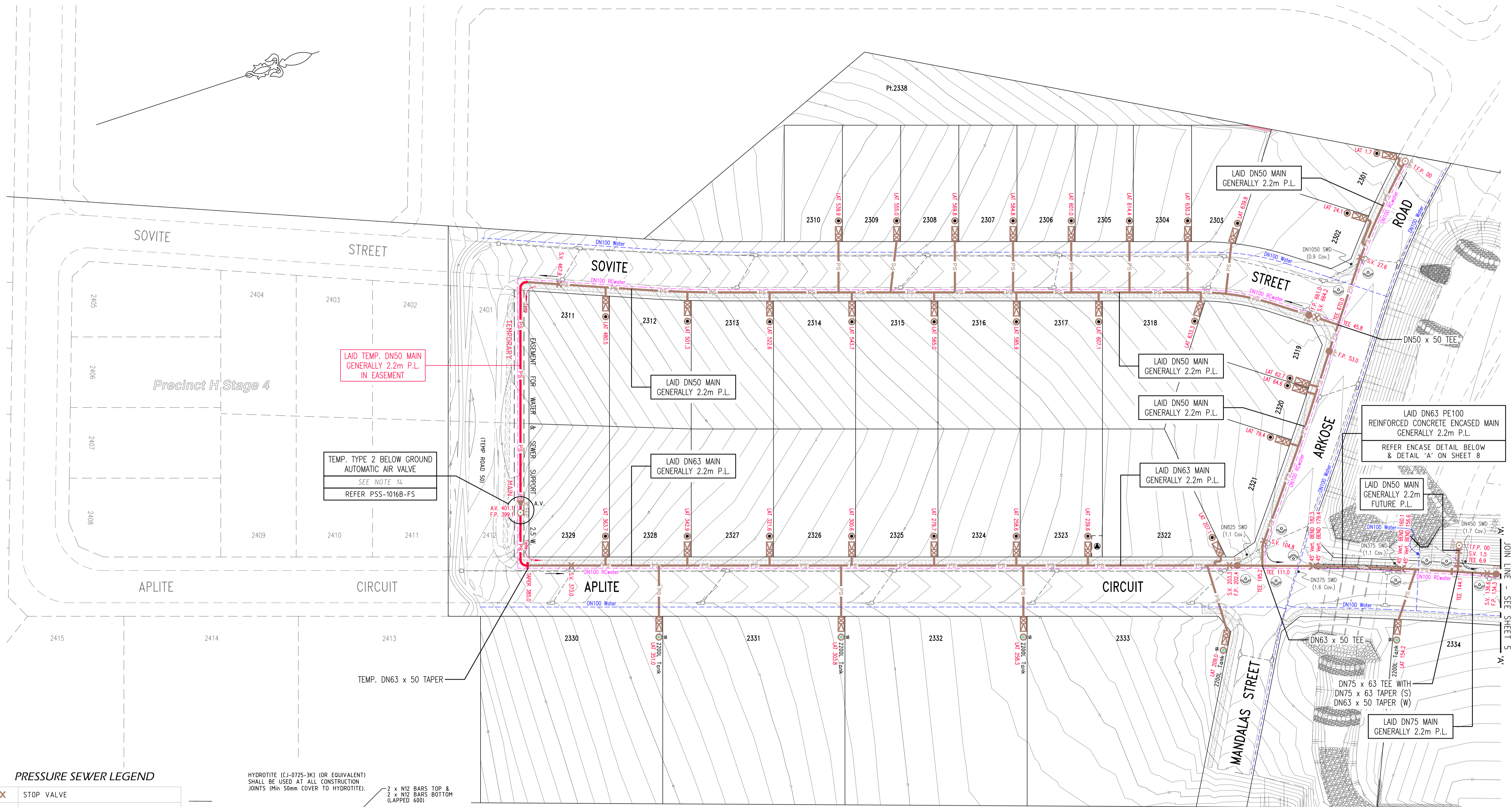


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 WATER RELATED INFRASTRUCTURE DESIGN AND MANAGEMENT
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PRESSURE SEWER GENERAL ARRANGEMENT			
DRAWN	DESIGNED	REVIEWED	VERIFIED
K.GAO	K.GAO	V.VIKSNE	D.SHEATHER
SCALE	DATUM	BASE REFERENCE	DATE OF ISSUE
-	-	-	2/2/2018

SHEET 3 OF 12
 WAC
 4/23645/H3



Laid TEMP. DN50 MAIN
GENERALLY 2.2m P.L.
IN EASEMENT

TEMP. TYPE 2 BELOW GROUND
AUTOMATIC AIR VALVE
SEE NOTE 14
REFER PSS-1016B-FS

Laid DN50 MAIN
GENERALLY 2.2m P.L.

Laid DN63 MAIN
GENERALLY 2.2m P.L.

Laid DN50 MAIN
GENERALLY 2.2m P.L.

Laid DN63 MAIN
GENERALLY 2.2m P.L.

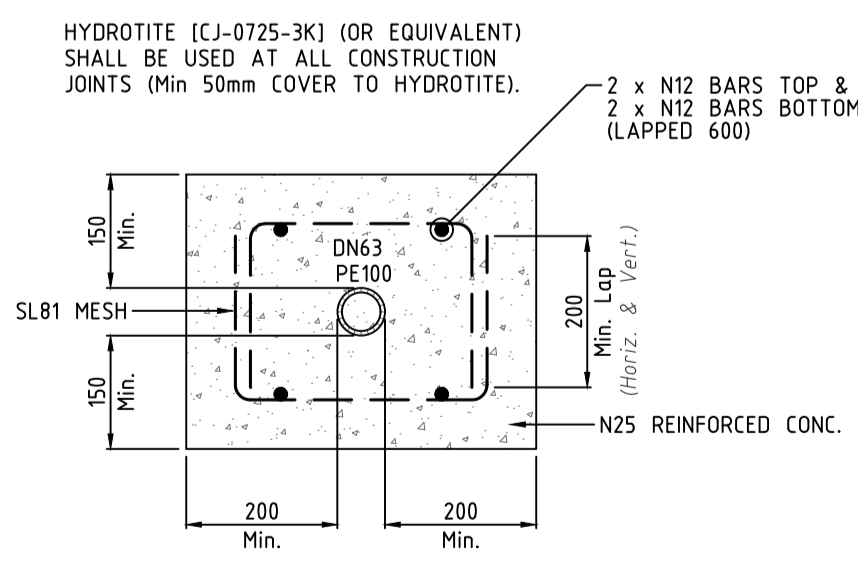
Laid DN63 PE100
REINFORCED CONCRETE ENCASED MAIN
GENERALLY 2.2m P.L.
REFER ENCASE DETAIL BELOW
& DETAIL 'A' ON SHEET 8

Laid DN50 MAIN
GENERALLY 2.2m
FUTURE P.L.

TEMP. DN63 x 50 TAPER

PRESSURE SEWER LEGEND

	STOP VALVE
	STOP VALVE (NORMALLY CLOSED)
	TAPER
	FLUSHING POINT
	TEMPORARY FLUSHING POINT
	PROPERTY BOUNDARY KIT
	COLLECTION TANK (STANDARD)
	COLLECTION TANK (WITH 300mm RISER)
	COLLECTION TANK (WITH 2x300mm RISERS)
	CONTROL/ALARM PANEL
	ELECTRICAL CABLES
	FLOW METER
	AIR VALVE
	PRESSURE MONITORING POINT
	REMOTE MONITORED PRESSURE TRANSDUCER
	VERTICAL DEFLECTION



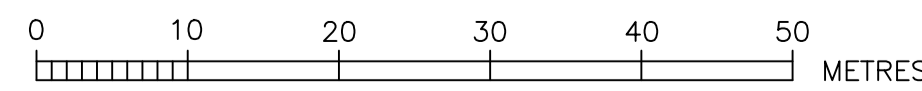
DN63 PE100 ENCASEMENT DETAIL

Scale 1:10

DENOTES LAY MAIN UNDER SERVICE
 DENOTES LAY MAIN OVER SERVICE

AREAS HATCHED THUS NOT DRAINED.

ESMT FOR PADMOUNT
SUBSTATION 2.75 W.



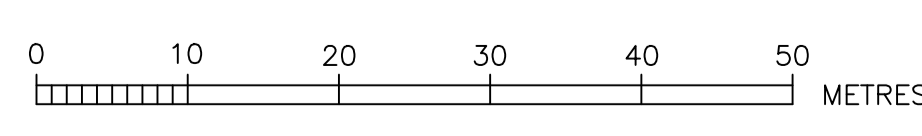
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PRESSURE SEWER DETAIL PLAN 1				SHEET 4 OF 12	WAC
DESIGNED BY	DRAWN BY	CHECKED BY	DATE	DATE OF ISSUE	AS NO.
K.GAO	K.GAO	V.VIKSNE	A.H.D.	2/2/2018	4/23645/H3



PRESSURE SEWER LEGEND

X	STOP VALVE
⊗	STOP VALVE (NORMALLY CLOSED)
	TAPER
●	FLUSHING POINT
○	TEMPORARY FLUSHING POINT
⊠	PROPERTY BOUNDARY KIT
⊙	COLLECTION TANK (STANDARD)
⊙ _{SR}	COLLECTION TANK (WITH 300mm RISER)
⊙ _{2R}	COLLECTION TANK (WITH 2x300mm RISERS)
⊠	CONTROL/ALARM PANEL
—	ELECTRICAL CABLES
▶	FLOW METER
▶	AIR VALVE
⊙	PRESSURE MONITORING POINT
⊙	REMOTE MONITORED PRESSURE TRANSDUCER
⌒	VERTICAL DEFLECTION



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PRESSURE SEWER DETAIL PLAN 2				SHEET 5 OF 12	WAC
DRAWN: K.GAO	DESIGNED: K.GAO	REVIEWED: V.VIKSNE	VERIFIED: D.SHEATHER	JOB No. 4/23645/H3	
SCALE: 1:500	DATUM: A.H.D.	DATE OF ISSUE: 2/2/2018			

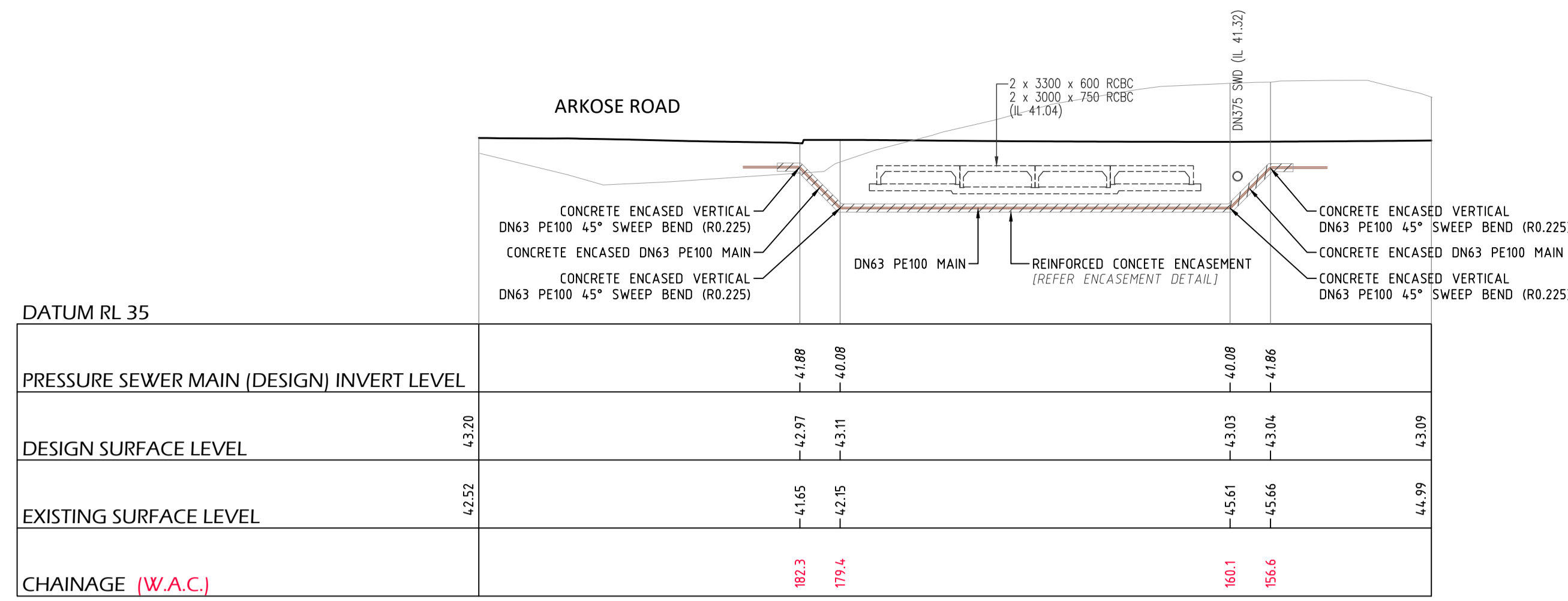


PRESSURE SEWER COLLECTION TANK LEVEL DETAILS								
BOX HILL DEVELOPMENT - PRECINCT H [STAGE 3]								
LOT NUMBER	COLLECTION TANK LOCATION	TANK SIZE	PFS/LAT TANK LOCATION	QUANTITY OF DRYWELL RISERS REQUIRED	TOP OF COLLECTION TANK	DESIGN SANITARY DRAINAGE INVERT LEVEL	TOP OF COLLECTION TANK LID*	CALCULATED SANITARY DRAINAGE INVERT LEVEL
	[FRONT / REAR]	[900L / 2200L]			[Design R.L.]	[Design R.L.]	[Work-As-Constructed]	[Work-As-Constructed]
2301	FRONT	900L	41.88		41.88	40.73	42.03	40.69
2302	FRONT	900L	42.42		42.42	41.27	42.57	41.23
2303	FRONT	900L	42.88		42.88	41.73	43.00	41.66
2304	FRONT	900L	43.18		43.18	42.03	43.34	42.00
2305	FRONT	900L	43.59		43.59	42.44	43.75	42.41
2306	FRONT	900L	44.02		44.02	42.87	44.19	42.85
2307	FRONT	900L	44.45		44.45	43.30	44.59	43.25
2308	FRONT	900L	44.88		44.88	43.73	44.95	43.61
2309	FRONT	900L	45.34		45.34	44.20	45.50	44.16
2310	FRONT	900L	45.85		45.90	44.75	45.99	44.65
2311	FRONT	900L	48.24		48.30	47.15	48.43	47.09
2312	FRONT	900L	47.41		47.50	46.35	47.58	46.24
2313	FRONT	900L	46.57		46.60	45.45	46.70	45.36
2314	FRONT	900L	45.75		45.80	44.65	45.89	44.55
2315	FRONT	900L	45.06		45.10	43.95	45.19	43.85
2316	FRONT	900L	44.45		44.45	43.30	44.57	43.23
2317	FRONT	900L	43.85		43.85	42.70	43.97	42.63
2318	FRONT	900L	43.13		43.13	41.98	43.30	41.96
2319	FRONT	900L	42.78		42.78	41.63	42.89	41.55
2320	FRONT	900L	42.82		42.82	41.67	42.96	41.62
2321	FRONT	900L	42.99		43.10	41.95	43.10	41.76
2322	FRONT	900L	43.78		43.78	42.63	43.92	42.58
2323	FRONT	900L	44.63		44.63	43.48	44.72	43.38
2324	FRONT	900L	45.18		45.18	44.03	45.37	44.03
2325	FRONT	900L	45.73		45.73	44.58	45.88	44.54
2326	FRONT	900L	46.27		46.27	45.12	46.38	45.04
2327	FRONT	900L	46.82		46.82	45.67	46.92	45.58
2328	FRONT	900L	47.38		47.42	46.27	47.45	46.11
2329	FRONT	900L	48.10		48.15	47.00	48.20	46.86
2330	FRONT	2200L	47.59	1	47.60	46.31	47.73	46.25
2331	FRONT	2200L	46.33	1	46.33	45.04	46.51	45.03
2332	FRONT	2200L	45.14	1	45.14	43.85	45.29	43.81
2333	FRONT	2200L	43.26	1	43.26	41.97	43.32	41.84
2334	FRONT	2200L	43.20	1	43.25	41.96	43.32	41.84
2335	FRONT	2200L	43.62	1	43.65	42.36	43.76	42.28
2336	FRONT	2200L	44.06	1	44.10	42.81	44.24	42.76

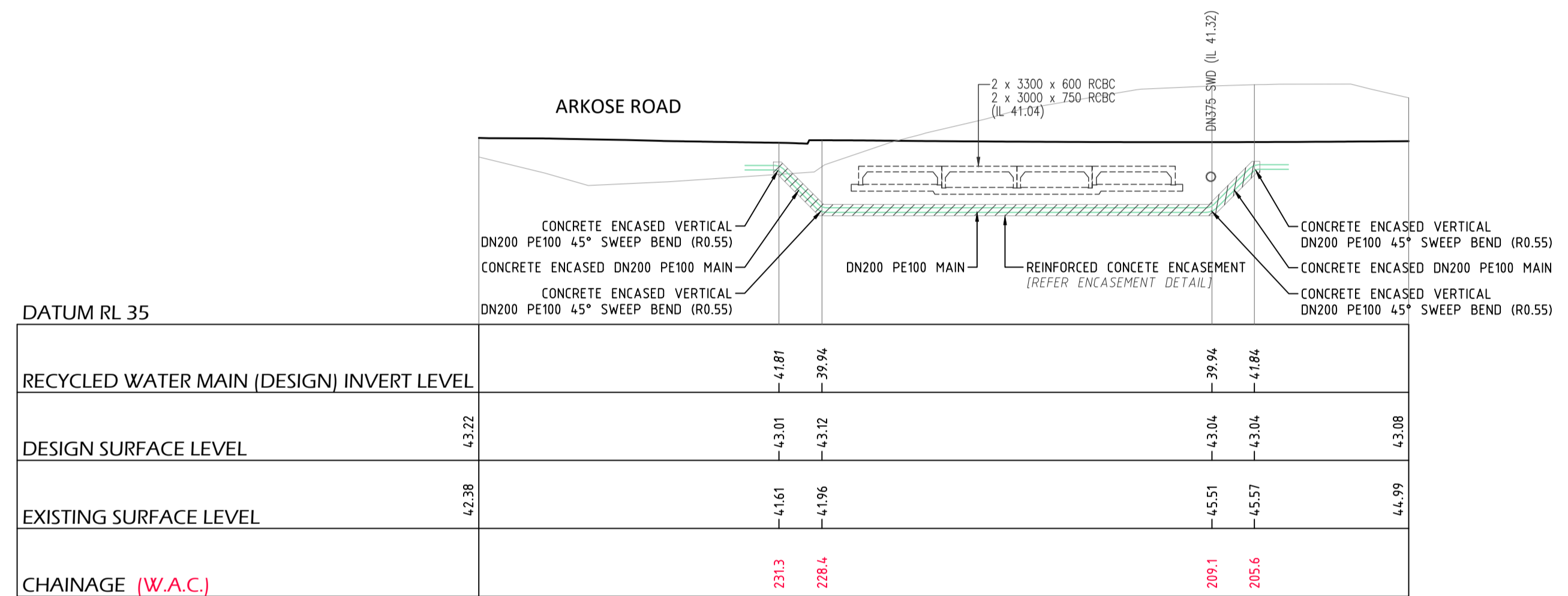
* COLLECTION TANK LEVEL PROVIDED TO G.P.S. ACCURACY ONLY. THE BUILDER IS REQUIRED TO CONFIRM DRAINAGE CONSTRAINTS PRIOR TO MAKING CONNECTION TO TANK.

COLLECTION TANK NOTES

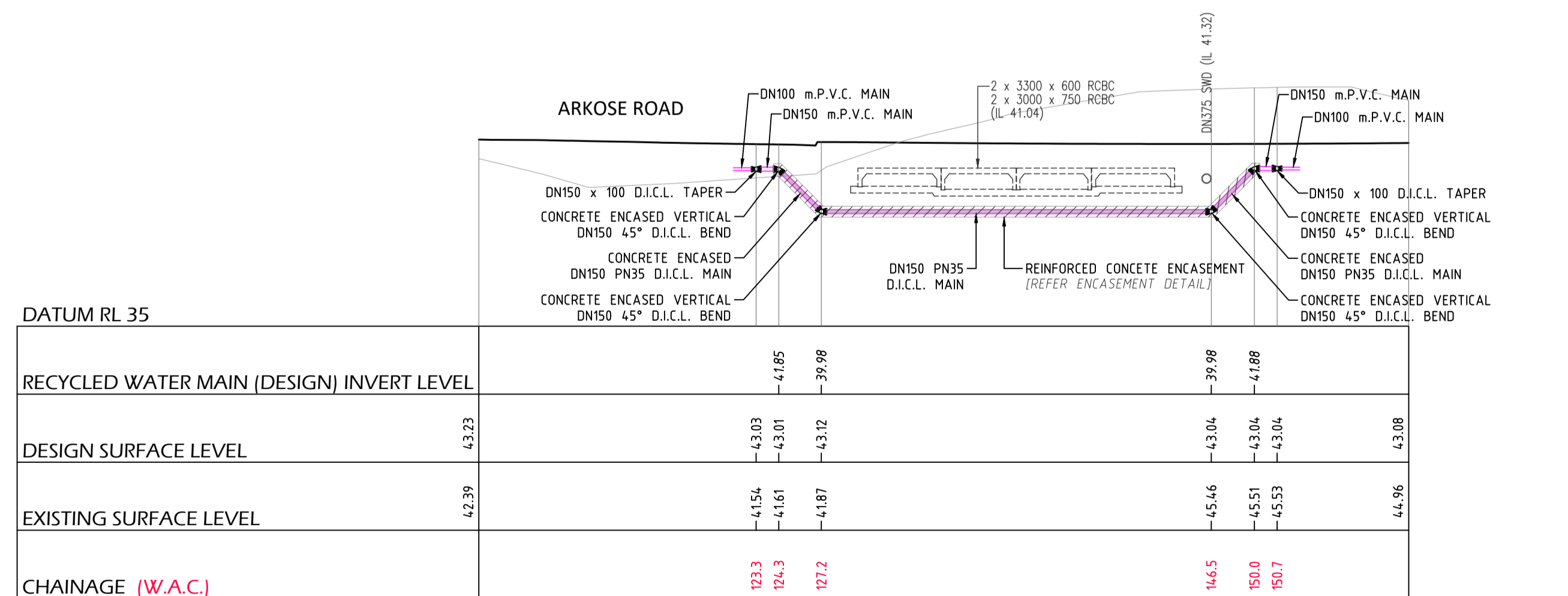
- DESIGN SURFACE LEVELS WERE ELECTRONICALLY EXTRACTED FROM DIGITAL DATA SUPPLIED BY J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS 21/3/17 (Precinct H Stage 3 CC Design Surface12daz).
- DESIGN LEVELS CAN ONLY BE ASSUMED AS CURRENT AT TIME OF EXTRACTION. ALL LEVELS SHALL BE CONFIRMED WITH THE SITE SUPERINTENDENT PRIOR TO INSTALLATION OF TANKS. SHOULD THE PROPOSED FINISHED SURFACE LEVEL (P.F.S.L.) DIFFER FROM DESIGN BY MORE THAN 100mm, THE CONSTRUCTOR SHALL CONTACT THE DESIGNER IMMEDIATELY.
- COLLECTION TANK SETOUT SHALL BE COMPLIANT WITH FSI-1000-FS & FSI-SK03A-FS. COLLECTION TANK INSTALLATION LEVELS DOCUMENTED ADJACENT SHALL SUPERSEDE ANY LEVELS ADVISED ON DRAWING FSI-SK03A-FS.
- R.A.R. ACCEPT NO RESPONSIBILITY FOR INCONSISTENCIES IN EXTRACTED LEVELS RESULTING FROM CHANGES TO THE MODEL (SURFACE LEVEL) INFORMATION POST DATA EXTRACTION DATE.



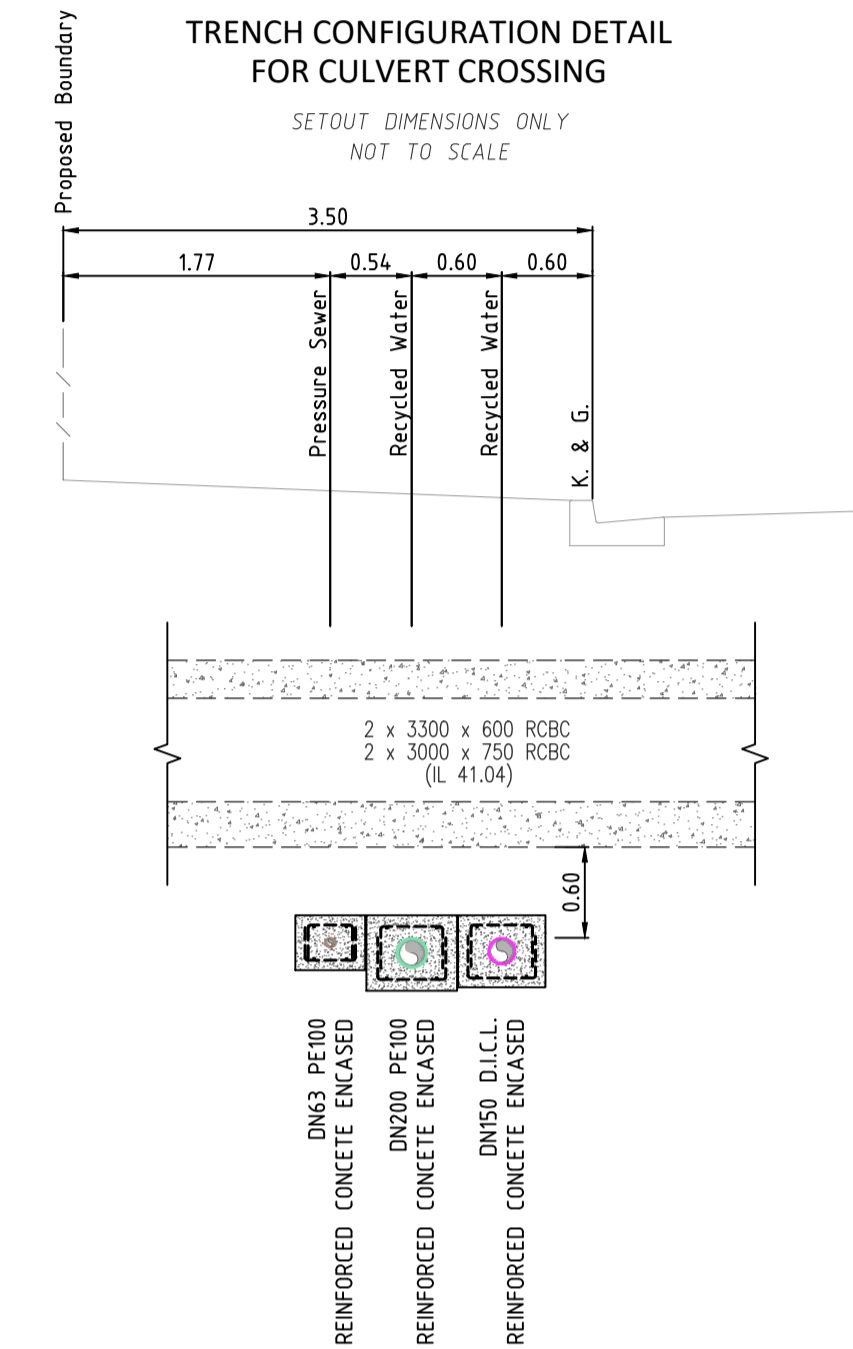
DETAIL A
DN63 PE100 PRESSURE SEWER CROSSING
SCALE: 1:200(H) 1:200(V)



DETAIL B
DN200 PE100 RECYCLED WATER CROSSING
SCALE: 1:200(H) 1:200(V)



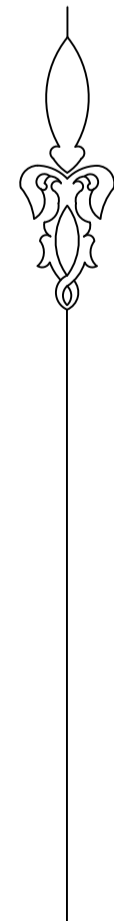
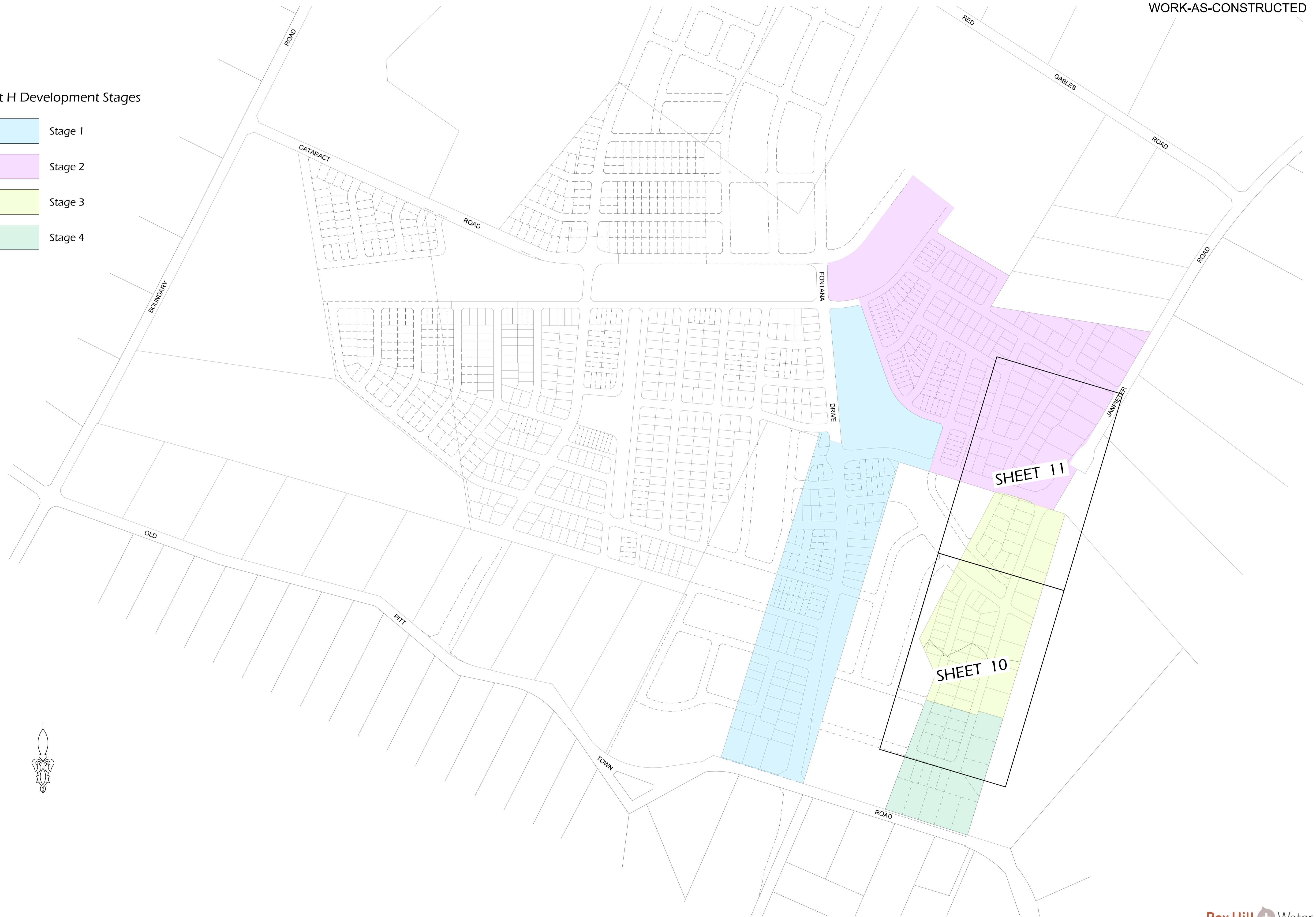
DETAIL C
DN150 D.I.C.L. RECYCLED WATER CROSSING
SCALE: 1:200(H) 1:200(V)

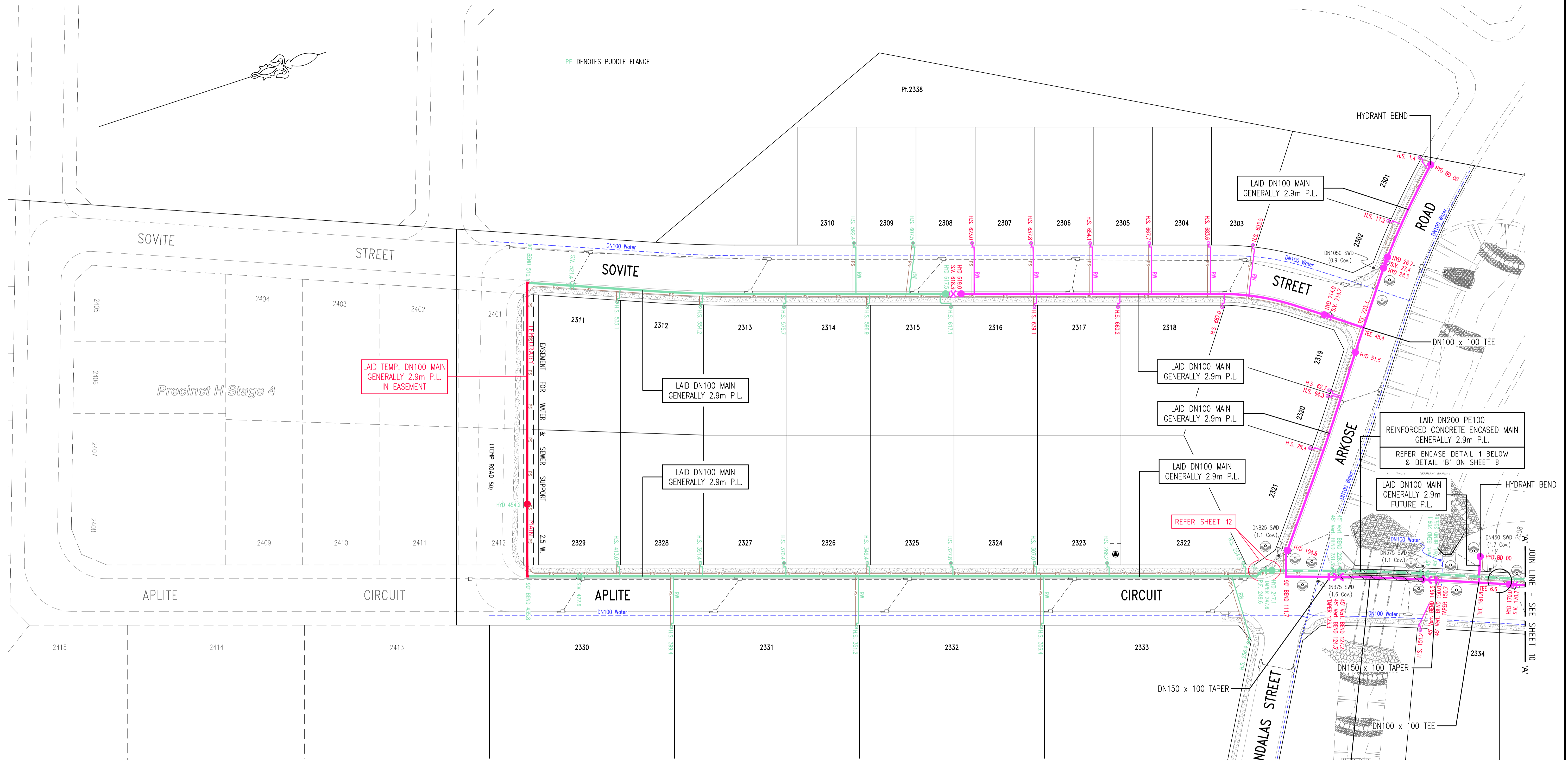


- NOTES:
- POUR UNDERSIDE OF CONCRETE ENCASUREMENT AGAINST UNDISTURBED GROUND.
 - NO JOINS PERMITTED IN THE PIPE SECTION UNDER THE CULVERT.
 - LAY 200um POLYTHENE FILM VERTICALLY BETWEEN CONCRETE ENCASUREMENTS.

Precinct H Development Stages

- Stage 1
- Stage 2
- Stage 3
- Stage 4





PF DENOTES PUDDLE FLANGE

Pl.2338

LAI D TEMP. DN100 MAIN GENERALLY 2.9m P.L. IN EASEMENT

REFER SHEET 12

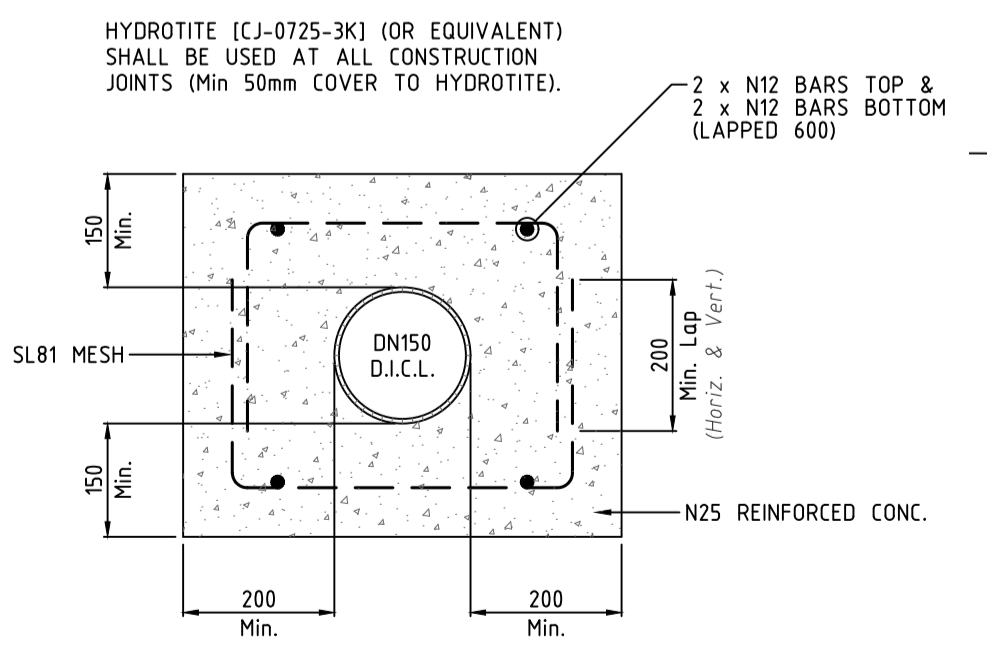
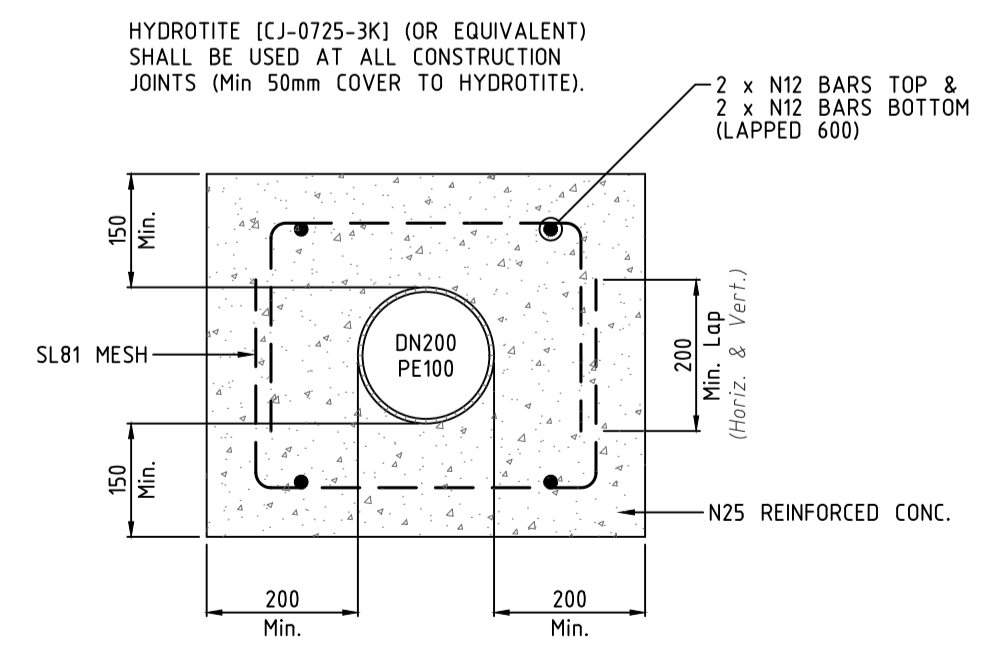
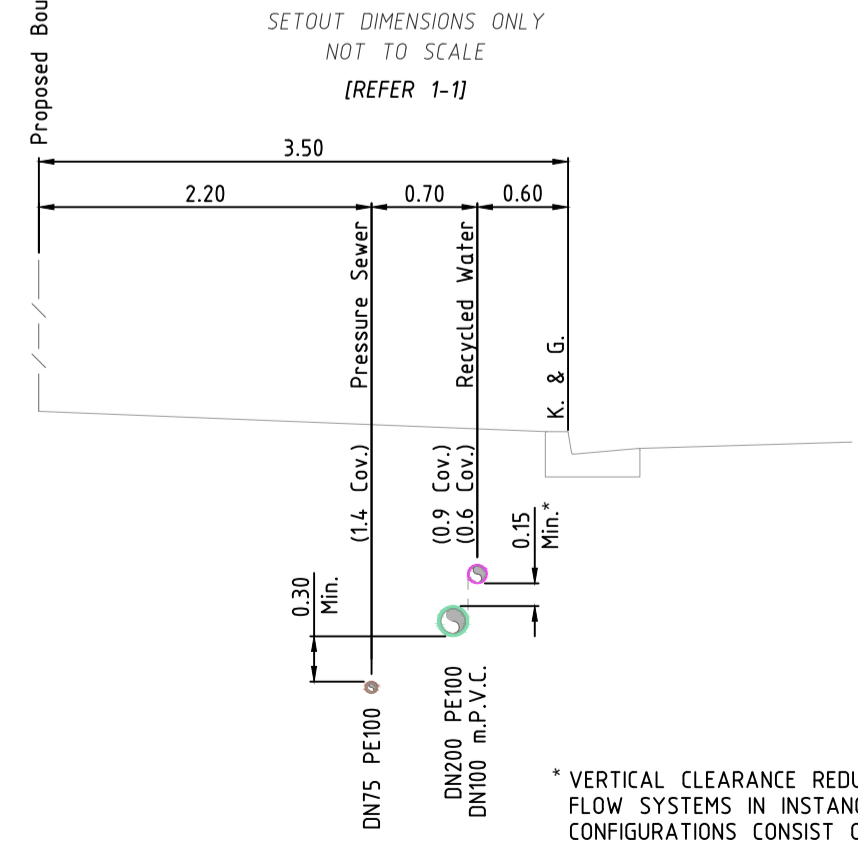
LAI DN150 D.I.C.L. REINFORCED CONCRETE ENCASED MAIN GENERALLY 2.9m P.L. REFER ENCASE DETAIL 2 BELOW & DETAIL 'C' ON SHEET 8

LAI DN100 m.P.V.C. MAIN & DN200 PE100 MAIN GENERALLY 2.9m P.L. SEE TRENCH CONFIGURATION DETAIL

RECYCLED WATER LEGEND

	PROPOSED MAIN (PRESSURE ZONE 1)
	PROPOSED PE100 MAIN (PRESSURE ZONE 2)
	PROPOSED MAIN (PRESSURE ZONE 2)
	EXISTING MAIN
	FUTURE MAIN
	STOP VALVE
	STOP VALVE (NORMALLY CLOSED)
	STOP VALVE (BYPASS)
	REFLUX VALVE
	HYDRANT
	CONTROL VALVE (HYDRANT)
	TAPER
	WATER SERVICE CONNECTION
	FLOW METER
	AIR VALVE
	VERTICAL DEFLECTION
	REMOTE MONITORED PRESSURE TRANSDUCER

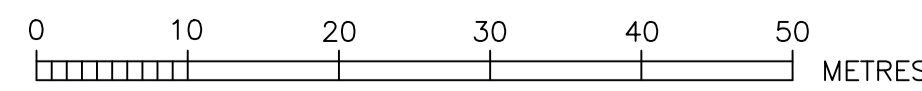
TRENCH CONFIGURATION DETAIL



DN200 PE100 ENCASEMENT DETAIL 1

DN150 D.I.C.L. ENCASEMENT DETAIL 2

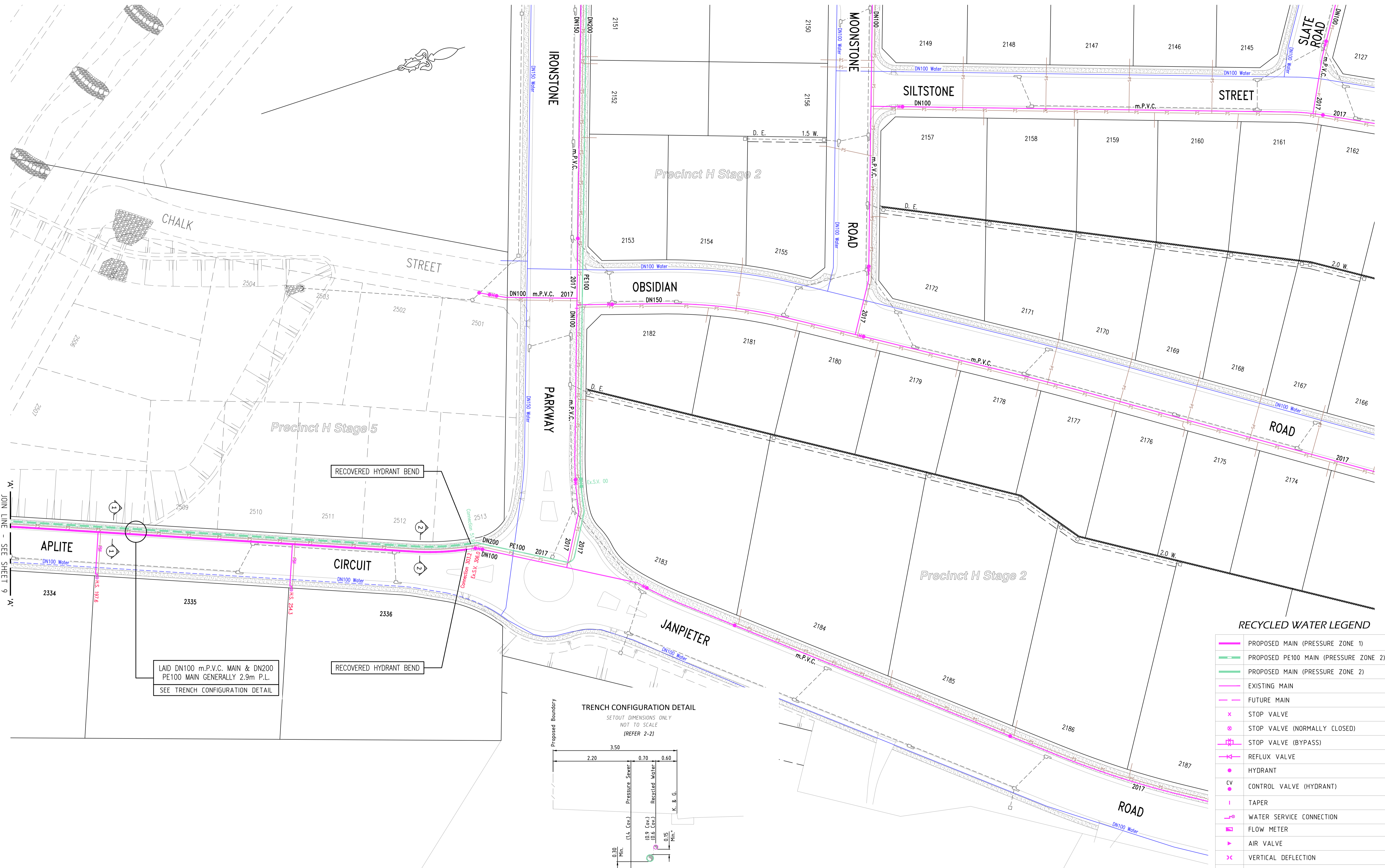
ESMT FOR PADMOUNT SUBSTATION 2.75 W.



ROSE ATKINS RIMMER (Infrastructure) Pty. Ltd.
RAR WATER RELATED INFRASTRUCTURE DESIGN AND MANAGEMENT
 142 SUNNYHOLT ROAD, BLACKTOWN
 P.O. BOX 6745, BLACKTOWN N.S.W. 2148
 PH: (02) 9853 0200 FAX: (02) 9671 7399

Box Hill Water

RECYCLED WATER DETAIL PLAN 1				SHEET 10 OF 12	WAC
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	DATE	SCALE
K.GAO	K.GAO	V.VIKSNE	D.SHEATHER	2/2/2018	1:500
PROJECT NO.					4/23645/H3

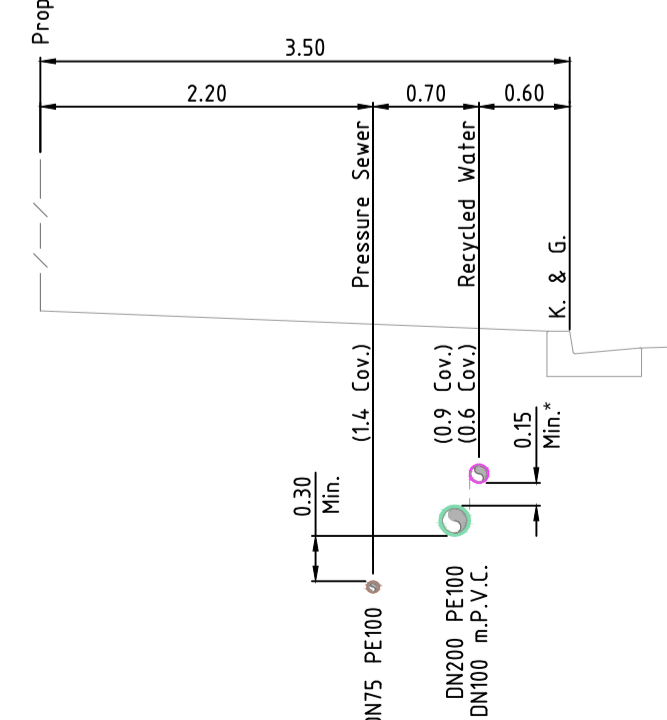


LAI D100 m.P.V.C. MAIN & DN200 PE100 MAIN GENERALLY 2.9m P.L. SEE TRENCH CONFIGURATION DETAIL

RECOVERED HYDRANT BEND

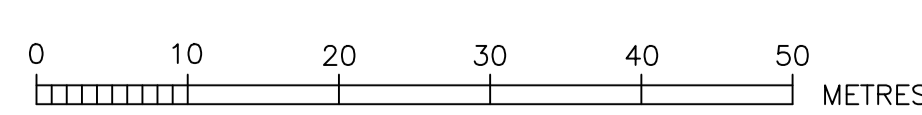
RECOVERED HYDRANT BEND

TRENCH CONFIGURATION DETAIL
SETOUT DIMENSIONS ONLY
NOT TO SCALE
[REFER 2-2]



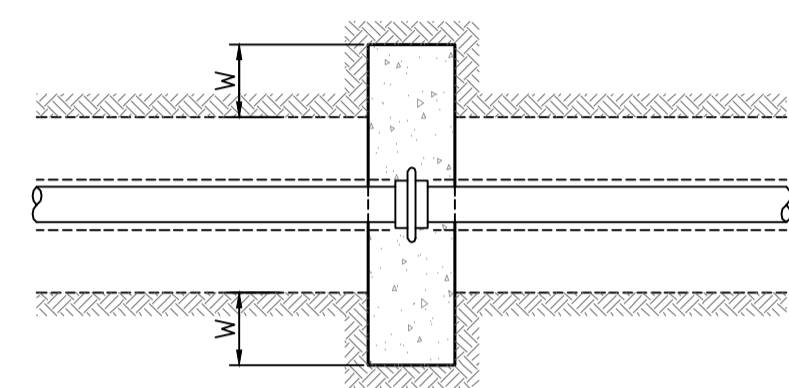
RECYCLED WATER LEGEND

	PROPOSED MAIN (PRESSURE ZONE 1)
	PROPOSED PE100 MAIN (PRESSURE ZONE 2)
	PROPOSED MAIN (PRESSURE ZONE 2)
	EXISTING MAIN
	FUTURE MAIN
	STOP VALVE
	STOP VALVE (NORMALLY CLOSED)
	STOP VALVE (BYPASS)
	REFLUX VALVE
	HYDRANT
	CONTROL VALVE (HYDRANT)
	TAPER
	WATER SERVICE CONNECTION
	FLOW METER
	AIR VALVE
	VERTICAL DEFLECTION
	REMOTE MONITORED PRESSURE TRANSDUCER

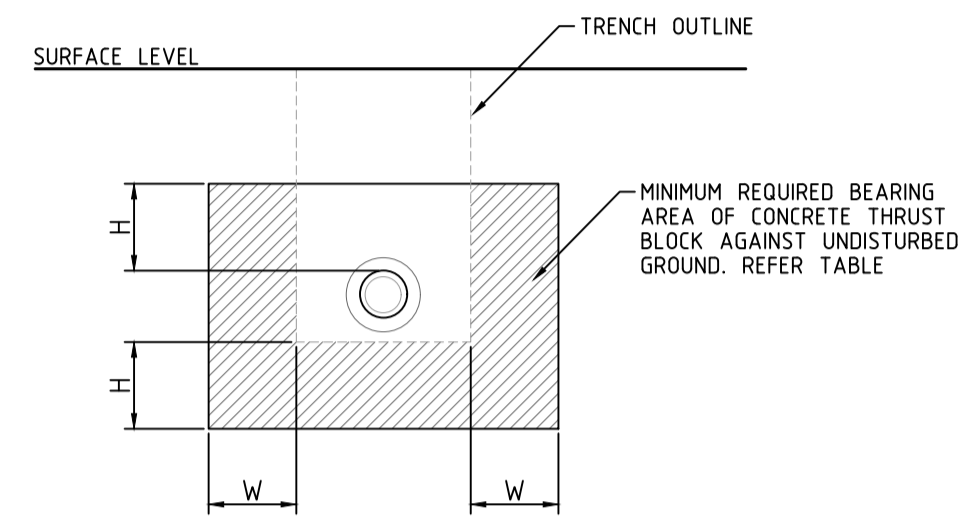


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PH: (02) 9853 0200 FAX: (02) 9671 7399

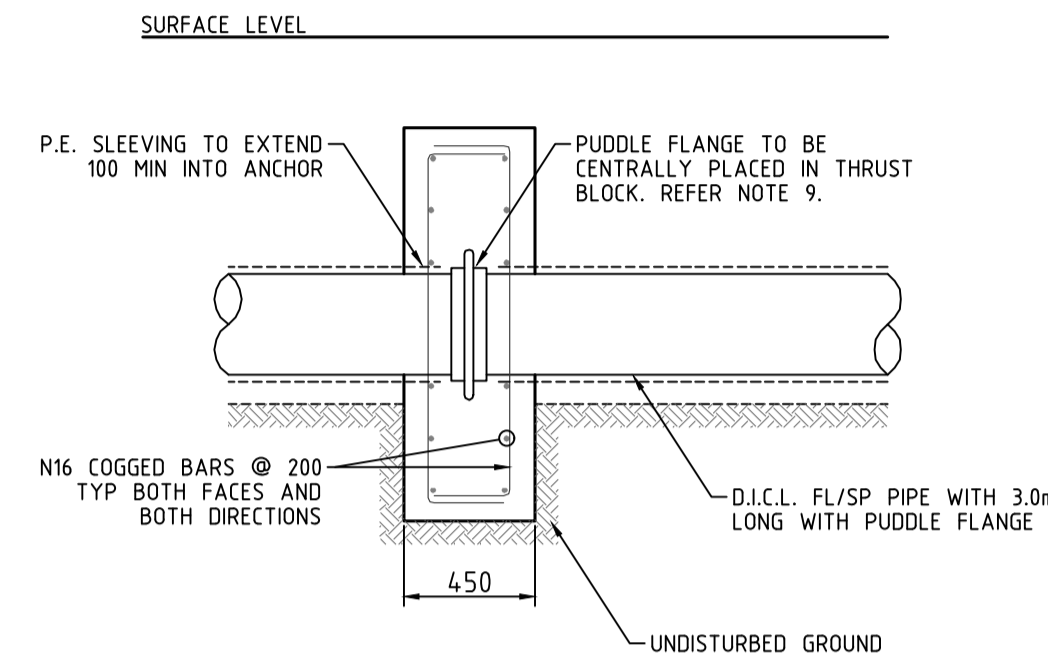
RECYCLED WATER DETAIL PLAN 2				SHEET 11 OF 12	VERSION: WAC
DRAWN: K.GAO	DESIGNED: K.GAO	REVIEWED: V.VIKSNE	VERIFIED: D.SHEATHER	JOB No. 4/23645/H3	
SCALE: 1:500	DATE: -	DATE REVISION: -	DATE OF ISSUE: 2/2/2018		



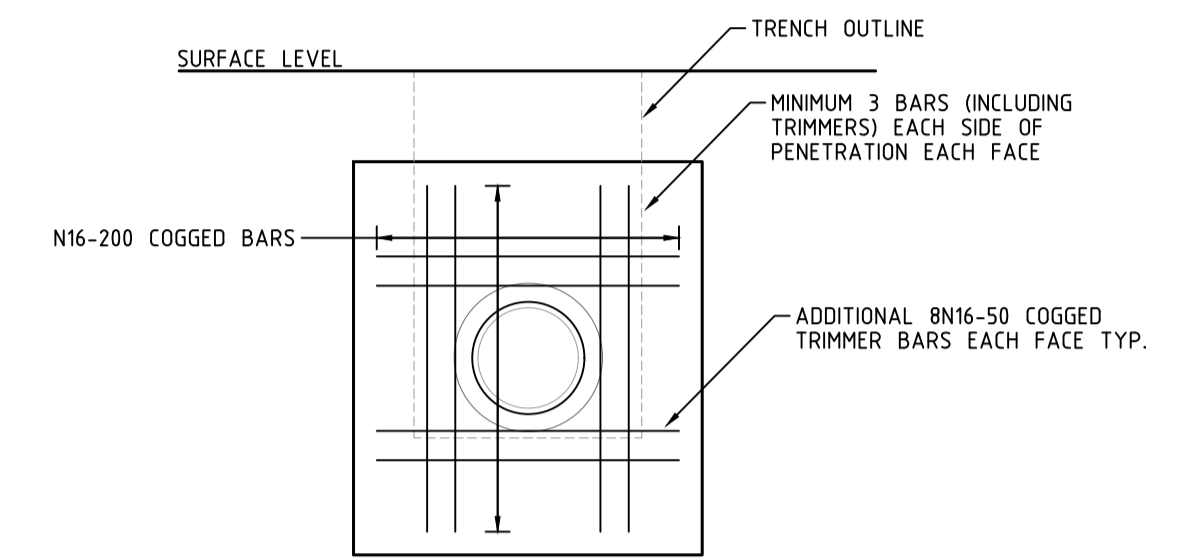
AREAS TO BE CAST AGAINST UNDISTURBED GROUND
PLAN
NOT TO SCALE



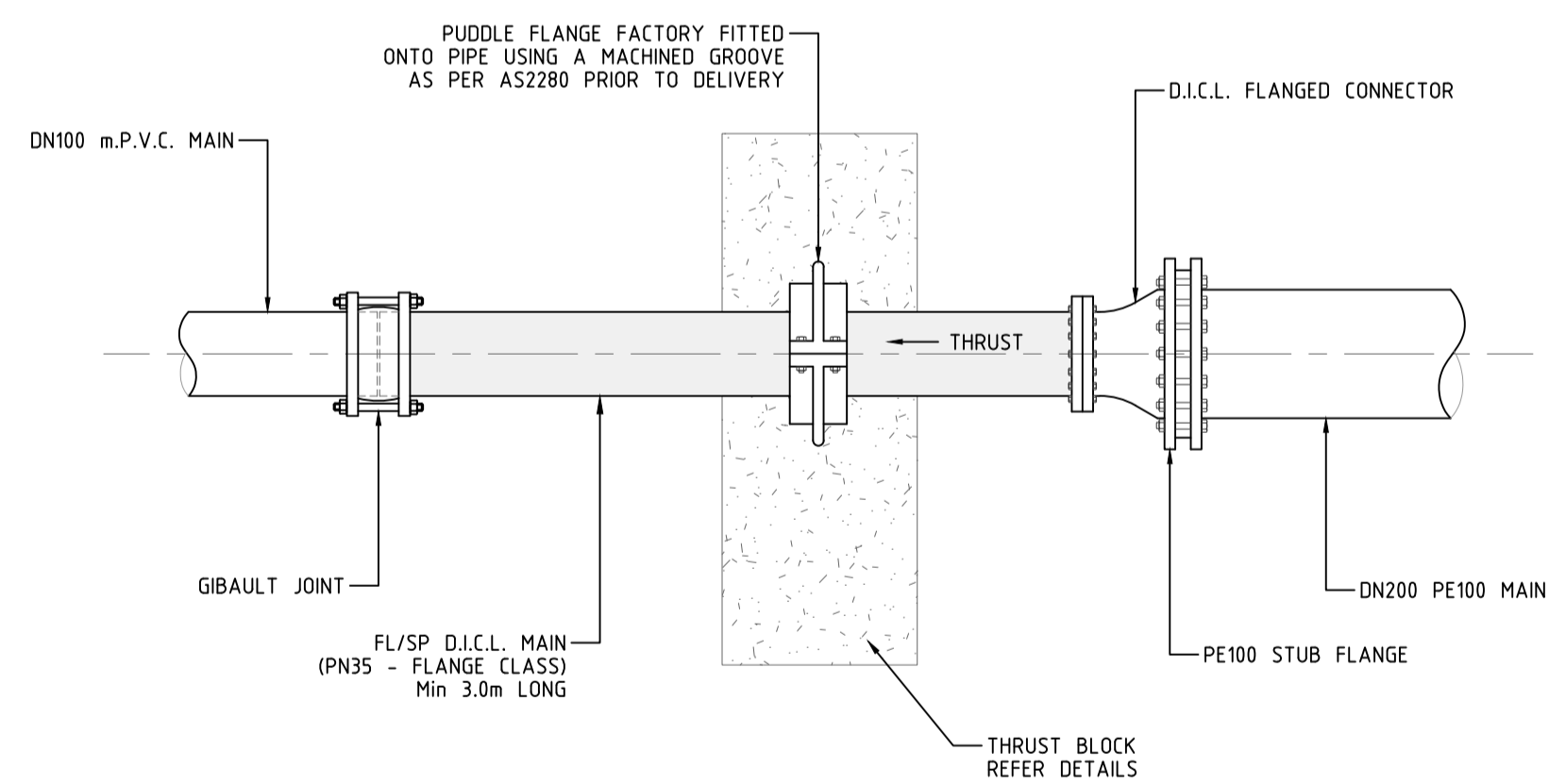
AREAS TO BE CAST AGAINST UNDISTURBED GROUND
ELEVATION
NOT TO SCALE



THRUST BLOCK DETAIL
NOT TO SCALE



THRUST BLOCK REINFORCEMENT DETAIL
NOT TO SCALE



PE100 / m.P.V.C. TRANSITION DETAIL
NOT TO SCALE

THRUST BLOCK AREAS & DIMENSIONS FOR PUDDLE FLANGE

DN	OD	DESIGN PRESSURE HEAD	TEST PRESSURE HEAD	THRUST T	SOIL AHP	REQUIRED BEARING AREA	NUMBER ANCHORS	H	W	MIN TRENCH WIDTH
(mm)	(mm)	(m)	(m)	(kN)	(kPa)	(sq.m)		(mm)	(mm)	(mm)
200	200	120	150	46.2	200	0.231	1	0.2	0.15	0.45
200	200	120	150	46.2	100	0.462	1	0.4	0.15	0.45
200	200	120	150	46.2	50	0.924	2	0.4	0.15	0.45

THRUST BLOCK NOTES:

- ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
- THRUST BLOCK DESIGNED TO WITHSTAND A DESIGN PRESSURE OF 120m AND A TEST PRESSURE OF 150m HEAD OF WATER.
- SHOULD THE CONSTRUCTOR QUESTION THE EXISTING GROUND CONDITIONS, THE ALLOWABLE HORIZONTAL BEARING PRESSURE (AHP) OF UNDISTURBED NATURAL SOIL SHALL BE CONFIRMED BY A SUITABLY EXPERIENCED GEOTECHNICAL ENGINEER PRIOR TO CASTING OF ANY THRUST BLOCK.
- CAST THE THRUST AREA OF ALL THRUST BLOCKS AGAINST A CLEAN FACE OF UNDISTURBED NATURAL SOIL. THRUST BLOCKS SHOULD NOT TO INTERFERE WITH ADJACENT SERVICES WHERE POSSIBLE.
- DO NOT USE THRUST BLOCKS AS SPECIFIED IN THIS DRAWING WHERE AHP < 100kPa.
- ALL D.I.C.L. FITTINGS AND PIPES SHALL BE WRAPPED IN POLYETHYLENE SLEEVING. TAPE 700 LONG P.E. SLEEVING TO END OF D.I.C.L. PIPE TO BE ENCASED 150 FROM SOCKET FACE TO OVERLAP P.E. SLEEVING D.I.C.L. PIPE. WHEN CONNECTING TO P.V.C. PIPE (WITHOUT P.E. SLEEVING), TAPE 700 LONG P.E. SLEEVE TO P.V.C. PIPE.
- ALL D.I.C.L. PIPES SHALL BE TO FLANGE CLASS U.N.O. & ALL D.I.C.L. FITTINGS SHALL BE MINIMUM CLASS PN16.
- D.I.C.L. FLANGES SHALL BE TO AS4087 CLASS 16. BOLTS & WASHERS SHALL BE GRADE 316SS.
- PUDDLE FLANGE SHALL BE FACTORY FITTED BOLT ON FULL THRUST RESTRAINT TYPE IN ACCORDANCE WITH AS2280.
- CONCRETE SHALL BE CLASS N25 TO PS-357.SW. SLUMP SHALL BE IN THE RANGE 80mm - 120mm. MAXIMUM NOMINAL AGGREGATE SIZE SHALL BE 20mm.
- THRUST BLOCK DESIGNS SHOWN ON THIS DRAWING ARE NOT SUITABLE FOR USE IN AGGRESSIVE OR CONTAMINATED SOILS.
- ALL REINFORCEMENT SHALL BE TO AS4671 SHAPED-D. STRENGTH GRATE = 500MPa, DUCTILITY CLASS-N.
- MINIMUM CLEAR COVER TO REINFORCEMENT SHALL BE 70mm.
- CONCRETE SHALL ACHIEVE A MINIMUM COMPRESSIVE STRENGTH OF 25MPa OR BE CURED FOR A MINIMUM OF 14 DAYS PRIOR TO APPLICATION OF THRUST LOADS.

DRAWN	DESIGNED	REVIEWED	VERIFIED
K.GAO	K.GAO	V.VIKSNE	D.SHEATHER
SCALE	DATE	DATE REVISION	DATE OF ISSUE
-	-	-	2/2/2018