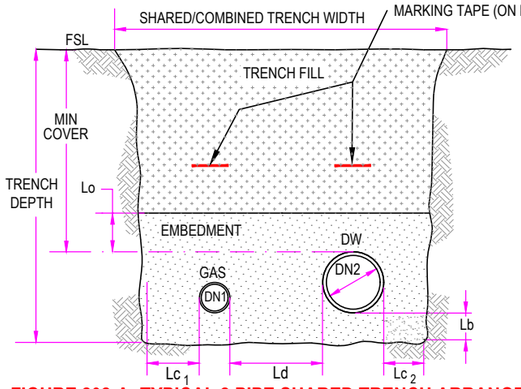

FIGURE 202-A: TYPICAL 2 PIPE SHARED TRENCH ARRANGEMENTS

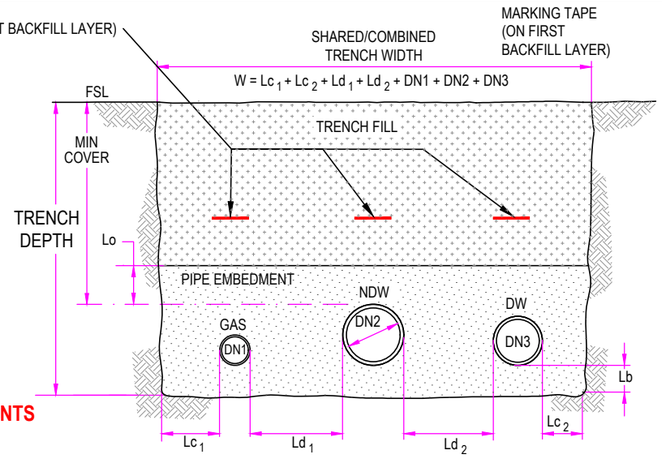

FIGURE 202-C: TYPICAL 3 PIPE SHARED TRENCH ARRANGEMENTS

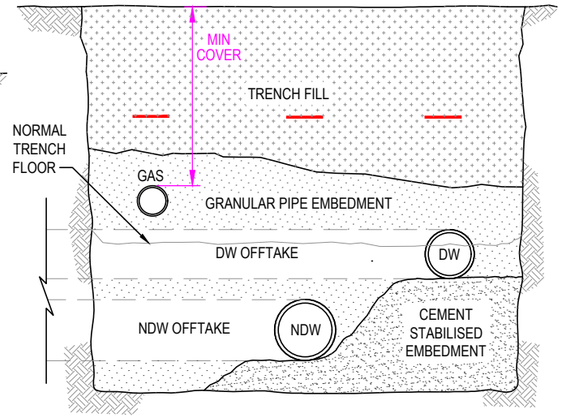

FIGURE 202-D: SHARED TRENCH WITH COMMON TRENCH FLOOR LEVEL (ADJACENT TO OFFTAKES)

Over-excavation (under DW main) only permitted within 3 pipe lengths of offtakes.
Cement stabilised embedment shall be plant mixed as per item I in Table 203-B.

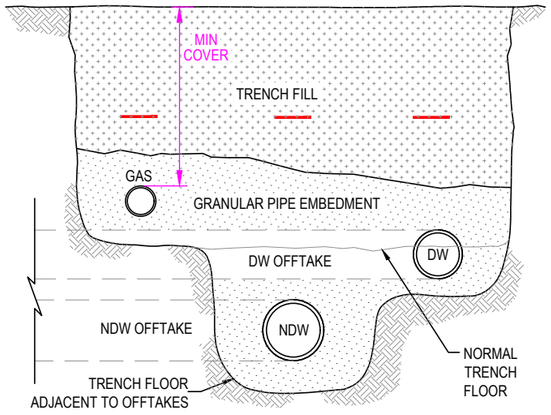

FIGURE 202-E: SHARED TRENCH WITH STEPPED TRENCH FLOOR LEVEL (ADJACENT TO OFFTAKES)

Shared trench offtakes may also be accommodated with mains at a common level. Refer Figures MRWA-W-205B-A to D for details.

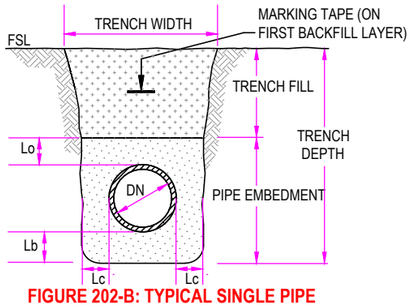

FIGURE 202-B: TYPICAL SINGLE PIPE SUPPORT & TRENCH FILL

General Notes:

1. This drawing to be read in conjunction with MRWA-W-201 and 203.
2. Keep sides of the excavation vertical to at least 150 above the pipes in strata other than sand.
3. Lay marking tape along route of the water main as per WSA03- 2012, MRWA edition.
4. Maintain minimum clearances between mains and services in accordance with Table 5.5 of MRWA edition of WSA 03-2011.
5. Excessive excavation to be treated in accordance with MRWA edition of WSA 03-2011.
6. Lay pipes in a shared trench at the same invert level where possible.
7. Maximum cover is 1.5 x minimum cover.
   This does not apply where main crosses under other services.
8. Cross water mains above other services (except Gas) wherever practical.
   When water mains pass under other services or obstructions, clearance under the obstruction or other service shall be minimised.

NOTES on 2 or 3 Pipe Trenches:

a. Shared trenching with mains ≥DN250 requires the approval of the Water Agency.
A. Shared trenching is only permitted between gas and water mains.
B. Gas mains shall be designed and constructed in accordance with the requirements of the gas authority and these requirements shall take precedence.
   Gas mains generally require a minimum cover of 600mm.
C. To calculate the width of a 3 pipe trench, use the formula:
   $W = Lc_1 + Lc_2 + Ld_1 + Ld_2 + DN1 + DN2 + DN3$

- Where Lc_1 is the side support for the gas main and Lc_2 is the side support for the DW main.
- Variables are labeled in the above Figures.
- Clearance is to be determined from the table according to the larger of the two mains, ie: if you have a DN100 beside a DN450 main, you should use a clearance of 600mm.
- OD shall be used instead of DN once the pipe to be installed is known.

Table Notes:

- For ISO sized pipe, use the internal diameter of the main and round up to nearest nom size (the DN sizes quoted are nominal sizes).
- For PE sized pipe, use the equivalent CIOD of the PE pipe as per Table 103-C.
- Where multiple pipes, use the larger pipe diameter to establish Ld.
- Footway reserves are not considered sufficiently wide to accommodate mains ≥DN600.

TABLE 202-A: TRENCH DIMENSIONAL DETAILS

	Property Service or Main Size	TRENCH DEPTHS: Minimum Cover (C) Residential Areas	Minimum Cover (C) Industrial Commercial Areas	Bedding Depth (Lb)	Min Overlay (Lo)	Minimum Depth of Trench D = Lb + DN + C: Residential Areas (D)	Minimum Depth of Trench D = Lb + DN + C: Industrial Commercial Areas (D)	TRENCH WIDTHS: Side Support (Lc)	Single Pipe Trench W=2Lc + DN: Minimum Trench Width (W)	Minimum Pipe Clearance (Ld)	Two Pipe Trench W=Lc1+Lc2+Ld+DN1+DN2: Minimum Trench Width (W)
Non-Trafficable Areas	Footway Reserves (mains ≤DN450 only. Includes driveways and footpaths)	≤100	450	600	75 - 150	100	**625**	**775**	100 - 350	**300**	300	W = 500 + Lc2+ DN2
		150	450	600	75 - 150	100	**675**	**825**	100 - 350	**350**	300	W = 550 + Lc2+ DN2
		225	450	600	100 - 200	150	**775**	**925**	150 - 400	**525**	300	W = 675 + Lc2+ DN2
		300	450	600	100 - 200	150	**850**	**1000**	150 - 400	**600**	300	W = 750 + Lc2+ DN2
		375	600	600	100 - 200	150	**1075**	**1075**	200 - 450	**775**	450	W = 1025 + Lc2+ DN2
		450	600	600	100 - 200	150	**1150**	**1150**	200 - 450	**850**	600	W = 1250 + Lc2+ DN2
	Open Reserves (ie: pipetracks & easements)	≤100	450	600	75 - 150	100	**625**	**775**	100 - 350	**300**	300	W = 500 + Lc2+ DN2
		150	450	600	75 - 150	100	**675**	**825**	100 - 350	**350**	300	W = 550 + Lc2+ DN2
		225	450	600	100 - 200	150	**775**	**925**	150 - 400	**525**	450	W = 825 + Lc2+ DN2
		300	450	600	100 - 200	150	**850**	**1000**	150 - 400	**600**	450	W = 900 + Lc2+ DN2
		375	600	600	100 - 200	150	**1075**	**1075**	200 - 450	**775**	450	W = 1025 + Lc2+ DN2
		450	600	600	100 - 200	150	**1150**	**1150**	200 - 450	**850**	600	W = 1250 + Lc2+ DN2
		600	600	600	100 - 200	150	**1300**	**1300**	200 - 450	**1200**	600	W = 1500 + Lc2+ DN2
		750	750	750	100 - 200	150	**1600**	**1600**	300 - 550	**1350**	600	W = 1650 + Lc2+ DN2
		900	750	750	100 - 200	150	**1750**	**1750**	300 - 550	**1500**	600	W = 1800 + Lc2+ DN2
Trafficable Areas	Local Traffic Streets (ie: Brown Roads in Melways)	≤100	600	600	75 - 150	100	**775**	**775**	100 - 350	**300**	300	W = 500 + Lc2+ DN2
		150	600	600	75 - 150	100	**825**	**825**	100 - 350	**350**	300	W = 550 + Lc2+ DN2
		225	600	600	100 - 200	150	**925**	**925**	150 - 400	**525**	450	W = 825 + Lc2+ DN2
		300	750	750	100 - 200	150	**1150**	**1150**	150 - 400	**600**	450	W = 900 + Lc2+ DN2
		375	750	750	100 - 200	150	**1225**	**1225**	200 - 450	**775**	450	W = 1025 + Lc2+ DN2
		450	750	750	100 - 200	150	**1300**	**1300**	200 - 450	**850**	600	W = 1250 + Lc2+ DN2
		600	1000	1000	100 - 200	150	**1700**	**1700**	300 - 550	**1200**	600	W = 1500 + Lc2+ DN2
		750	1000	1000	100 - 200	150	**1850**	**1850**	300 - 550	**1350**	600	W = 1650 + Lc2+ DN2
		900	1000	1000	100 - 200	150	**2000**	**2000**	300 - 550	**1500**	600	W = 1800 + Lc2+ DN2
	Major Roadways (ie: Grey & Orange roads in Melways)	≤100	750	750	75 - 150	100	**925**	**925**	100 - 350	**300**	300	W = 500 + Lc2+ DN2
		150	750	750	75 - 150	150	**975**	**975**	100 - 350	**350**	300	W = 550 + Lc2+ DN2
		225	750	750	100 - 200	150	**1075**	**1075**	150 - 400	**525**	450	W = 825 + Lc2+ DN2
		300	1000	1000	100 - 200	150	**1400**	**1400**	150 - 400	**600**	450	W = 900 + Lc2+ DN2
		375	1000	1000	100 - 200	150	**1475**	**1475**	200 - 450	**775**	450	W = 1025 + Lc2+ DN2
		450	1000	1000	100 - 200	150	**1550**	**1550**	200 - 450	**850**	600	W = 1250 + Lc2+ DN2
		600	1200	1200	100 - 200	150	**1900**	**1900**	300 - 550	**1200**	600	W = 1500 + Lc2+ DN2
		750	1200	1200	100 - 200	150	**2050**	**2050**	300 - 550	**1350**	600	W = 1650 + Lc2+ DN2
		900	1200	1200	100 - 200	150	**2200**	**2200**	300 - 550	**1500**	600	W = 1800 + Lc2+ DN2
	Freeways & Primary State Arterials (ie: Red, Black, Green roads in the Melways)	≤100	1200	1200	75 - 150	100	**1375**	**1375**	100 - 350	**300**	300	W = 500 + Lc2+ DN2
		150	1200	1200	75 - 150	100	**1425**	**1425**	100 - 350	**350**	300	W = 550 + Lc2+ DN2
		225	1200	1200	100 - 200	150	**1525**	**1525**	150 - 400	**525**	450	W = 825 + Lc2+ DN2
		300	1200	1200	100 - 200	150	**1600**	**1600**	150 - 400	**600**	450	W = 900 + Lc2+ DN2
		375	1200	1200	100 - 200	150	**1675**	**1675**	200 - 450	**775**	450	W = 1025 + Lc2+ DN2
		450	1200	1200	100 - 200	150	**1750**	**1750**	200 - 450	**850**	600	W = 1250 + Lc2+ DN2
		600	1200	1200	100 - 200	150	**1900**	**1900**	300 - 550	**1200**	600	W = 1500 + Lc2+ DN2
		750	1200	1200	100 - 200	150	**2050**	**2050**	300 - 550	**1350**	600	W = 1650 + Lc2+ DN2
		900	1200	1200	100 - 200	150	**2200**	**2200**	300 - 550	**1500**	600	W = 1800 + Lc2+ DN2

REV	DESCRIPTION	DATE	APPROVED
3	TRENCH AT OFFTAKES. UPPER LIMITS INCLUDED.	1/12/16	RJ / CP / JT
2	PUBLISHED FIRST ISSUE	23/03/12	K.DAWSON
1	PRE PUBLISHED DRAFT FOR COMMENT	12/07/11	K.DAWSON

DESIGNED: K. DAWSON DATE: 11/03/2011
DRAWN: D. TOLENTINO DATE: 11/03/2011

CHECKED:	NAME	DATE	APPROVED:	NAME	DATE
☐ CWW	R.JAGGER	23/03/12	☒ CWW	R.CARRUTHERS	23/03/12
☒ SEWL	C.PAXMAN	23/03/12	☒ SEWL	G.REYNOLDS	23/03/12
☒ YVW	S. TAN	23/03/12	☒ YVW	A.COSHAM	23/03/12

MELBOURNE RETAIL WATER AGENCIES
City West Water
South East Water
Yarra Valley Water

MRWA WATER SUPPLY STANDARDS

PIPE TRENCH DETAILS

NOT TO SCALE

MRWA-W-202

ISSUED 2012 | REVISION NO. 3