

DESIGN HEAD: 93 m
ZONE: RESIDENTIAL
TEST PRESSURE: 1200 kPa

LOCALITY PLAN

SCALE: 1:20,000
MELWAYS: 12 A3

INSTRUCTIONS ON USING THIS DESIGN TEMPLATE SHEET & EXAMPLE DESIGNS:

- A. Text in blue italics is instructional information for the designer to act on. Once the action has been completed, the blue italics text should be removed.
- B. Non italics text colored black is part of the design template and shall remain in place if relevant.
- C. Non italics text colored magenta is provided as an example only and shall be removed or modified to be specific to the design being produced.
- D. The template & example design is split into 3 parts (MRWA-W-101,102 &102B)
 - 1. Part 1 (MRWA-W-101, this sheet) shall include all notes and a locality plan. This part is a TEMPLATE which shall be filled in as part of all water pipeline designs. Much of the notes text is provided and will likely remain consistent across all jobs. All notes must be confirmed by the designer and only included if relevant. Job specific requirements outside of those already quoted must be added by the designer. The intent is that all of Part A fit on one sheet and be readable when printed on A3 paper.
 - 2. Part 2 (refer to MRWA-W-101A which is an EXAMPLE that demonstrates the layout, line and text requirements) which is to contain the design drawing(s) which shall take up the whole page and have a maximum scale of 1:500 on A1 paper (equivalent to 1:1000 on A3 paper, which is readable). There may be a number of sheets to Part 2 depending on the size of the design).
 - 3. Part 3 (refer to MRWA-W-101B which is an EXAMPLE that demonstrates the layout, line and text requirements) shall contain all schematic enlargements (details) which show construction components and how they are to be configured. Schematic enlargements will be required when there are more than six (6) fittings in close proximity (ie: 5 meter diameter circle) or a non standard arrangement is proposed (this often occurs at valve and hydrant clusters).
- E. All symbology used in Parts 2 & 3 must be as shown in standard drawing MRWA-W-100.
- F. MRWA-W-100 & 101 are available in CAD and MS Word format from the water agency for adjustment & issuing to contractors.
- G. All works are to be designed in accordance with WSA 03- 2011 MWRA edition.
- H. Sewer designs shall not be included in DW & NDW designs.



FOR THE DURATION OF PROCLAIMED WATER RESTRICTIONS, THE CONTRACTOR SHALL CONFORM WITH THE RESTRICTIONS AND ANY OTHER WATER CONSERVATION REQUIREMENTS IMPOSED BY THE WATER AGENCY.

General Notes:

- Only contractors accredited by Greater Western Water (enter the Water Agency) to WC1 (enter the categories of work required for this project) shall be eligible to construct these works.
- Only products approved and catalogued by the Water Agency shall be used.
- Works must be constructed according to WSA 03- 2011 MRWA edition.
The Contractor shall ensure that they are conversant with all current revisions, amendments and updates that the relevant Water Agency has made to their standards.
- DW and NDW assets shall only be constructed after deeper assets affecting the water mains have been constructed (eg: sewerage & drainage assets).
- This design is to be read in conjunction with road and drainage plans.
- The Contractor shall obtain a road opening permit for any works within the road reserve and comply with all requirements of the road owner.

Survey, Set Out and Asset Recording

- Temporary Bench Marks (TBM) for the set out of works to the Australian Height Datum (AHD) are provided in the design drawings. (The designer shall mark all TBMs on plans)
- All levels are in metres to AHD.
- All co-ordinates are in metres to the Map Grid of Australia (MGA 55- 94).
- The Contractor is directly responsible for ensuring the project set out is consistent with the design. Should actual site conditions conflict in any way with that documented, the Contractor shall contact the Superintendent for clarification before proceeding.
- The Contractor is to engage a suitably qualified and experienced Surveyor to undertake asset recording of the work. All surveyor works and data recording shall be undertaken in accordance with the MRWA survey manual.
- All specific pipe materials (eg: PVC-O) shall be indicated in the As Constructed information

Products and Materials (Refer Table 1 & 2)

- (Consult with the Water Agency where test pressures exceed 1600 kPa. Where a higher test P is accepted, provide instruction to the Contractor on the products and materials to be used)
- DW and NDW system components shall be differentiated as per section 4.2 of WSA03-2011, MRWA edition. (Remove if not a Dual Water design)

Appurtenances (Fittings- Refer Table 3)

- (insert any relevant notes here)

Water Main Alignment, Trenching & Cover (Refer Table 5)

- Offsets of mains from property boundaries shall be; min 600mm (mains < DN100) and min 1m (mains ≥DN100).
- All water mains shall pass over drains and sewers unless shown otherwise in the design drawings.
(Designer is to ensure that wherever practical, water asset offsets comply with those stated within the "Road Management Act 2004 Code of Practice for Infrastructure in Road Reserves").

Embedment

- (Nominate acceptable embedment system(s) and nominate where each is required.)

Backfill

- (Nominate the road owner's backfill material and compaction requirements (ie: Vicroads or Council) for road reserve backfill.)
- Non trafficable backfill shall be completed as per MRWA-W-201 and the current version of the MRWA Backfill Specification.

Thrust Restraint (Refer Table 6)

- Thrust restraints have been designed on the basis of the AHBP (ground strength) nominated in TABLE 6. The Contractor shall confirm the actual ground conditions and discuss with the Superintendent any ground conditions which are found to be different to that nominated. (Designer to undertake a Geotechnical investigation and quote (in Table 6) the AHBP of the ground used in calculating each thrust restraints, especially for thrust restraints > 2m²)

Property Services

- NDW property services shall always be located on the left of the DW property service as you look from the road to the front of the property. (Remove if not a Dual Water design)

Connections (All types)

- All property service connections to new residential RRJ reticulation mains are to be completed using pretapped connectors.

Other Services (Ref- Table 5 & 7)

- To receive the most up to date information prior to construction, "Dial before you Dig" shall be undertaken to aid in the location of other services.
Other services shall be carefully located prior to full excavation at the contractor's cost.
Any clashes of proposed new works with other assets shall be reported to the Superintendent immediately for clarification.
- Clearances to other services shall be as per Table 7 and Table 5.5 of WSA03- 2011 MRWA edition. These clearances shall apply to surface covers as well as underground assets.

Earthworks and Retaining Walls:

- In areas subject to earthworks, construction of water assets shall not commence until earthworks and retaining walls has been completed unless written approval has been given by the Water Authority.

Testing, Asset Acceptance and Live Connections

- Post construction activities (of both DW & NDW) such as swabbing, water quality testing, pressure testing and chlorination shall be carried out in accordance with WSA03-2011 MRWA edition and the MRWA Water Quality Compliance Specification.
All test results shall be documented and reported to the Superintendent.
- The Water Agency shall be notified in writing 2 full working days in advance of testing being undertaken.
- Both ends of DW and NDW main to meter property services shall be inspected by the Water Agency.
The Water Agency shall be notified in writing 2 full working days in advance of this inspection being carried out.
Both ends of DW-NDW main to meter property services are to remain exposed until inspected by the Water Agency compliance officer. (Remove this note if not a Dual Water design).
(insert if YVW)- Each property service shall be "squirt tested". This test involves placing each network under pressure separately and ensuring that only the end of the correct property service discharges water.
- The Contractor's ITP shall include provision for each NDW connection to be signed off as correctly installed. (Remove if not a Dual Water design).
- The Water Agency shall be notified in writing 5 (if GWW or SEW) / 9 (if YVW) full working days in advance of connection to the live network being undertaken.
Shut down work shall be as short as practical and scheduled to commence at 9am on working days with completion to occur no later than 4pm.
In industrial and commercial areas, the impact on business shall be considered and it may be necessary to carry out the work outside normal working hours.

- (insert if YVW)- Shut downs shall be limited to 4 hours in duration. Arrange for alternate supplies should the shut down duration exceed 4 hours.
- Valves connecting new assets to the Water Agency's live system shall not be operated by the Contractor.

TABLE 1. New Pipe Schedule

New Work	Type	Class	Drinking Main		Non-Drinking Main	
			Length	Length	Length	Length
150	PVC-O or PVC-M	16	269m	268m		
100	PVC-O or PVC-M	16	63m	75m		
125	PE100	16	9m	10m		
63	PE100	16		56m		
50	PE100	16	32m			
40	PE100	16	32m			
25	PE100	16		Property Services	Property Services	

TABLE 2. Pipe Material Schedule

MATERIAL	Reference	MATERIAL	Reference
PVC-M	WSA-PS-209	PE (retic & submain)	WSA-PS-207
PVC-O	WSA-PS-210	PE (property services)	WSA-PS-215

TABLE 3. Hydrant & Washout Schedule

Main Size	Fitting Type	Ownership	Location	Street	Location
150	WASHOUT	NDW - GWW	End of Line	GOODENIA AVE	2m E of WBL Lot 2448
150	WASHOUT	DW	In Line	GOODENIA AVE	4.5m E of WBL Lot 2448
150	HYDRANT	NDW - Council	In Line	GOODENIA AVE	5m E of WBL Lot 2445
150	HYDRANT	DW	In Line	GOODENIA AVE	7.5m E of WBL Lot 2445
100	HYDRANT	NDW - Council	In Line	SPRINGWOOD CRT	3m S of NBL Lot 2450
100	HYDRANT	DW	In Line	SPRINGWOOD CRT	5m N of SBL Lot 2450
63 PE	FLUSHING BOX	NDW - GWW	End of Line	SPRINGWOOD CRT	7m N of SBL of Lot 2459
100	WASHOUT	NDW - GWW	End of Line	FIRECREST ROAD	3.5m S of NBL Lot 2438
100	WASHOUT	DW	End of Line	FIRECREST ROAD	1m S of NBL Lot 2438
100	HYDRANT	NDW - Council	In Line	FIRECREST ROAD	6m N of SBL Lot 2438
100	HYDRANT	DW	In Line	FIRECREST ROAD	3.5m N of SBL Lot 2438
150	HYDRANT	NDW - Council	In Line	ISON ROAD	3.5m N of SBL Cnr Lot
150	HYDRANT	DW	In Line	ISON ROAD	1m N of SBL Cnr Lot
150	WASHOUT	NDW - GWW	End of Line	ISON ROAD	3.5m S of NBL of Cnr Lot
150	WASHOUT	DW	End of Line	ISON ROAD	1m N of NBL of Cnr Lot

TABLE 4. Curved Pipe & Deflection Schedule (Produce in accordance with MRWA-W-212)

Location	Method	Offset / Radius (m)	Total Pipe Length (m)	Pipe Lengths (m)
Eg only	5 x 6° SOC Bends	100m radius	60	12 x 5m

TABLE 5. Service Alignment Schedule (offsets in m)

Location	Water	ND-Water	Gas	NBN	Elec	Poles	BOK
ISON ROAD (SERVICE ROAD)	3.65 W	3.2 W	2.75 W	4.25 E	4.75 E	5.05 E	5.70 W
GOODENIA AVENUE	2.65 N	2.2 N	1.75 N	1.75 S	2.05 S	3.05 S	3.60 N
SPRINGWOOD CRT	2.55 W	2.15 W	1.75 W	1.75 E	2.05 E	3.05 E	3.60 W
FIRECREST ROAD	2.55 E	2.15 E	1.75 E	1.75 W	2.05 W	3.05 W	3.6 E

TABLE 6. Thrust Restraint Schedule

Location	Type	Thrust	AHBP (kPa) USED	Area (m ²), or W(m) x Y(m)	No. Locations
A	IN LINE	2 x DN150 VALVES	50	1.16 (tot)	2
B	PLAIN	2 x DN150 x DN100 TEES	50	0.56 (tot)	1
C	PLAIN	2 x DN100 WASHOUTS	50	0.56 (tot)	1
D	IN LINE	2 x (DN100 VALVES + PE THERMAL SHRINKAGE)	50	0.80 (tot)	1
E	CANTILEVERED	2 x DN150 VALVES	100	1.6 x 1.5	1
F	PLAIN	2 x DN150 WASHOUTS	100	0.56 (tot)	3
G	IN LINE	1 x DN100 TAPER + VALVE	50	0.30 (tot)	2

TABLE 7. Vertical Clearances

Existing or proposed Service	Minimum vertical clearance (mm)	Existing or proposed Service	Minimum vertical clearance (mm)
Water mains ≤ DN375	150	Electricity conduits and cables	225
Water mains >DN375	300	Stormwater drains & pits	150
Gas mains	150	Sewers - gravity	500
Teleco conduits and cables	150	Sewers - pressure & vacuum	300

- Vertical clearance between water mains shall depend on the larger main diameter.
- Water mains shall cross over sewers and drains unless shown otherwise.
- Maintain additional clearance from High Voltage electrical cables to allow for a protective barrier and marking. (The designer shall contact the power utility and specify HV cable clearances and protective barrier requirements in the design)

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

WARNING
BEWARE OF ASBESTOS
SOME UNDERGROUND SERVICES MAYBE CONSTRUCTED FROM ASBESTOS CONTAINING MATERIAL. CONTACT THE SUPERINTENDENT FOR INSTRUCTIONS ON HOW TO MANAGE ANY POTENTIAL ASBESTOS HAZARD

ISSUED FOR CONSTRUCTION

Remove the irrelevant Water Agency Logos or turn off relevant layer
MRWA-LOGO-CWW
MRWA-LOGO-SEW
MRWA-LOGO-YVW
MRWA-TEXT-OFF

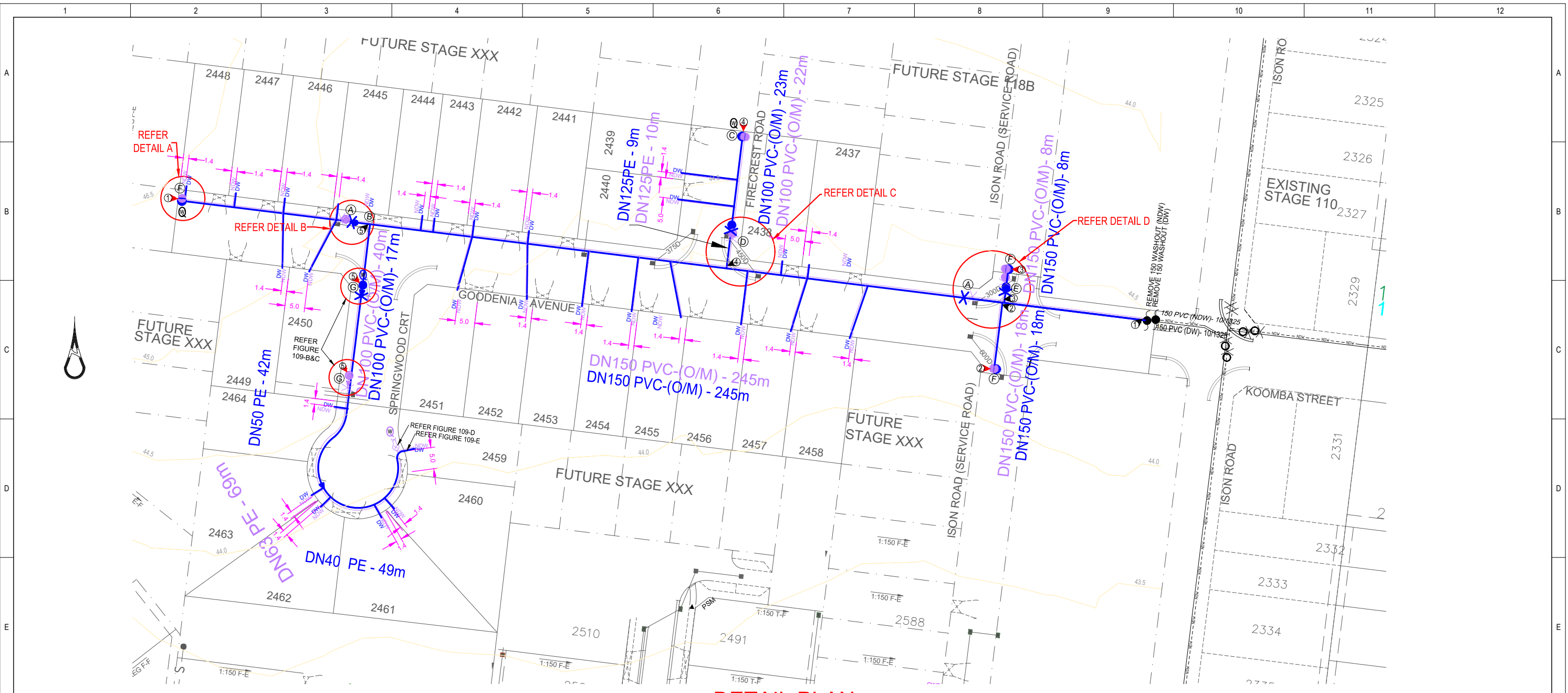


GREATER WESTERN WATER
MUNICIPALITY
PROJECT TITLE
NOTES, SCHEDULES
& LOCALITY PLAN

SCALE: AS SHOWN @A3
SHEET: 1 OF X
DRAWING No.: MRWA-W-101
REV: 0

DESIGNED	D. DESIGNER	DATE DD/MM/20YY	PROJECT NUMBER	XXXXXX
DRAWN	D. DRAFTSPERSON	DATE DD/MM/20YY	AUTHORISED	A. AUTHORISED
CHECKED	C. CHECKER	DATE DD/MM/20YY	REGISTERED ENGINEER	NAME: R. ENGINEER PE REG. NO: XXXXXX DATE: DD/MM/20YY

REV	DESCRIPTION	DATE	REG. ENG.	REV	DESCRIPTION	DATE	REG. ENG.
1				2			
3				4			
5				6			
7				8			



DETAIL PLAN

LEGEND (Designer to bring in all required symbols from MRWA-W-100 into this legend)

X	VALVE		CHLORINATION
	WATER AUTHORITY HYDRANT. BELOW GROUND.		ELECTROLYSIS
	COUNCIL HYDRANT. BELOW GROUND.		NON RETURN VALVE
	REMOVE FITTING		ENDCAP
	TAPER		FERRULE (MALE OUTLET THREAD)
	SWAB DIRECTION		FL DUCKFOOT BEND WITH HYDRANT
	SWAB INSERTION POINT		SOC WASHOUT BEND WITH HYDRANT
	SWAB REMOVAL POINT		RETAINING WALL
	WATER QUALITY SAMPLING POINT (DUAL WATER)		
	WATER QUALITY SAMPLING POINT (DW)		
	WATER QUALITY SAMPLING POINT (NDW)		

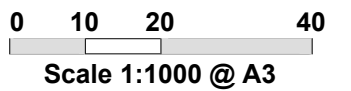
Detailed Design Plan to Indicate:

- All DW & NDW assets (on the same set of plans).
- All contours (0.5m intervals in flat terrain, 1.0m in undulating terrain, 2.0m in steep terrain).
- All property boundaries.
- Red circles for areas covered by details (Details required where there are 6 or more fittings in close proximity (ie; 5 metre diameter circle)).
- All driveway locations and road pavement boundaries. Only intersection kerb has been shown. All kerb may be shown if preferred.
- Show other authority assets as follows (focus on assets relevant to the construction of the water network(s) to increase clarity)
 - Greenfields development works - show drainage & gas transfer mains. Show any electricity or communications assets on the same side of the road reserve as water mains.
 - Existing built up areas (Brownfields areas) - show all drainage, gas, electricity and communications assets where they are close (within 1m) inc crossings (if available).
- Property services and their ties from nearest property boundaries.
- All hydrants, valves, reducers, scours, washouts, curves and bends.
- All thrust blocks (with reference to thrust block schedule item number).
- North point & scale.
- Longitudinal section required for all mains \geq DN300.
- Roads alignments, road names, allotment numbers & kerbs.
- Water main sizes, length and type & offsets.
- Water main offsets at all changes of alignment.
- Swabbing insertion and removal points.
- Initial and full surname of designer and design checker.
- Water Quality sampling points on existing and new water mains (refer to MRWA Water Quality specification for details). Show next to property connection (wherever meters are available) or hydrant / washout (where no meters have yet been installed).
- All retaining walls.

Notes to the Designer:

- Locate valves and hydrants as per MRWA-W-300A & 300B.
- Only one property service tie need be shown.
- Place valves and hydrants optimally on retic / distribution mains first before considering property service locations.

ISSUED FOR CONSTRUCTION

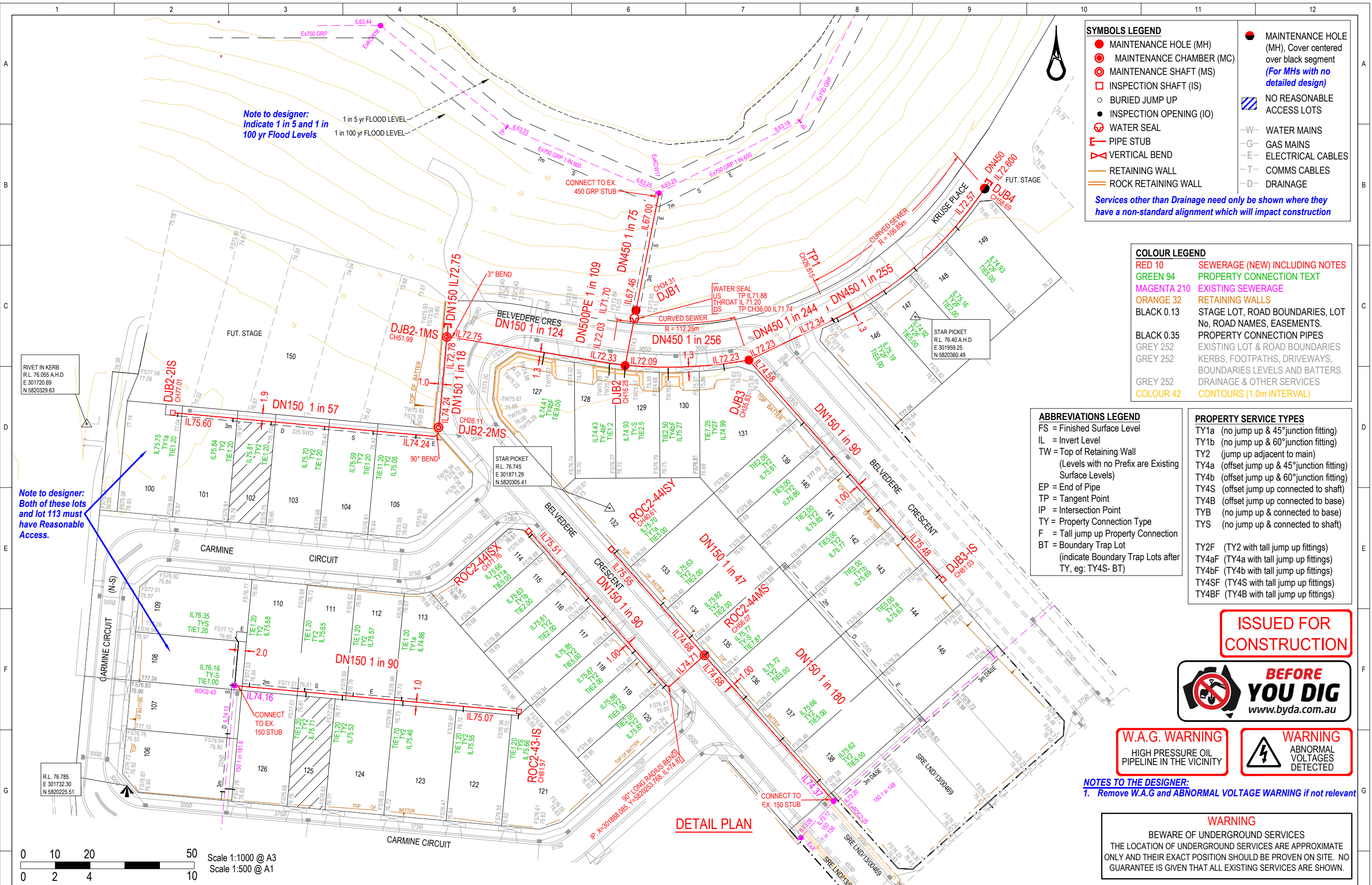


DESIGNED			D. DESIGNER			PROJECT NUMBER			XXXXXX		
DRAWN			D. DRAFTSPERSON			AUTHORISED			A. AUTHORISED		
CHECKED			C. CHECKER			REGISTERED ENGINEER			NAME: R. ENGINEER		
REV			DESCRIPTION			DATE			REG. ENG.		

Remove the irrelevant Water Agency Logos or turn off relevant layer

GREATER WESTERN WATER
MUNICIPALITY
PROJECT TITLE
DETAIL PLAN

SCALE: AS SHOWN @A3
SHEET: 2 OF X
DRAWING No.: MRWA-W-102A
REV: 0



SYMBOLS LEGEND

- MAINTENANCE HOLE (MH)
- MAINTENANCE CHAMBER (MC)
- MAINTENANCE SHAFT (MS)
- INSPECTION SHAFT (IS)
- BURIED JUMP UP
- INSPECTION OPENING (IO)
- WATER SEAL
- ┌ PIPE STUB
- ∠ VERTICAL BEND
- RETAINING WALL
- ROCK RETAINING WALL
- MAINTENANCE HOLE (MH), Cover centered over black segment (For MHS with no detailed design)
- ▨ NO REASONABLE ACCESS LOTS
- WATER MAINS
- GAS MAINS
- ELECTRICAL CABLES
- COMMS CABLES
- DRAINAGE

Services other than Drainage need only be shown where they have a non-standard alignment which will impact construction

COLOUR LEGEND

- RED 10 SEWERAGE (NEW) INCLUDING NOTES
- GREEN 94 PROPERTY CONNECTION TEXT
- MAGENTA 210 EXISTING SEWERAGE
- ORANGE 32 RETAINING WALLS
- BLACK 0.13 STAGE LOT, ROAD BOUNDARIES, LOT No, ROAD NAMES, EASEMENTS.
- BLACK 0.35 PROPERTY CONNECTION PIPES
- GREY 252 EXISTING LOT & ROAD BOUNDARIES
- GREY 252 KERBS, FOOTPATHS, DRIVEWAYS, BOUNDARIES LEVELS AND BATTERS.
- GREY 252 DRAINAGE & OTHER SERVICES
- COLOUR 42 CONTOURS (1.0m INTERVAL)

ABBREVIATIONS LEGEND

- FS = Finished Surface Level
- IL = Invert Level
- TW = Top of Retaining Wall (Levels with no Prefix are Existing Surface Levels)
- EP = End of Pipe
- TP = Tangent Point
- IP = Intersection Point
- TY = Property Connection Type
- F = Tall jump up Property Connection
- BT = Boundary Trap Lot (indicate Boundary Trap Lots after TY, eg: TY4S- BT)

PROPERTY SERVICE TYPES

- TY1a (no jump up & 45° junction fitting)
- TY1b (no jump up & 60° junction fitting)
- TY2 (jump up adjacent to main)
- TY4a (offset jump up & 45° junction fitting)
- TY4b (offset jump up & 60° junction fitting)
- TY4S (offset jump up connected to shaft)
- TY4B (offset jump up connected to base)
- TYB (no jump up & connected to base)
- TYS (no jump up & connected to shaft)
- TY2F (TY2 with tall jump up fittings)
- TY4aF (TY4a with tall jump up fittings)
- TY4bF (TY4b with tall jump up fittings)
- TY4SF (TY4S with tall jump up fittings)
- TY4BF (TY4B with tall jump up fittings)

Note to designer:
Indicate 1 in 5 and 1 in 100 yr FLOOD LEVELS

Note to designer:
Both of these lots and lot 113 must have Reasonable Access.

ISSUED FOR CONSTRUCTION



W.A.G. WARNING
HIGH PRESSURE OIL PIPELINE IN THE VICINITY

WARNING
ABNORMAL VOLTAGES DETECTED

NOTES TO THE DESIGNER:
1. Remove W.A.G and ABNORMAL VOLTAGE WARNING if not relevant

WARNING
BEWARE OF UNDERGROUND SERVICES
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Scale 1:1000 @ A3
Scale 1:500 @ A1

REV	DESCRIPTION	DATE	REG. ENG.	REV	DESCRIPTION	DATE	REG. ENG.
1				2			
2				3			
3				4			
4				5			

DESIGNED	D. DESIGNER DATE DD/MM/20YY	PROJECT NUMBER	XXXXXX
DRAWN	D. DRAFTSPERSON DATE DD/MM/20YY	AUTHORISED	A. AUTHORISED DATE DD/MM/20YY
CHECKED	C. CHECKER DATE DD/MM/20YY	REGISTERED ENGINEER	NAME: R. ENGINEER PE REG NO: XXXXXX DATE: DD/MM/20YY

Remove the irrelevant Water Agency Logos or turn off relevant layer
MRWA-LOGO-CWW
MRWA-LOGO-SEW
MRWA-LOGO-YW
MRWA-TEXT-OFF

Insert Consultancy name and logo here

GREATER WESTERN WATER
MUNICIPALITY
PROJECT TITLE
DETAIL PLAN

SCALE: AS SHOWN @A3
SHEET: 2 OF 6
DRAWING No.: MRWA-S-101A
REV: 0

EMBEDMENT & BACKFILL DETAILS:

- Embedment shall be Type A unless stated otherwise.
- Backfill Type O is ordinary fill, to be selected and installed as per MRWA Backfill Specification 04-03.X (Consultant to write in the Backfill Specification adopted by the Water Agency).
- Type F is to be installed as per Figure 1 (Consultant to write in the Road Owners Requirements for Backfill in the Road Reserve which is not under road pavement into Figure 1).

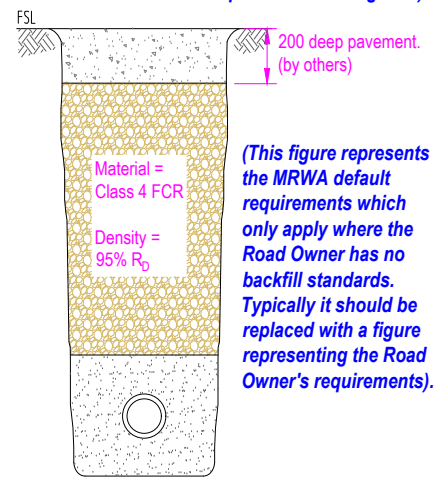


Figure 1: Type F Backfill

- Type R is to be installed as per Figure 2. Type R backfill is to be used under all road pavement. (Consultant to write in the Road Owners Requirements for Backfill under Road Pavement into Figure 2).

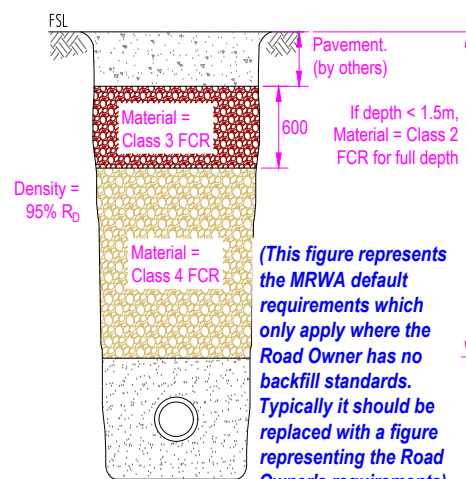


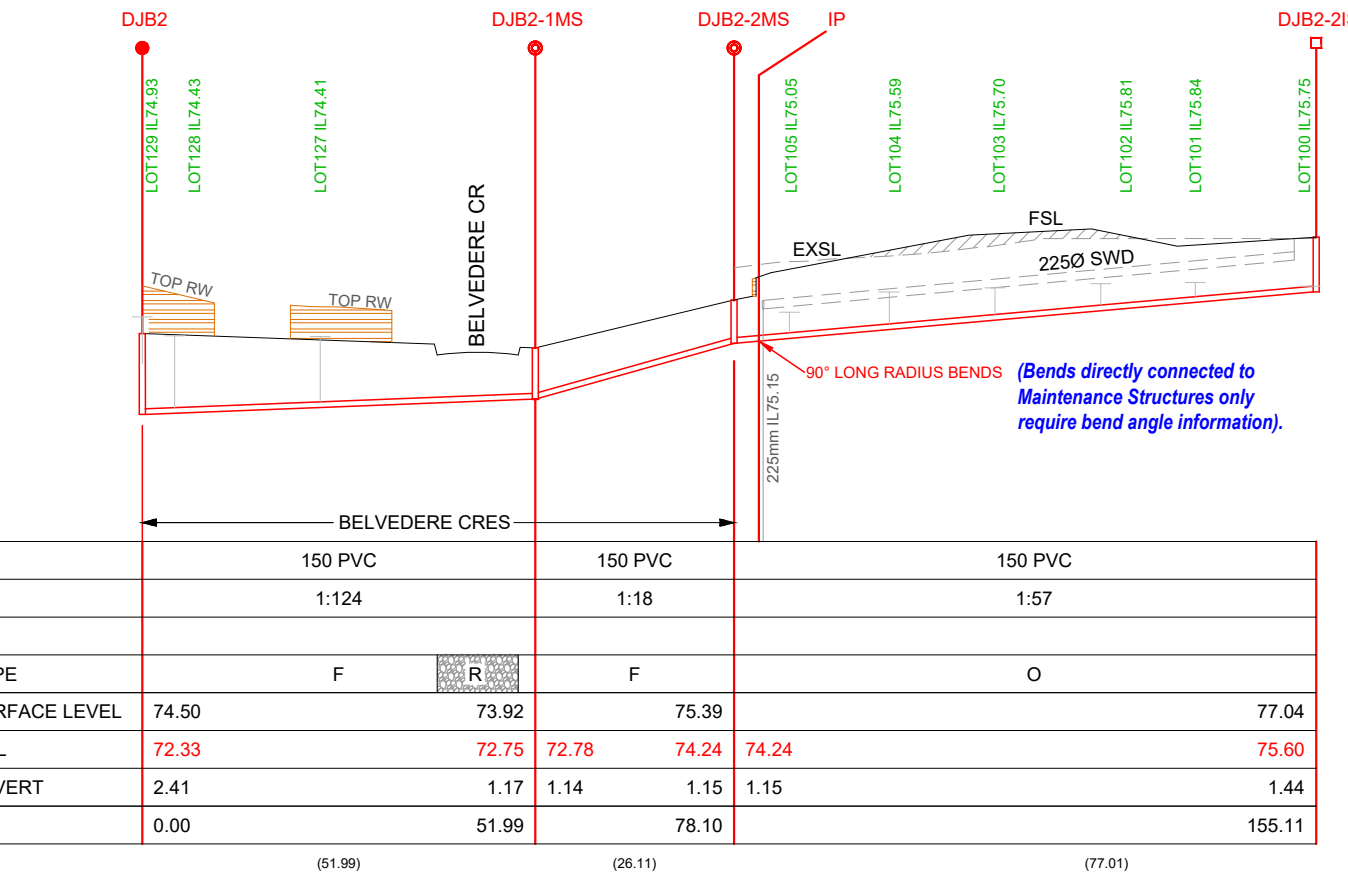
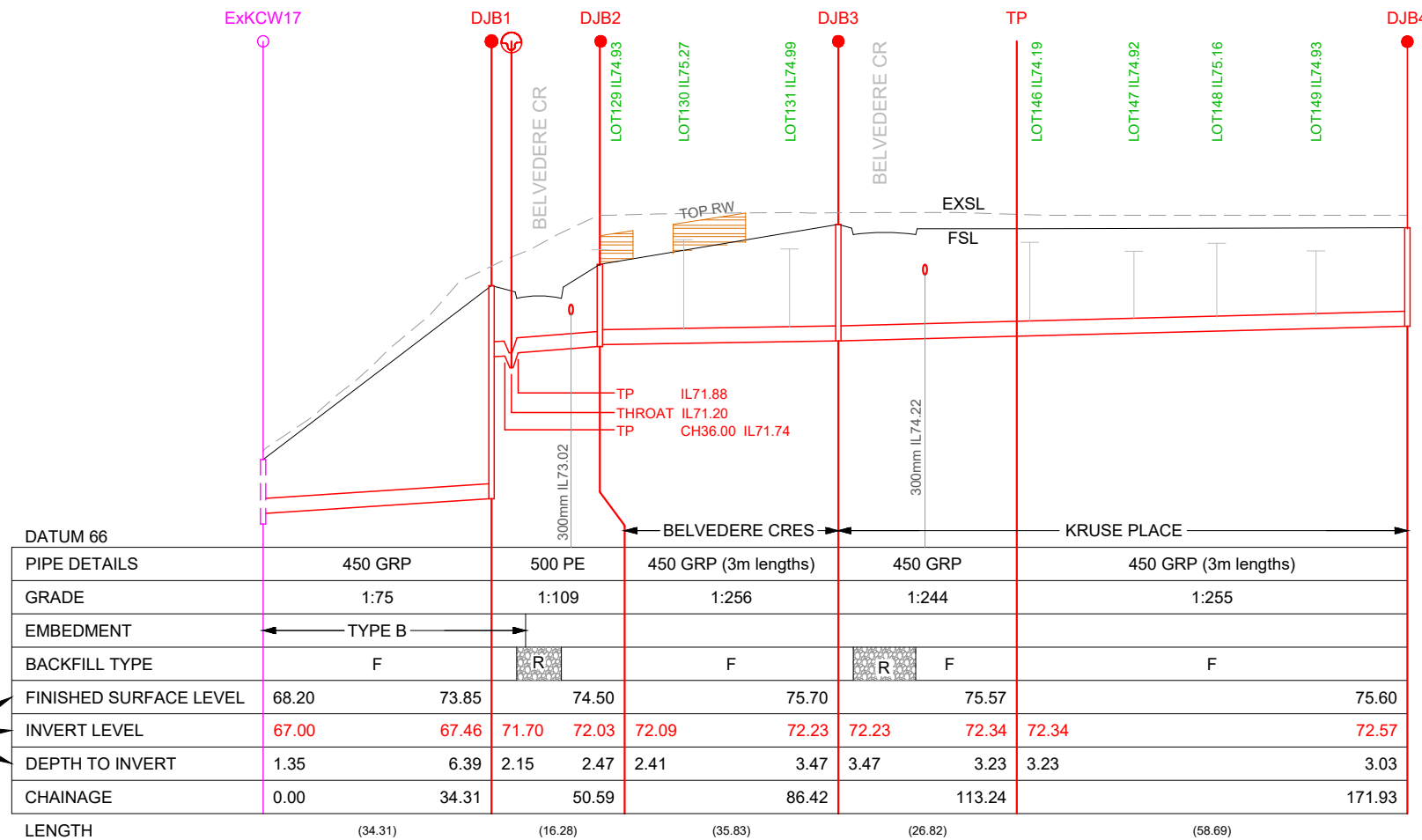
Figure 2: Type R Backfill

(This information is only required on one of the long section sheets).

OTHER NOTES:

- Provide drops at Maintenance Structures in accordance with Table 300B-A.
- The order of level and depth in the tables may be altered from that shown in the standards, although the given order is preferred.

The order of level and depth in the tables may be altered

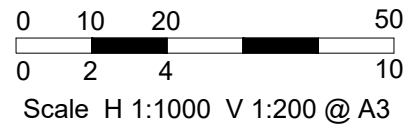


COLOUR LEGEND

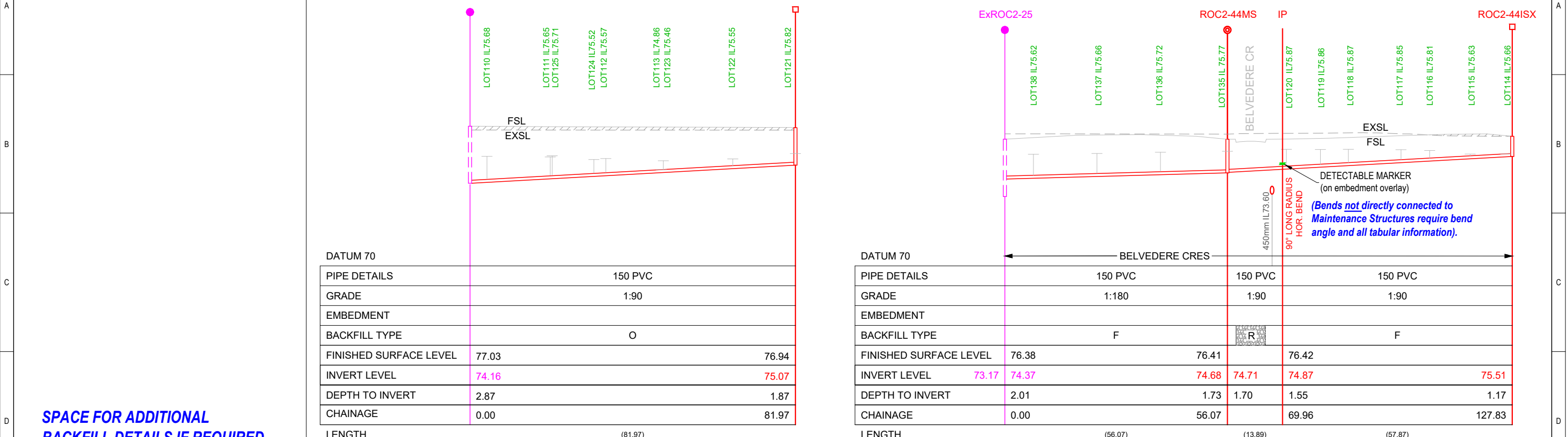
RED 10	SEWERAGE (NEW) INCLUDING NOTES
GREEN 94	PROPERTY CONNECTION TEXT
BLACK 0.35	FINISHED SURFACE, PROPERTY CONNECTION PIPES
MAGENTA 210	EXISTING SEWERAGE
GREY 252	DRAINAGE
ORANGE 32	RETAINING WALLS
GREY 252	CUT & FILL (EARTHWORKS)

ISSUED FOR CONSTRUCTION

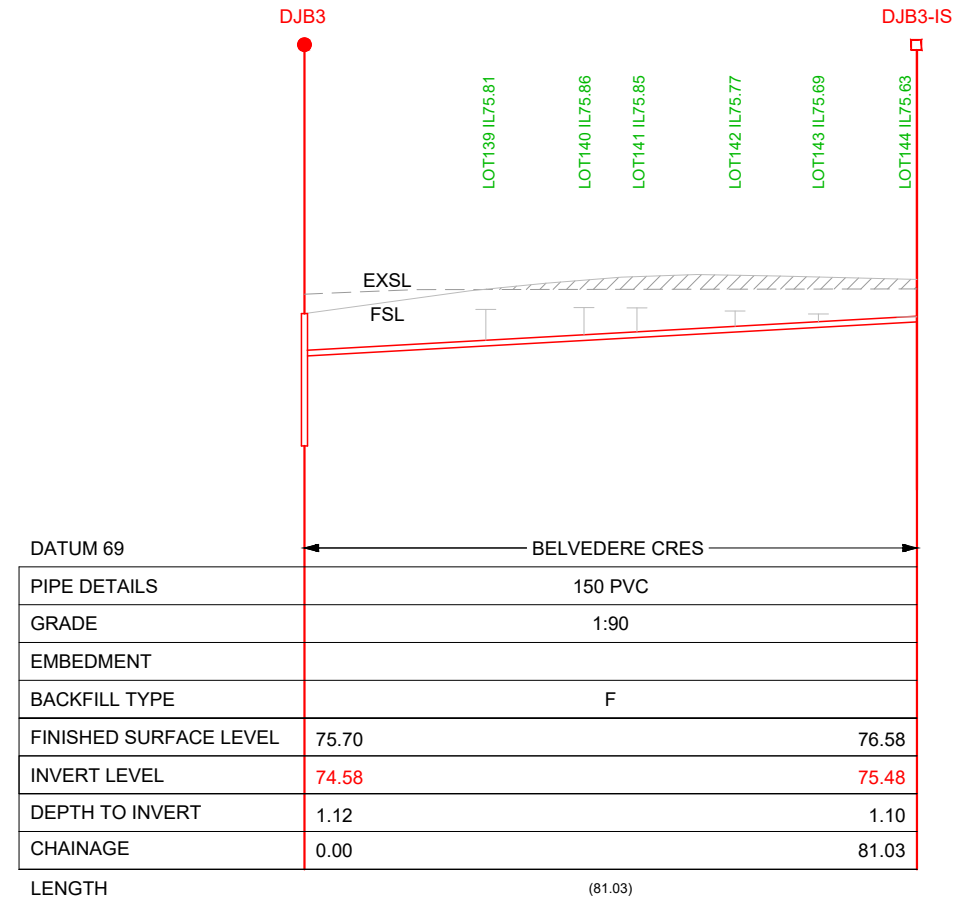
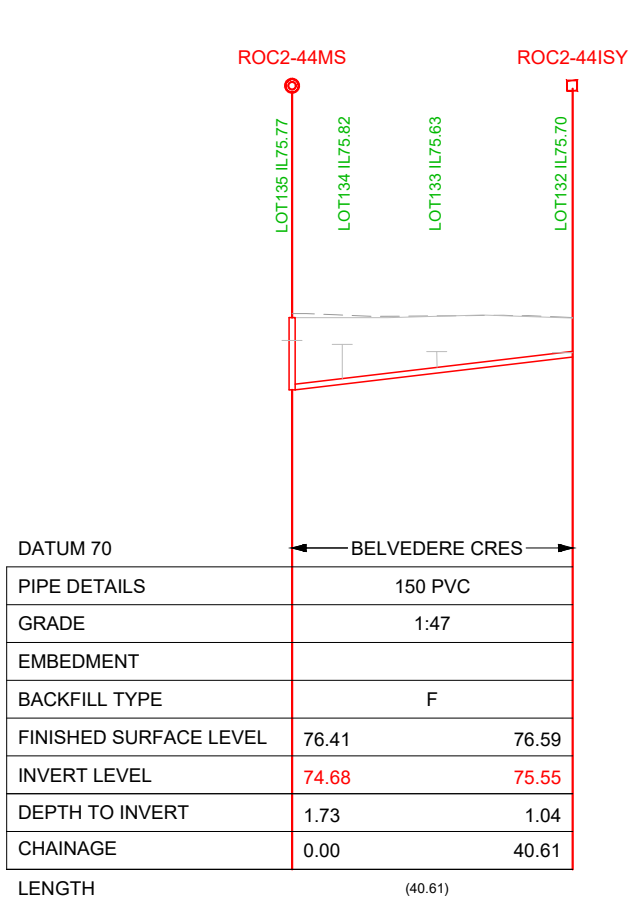
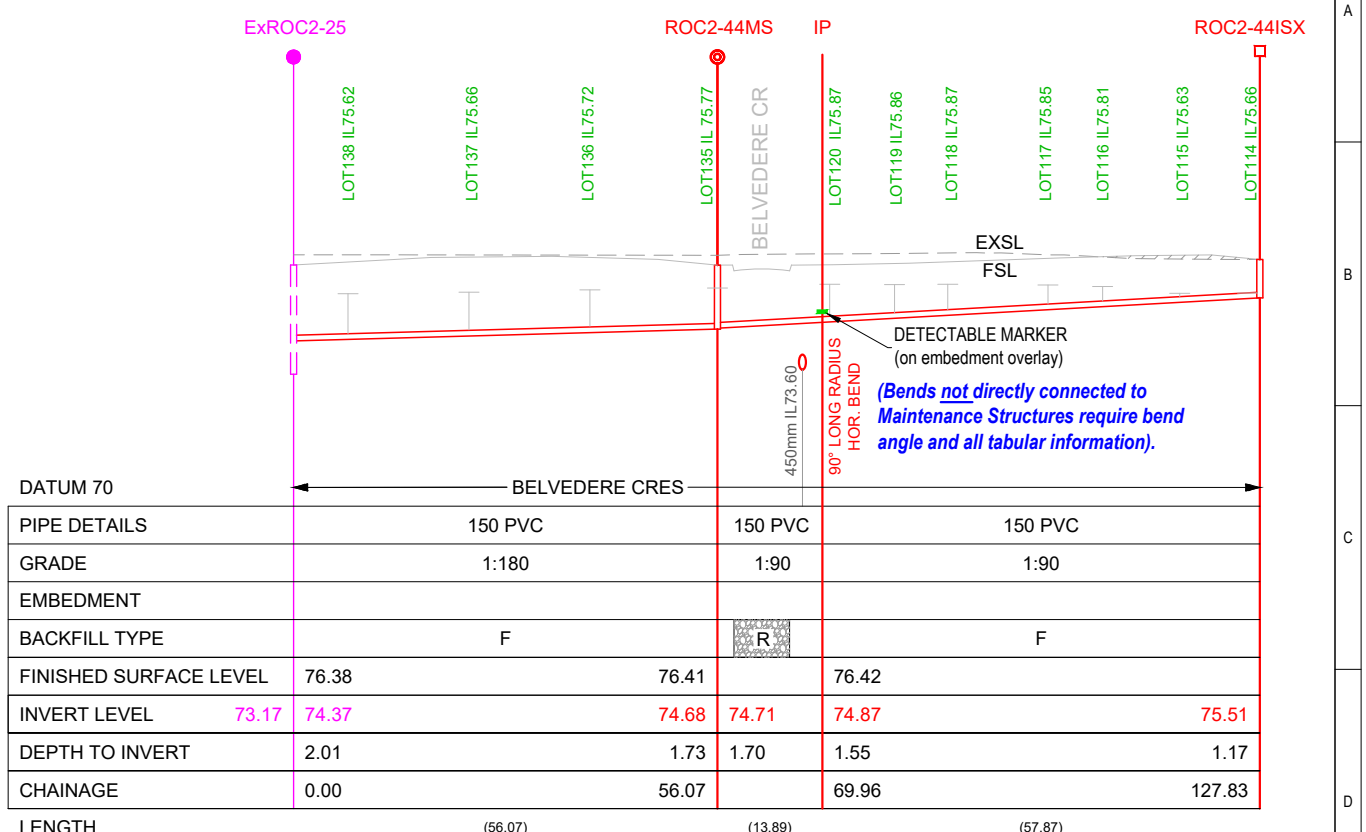
FILL SHOWN THUS: TENDERS SHOULD BE PREPARED ON THE BASIS THAT EARTHWORKS SHOWN SHADED SHOULD BE COMPLETED PRIOR TO THE COMMENCEMENT OF WORKS.



DESIGNED	D. DESIGNER DATE DD/MM/20YY	PROJECT NUMBER	XXXXXX	Remove the irrelevant Water Agency Logos or turn off relevant layer MRWA-LOGO-CWW MRWA-LOGO-SEW MRWA-LOGO-YWW MRWA-TEXT-OFF		GREATER WESTERN WATER MUNICIPALITY PROJECT TITLE LONGITUDINAL SECTION SHEET 1	SCALE: AS SHOWN @A3
AUTHORISED	A. AUTHORISED DATE DD/MM/20YY	REGISTERED ENGINEER	NAME: R. ENGINEER PE REG. NO: XXXXXX DATE: DD/MM/20YY				SHEET: 3 OF 6
DRAWN	D. DRAFTSPERSON DATE DD/MM/20YY	CHECKED	C. CHECKER DATE DD/MM/20YY	Insert Consultancy name and logo here	DRAWING No.: MRWA-S-101B REV: 0		
REV	DESCRIPTION	DATE	REG. ENG.				



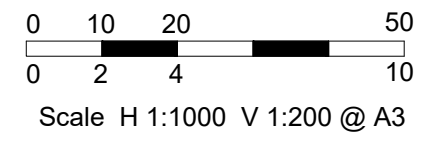
SPACE FOR ADDITIONAL BACKFILL DETAILS IF REQUIRED



COLOUR LEGEND	
RED 10	SEWERAGE (NEW) INCLUDING NOTES
GREEN 94	PROPERTY CONNECTION TEXT
BLACK 0.35	FINISHED SURFACE, PROPERTY CONNECTION PIPES
MAGENTA 210	EXISTING SEWERAGE
GREY 252	DRAINAGE
ORANGE 32	RETAINING WALLS
GREY 252	CUT & FILL (EARTHWORKS)

ISSUED FOR CONSTRUCTION

FILL SHOWN AS FOLLOWS: TENDERS SHOULD BE PREPARED ON THE BASIS THAT EARTHWORKS SHOWN SHADED SHOULD BE COMPLETED PRIOR TO THE COMMENCEMENT OF WORKS.



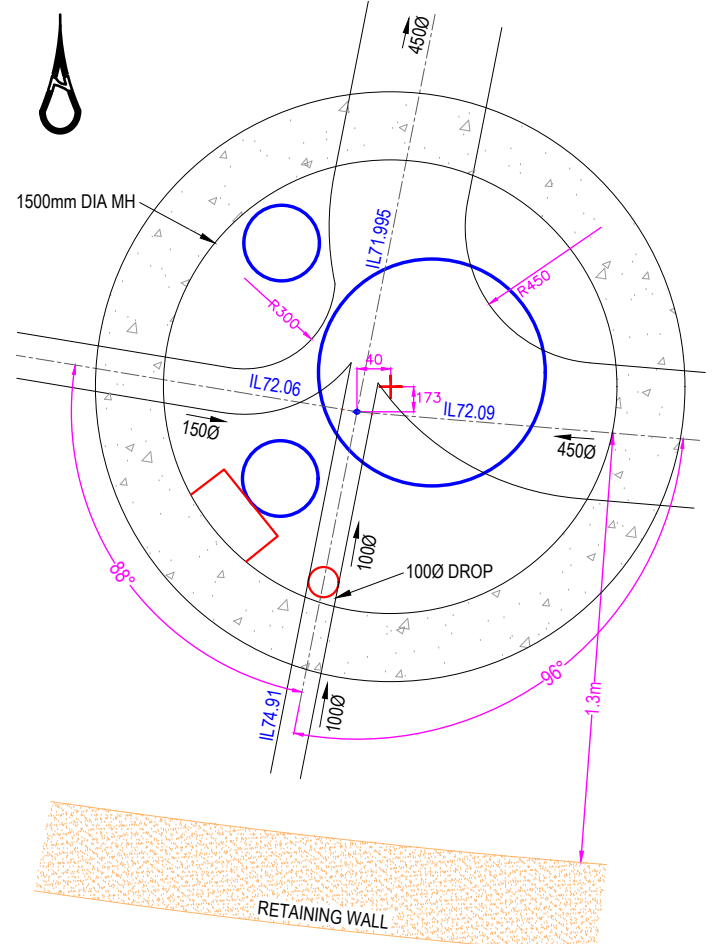
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DRAWN	D. DRAFTSPERSON DATE: DD/MM/20YY	AUTHORISED	A. AUTHORISED DATE: DD/MM/20YY
CHECKED	C. CHECKER DATE: DD/MM/20YY	REGISTERED ENGINEER	NAME: R. ENGINEER PE REG. NO: XXXXXX DATE: DD/MM/20YY

Remove the irrelevant Water Agency Logos or turn off relevant layer
MRWA-LOGO-CWW
MRWA-LOGO-SEW
MRWA-LOGO-YVW
MRWA-TEXT-OFF

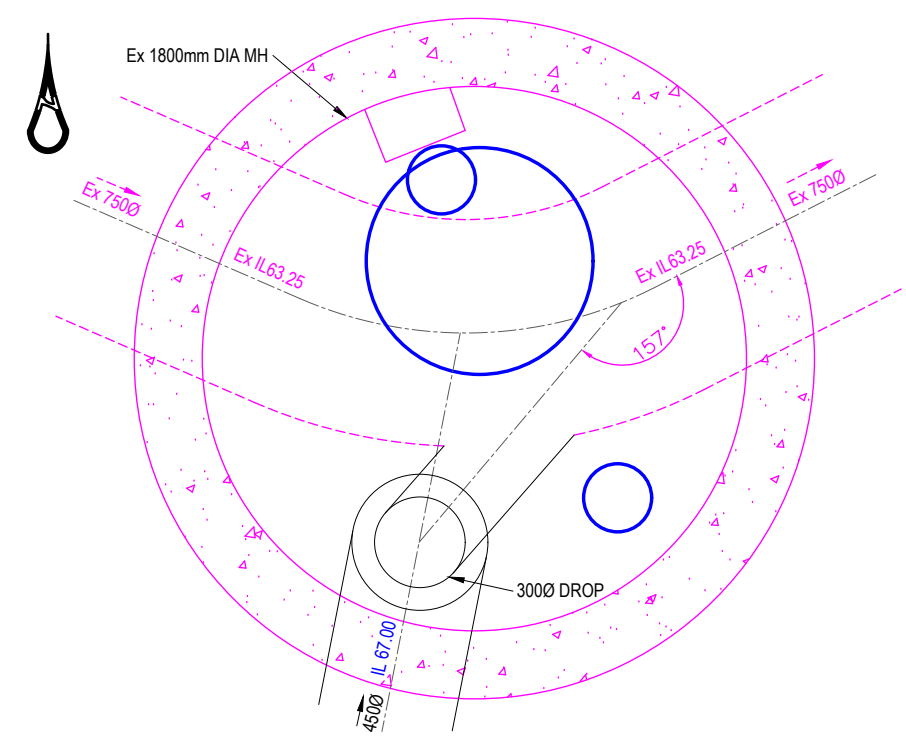
Insert Consultancy name and logo here

GREATER WESTERN WATER
MUNICIPALITY PROJECT TITLE
LONGITUDINAL SECTION SHEET 2

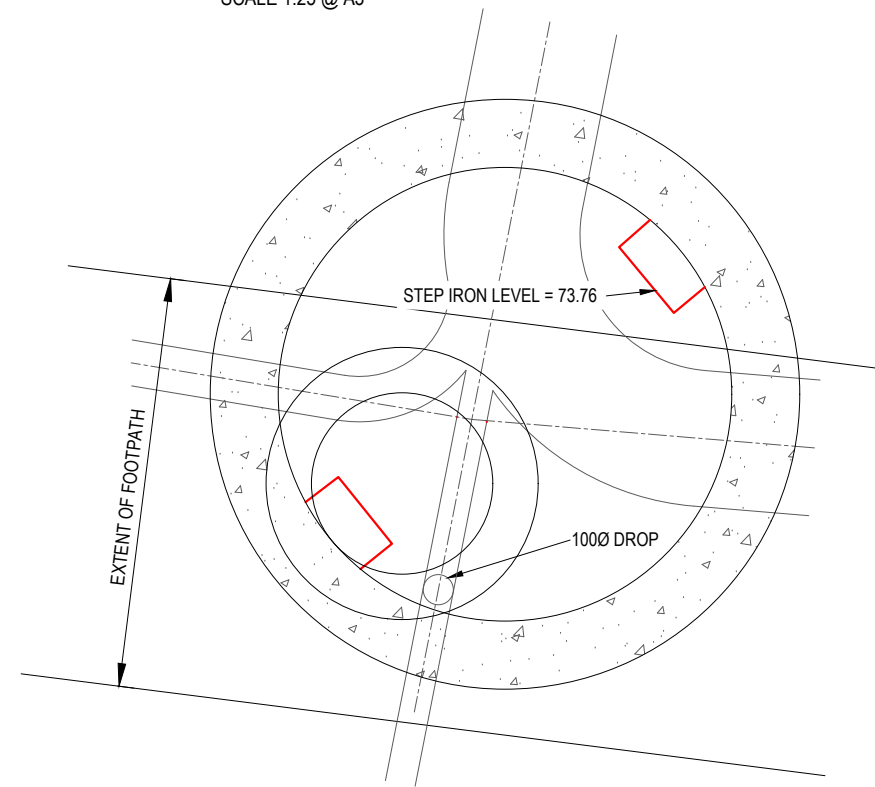
SCALE: AS SHOWN @A3
SHEET: 4 OF 6
DRAWING No.: MRWA-S-101C
REV: 0



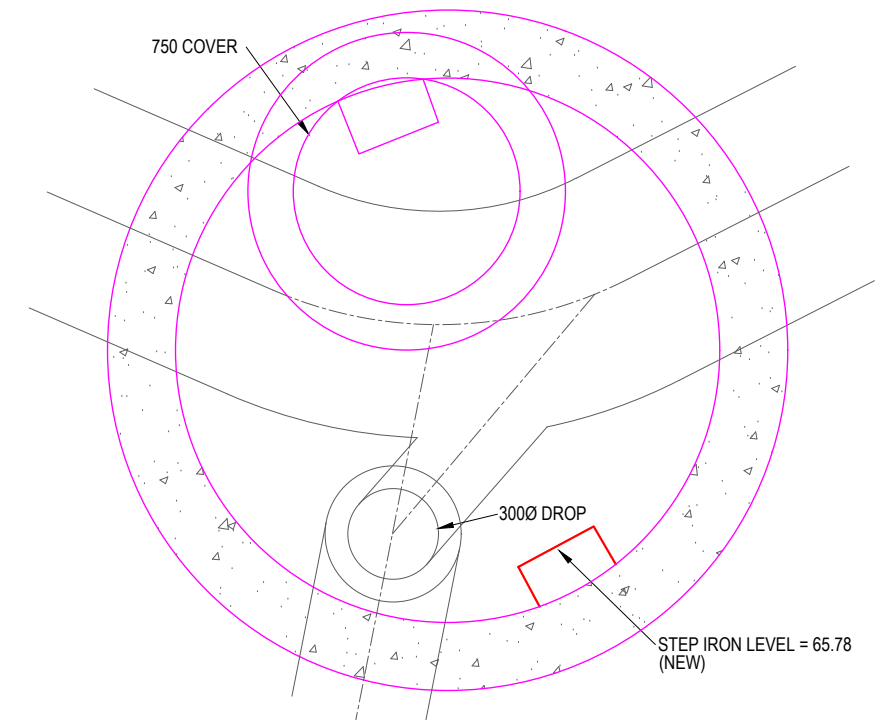
MAINTENANCE HOLE DJB2 BASE ARRANGEMENT
SCALE 1:25 @ A3



Ex MAINTENANCE HOLE KCW17 BASE ARRANGEMENT
SCALE 1:25 @ A3



MAINTENANCE HOLE DJB2 COVERS & FITTINGS ARRANGEMENT
SCALE 1:25 @ A3



Ex MAINTENANCE HOLE KCW17 COVERS & FITTINGS ARRANGEMENT
SCALE 1:25 @ A3

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Note to the Designer:
Maintenance Holes DJB1 and DJB3 would ordinarily require a Detailed Design as per MRWA-S-308. They have not been included in this template

DESIGNED			D. DESIGNER			PROJECT NUMBER			XXXXXX		
DRAWN			D. DRAFTSPERSON			AUTHORISED			A. AUTHORISED		
CHECKED			C. CHECKER			REGISTERED ENGINEER			NAME: R. ENGINEER		
REV			DESCRIPTION			DATE			REG. ENG.		
1			2			3			4		
5			6			7			8		
9			10			11			12		


Remove the irrelevant Water Agency Logos or turn off relevant layer

MRWA-LOGO-CWW

MRWA-LOGO-SEW

MRWA-LOGO-YVW

MRWA-TEXT-OFF



GREATER WESTERN WATER
MUNICIPALITY
PROJECT TITLE
CONSTRUCTION DETAILS

SCALE: AS SHOWN @A3

SHEET: 5 OF 6

DRAWING No.: MRWA-S-101D

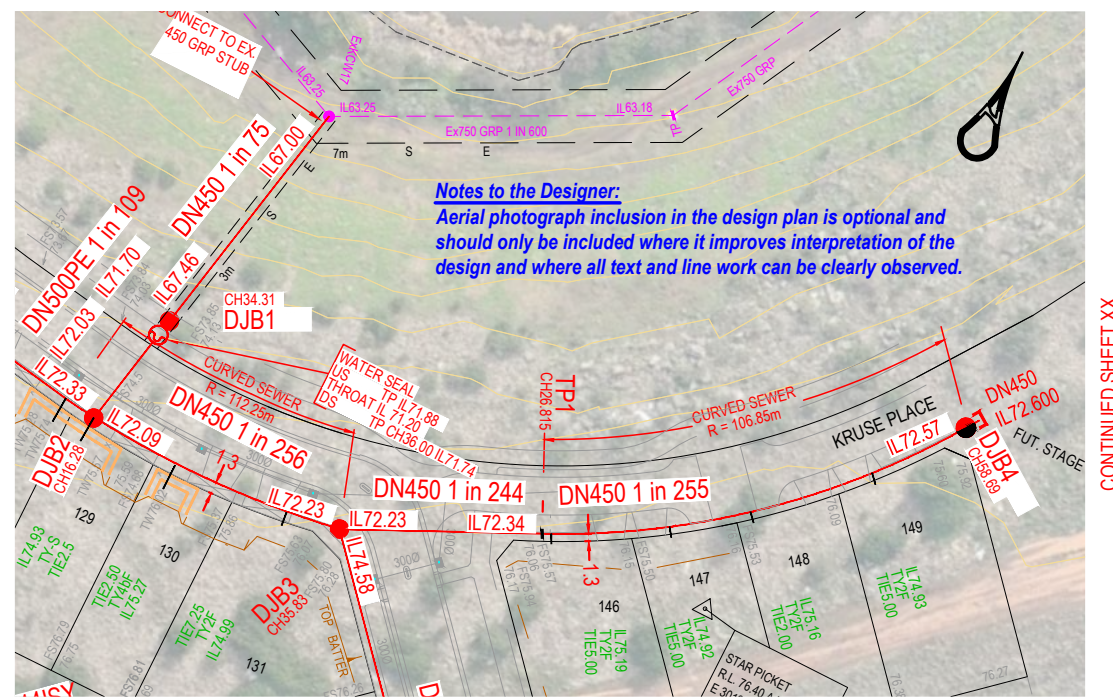
REV: 0

- SYMBOLS LEGEND**
- MAINTENANCE HOLE (MH)
 - MAINTENANCE CHAMBER (MC)
 - MAINTENANCE SHAFT (MS)
 - INSPECTION SHAFT (IS)
 - BURIED JUMP UP
 - INSPECTION OPENING (IO)
 - ⊕ WATER SEAL
 - └ PIPE STUB
 - ∠ VERTICAL BEND
 - RETAINING WALL
 - ROCK RETAINING WALL
 - MAINTENANCE HOLE (MH), Cover centered over black segment
 - (For MHs with no detailed design)
 - ▨ NO REASONABLE ACCESS LOTS
 - W— WATER MAINS
 - G— GAS MAINS
 - E— ELECTRICAL CABLES
 - T— COMMS CABLES
 - D— DRAINAGE
- Services other than Drainage need only be shown where they have a non-standard alignment which will impact construction*

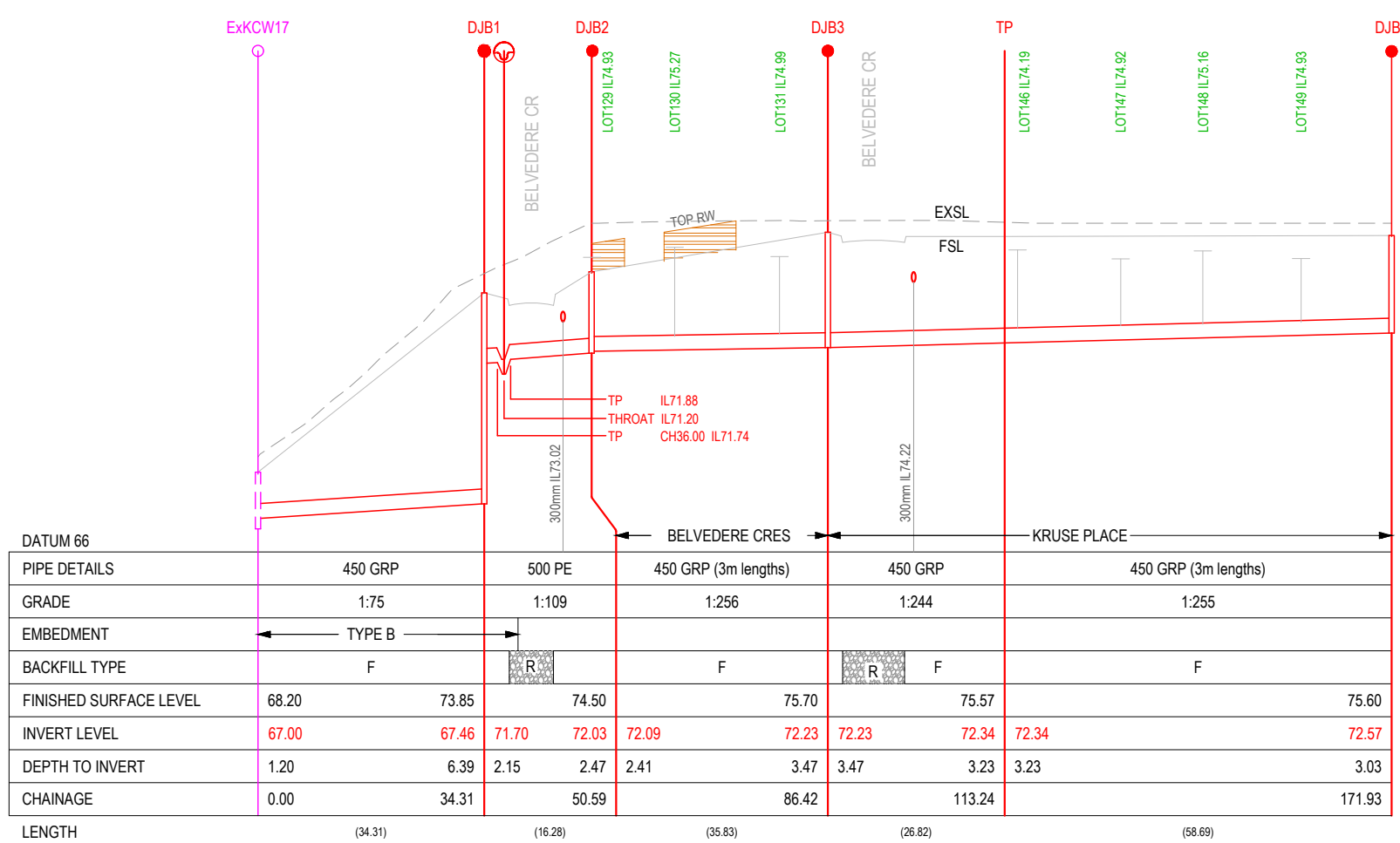
- PROPERTY SERVICE TYPES**
- TY1a (no jump up & 45° junction fitting)
 - TY1b (no jump up & 60° junction fitting)
 - TY2 (jump up adjacent to main)
 - TY4a (offset jump up & 45° junction fitting)
 - TY4b (offset jump up & 60° junction fitting)
 - TY4S (offset jump up connected to shaft)
 - TY4B (offset jump up connected to base)
 - TYB (no jump up & connected to base)
 - TY5 (no jump up & connected to shaft)
 - TY2F (TY2 with tall jump up fittings)
 - TY4aF (TY4a with tall jump up fittings)
 - TY4bF (TY4b with tall jump up fittings)
 - TY4SF (TY4S with tall jump up fittings)
 - TY4BF (TY4B with tall jump up fittings)

- ABBREVIATIONS LEGEND**
- FS = Finished Surface Level
 - IL = Invert Level
 - TW = Top of Retaining Wall (Levels with no Prefix are Existing Surface Levels)
 - EP = End of Pipe
 - TP = Tangent Point
 - IP = Intersection Point
 - TY = Property Connection Type
 - F = Tall jump up Property Connection
 - BT = Boundary Trap Lot (indicate Boundary Trap Lots after TY, eg: TY4S-BT)

- COLOUR LEGEND**
- RED 10 SEWERAGE (NEW) INCLUDING NOTES
 - GREEN 94 PROPERTY CONNECTION TEXT
 - MAGENTA 210 EXISTING SEWERAGE
 - ORANGE 32 RETAINING WALLS
 - BLACK 0.13 STAGE LOT, ROAD BOUNDARIES, LOT No, ROAD NAMES, EASEMENTS.
 - BLACK 0.35 PROPERTY CONNECTION PIPES
 - GREY 252 EXISTING LOT & ROAD BOUNDARIES
 - GREY 252 KERBS, FOOTPATHS, DRIVEWAYS, BOUNDARIES LEVELS AND BATTERS.
 - GREY 252 DRAINAGE & OTHER SERVICES
 - COLOUR 42 CONTOURS (1.0m INTERVAL)



DETAIL PLAN
SCALE 1:500 @ A1



LONGITUDINAL SECTION
SCALE 1:500 @ A1 HORIZONTAL
SCALE 1:100 @ A1 VERTICAL

- Notes to the Designer:**
- While this template is primarily intended for linear asset projects such as Branch Sewers where reticulation connections are not included, it may also be used for smaller network projects where Plan and Long Section(s) can fit onto a single page.
 - Trench sections as indicated in MRWA-S-101B are required to be shown somewhere within the Design Drawings.

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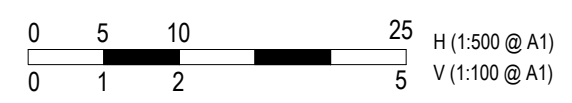


W.A.G. WARNING
HIGH PRESSURE OIL PIPELINE IN THE VICINITY

WARNING
ABNORMAL VOLTAGES DETECTED

- NOTES TO THE DESIGNER:**
- Remove W.A.G and ABNORMAL VOLTAGE WARNING if not relevant

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.



DESIGNED	D. DESIGNER DATE DD/MM/20YY	PROJECT NUMBER	XXXXXX	Remove the irrelevant Water Agency Logos or turn off relevant layer MRWA-LOGO-CWW MRWA-LOGO-SEW MRWA-LOGO-YWW MRWA-TEXT-OFF		GREATER WESTERN WATER MUNICIPALITY PROJECT TITLE CONSTRUCTION DETAILS	SCALE: AS SHOWN @A3
DRAWN	D. DRAFTSPERSON DATE DD/MM/20YY	AUTHORISED	A. AUTHORISED DATE DD/MM/20YY				SHEET: 6 OF 6
CHECKED	C. CHECKER DATE DD/MM/20YY	REGISTERED ENGINEER	NAME: R. ENGINEER PE REG. NO: XXXXXX DATE: DD/MM/20YY				DRAWING No.: MRWA-S-102
REV	DESCRIPTION	DATE	REG. ENG.	REV	DESCRIPTION	DATE	REG. ENG.