Drawing No.	CAD No.	Description
WW 1	2010070.002	General construction notes
WW 2	2010070.001	Typical trench reinstatements details for wastewater
WW 3	2010070.005	Bedding details
WW 4	2010070.003	Drainage plan format for design
WW 5	2010070.010	Manhole general details and layout. For manholes up to 1.8m deep
WW 6	2010070.029	Typical manhole throat and cover details
WW 7	2010070.033	Angled manhole access details
WW 8	2010070.009	Terminating manhole detail 675mm nominal diameter
WW 9	2010070.012	Manholes > 1.8m deep
WW 10	2010070.013	Manhole connection and starter detail
WW 11	2010070.028	Standard concrete manhole HDPE sliding joint
WW 12	2010070.054	Standard concrete manhole restraint PE joint
WW 13	2010070.018	Internal manhole plunge-drop pipe
WW 14	2010070.036	Saddle connections to gravity public wastewater
WW 15	2010070.038	In-line service connections to public gravity wastewater
WW 16	2010070.049	Bulkheads for steep grades
WW 17	2010070.037	Private connection minimum floor level to soffit of wastewater
WW 18	2010070.043	Private rising main connection
WW 19	2010070.041	Pressure sewer outlet to gravity public
WW 20	2010070.055	Pressure wastewater flush-out / scour
WW 21	2010070.056	Boundary pressure wastewater connection
WW 22	2010070.057	Boundary multi-connection for pressure wastewater
WW 23	2010070.058	Pressure wastewater vent and air valve
WW 24	2010070.053	Anchor block details. Reducers and vertical bends for pressure systems
WW 25	2010070.052	Flange connection detail. PE main to other for pressure systems
WW 26	2010070.044	Pipe and manhole construction clearance
WW 27	2010070.045	Building close to, or over local network wastewater
WW 28	2010070.051	Guideline for building close to, or over transmission wastewater

GENERAL CONSTRUCTION NOTES

STANDARDS RELATING TO WORKS

Works shall to be carried out to the requirements of the Health & Safety at work in Employment Act 2015

Works shall be completed to Watercare Construction Standards.

MANUFACTURERS SPECIFICATIONS

Materials shall be installed to the Manufacturers requirements unless otherwise specified.

WELDING & FIXINGS

All steelwork shall be be workshop fabricated.

Steelwork and fixings shall be hot-dip galvanised to AS/NZS 4680 unless otherwise stated.

A Nickel anti-seize free of copper , lead , sulphides , chlorides & carbons (graphite) shall be used on bolts.

REINFORCING STEEL

Reinforcing shall be centrally placed with the specified minimum cover.

Bends shall be cold formed.

JOINT SEALS

Flanges : Per WSL Material Standard.

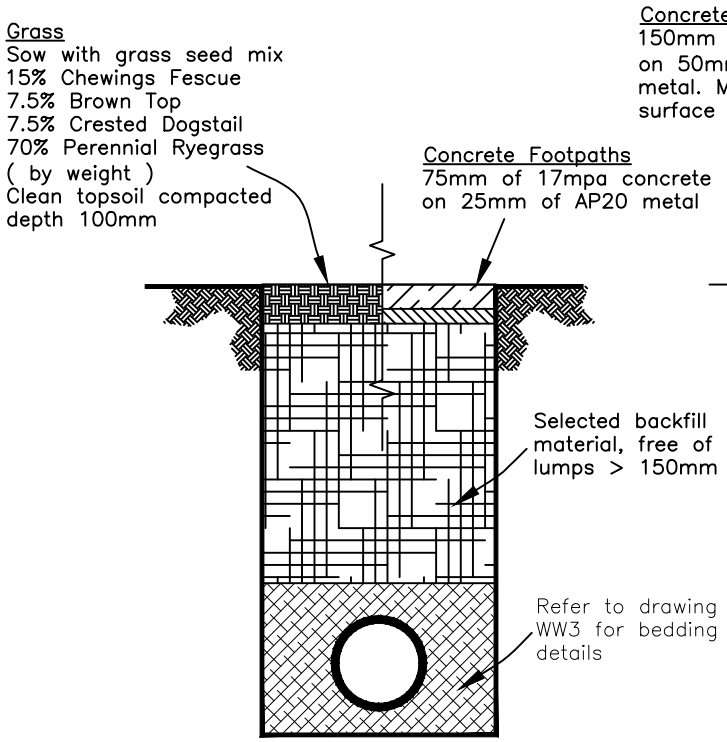
Manhole Joints : Concrete manhole with flexable joint seal such as rubber or butyl.
All joints must be externally wrapped with an accepted tape wrapped system.
Alternative materials to suppliers' specifications.

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.002D .DWG

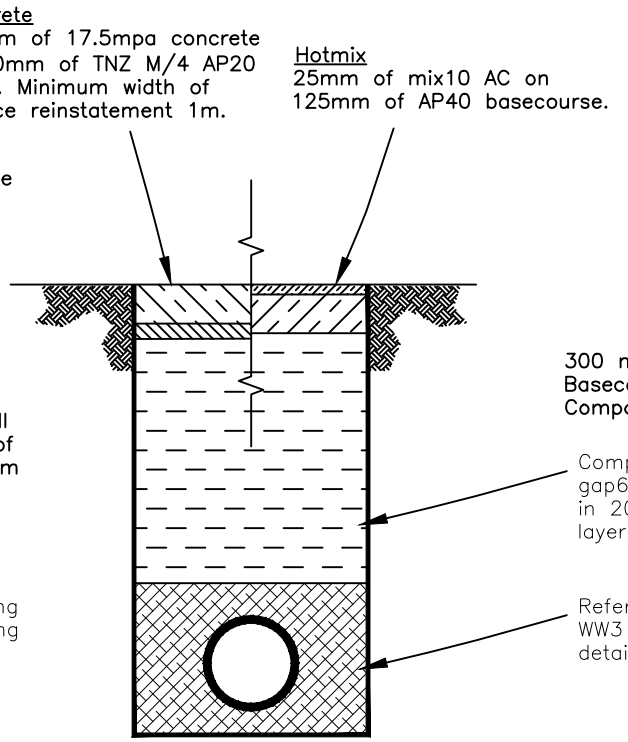
Watercare

GENERAL CONSTRUCTION NOTES

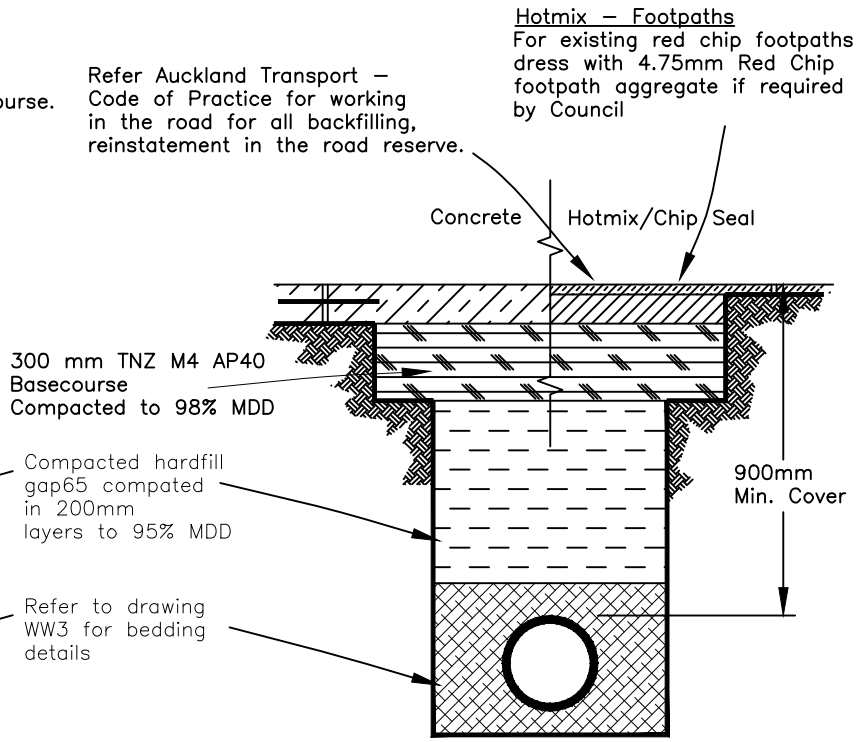
SCALE:	N.T.S.
ISSUE DATE:	13-07-2018
DWG No.	2010070.002D
REFERENCE No.	WW 1



GRASS AREA & FOOTPATH
(Not in Road reserve)
REINSTATEMENT



DRIVEWAY REINSTATEMENT
(Not in Road Reserve)



FOOTPATH/VEHICLE CROSSING,
CARRIAGEWAY REINSTATEMENT

NOTES

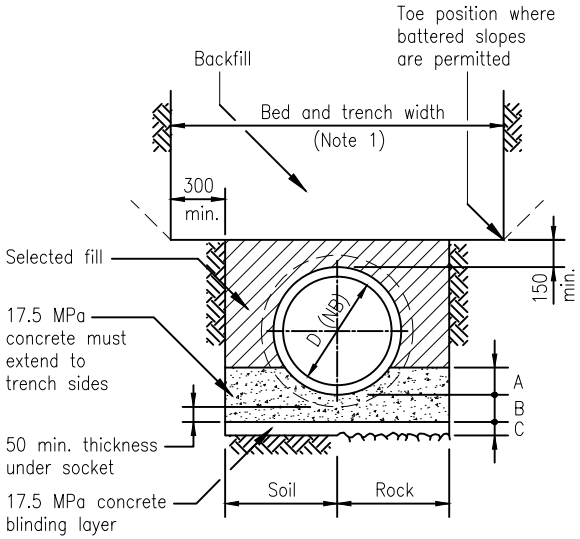
1. All trench surface reinstatement within the road reserve shall comply with Auckland Transport requirements.
   The details shown are typical expectations for reinstatements.
2. Backfill shall be compacted in 200mm layers to obtain maximum density as described in Watercare's Construction Standards.
3. Where concrete or other stabilized layers exist in the roadway, the trench shall be reinstated with similar material or as directed by the roading engineer.

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.001C .DWG

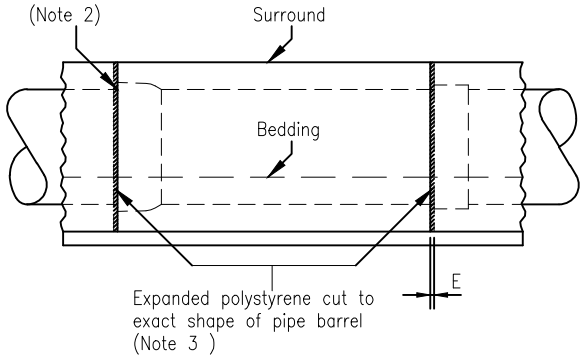
Watercare

TYPICAL TRENCH REINSTATEMENT DETAILS FOR WASTEWATER

SCALE:	N.T.S.
ISSUE DATE:	06–03–2017
DWG No.	2010070.001C
REFERENCE No.	WW 2



CONCRETE BEDDING



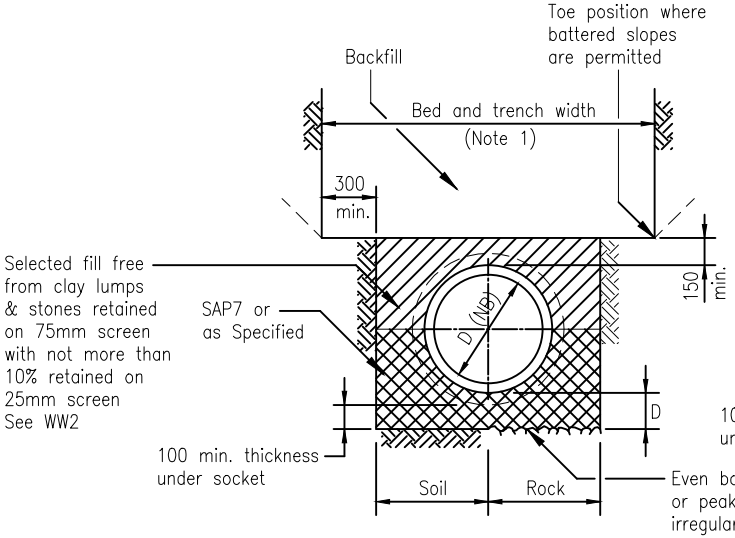
CONCRETE BEDDING AND SURROUND

NOTES :

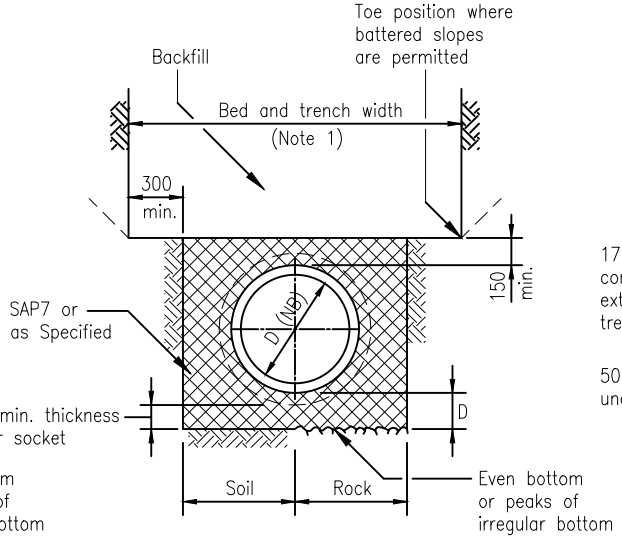
1. Concrete bedding O.A. Width = D+200mm
   Concrete Surround O.A. Width = D+D/2 with Min 50mm concrete either side.
   Granular bedding Min. 300mm either side of the pipe.
2. Wrap joint gap outside the rubber ring with an acceptable system.
3. Expanded polystyrene shall extend the full cross-section of concrete.
4. Bedding and backfill shall be well compacted in layers not exceeding 200mm depth to AS/NZS 2566.2

DIMENSION TABLE		
	D≤250	D=300
A	0.5D	150
B	100	150
C	50	50
D	150	150
E*	25	25
E**	25	25

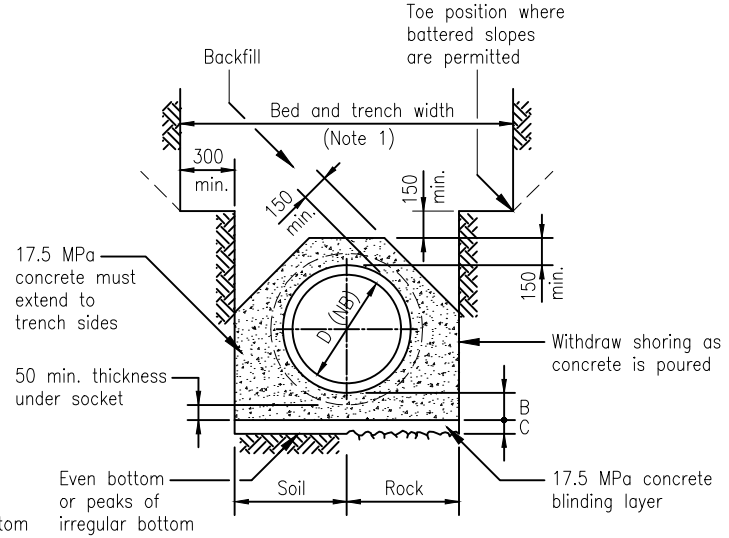
E*=E for concrete surround
E**=E for concrete bedding



GRANULAR BEDDING



GRANULAR SURROUND



CONCRETE SURROUND

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.005C .DWG

Watercare

BEDDING DETAILS

SCALE:	N.T.S.
ISSUE DATE:	23-01-2017
DWG No.	2010070.005C
REFERENCE No.	WW 3

NOTES

1/ Show all underground services on plan and longitudinal sections.

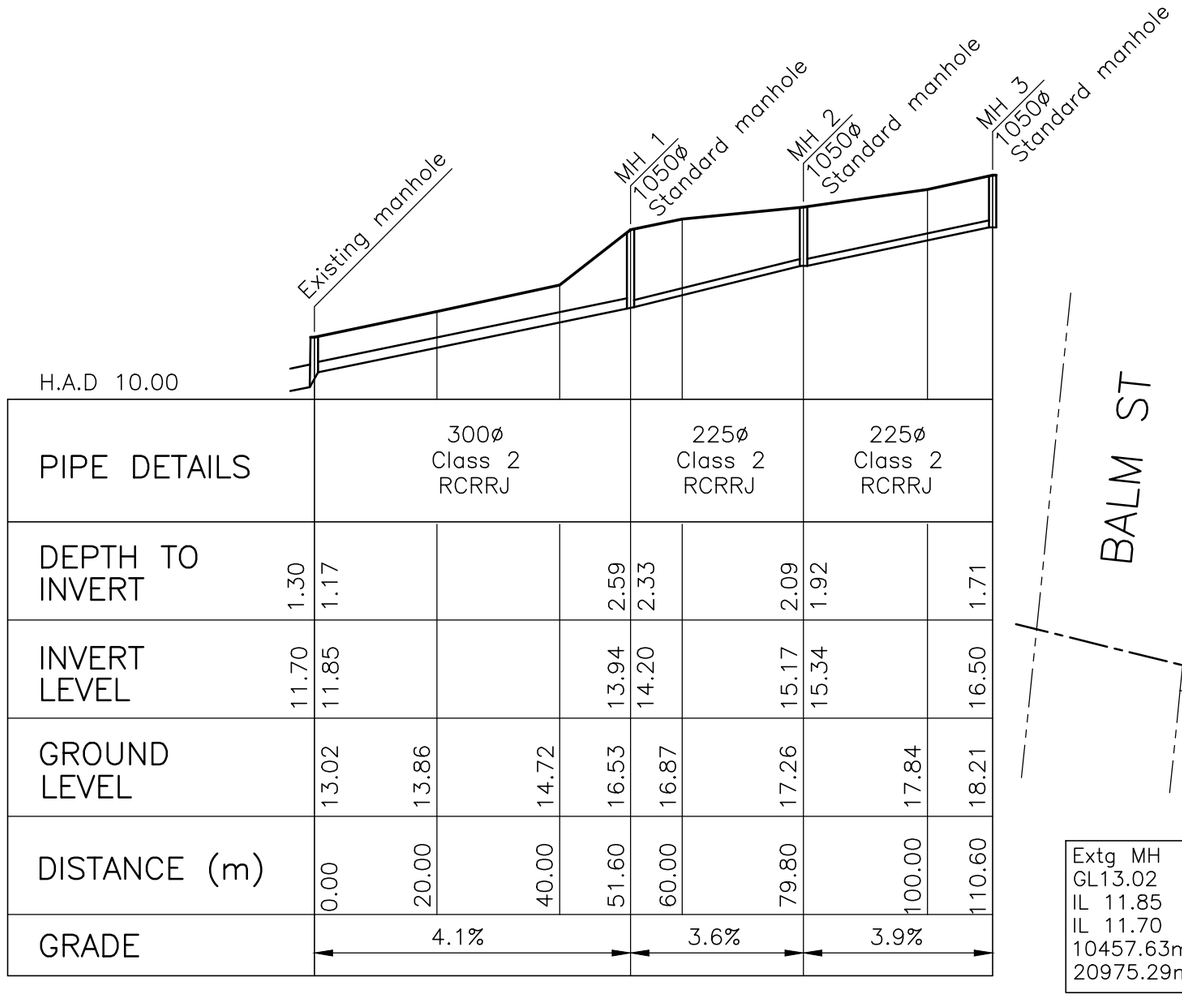
2/ Calculation of grades are based on the distances between manhole centrelines minus the average diameter of the two manholes.

LIST OF STRUCTURES PROPOSED TO BE PUBLIC

From	To	Being
Exist MH	New MH3	110m WW (600mm to 225mm dia)

Street address of development _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

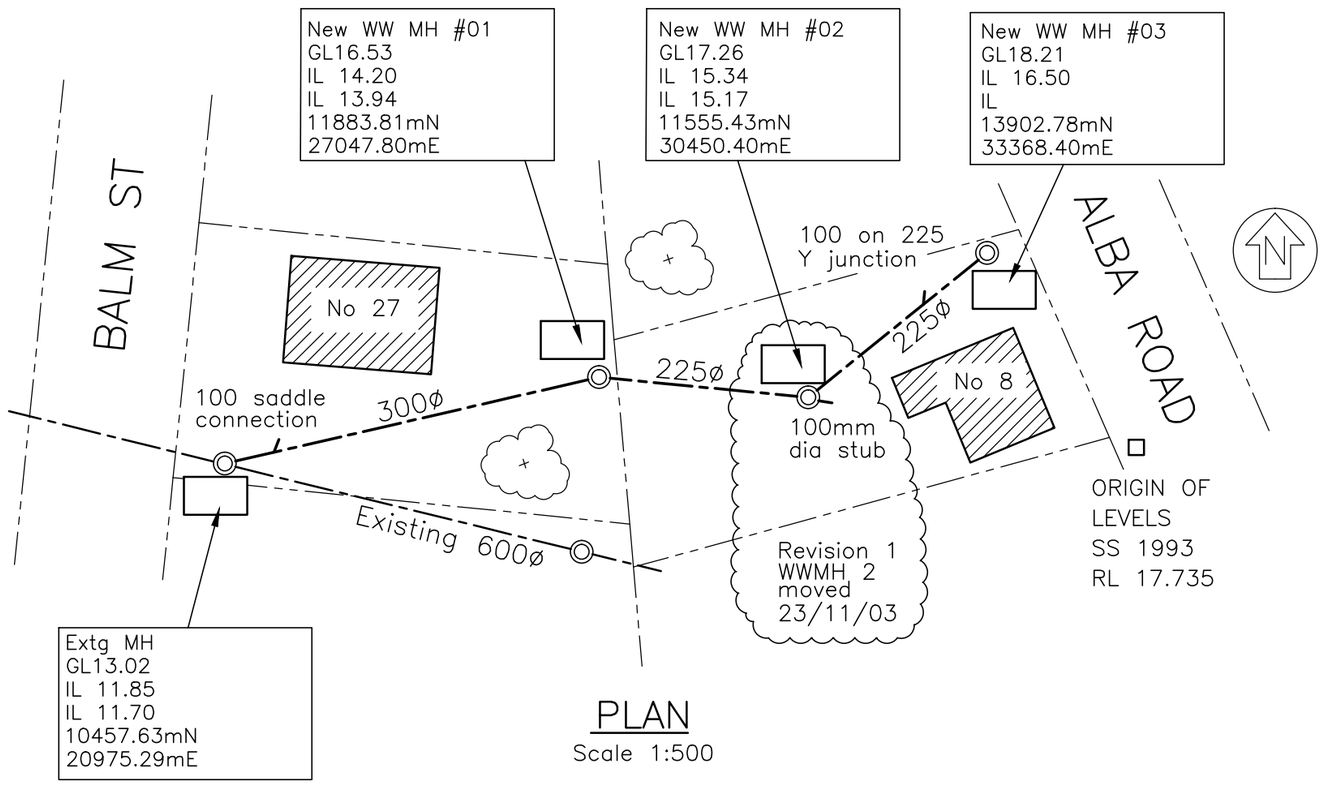
Legal description (eg Lot..... DP.....) _ _ _ _ _ _ _ _ _ _ _ _ _ _



PIPE DETAILS		300ø Class 2 RCRRJ				225ø Class 2 RCRRJ			225ø Class 2 RCRRJ			
DEPTH TO INVERT	1.30	1.17			2.59	2.33		2.09	1.92			1.71
INVERT LEVEL	11.70	11.85			13.94	14.20		15.17	15.34			16.50
GROUND LEVEL		13.02	13.86	14.72	16.53	16.87		17.26		17.84		18.21
DISTANCE (m)		0.00	20.00	40.00	51.60	60.00		79.80		100.00		110.60
GRADE		4.1%				3.6%			3.9%			

LONGITUDINAL SECTION

Scale Horiz. 1:500
Vert. 1:100



PLAN

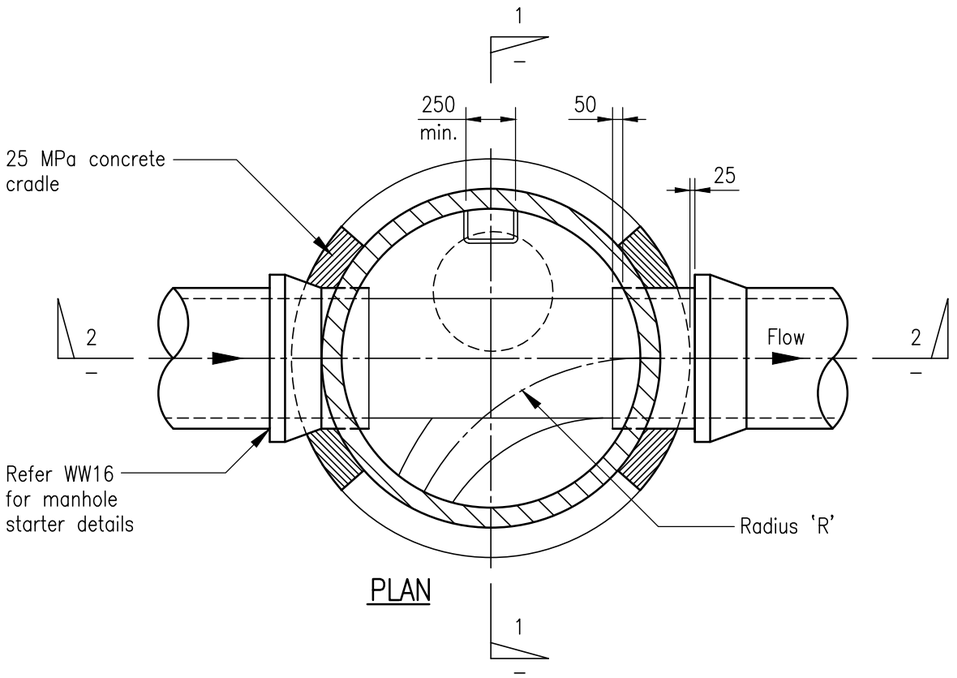
Scale 1:500

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.003B .DWG

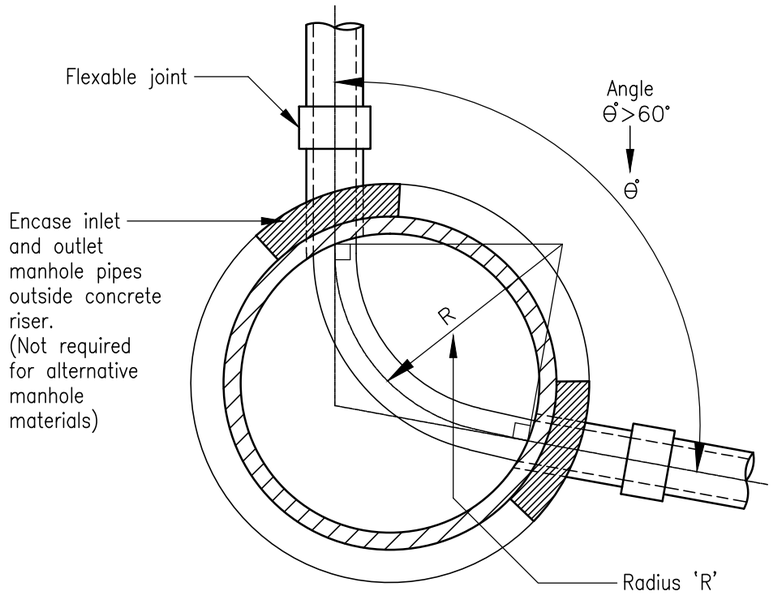
Watercare

DRAINAGE PLAN FORMAT FOR DESIGN

SCALE:	N.T.S.
ISSUE DATE:	13–07–2018
DWG No.	2010070.003B
REFERENCE No.	WW 4



PLAN



PLAN

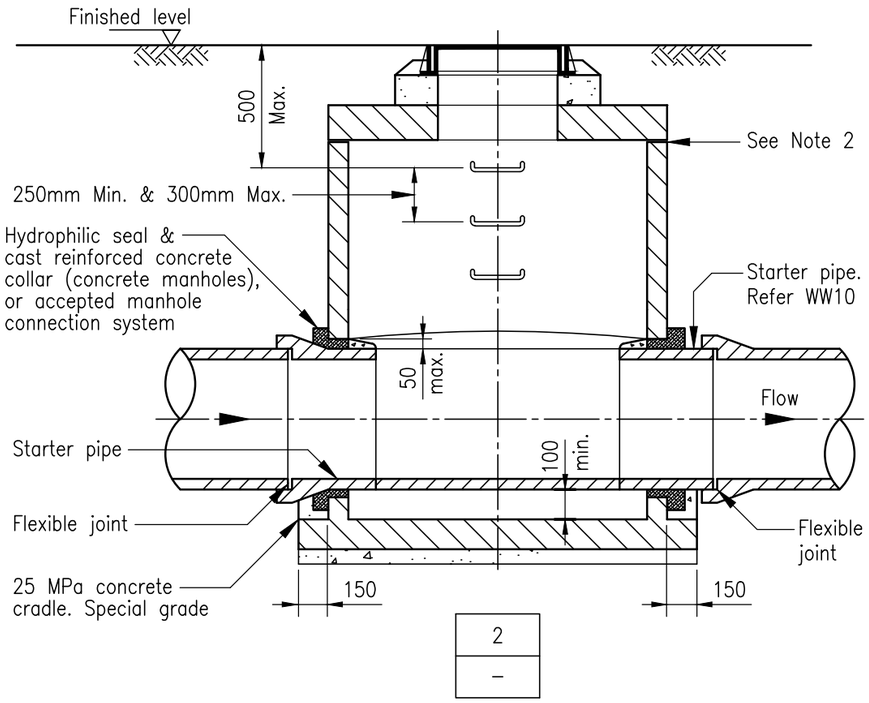
MANHOLE RISER DIAMETERS			
MAX. PIPE DIA.	NO. OF INCOMING PIPES **		
	1	2*	3***
⩽250	1050	1050	1050
300	1500	1500	1500
>300	Refer to transmission dwgs.		

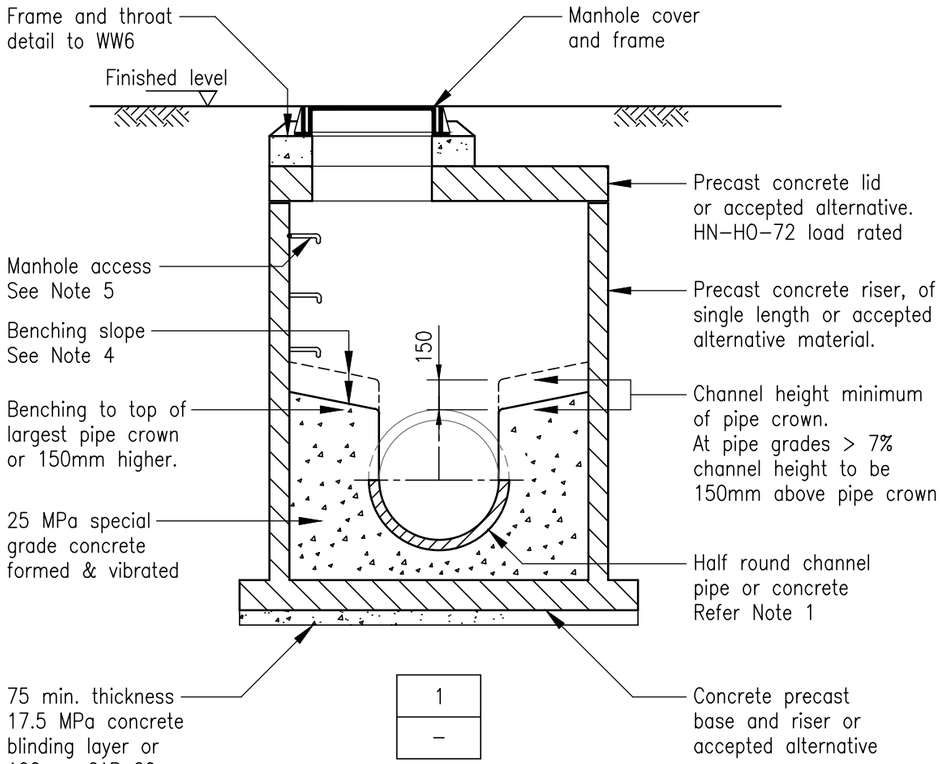
* Based on Max. 120 Deg deflection through manhole.

** To be determined with due regard for future potential connections.

*** Based on Min. 60 Deg between pipes & ⩽ 180 Deg between pipe 1 & pipe 3

[Outside these criteria requires specific design]





NOTES:

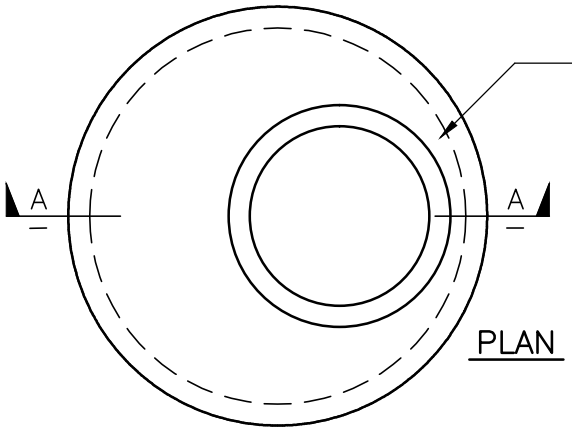
1. Half round channels shall be pre-formed from a corrosion, prehibitive material.
2. Joint seals shall be an acceptable flexible seal. The joint shall be closed with an epoxy mortar (if concrete) & externally wrapped with an acceptable wrapping system.
3. Refer WW6 for manhole throat and cover details.
4. Concrete benching shall have a minimum slope of 1 in 12, proprietary benching products with a smooth surface (such as Polyethylene) shall not be less than 1 in 20. Refer to Watercare material supply standard.
5. Refer to the material supply standard for step-rung and ladder policy.
6. For manholes deeper than 1.8m Refer to WW9
6. Abbreviations :
   Min. = Minimum
   I.D. = Internal diameter
   'R' = Min. Radius (3 x I.D.).

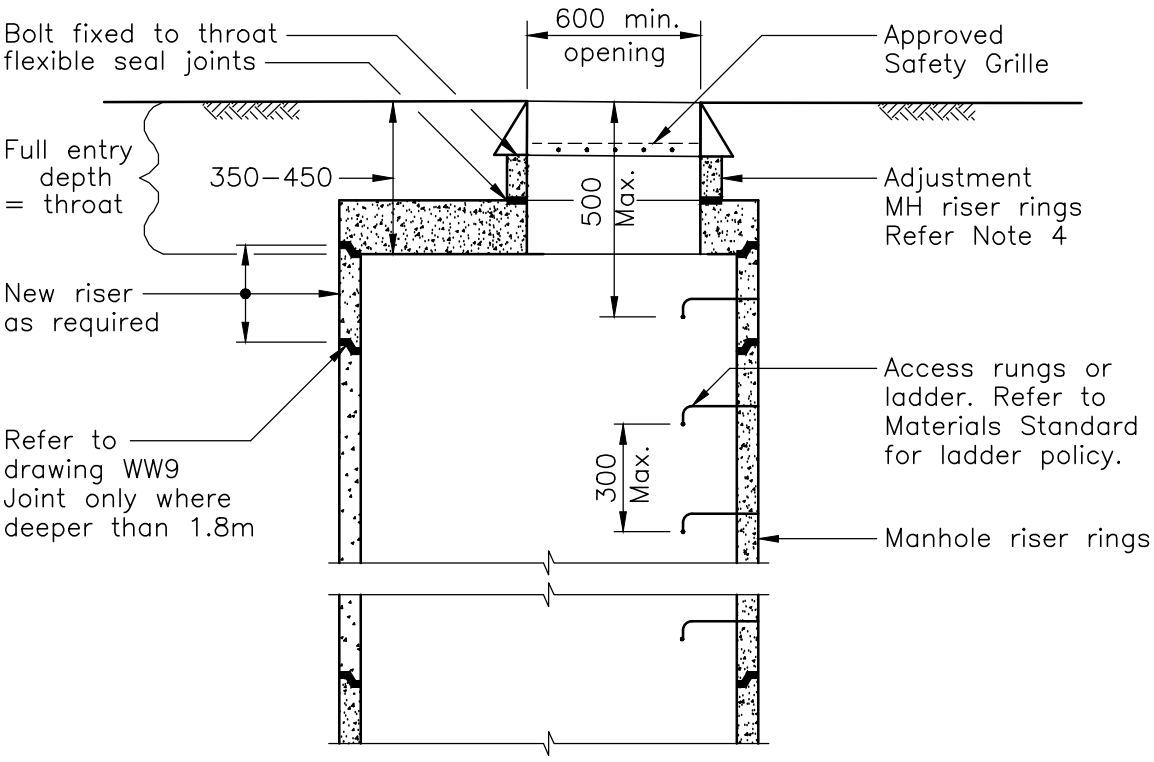
O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.010D .DWG

Watercare

MANHOLE GENERAL DETAILS AND LAYOUT FOR MANHOLES UP TO 1.8m DEEP

SCALE:	N.T.S.
ISSUE DATE:	13-07-2018
DWG No.	2010070.010D
REFERENCE No.	WW 5





TYPICAL SECTION A–A
THROUGH MANHOLE

NOTES:

1. Lid supplied to HN–HO–72 loading and compliance certified.
2. When the throat depth is greater than 450mm, a new manhole riser is required with a new adjustment ring.
3. Refer drawing WW9 for manholes deeper than 1.8m
4. Refer drawing WW7 for sloping ground.
5. Refer drawing WW5 for manhole details.
6. Approved Safety Grille below access manhole cover.
7. Manhole covers in the road shall be constructed so that the cover hinge is facing the oncoming traffic. (Refer Fig 1)
8. For all other covers the orientation should be so that the cover hinge is at 90 degrees from the ladder, Either side. (Refer Fig 2)

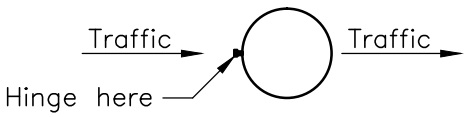


Fig 1

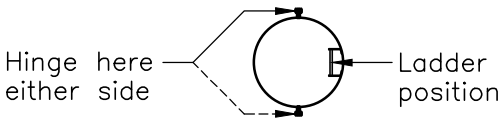


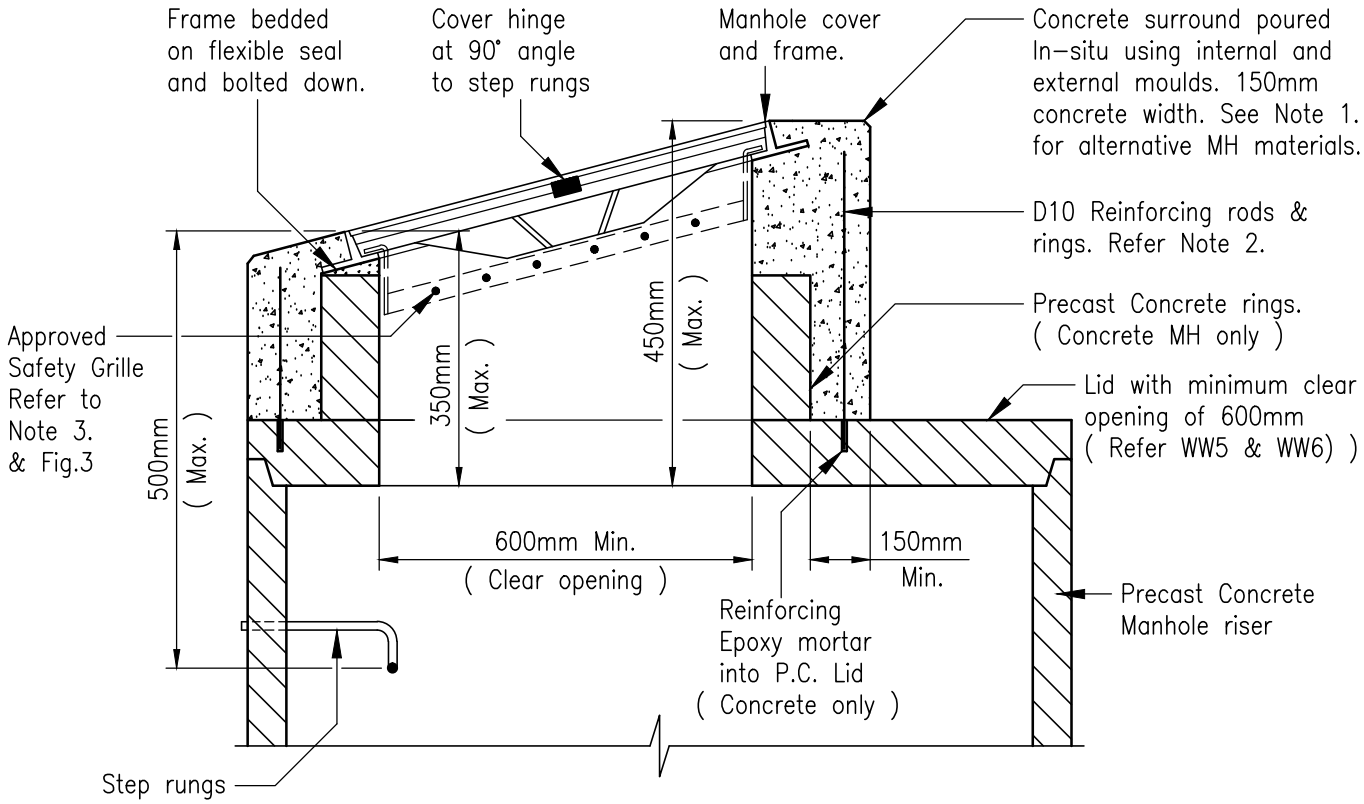
Fig 2

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.029C .DWG

TYPICAL MANHOLE THROAT AND COVER DETAILS

SCALE:	N.T.S.
ISSUE DATE:	13–07–2018
DWG No.	2010070.029C
REFERENCE No.	WW 6

Fig.3



ANGLED MANHOLE ACCESS

NOTES :

1. MH material other than concrete cut to suit on-site.
2. D10 vertical reinf. rods & horizontal rings to be spaced at 300mm max. crs.
3. Approved Safety Grille below access manhole cover.
4. Manhole covers in road shall be constructed so that the cover hinge is facing the oncoming traffic. (Refer Fig.1)
5. For all other covers the orientation shall be so that the cover hinge is at 90 degrees from the ladder, either side. (Refer Fig.2)
6. See Fig.3 for safety grilles. Type and position must be considered for angled installation.

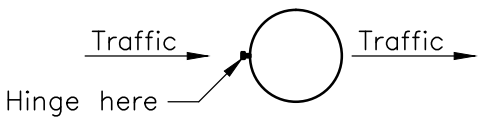


Fig.1

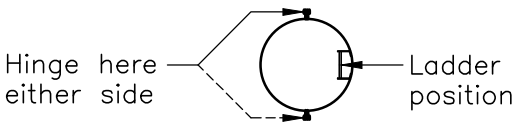
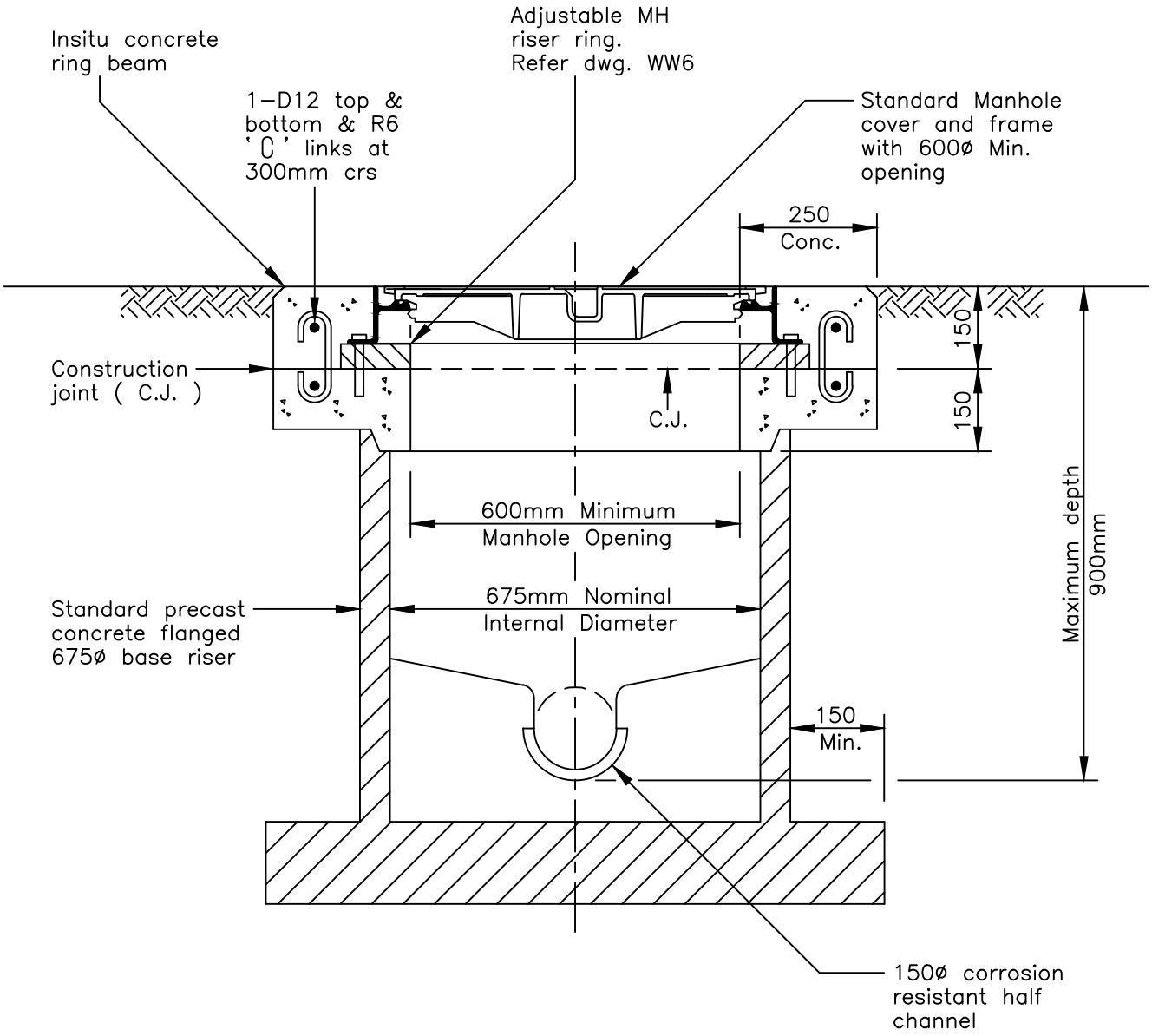


Fig.2

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.033D .DWG

ANGLED MANHOLE ACCESS DETAILS

SCALE:	N.T.S.
ISSUE DATE:	13-07-2018
DWG No.	2010070.033D
REFERENCE No.	WW 7



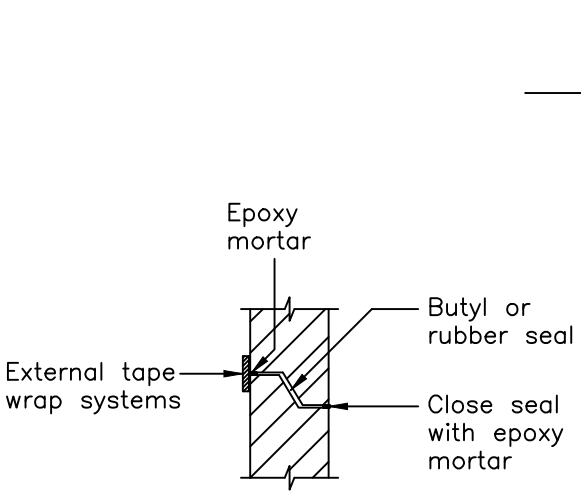
Notes:

1. Only to be used as terminating manhole on level Residential sites with more than two 100ø House connections.
2. This drawing to be read with WW5 and WW6

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.009C .DWG

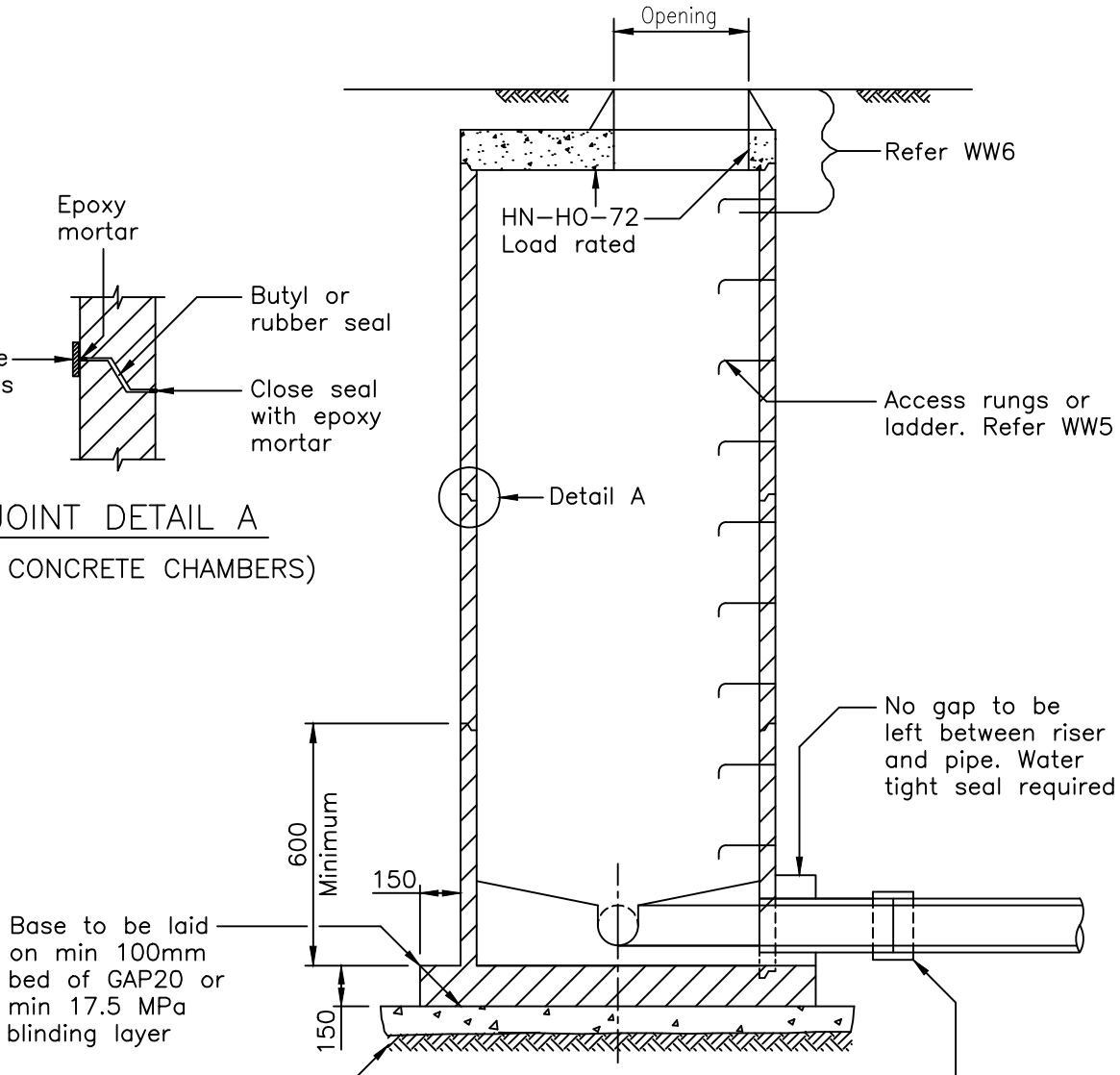
TERMINATING MANHOLE DETAIL 675mm NOMINAL DIAMETER

SCALE:	N.T.S.
ISSUE DATE:	06–03–2017
DWG No.	2010070.009C
REFERENCE No.	WW 8



JOINT DETAIL A

(FOR CONCRETE CHAMBERS)



SECTION THROUGH MANHOLE

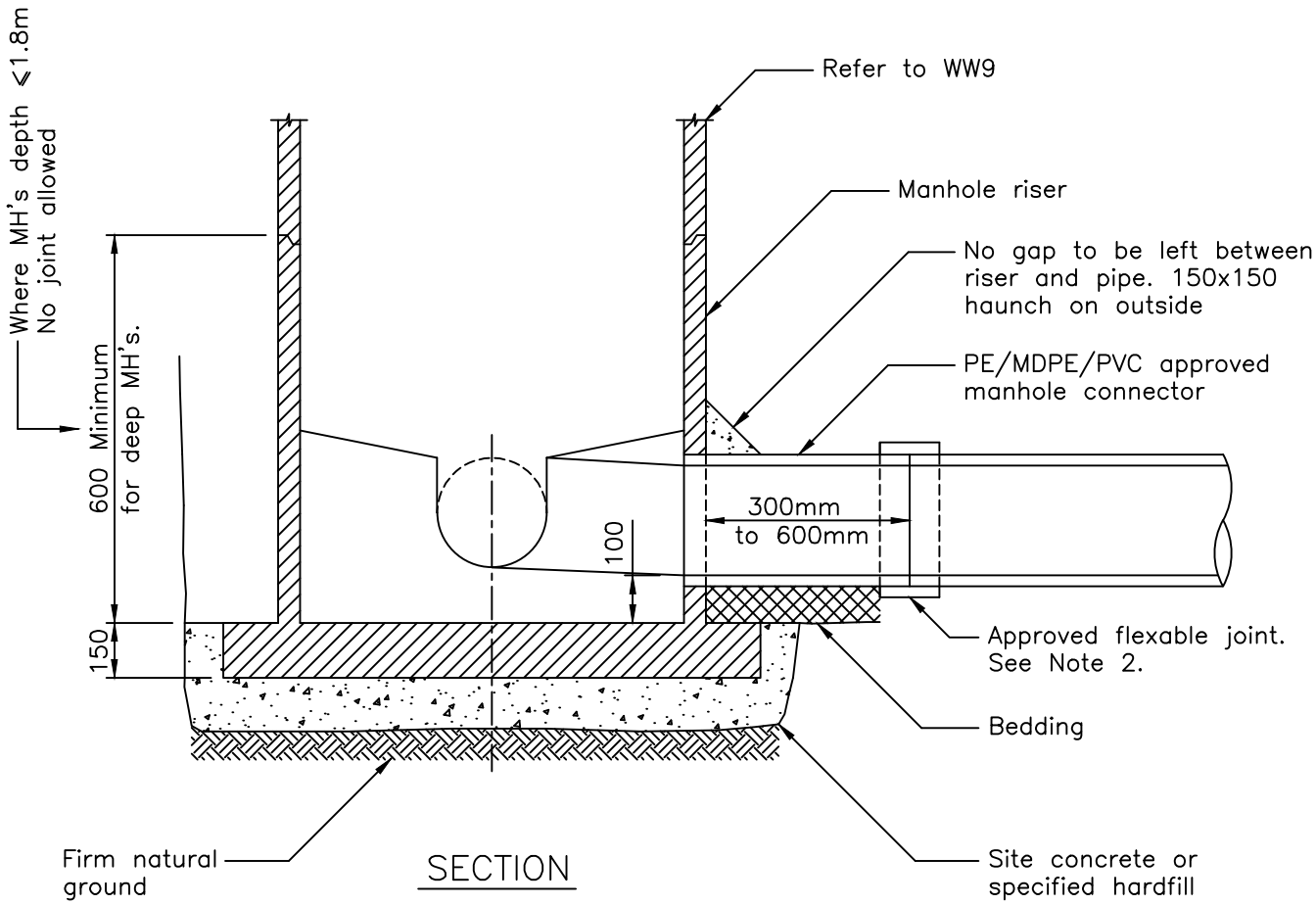
Notes:

1. Refer to WW5 for general details.
2. Channel through manhole to be lined.
3. All manhole openings must be cut.
4. For droppers refer to WW13
5. The manhole diameter shall be increased to minimum internal 1200mm for all manholes greater than 3.0 metres deep.
6. For manholes > 6.0 meters deep the minimum internal diameter shall be 1500mm.
7. Refer WW6 for manhole throat and cover details.
8. Manholes greater than 6m deep must be installed with landing platforms. Refer drawing in (Transmission drawing set)

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.012D .DWG

MANHOLES > 1.8m DEEP

SCALE:	N.T.S.
ISSUE DATE:	13-03-2017
DWG No.	2010070.012D
REFERENCE No.	WW 9



SECTION

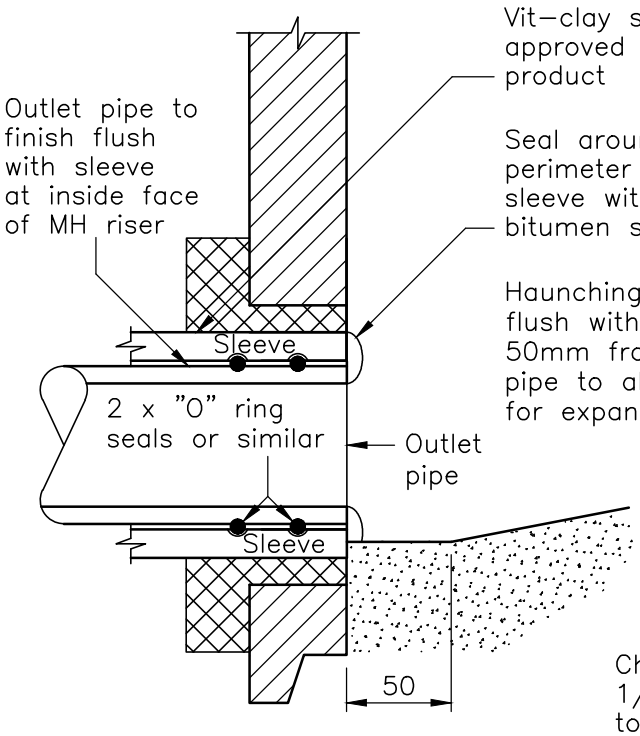
Notes:

1. This drawing shall be read with WW5.
2. For PE pipe connections to a concrete manhole refer to WW11 and WW12 for acceptable solutions.
3. Detail may differ for accepted proprietary manhole systems other than concrete.

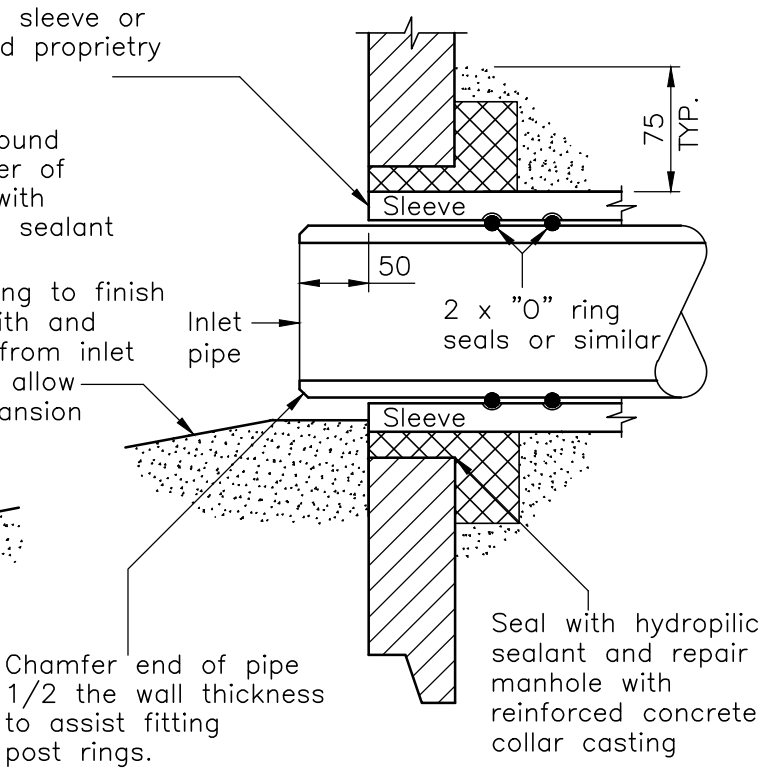
O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.013D .DWG

MANHOLE CONNECTION & STARTER DETAIL

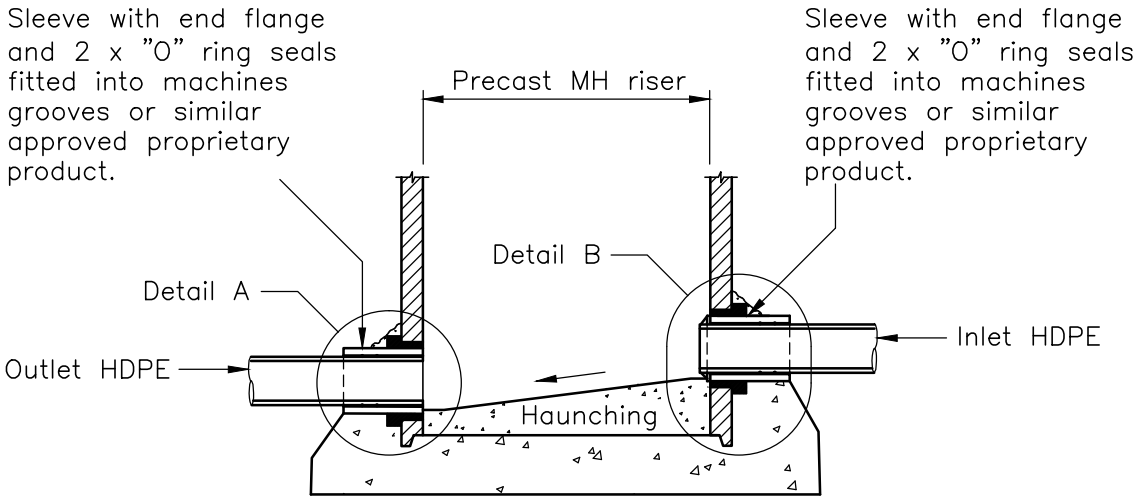
SCALE:	N.T.S.
ISSUE DATE:	06–03–2017
DWG No.	2010070.013D
REFERENCE No.	WW 10



DETAIL A



DETAIL B



DETAIL OF SLIDING JOINT AT MANHOLE

NOTES:

1. This detail applies to connecting pipes of < 7% grade. Refer to WW12 for steeper grades with a non sliding joint.
2. Haunching shall be formed to enable the pipe to expand and contract.

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.028C .DWG

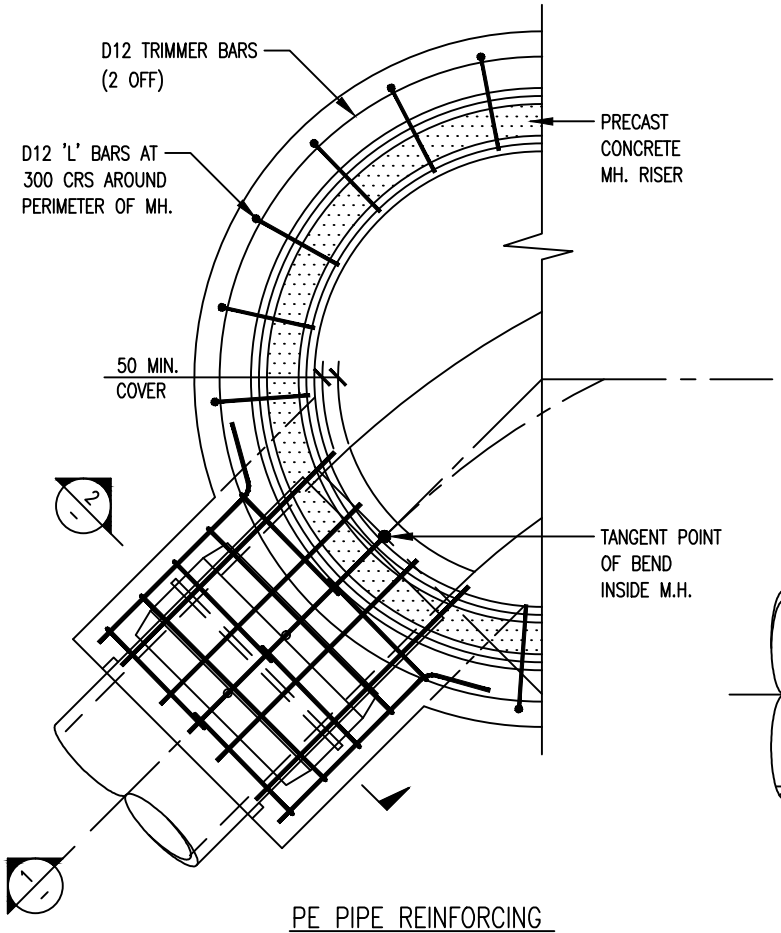
Watercare

STANDARD CONCRETE MANHOLE HDPE SLIDING JOINT

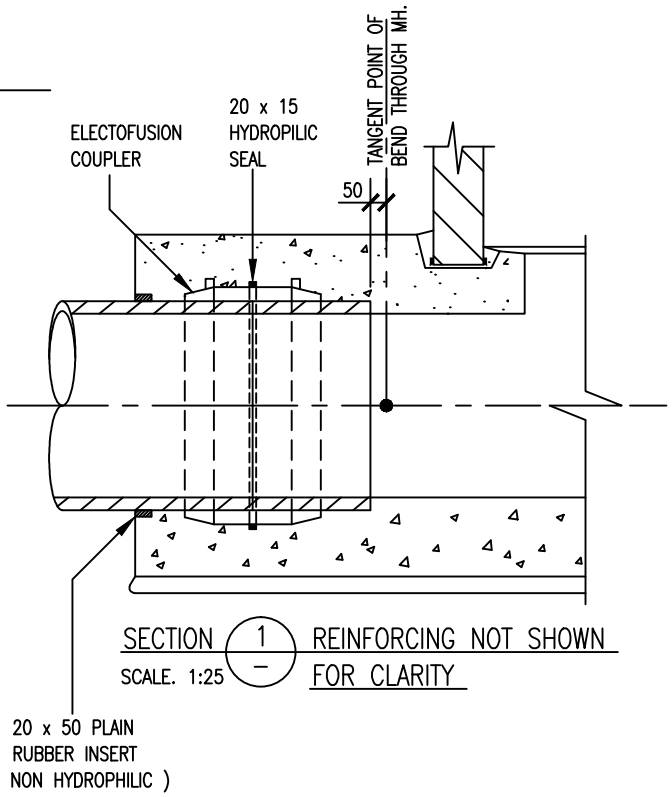
SCALE:	N.T.S.
ISSUE DATE:	13–07–2018
DWG No.	2010070.028C
REFERENCE No.	WW 11

GENERAL NOTES :

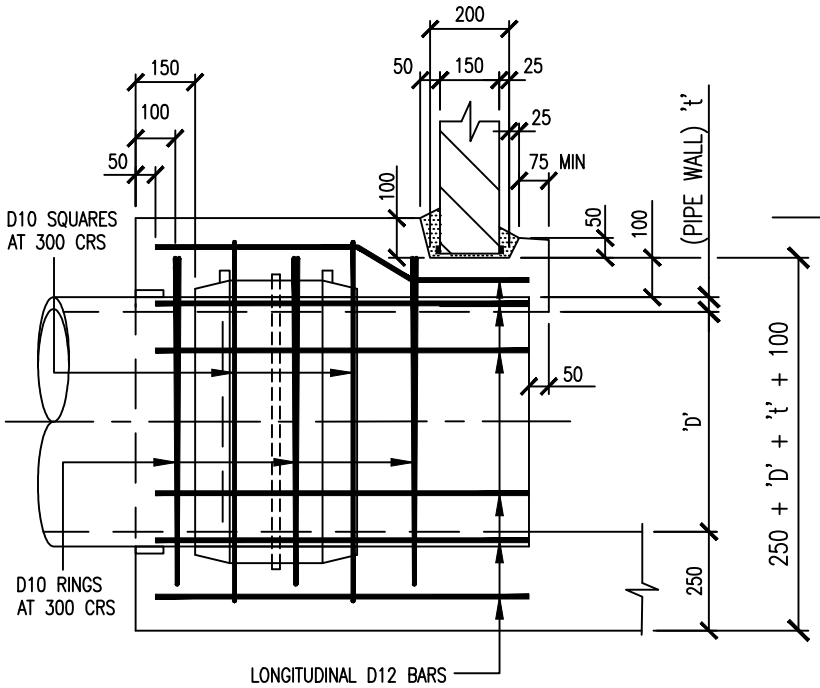
1. APPLICATION WHERE PIPE GRADE IS > 7%
2. ALL REINFORCEMENT TO BE DEFORMED MILD STEEL.
3. ALL CONCRETE TO HAVE A 28 DAY STRENGTH OF 30 MPa.
4. PROVIDE 50mm MIN. COVER TO ALL REINFORCEMENT.



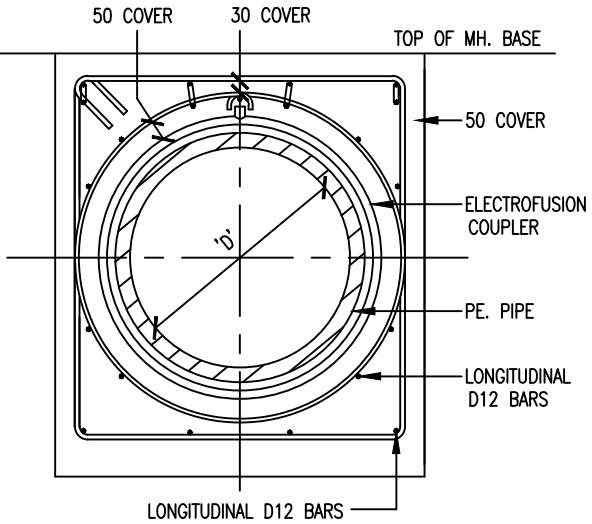
PE PIPE REINFORCING
SCALE. 1:25



SECTION 1/– REINFORCING NOT SHOWN FOR CLARITY
SCALE. 1:25



SECTION 1/– REINFORCING FOR BASE EXTENSION
SCALE. 1:20

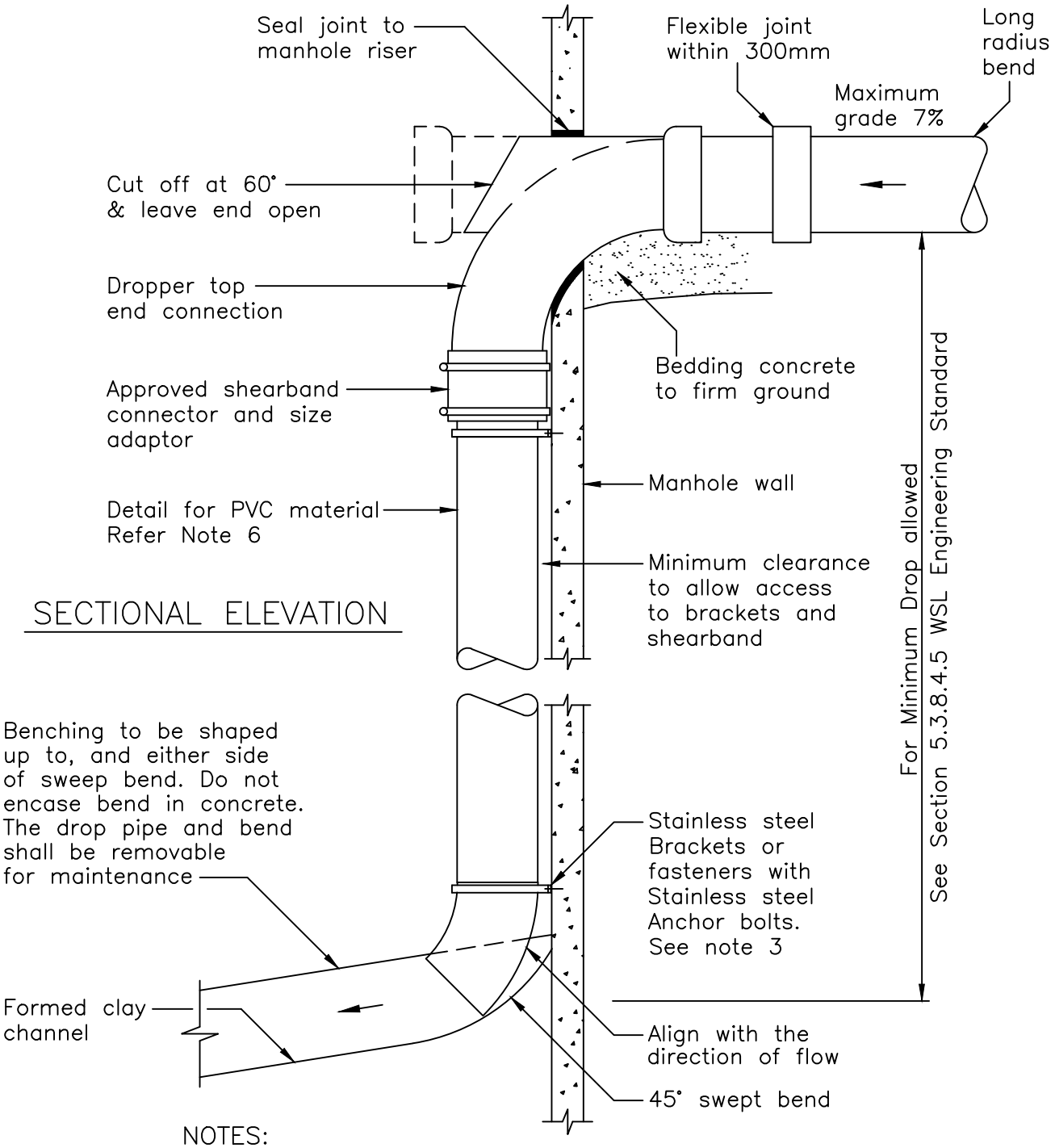


SECTION 2/–
SCALE. 1:20

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.054A .DWG

STANDARD CONCRETE MANHOLE RESTRAINT PE JOINT

SCALE:	AS SHOWN
ISSUE DATE:	23–01–2017
DWG No.	2010070.054A
REFERENCE No.	WW 12



SECTIONAL ELEVATION

NOTES:

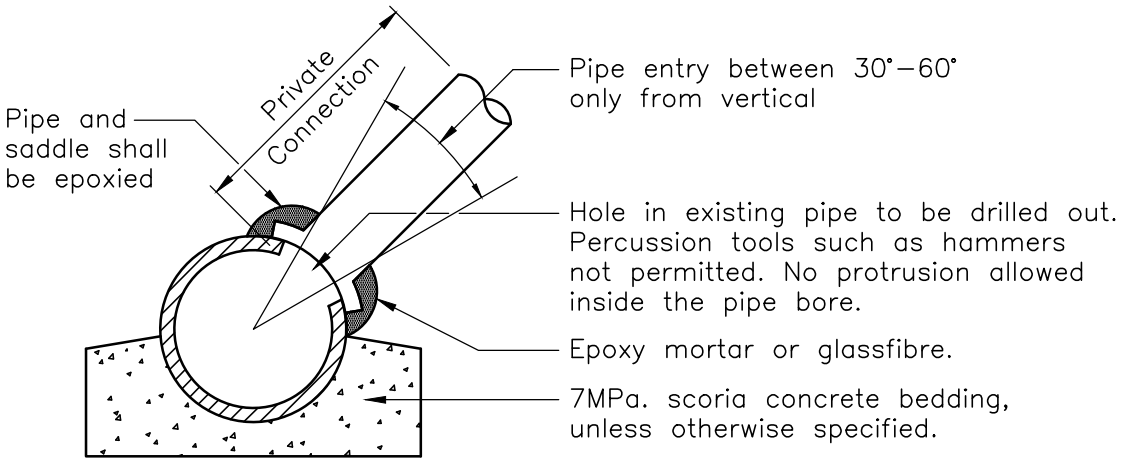
1. Specific approval is required from Watercare for all internal drop connections to existing manholes. Considerations include space available in the existing manhole and number of existing internal drop connections.
2. Internal drop shall be clear of Manhole rungs/ladders.
3. 100ø to 300ø PVC drop pipe held in place by Stainless steel brackets or fasteners with M10 Stainless steel anchor bolts every 600 mm.
4. Specific design is required where the incoming grade exceeds 7%, high velocity or where deep manholes make plunge–droppers unsuitable.
5. The minium clear diameter in the manhole shall be 1m. Vertical droppers are not allowed in manholes under 1200mm diameter.
6. This detail is suitable for GRP. For PE, joints shall be butt–welded. The PE top end connections shall be fabricated to fit over the incoming pipe with an O–ring seal.

o:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.018C .DWG

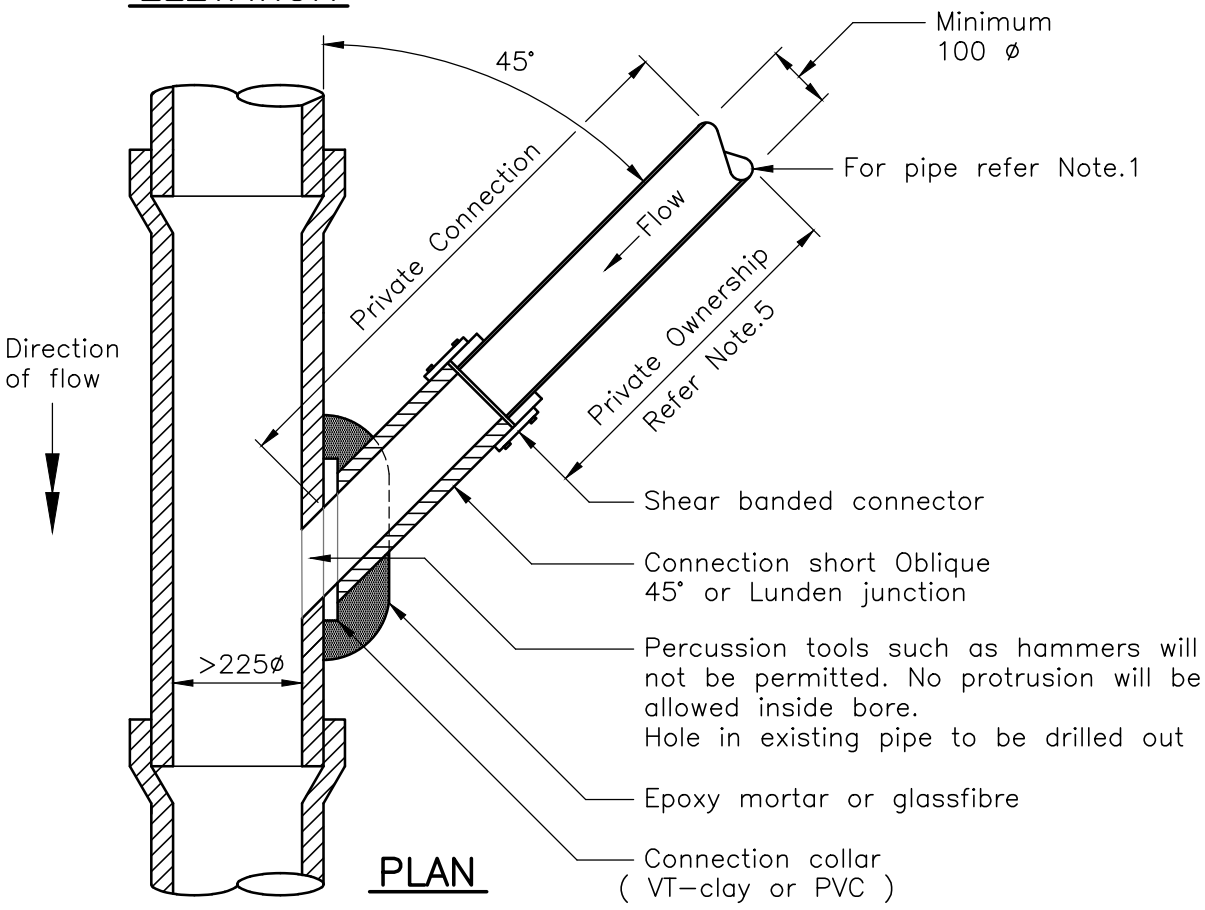
Watercare

INTERNAL MANHOLE PLUNGE–DROP PIPE

SCALE:	N.T.S.
ISSUE DATE:	06–03–2017
DWG No.	2010070.018C
REFERENCE No.	WW 13



ELEVATION



PLAN

NOTES:

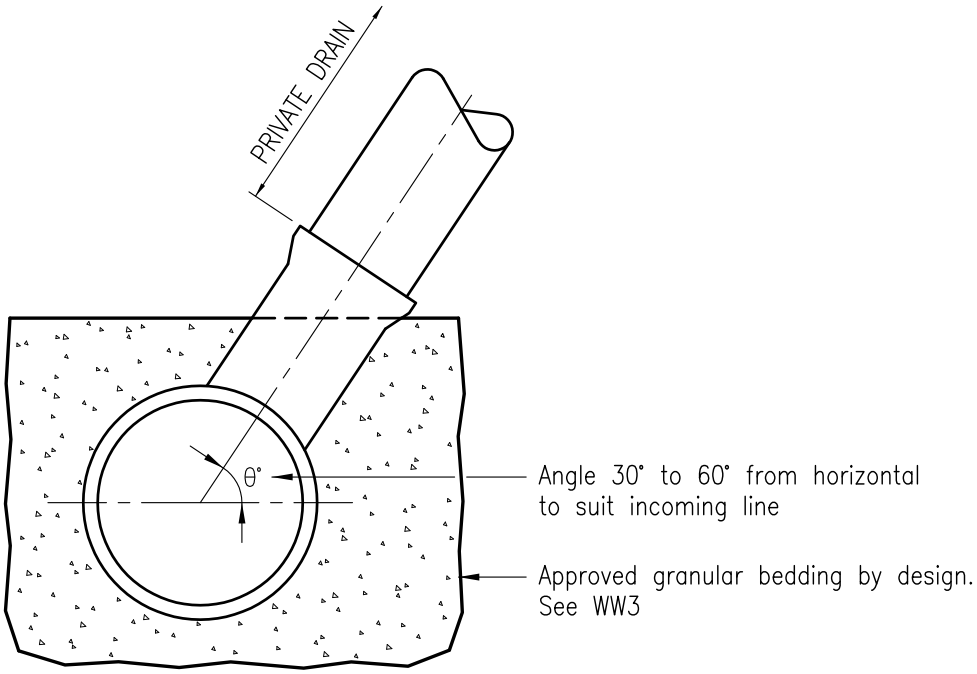
1. Applies to concrete, VT–clay, or PVC pipe saddle connections only. For other materials refer WW15.
2. The maximum lateral pipe size shall be less than half of the main.
3. For pipe lateral to main ratio outside the above parameters, refer to WW15, or a manhole shall be constructed where approved.
4. If the existing sewer pipe has PE or CIPP liner, specific design & approval required from Watercare.
5. Refer to Watercare Point–of–Supply Policy.

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.036C .DWG

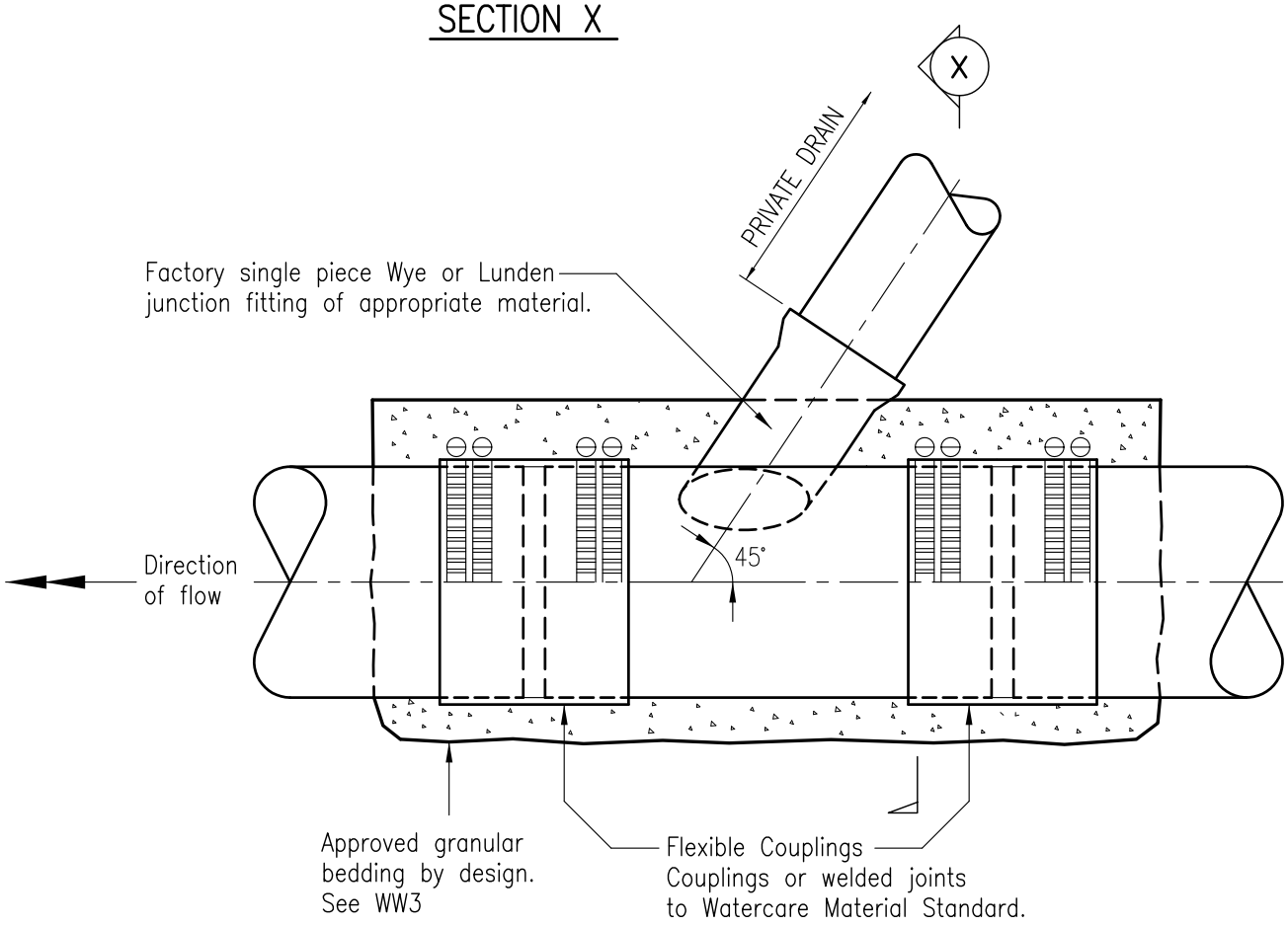
Watercare

SADDLE CONNECTIONS TO GRAVITY PUBLIC WASTEWATER

SCALE:	N.T.S.
ISSUE DATE:	13–07–2018
DWG No.	2010070.036C
REFERENCE No.	WW 14



SECTION X



NOTES:

1. For saddle connections refer WW14
2. Refer to Watercare Point-of-Supply policy

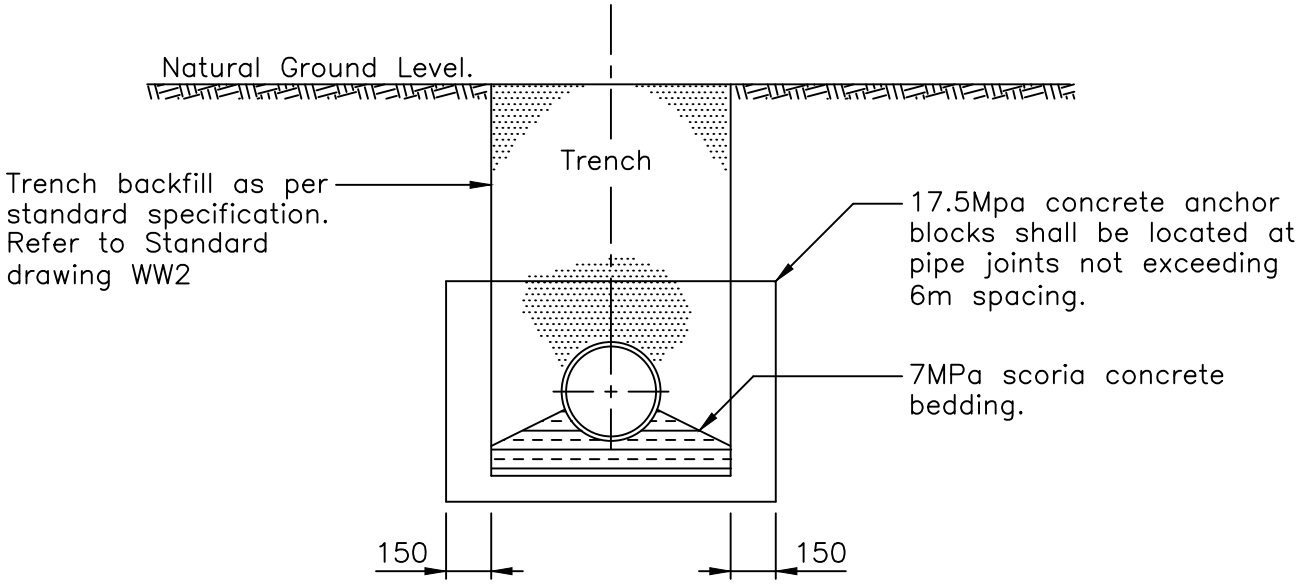
O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.038A .DWG

IN-LINE SERVICES CONNECTIONS TO PUBLIC GRAVITY WASTEWATER

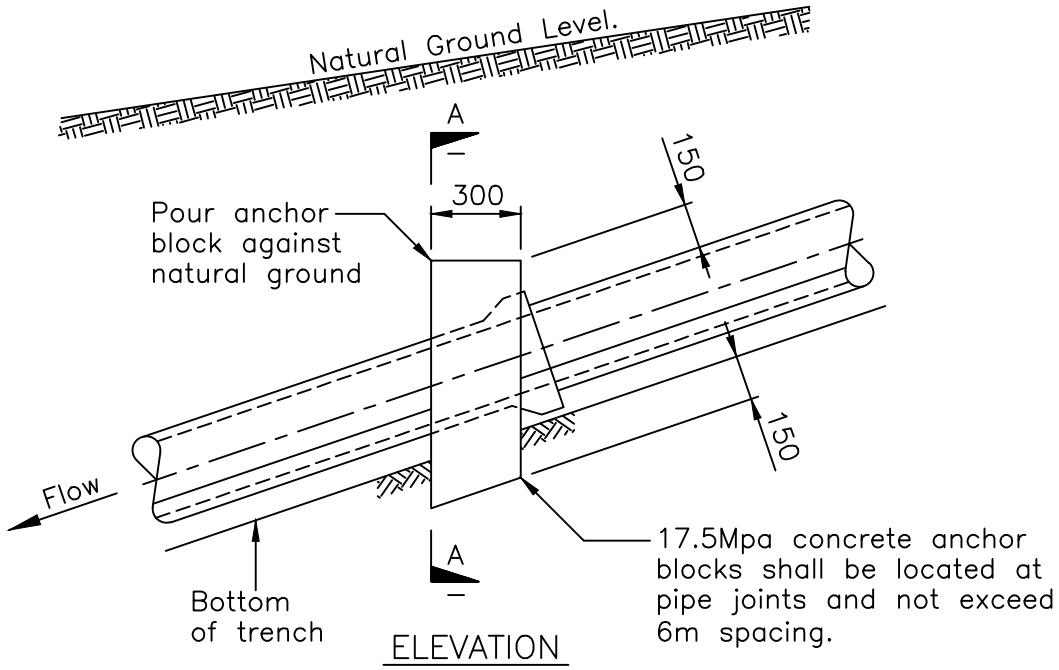
SCALE:	N.T.S.
ISSUE DATE:	17-11-2017
DWG No.	2010070.038A
REFERENCE No.	WW 15

NOTE:

For wastewater lines laid at grades steeper than 10% (including service connections) the bedding and surround material shall be of a low–grade (7MPa) scoria concrete. For lines exceeding a grade of 20% anchor blocks shall be located at pipe joints, and not exceed 6m spacing.



SECTION A–A

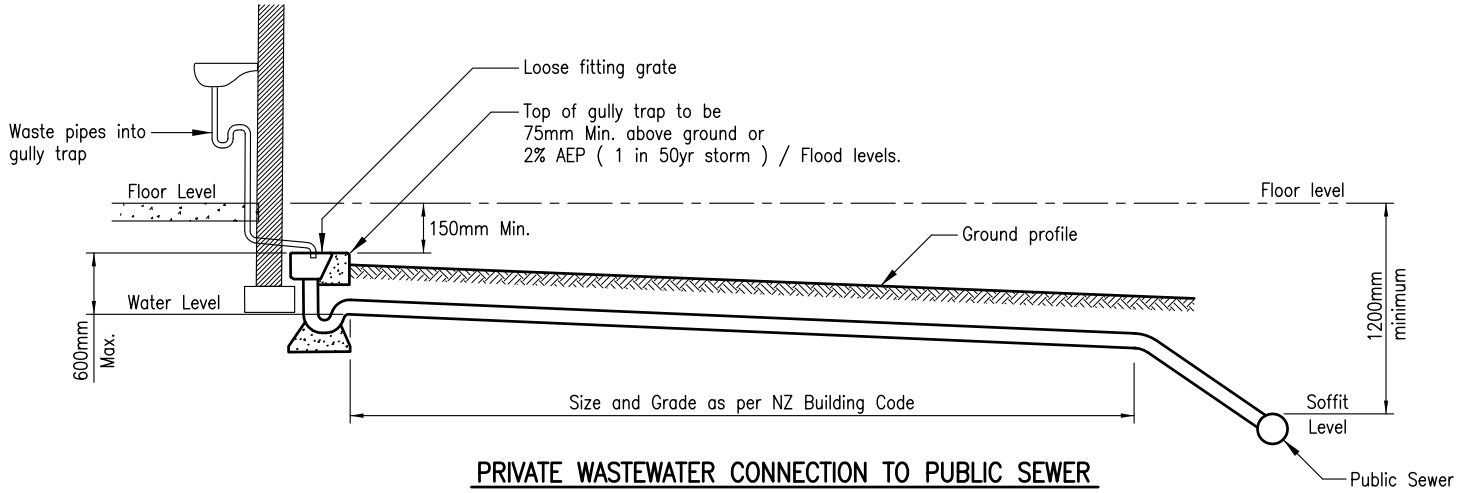


ELEVATION

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.049A .DWG

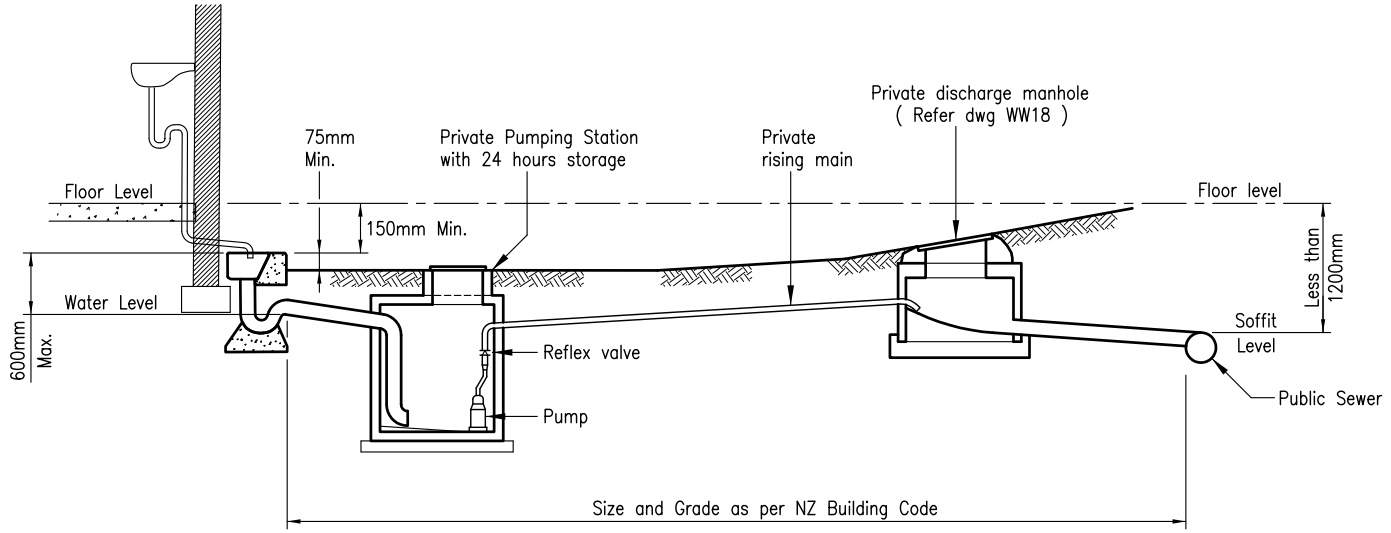
BULKHEADS FOR STEEP GRADES

SCALE:	N.T.S.
ISSUE DATE:	01–03–2017
DWG No.	2010070.049A
REFERENCE No.	WW 16



PRIVATE WASTEWATER CONNECTION TO PUBLIC SEWER

(Floor level to soffit 1200mm minimum unless approved by Watercare)



PRIVATE WASTEWATER PUMPING STATION CONNECTION TO PUBLIC SEWER

(Floor level to soffit less than 1200mm)

NOTE:

EXAMPLE OF HOUSE SERVICE CONNECTION TO A PUBLIC SEWER

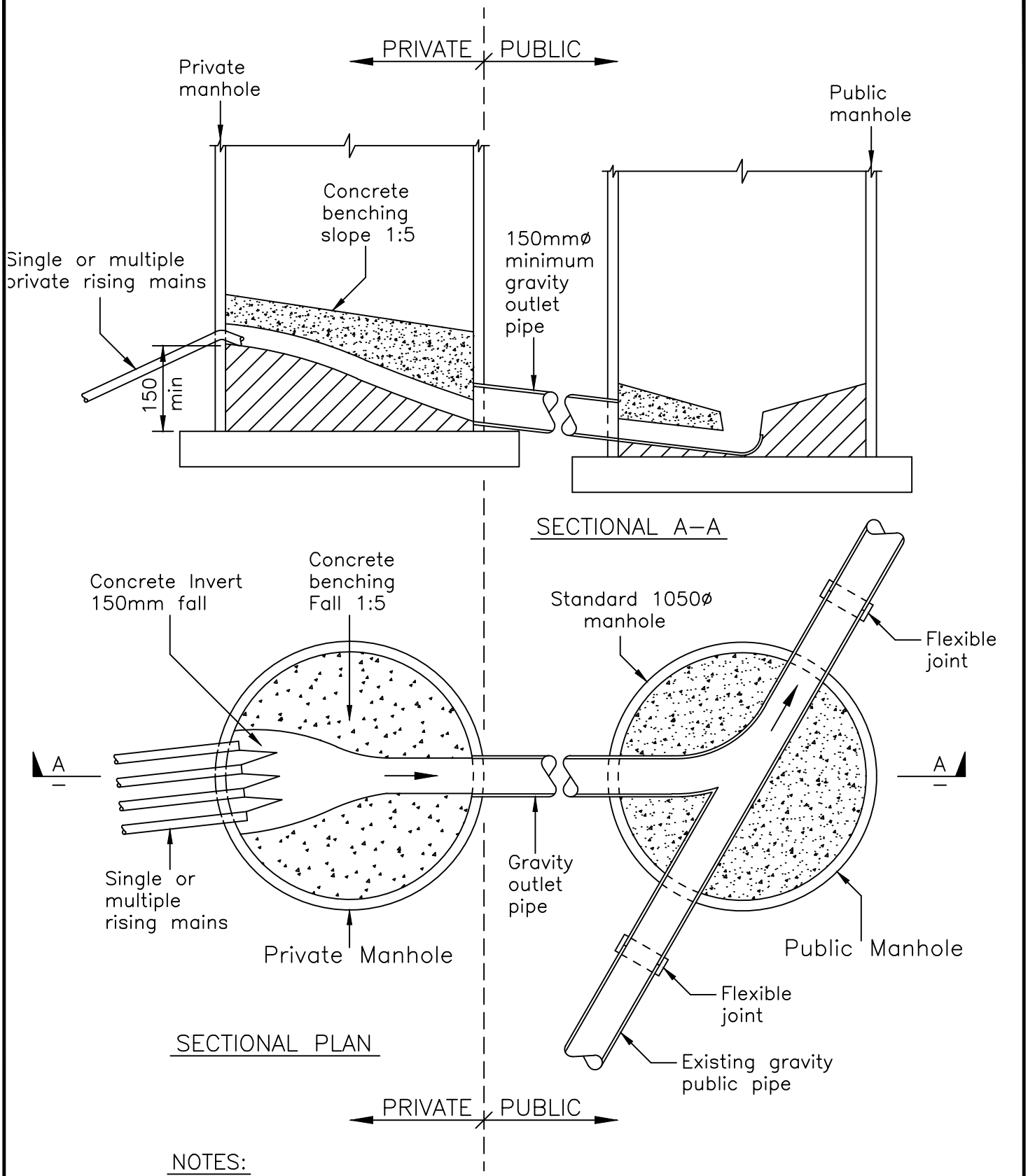
1. Minimum requirements are satisfied when the floor level is at least 1200mm above the soffit of the receiving sewer.
2. Where the receiving sewer is less than 1200mm a private pumping station and discharge manhole shall be installed.
3. Ground around gully trap shall be at least 75mm below the gully trap or 2% of the AEP (Annual exceedance probability) – Rain fall flood levels.
4. Building floor shall be at least 150mm above the gully trap. Gully traps shall not be placed in over land flow paths.

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.037B .DWG

Watercare

PRIVATE CONNECTIONS
MINIMUM FLOOR LEVEL TO SOFFIT OF WASTEWATER

SCALE:	N.T.S.
ISSUE DATE:	02–08–2018
DWG No.	2010070.037B
REFERENCE No.	WW 17



SECTIONAL A–A

SECTIONAL PLAN

PRIVATE
PUBLIC

NOTES:

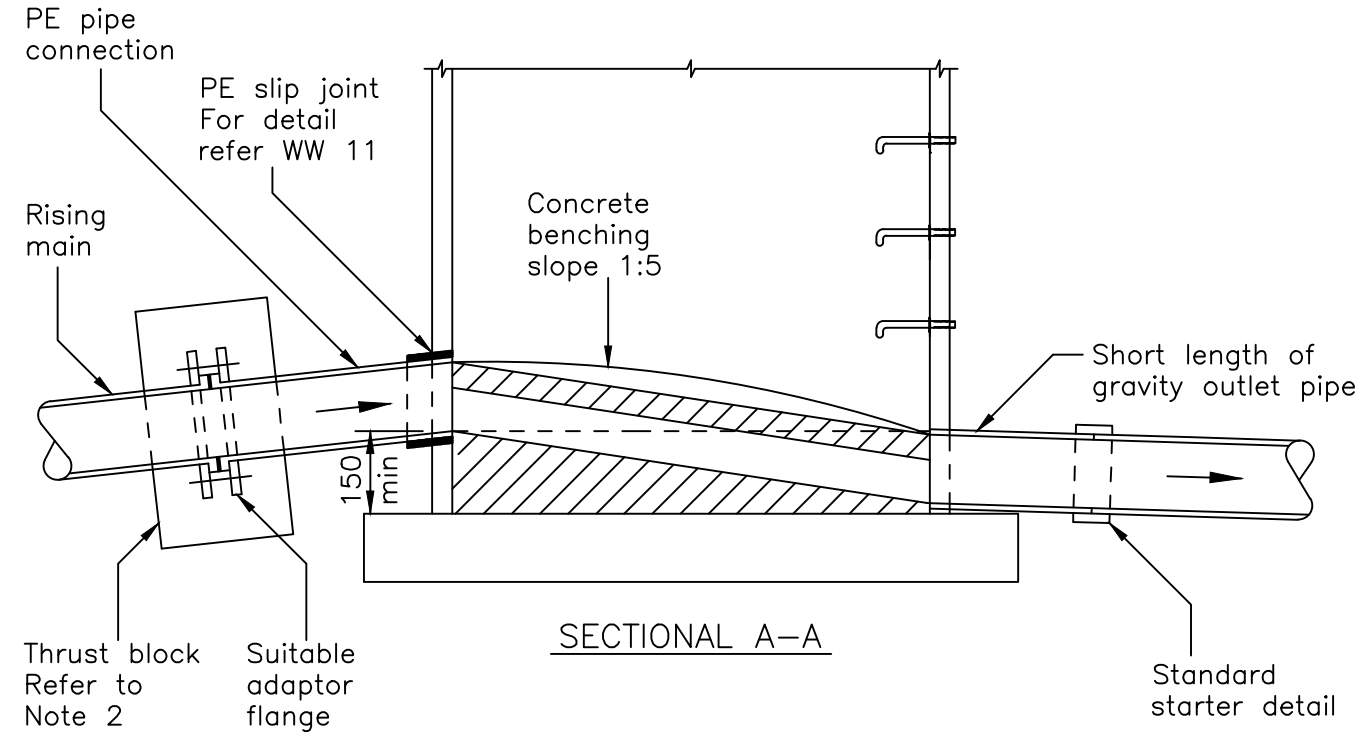
1. Read with WW5 and WW7
2. For pressure main outlet detail refer to drawing WW19
3. Private main connection to the public wastewater shall be made via a private shallow manhole with a public 150mm min. gravity pipe feed to public wastewater or manhole.

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.043A .DWG

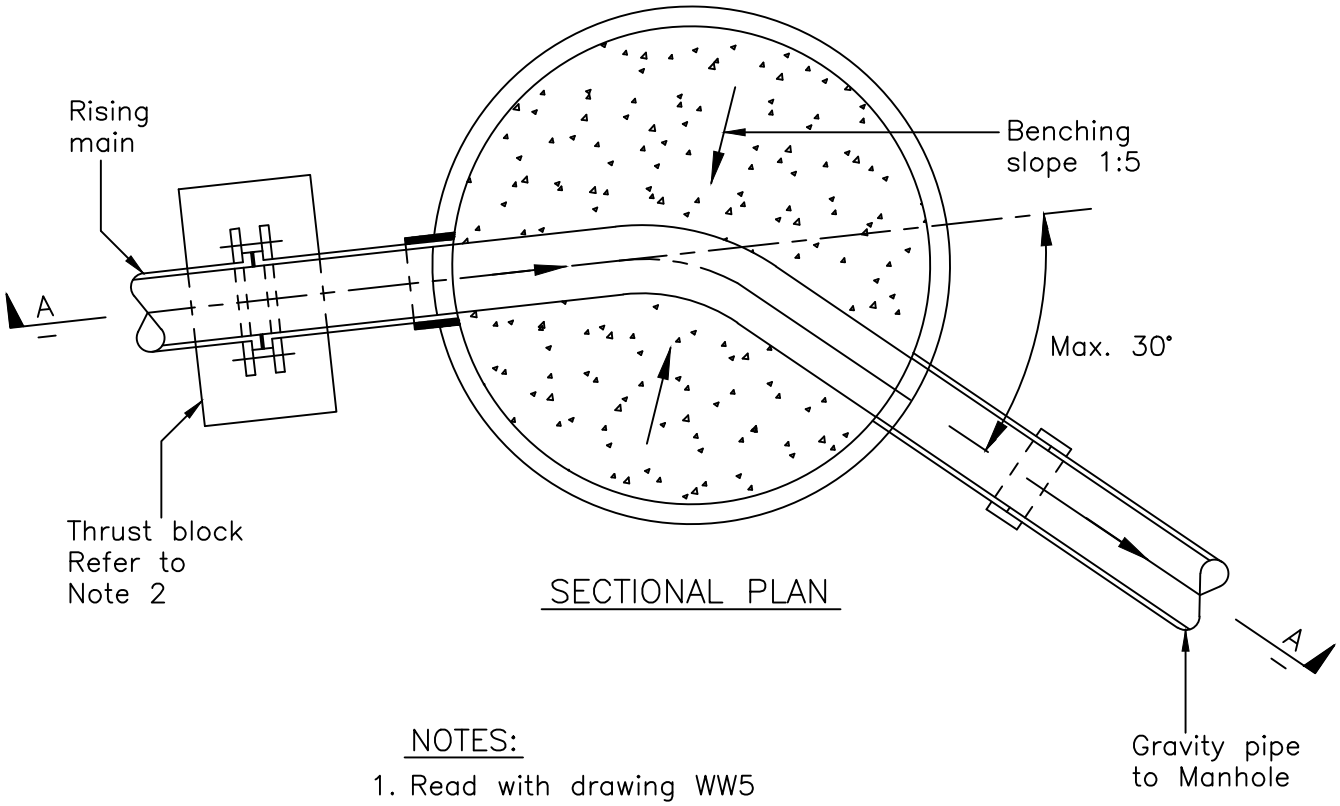
Watercare

PRIVATE RISING MAIN CONNECTION

SCALE:	N.T.S.
ISSUE DATE:	06–03–2017
DWG No.	2010070.043A
REFERENCE No.	WW 18



SECTIONAL A–A



SECTIONAL PLAN

NOTES:

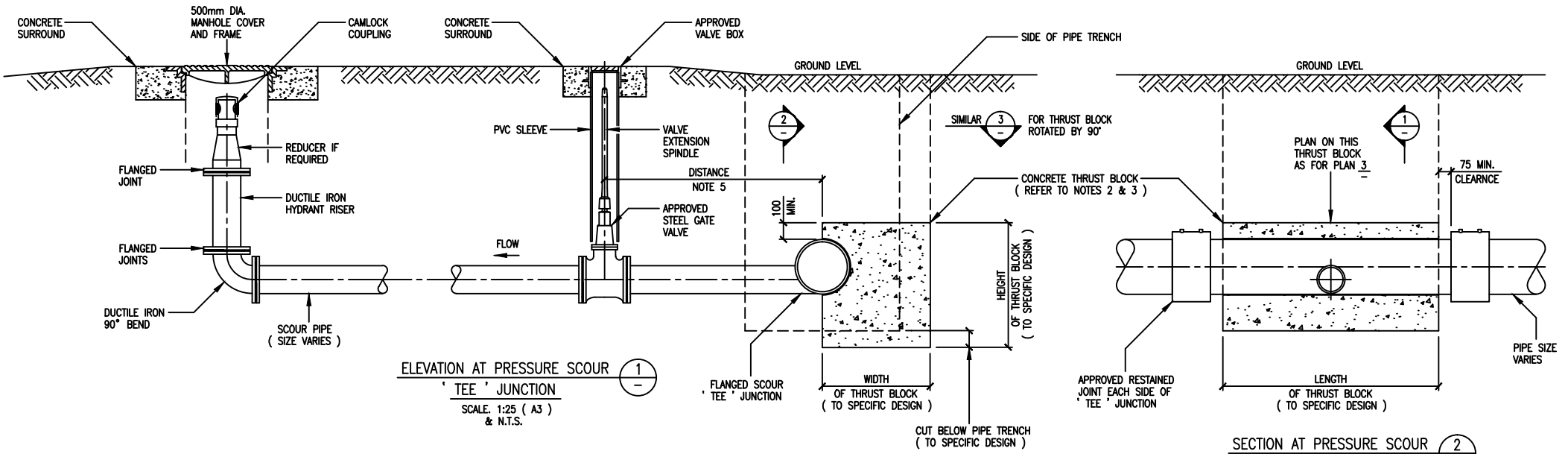
1. Read with drawing WW5
2. Thrust blocks to be constructed on rising main inlet and will be cast against firm ground. For thrust block details refer to drawing WW24
3. For private rising main connections refer to drawing WW18

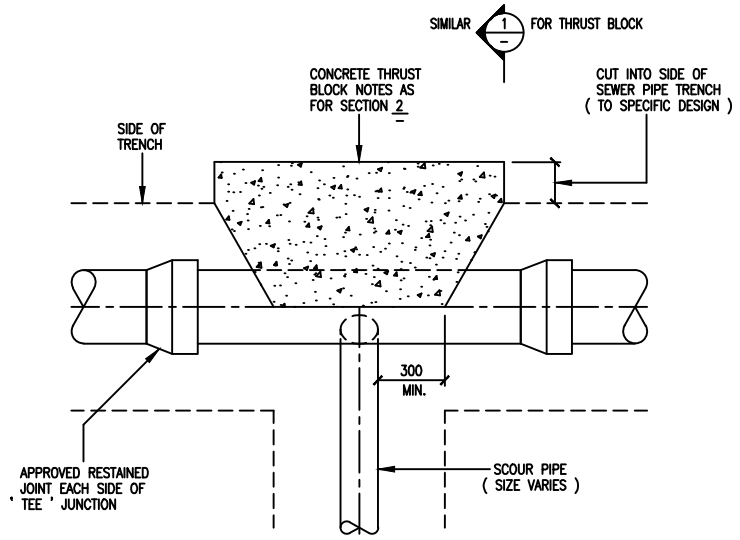
O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.041A .DWG

Watercare

PRESSURE SEWER OUTLET TO GRAVITY PUBLIC

SCALE:	N.T.S.
ISSUE DATE:	06–03–2017
DWG No.	2010070.041A
REFERENCE No.	WW 19





Anchor block size based on 100KPa. soil bearing stress			
PIPE DIA.	LENGTH	DEPTH	WIDTH
100mm	500	250	250
150mm	900	300	450
200mm	1100	450	550

NOTES

1. DETAILS ON THIS DRAWING ARE DIAGRAMMATIC. PIPE SIZES AND PIPE DEPTHS VARY.
2. THRUST BLOCKS SHALL BE SIZED FOR THE SPECIFIC SOIL BEARING CAPACITY TAKING INTO ACCOUNT THE MAXIMUM PUMPING PRESSURE AND FLOW VELOCITY.
3. THRUST BLOCKS SHALL BE CAST AGAINST THE UNDISTURBED CUT FACE OF THE EXCAVATION.
4. WHERE THE PIPE COMES IN CONTACT WITH THE THRUST BLOCK THE PIPE SHALL BE WRAPPED IN A PROTECTIVE MEMBRANE TO PREVENT ABRASION BETWEEN THE CONCRETE AND THE PIPE.
5. DISTANCE TO ISOLATION VALVE TO BE AS SHORT AS POSSIBLE TO PREVENT SEPTICITY.

KEY

N.T.S. = NOT TO SCALE
MIN. = MINIMUM

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.055 .DWG

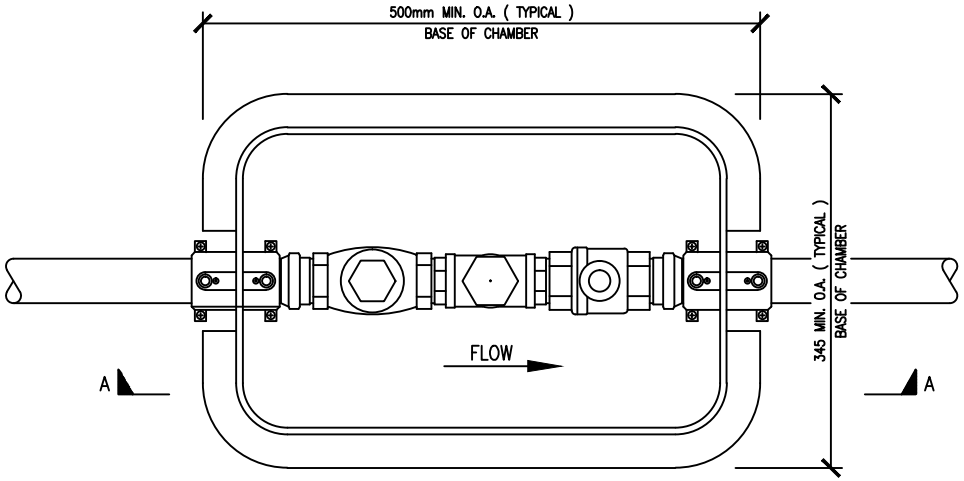
Watercare

PRESSURE WASTEWATER FLUSH-OUT / SCOUR

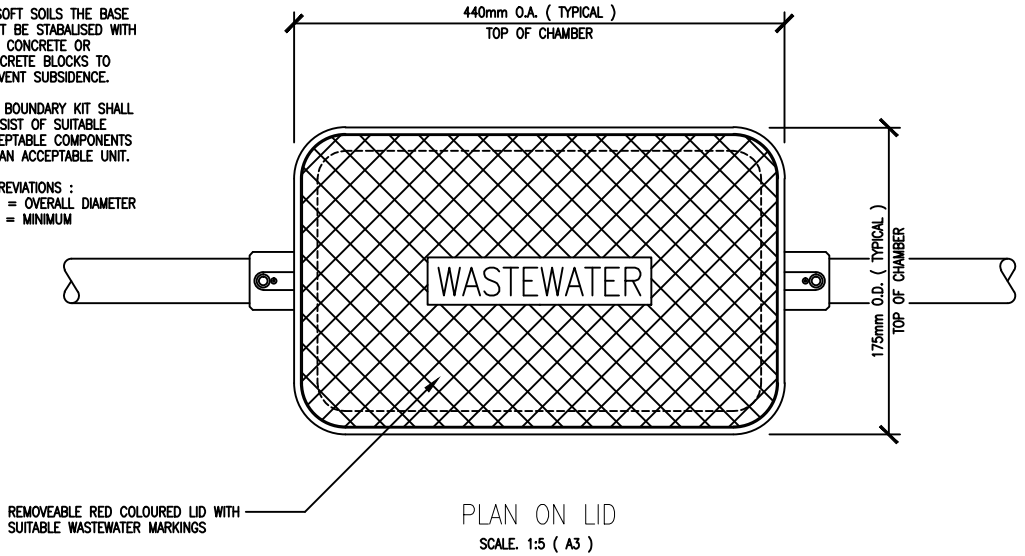
SCALE:	AS SHOWN
ISSUE DATE:	21-03-2017
DWG No.	2010070.055
REFERENCE No.	WW 20

NOTES

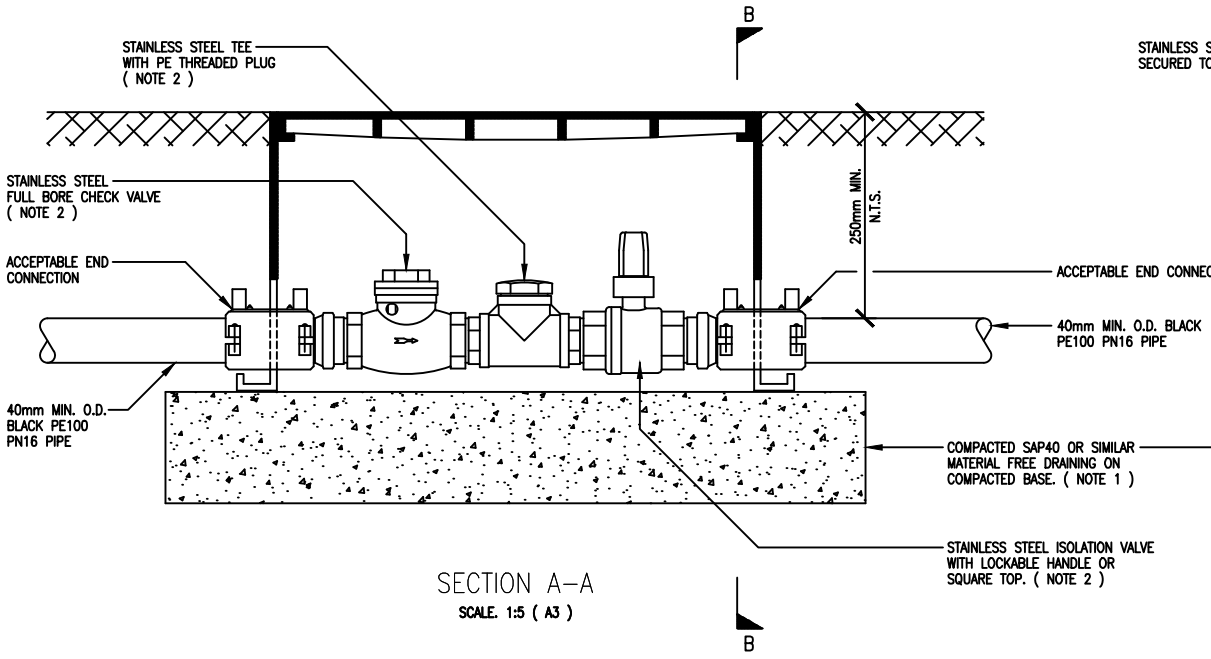
1. IN SOFT SOILS THE BASE MUST BE STABALISED WITH SITE CONCRETE OR CONCRETE BLOCKS TO PREVENT SUBSIDENCE.
2. THE BOUNDARY KIT SHALL CONSIST OF SUITABLE ACCEPTABLE COMPONENTS OR AN ACCEPTABLE UNIT.
3. ABBREVIATIONS :
   O.D. = OVERALL DIAMETER
   MIN. = MINIMUM



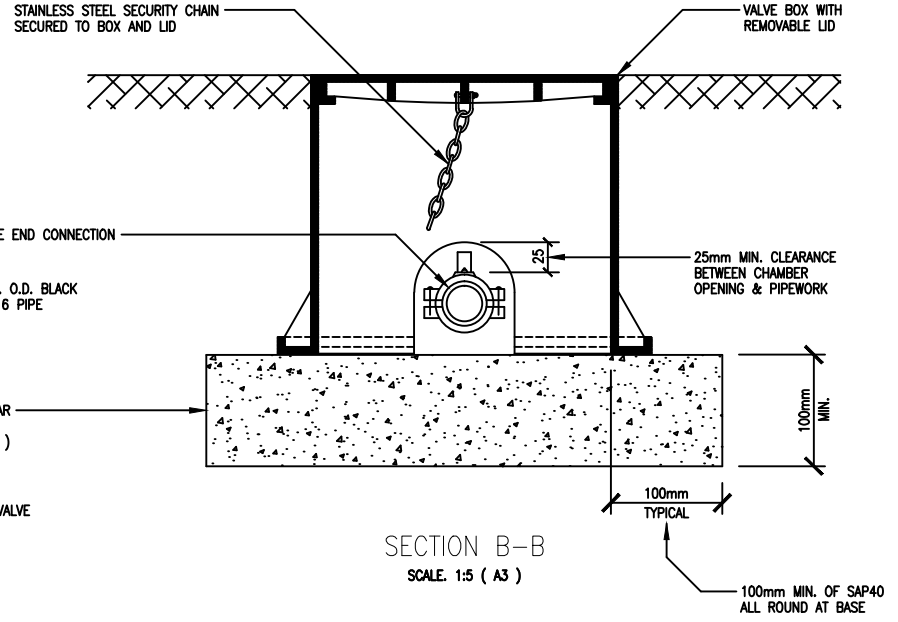
SECTIONAL PLAN
SCALE. 1:5 (A3)



PLAN ON LID
SCALE. 1:5 (A3)



SECTION A–A
SCALE. 1:5 (A3)



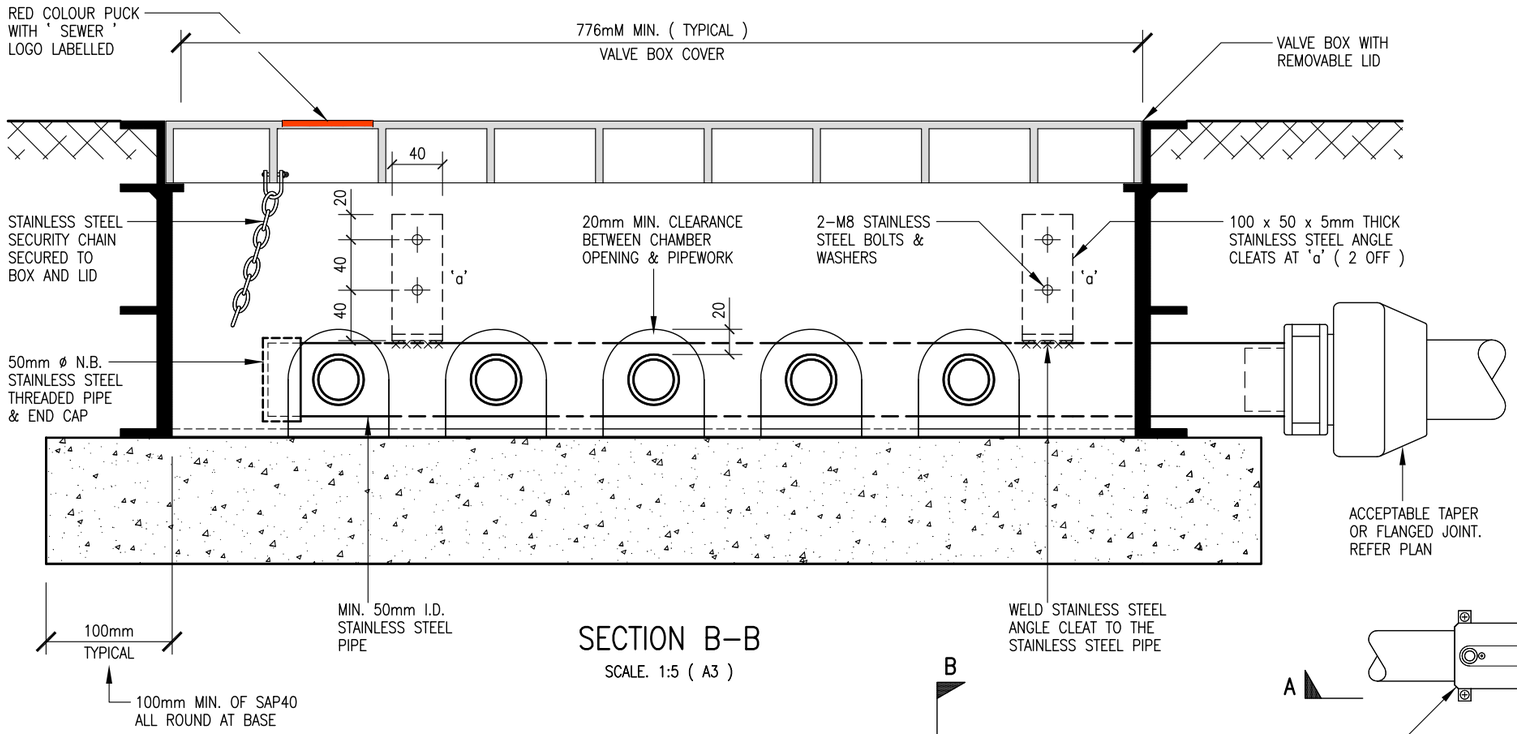
SECTION B–B
SCALE. 1:5 (A3)

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.056 .DWG

Watercare

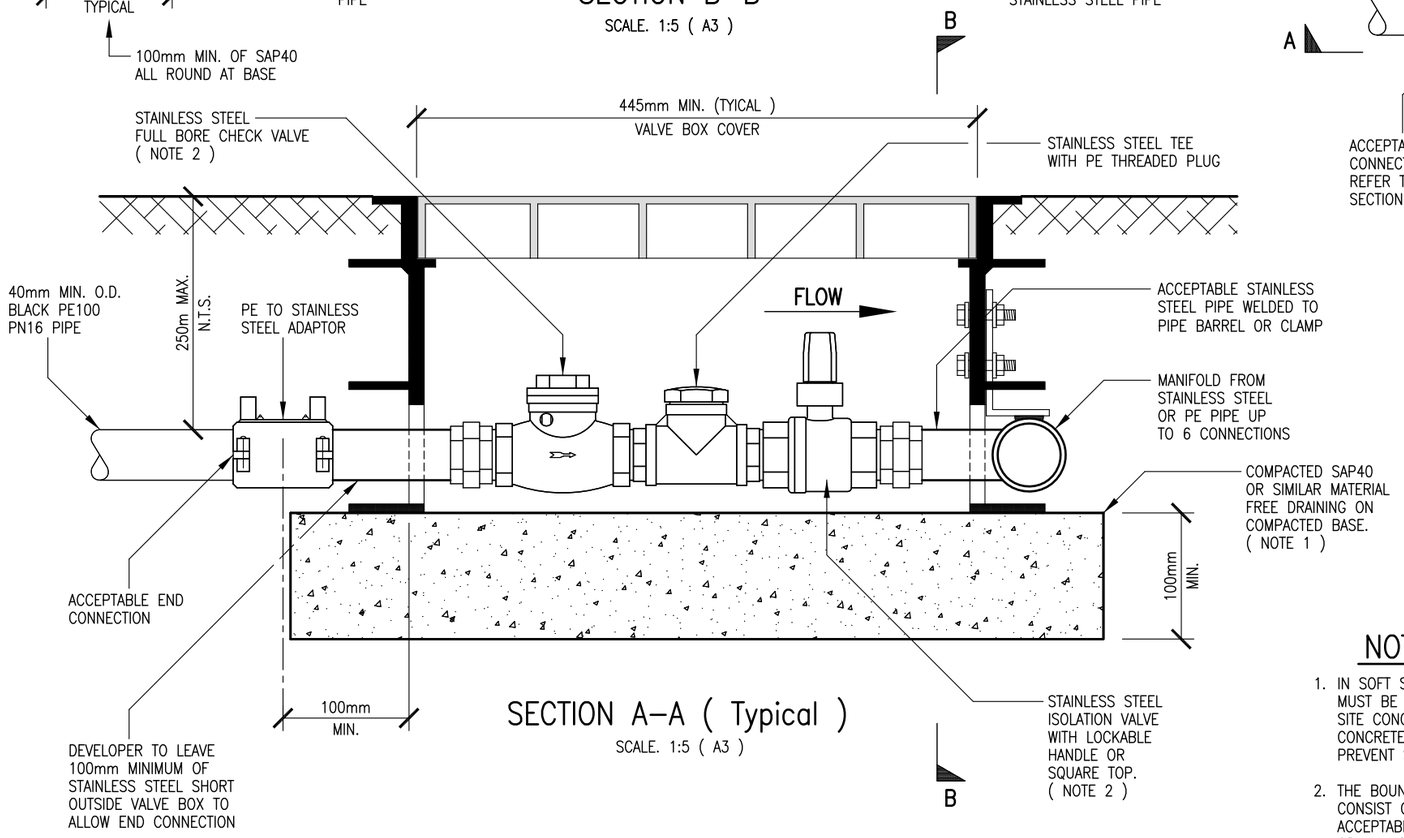
BOUNDARY PRESSURE WASTEWATER CONNECTION

SCALE:	1:5 (A3)
ISSUE DATE:	23–01–2017
DWG No.	2010070.056
REFERENCE No.	WW 21



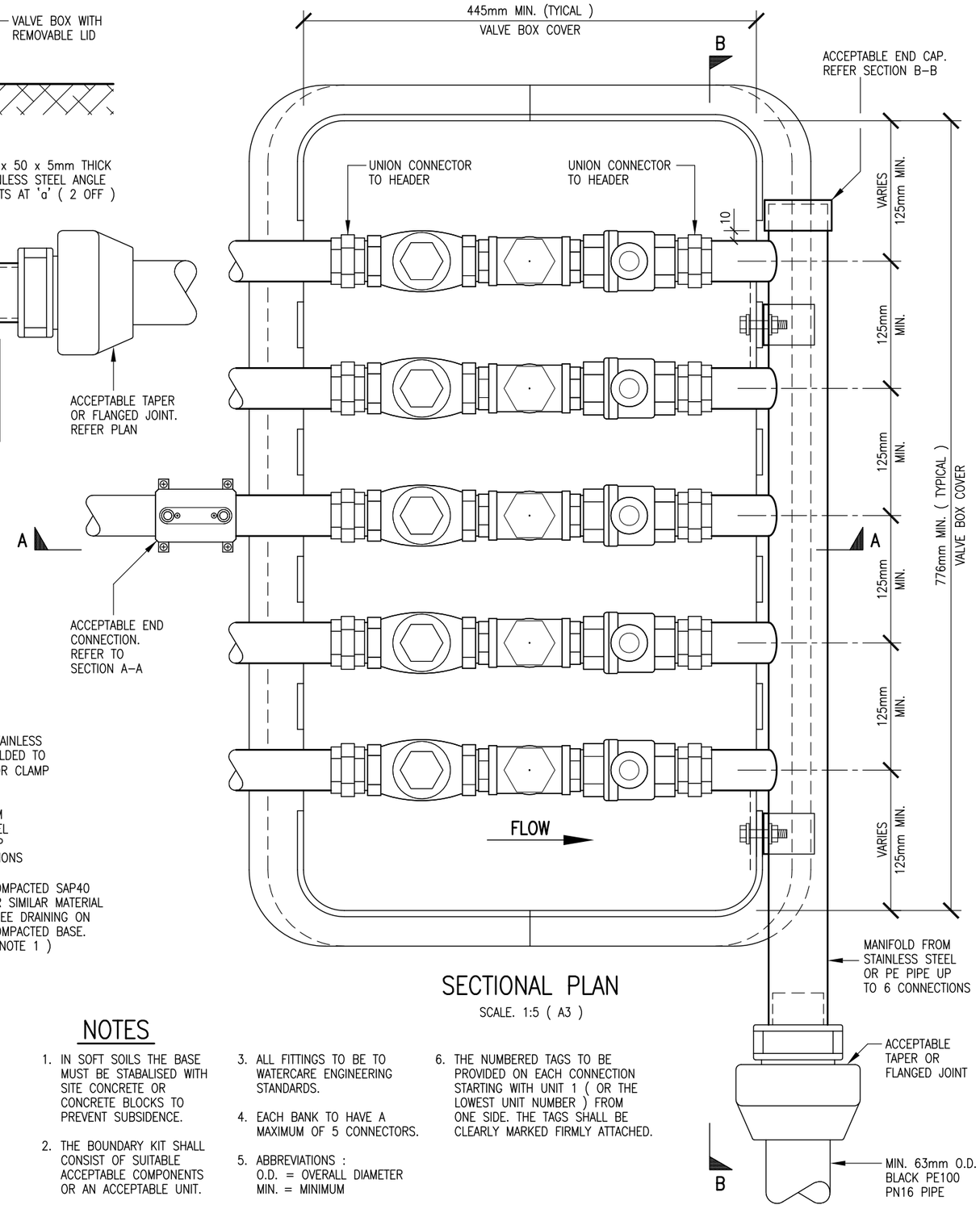
SECTION B–B

SCALE. 1:5 (A3)



SECTION A–A (Typical)

SCALE. 1:5 (A3)



SECTIONAL PLAN

SCALE. 1:5 (A3)

NOTES

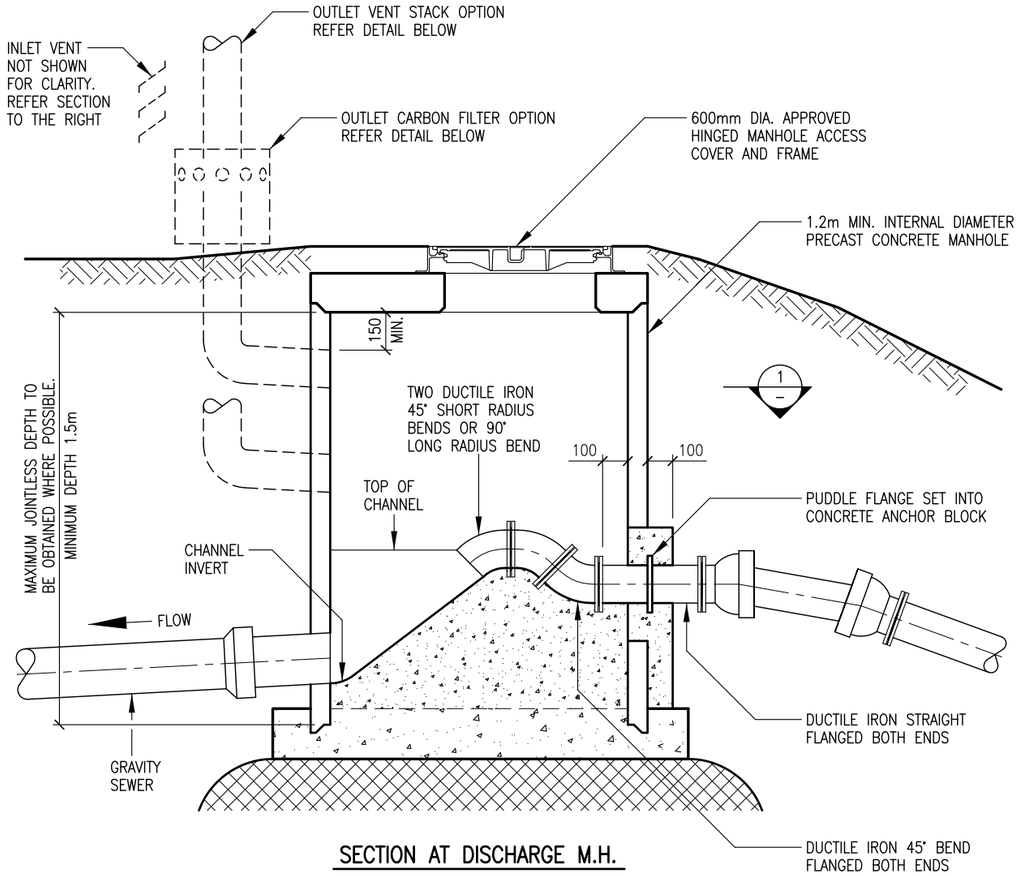
1. IN SOFT SOILS THE BASE MUST BE STABALISED WITH SITE CONCRETE OR CONCRETE BLOCKS TO PREVENT SUBSIDENCE.
2. THE BOUNDARY KIT SHALL CONSIST OF SUITABLE ACCEPTABLE COMPONENTS OR AN ACCEPTABLE UNIT.
3. ALL FITTINGS TO BE TO WATERCARE ENGINEERING STANDARDS.
4. EACH BANK TO HAVE A MAXIMUM OF 5 CONNECTORS.
5. ABBREVIATIONS :
   O.D. = OVERALL DIAMETER
   MIN. = MINIMUM
6. THE NUMBERED TAGS TO BE PROVIDED ON EACH CONNECTION STARTING WITH UNIT 1 (OR THE LOWEST UNIT NUMBER) FROM ONE SIDE. THE TAGS SHALL BE CLEARLY MARKED FIRMLY ATTACHED.

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.057 .DWG

Watercare

BOUNDARY MULTI–CONNECTION FOR PRESSURE WASTEWATER

SCALE:	1:5 & N.T.S. (A3)
ISSUE DATE:	13–07–2018
DWG No.	2010070.057A
REFERENCE No.	WW 22

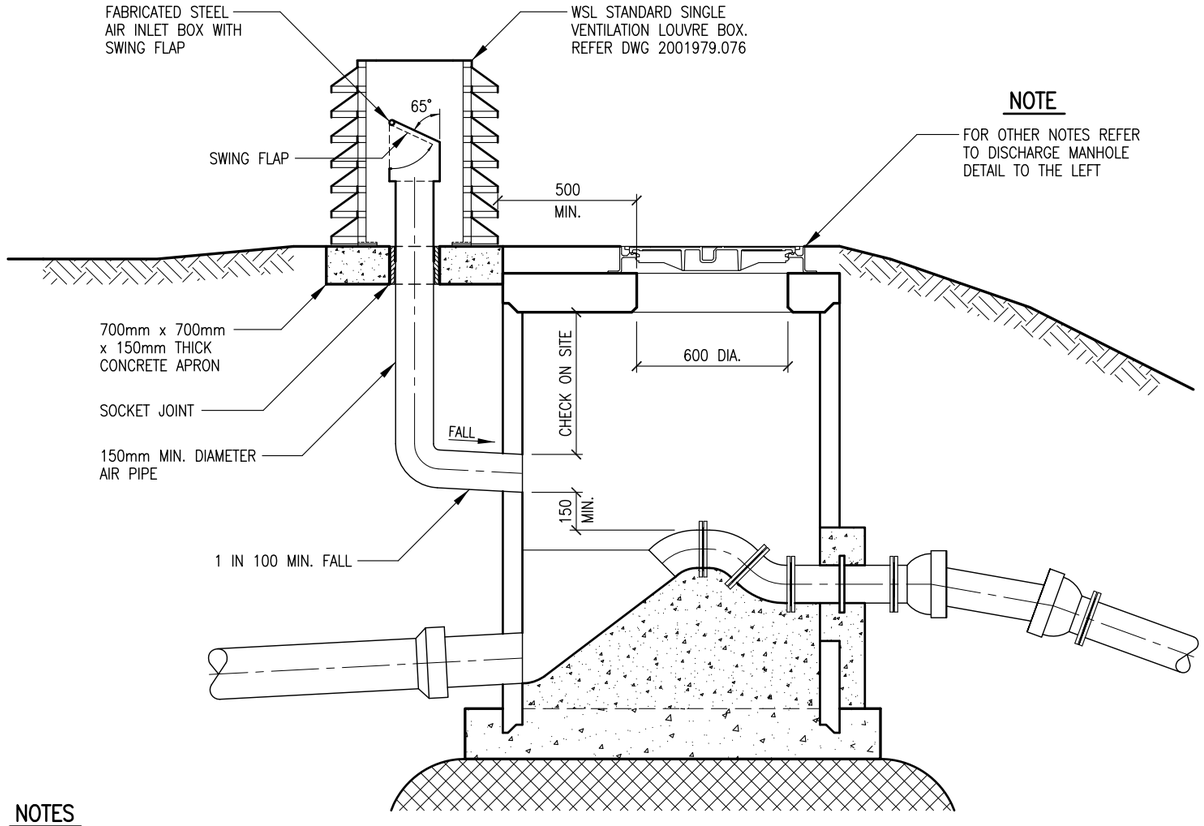


SECTION AT DISCHARGE M.H.

SCALE. 1:25 (A3)
& N.T.S.

KEY

N.T.S. = NOT TO SCALE
MIN. = MINIMUM

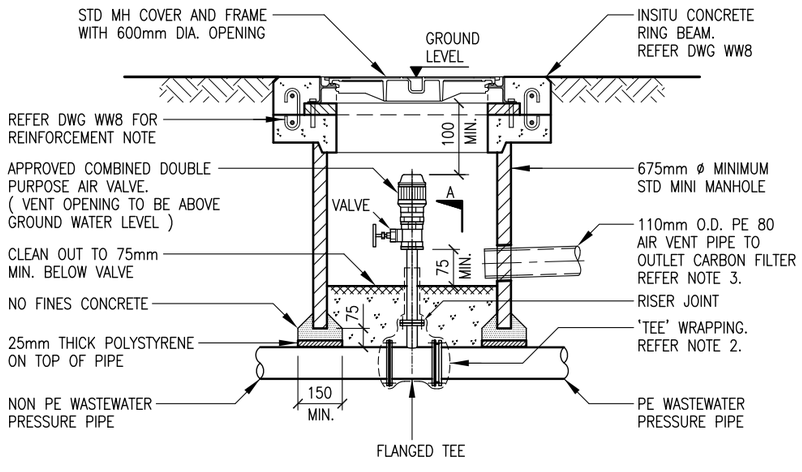


INLET VENT AT DISCHARGE M.H.

SCALE. 1:25 (A3)
& N.T.S.

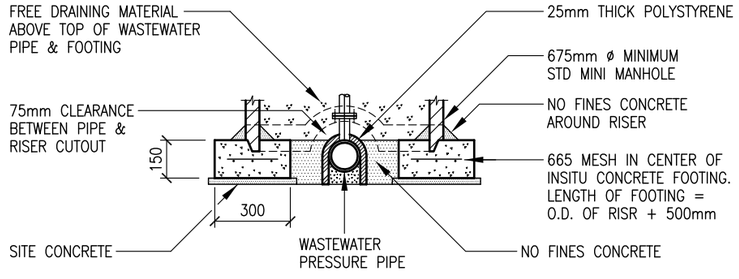
NOTES

1. DETAILS ON THIS DRAWING ARE DIAGRAMMATIC. PIPES VARY.
2. NON PLASTIC ' TEES ' SHALL BE WRAPPED WITH A SUITABLE WRAPPING SYSTEM.
3. VENT STACKS IN LIEU OF FILTERS MUST BE DESIGNED FOR HEIGHT AND LOCATION.



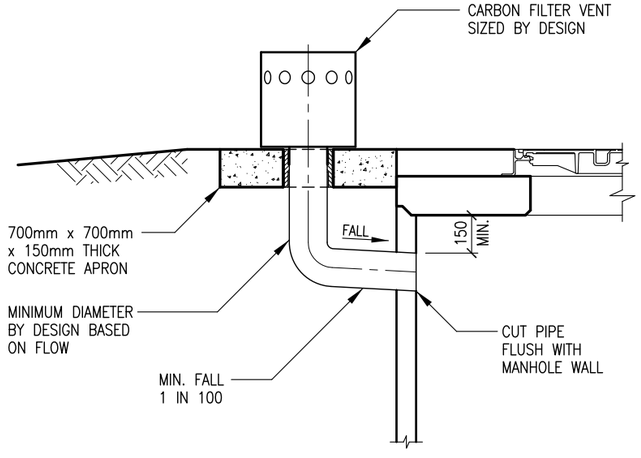
STANDARD AIR RELEASE VALVE & CHAMBER DETAIL

SCALE. 1:25 (A3)
& N.T.S.



SECTION A

SCALE. 1:25 (A3)
& N.T.S.



OUTLET CARBON FILTER VENT OPTION

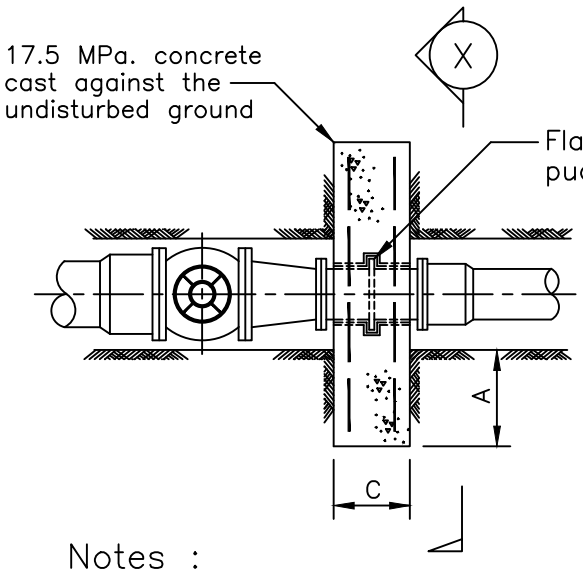
SCALE. 1:25 (A3)
& N.T.S.

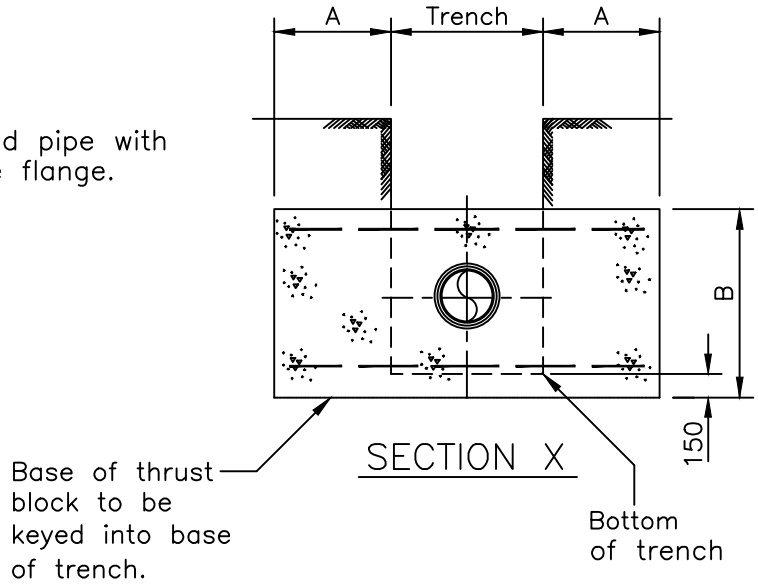
0:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.058B .DWG

Watercare

PRESSURE WASTEWATER VENT AND AIR VALVE

SCALE:	AS SHOWN
ISSUE DATE:	13-07-2018
DWG No.	2010070.058A
REFERENCE No.	WW 23





Notes :

1. Concrete thrust block dimensions for firm soil conditions.
2. The dimensions to be increased or decreased for variation in soil conditions.
3. Allowable bearing stress used - 100kPa.
4. Internal pipe test pressure up to 1400kPa.
5. As built locations to be obtained prior to backfill.
6. Protective membrane (Polythene) between concrete and pipe.
7. 75mm clearance between fittings/flanges and concrete casting.
8. All fittings to be wrapped with a suitable wrapping system.

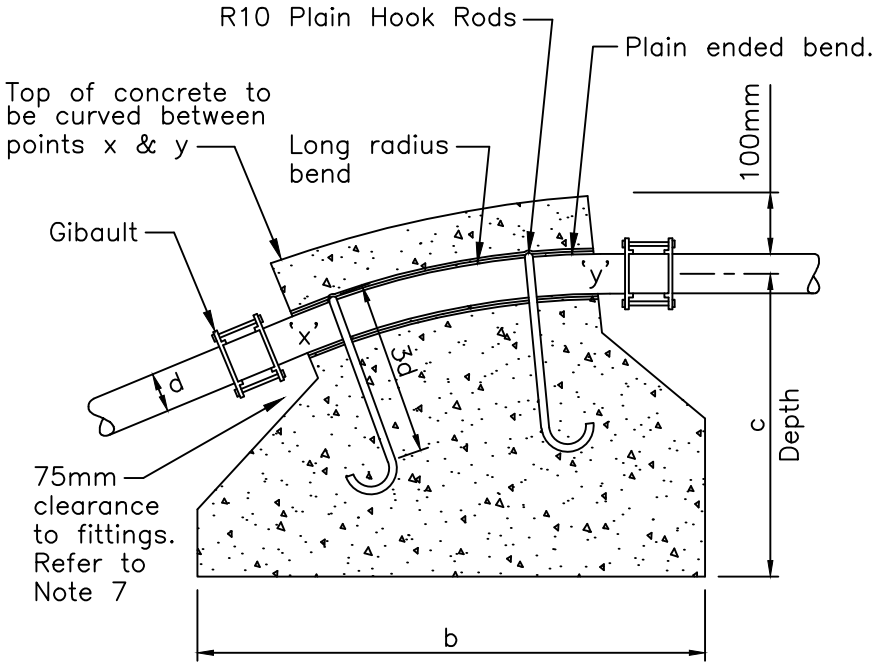
Reducer mm	Reducers		
	A	B	C
100–150	250	350	300
100–200	500	350	300
150–200	250	500	300
150–250	500	500	300
200–250	250	600	300
200–300	400	700	300
250–300	300	800	300

ANCHOR BLOCKS AT REDUCERS

Pipe Dia	Vertical Bends–45°		
	a	b	c
100mm	600	800	700
150mm	800	1000	800
200mm	1000	1200	800
250mm	1000	1600	1000
300mm	1000	2000	1200

Pipe Dia	Vertical Bends–22.5°		
	a	b	c
100mm	500	500	500
150mm	500	800	800
200mm	700	1000	800
250mm	800	1200	900
300mm	900	1500	1000

Pipe Dia	Vertical Bends–11.25°		
	a	b	c
100mm	400	500	500
150mm	500	600	600
200mm	500	800	800
250mm	700	1000	800
300mm	800	1200	900



a = Width of Anchor Block

VERTICAL SECTION

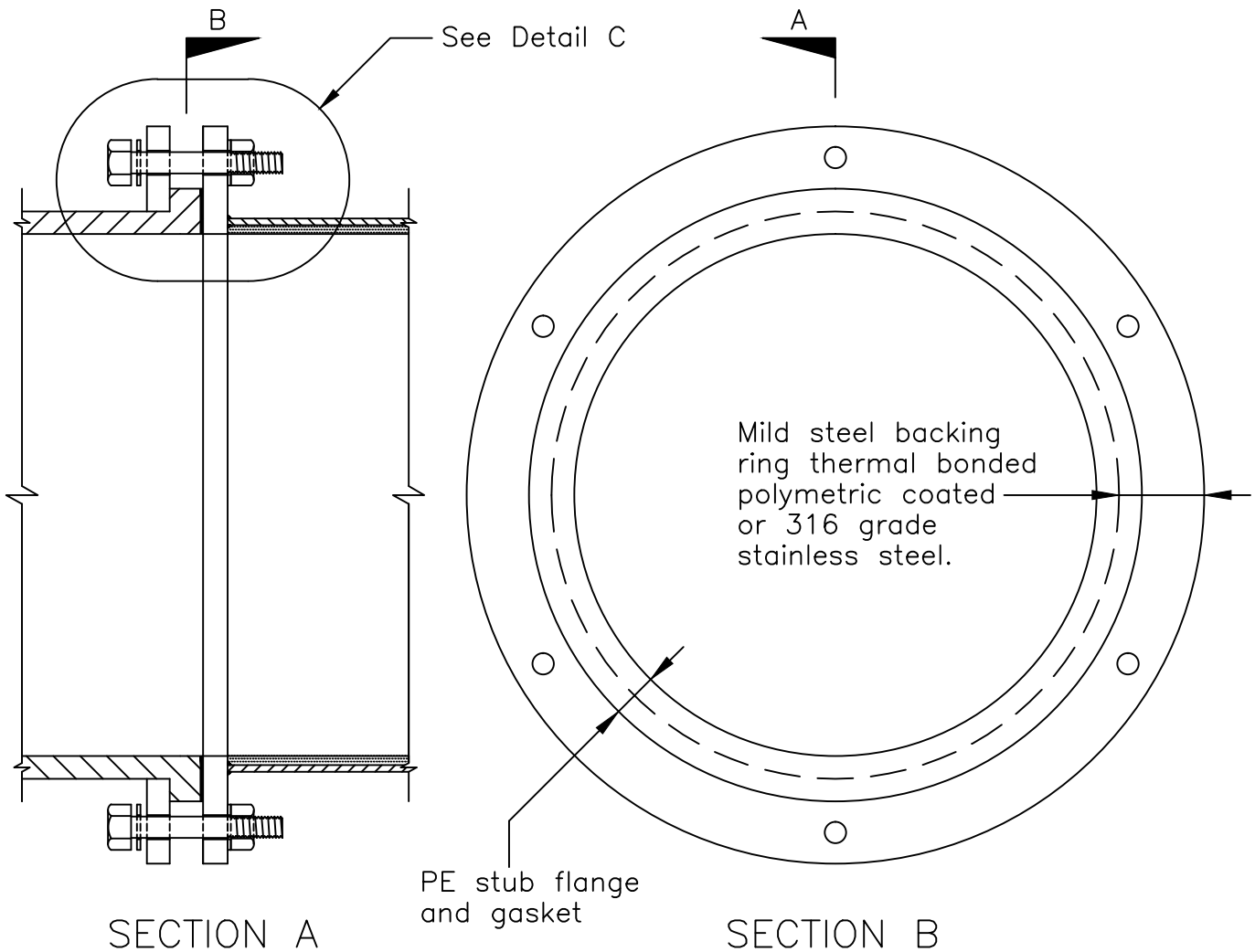
ANCHOR BLOCKS AT BENDS IN VERTICAL PLANE

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.053B .DWG

Watercare

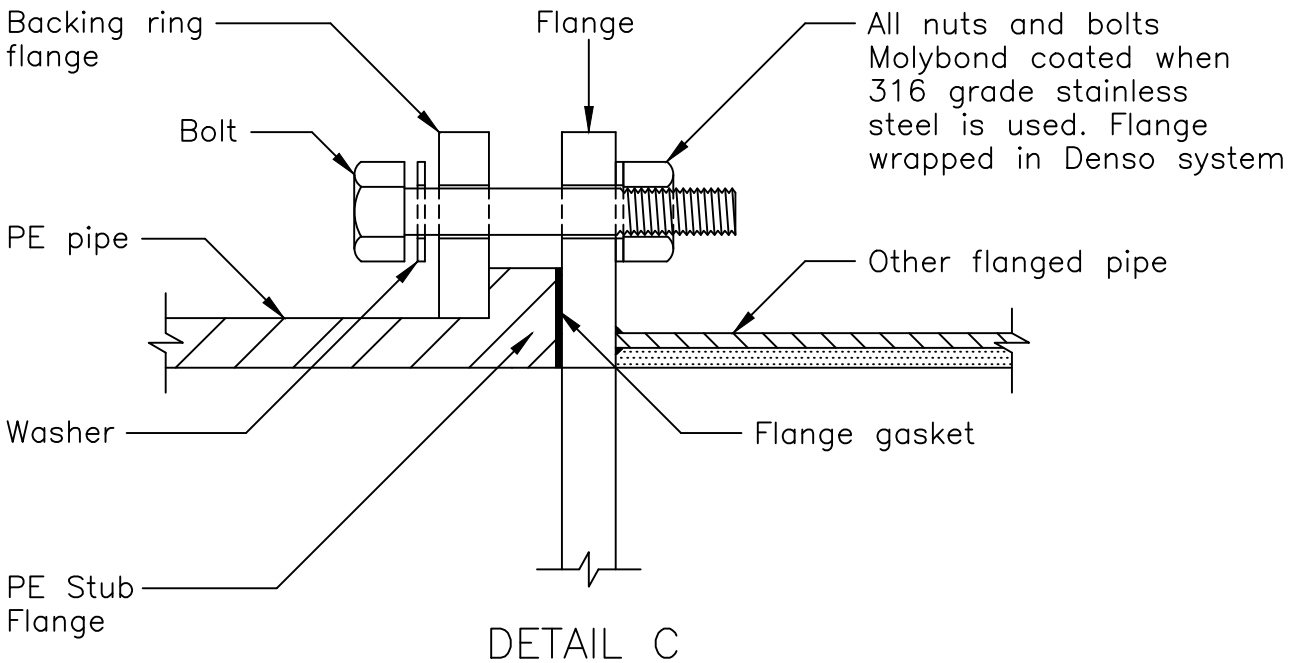
ANCHOR BLOCK DETAILS REDUCERS AND VERTICAL BENDS FOR PRESSURE SYSTEMS

SCALE:	N.T.S.
ISSUE DATE:	06–03–2017
DWG No.	2010070.053B
REFERENCE No.	WW 24



SECTION A

SECTION B



DETAIL C

Note:

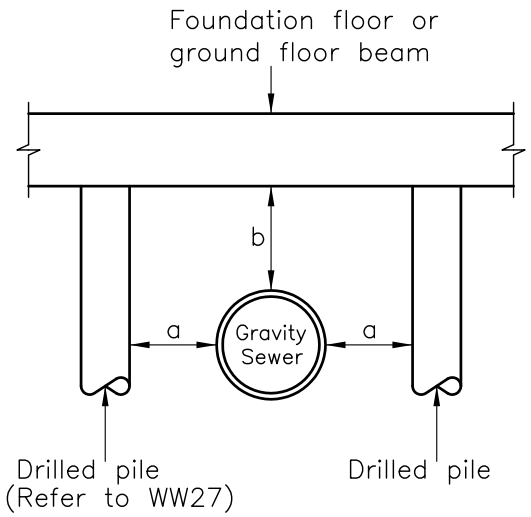
Where stub flange reduced to fit, calculations should show Max. allowable operating pressure is met.

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.052B .DWG

Watercare

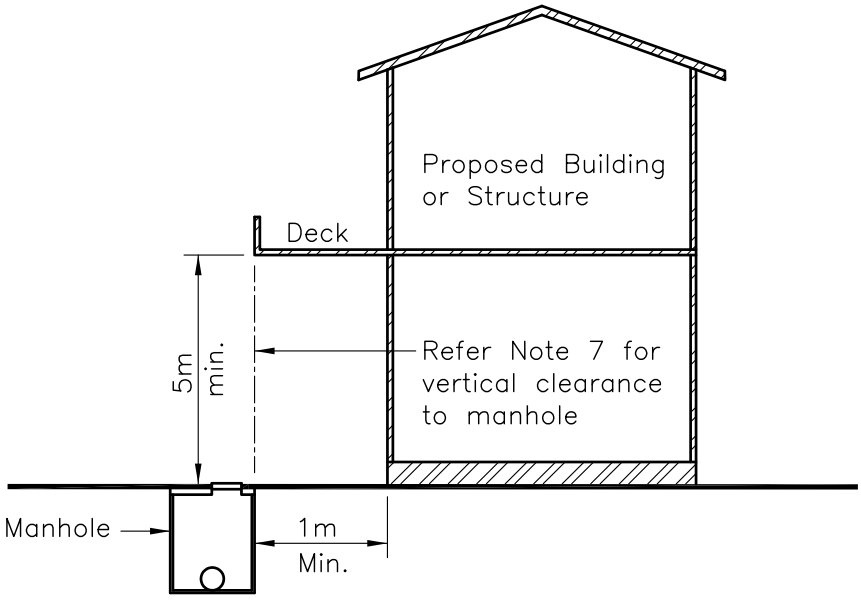
FLANGE CONNECTION DETAIL PE MAIN TO OTHER FOR PRESSURE SYSTEMS

SCALE:	N.T.S.
ISSUE DATE:	13–03–2017
DWG No.	2010070.052B
REFERENCE No.	WW 25



Minimum Pile Clearances						
Type of Sewer	Sewer Depth < 3m		Sewer Depth 3m–5m		Sewer Depth >5m	
	a	b	a	b	a	b
Local Wastewater Network	1m	0.6m	1m	0.6m	1.5m	0.6m
Transmission (Trunk) Sewer	1m	1m	2m	1m	3m	1.5m

PIPE CONSTRUCTION CLEARANCE FOR BRIDGING OPTIONS



MANHOLE CONSTRUCTION CLEARANCE

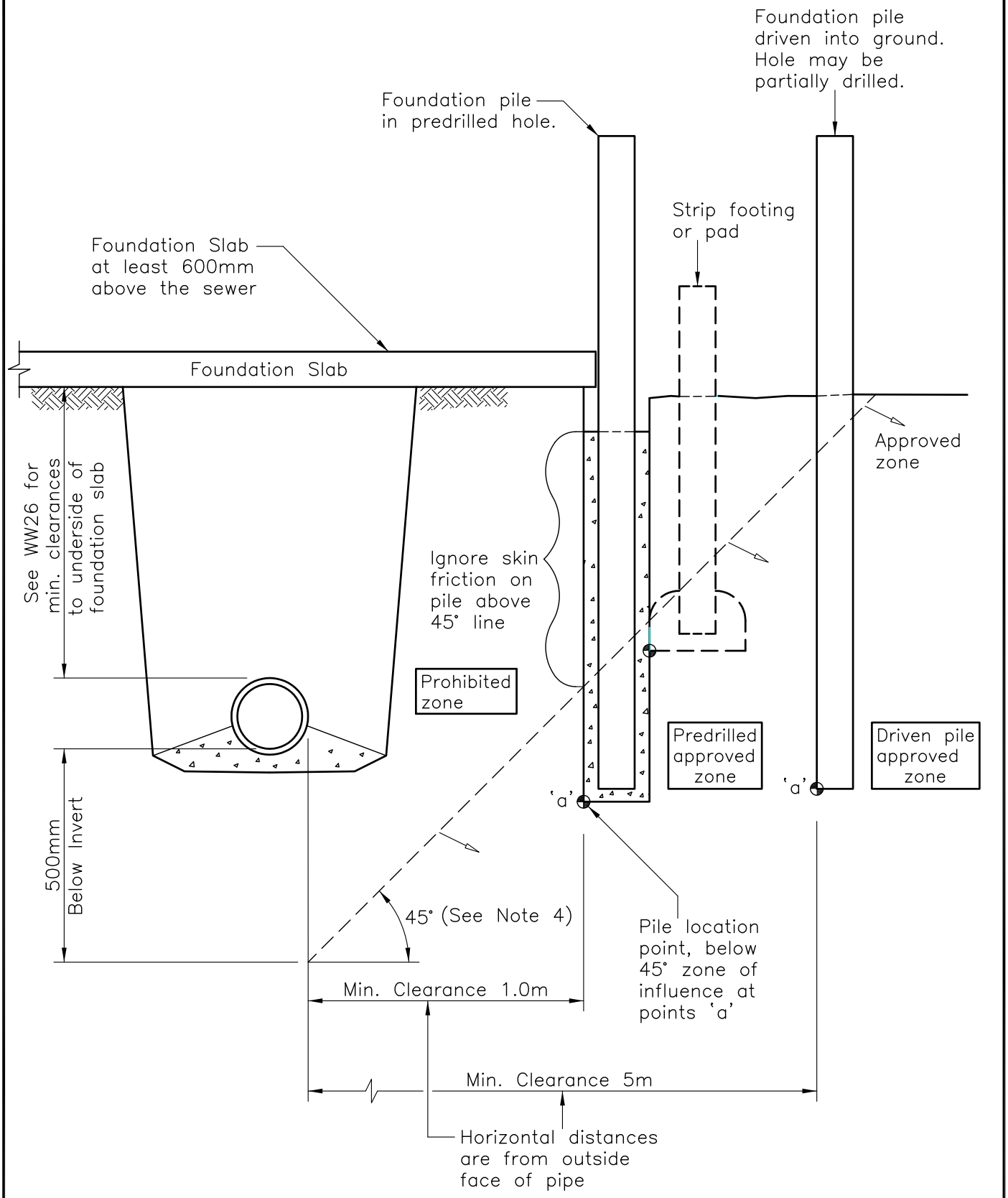
NOTES:

1. Locate sewer to survey accuracy or by hand piloting.
2. No driven piles within 5m of a sewer or 10m of brick sewer.
3. All manholes shall have 24 hrs unobstructed access.
4. No construction shall occur above a manhole or within tolerances 'a' or 'b' in table above.
5. Pressure mains shall not be built over.
6. Brick or poor condition wastewater pipe shall not be built over. Bridging options must be approved.
7. Vertical clearance from the top of the chamber shall be 5m Min. over the full width of the chamber.

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.044D .DWG

PIPE AND MANHOLE CONSTRUCTION CLEARANCE

SCALE:	N.T.S.
ISSUE DATE:	04–12–2017
DWG No.	2010070.044D
REFERENCE No.	WW 26



NOTES:

1. No driven piles are permitted within 10m of brick Sewers, or within 5m of all other sewers.
2. Piles that are required to resist horizontal forces will require specific design.
3. Pile/Footing location point must be below 45° zone of influence.
4. Zone of influence typically 45° or angle determined by a structural engineer.

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.045B .DWG

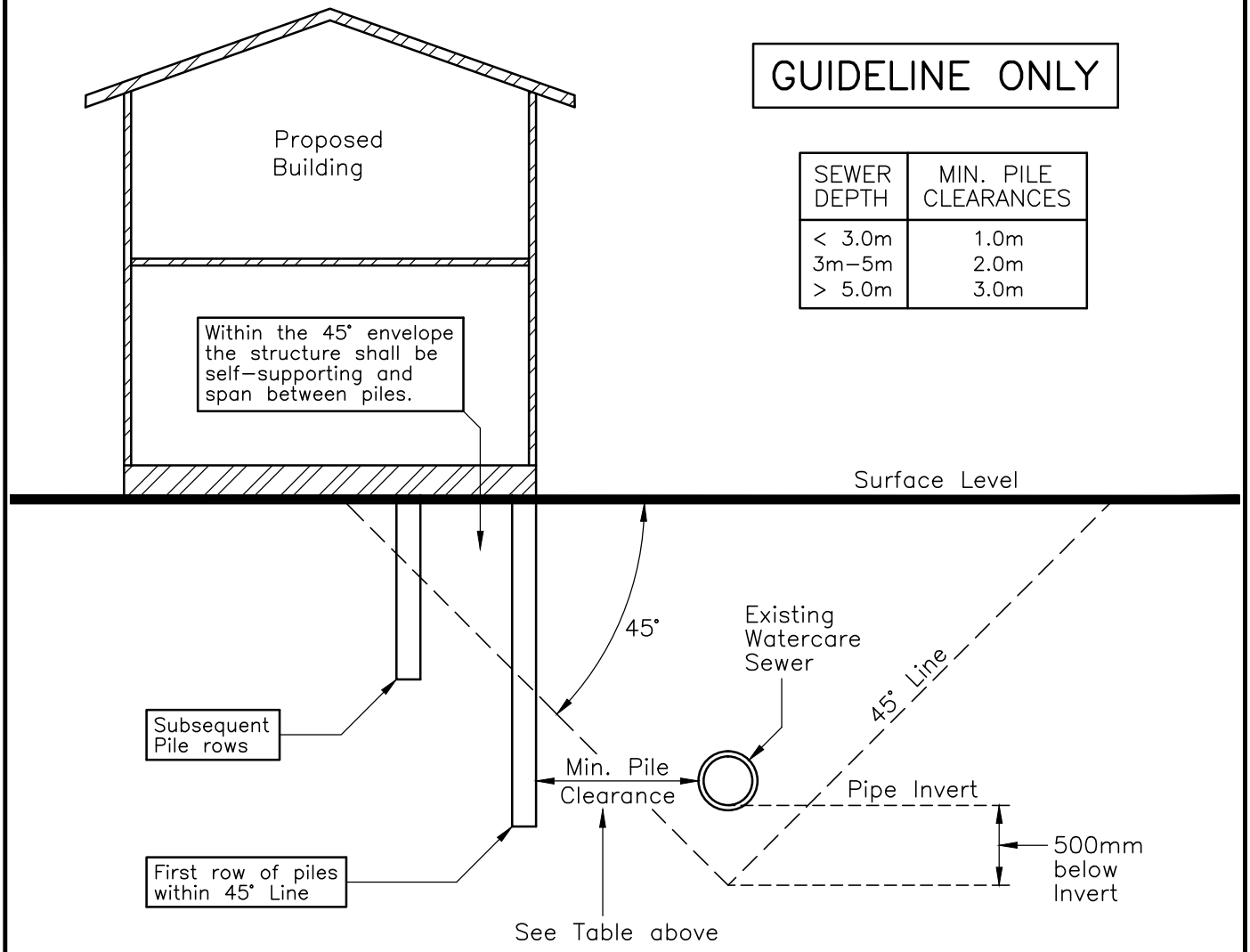
Watercare

BUILDING CLOSE TO OR OVER LOCAL NETWORK WASTEWATER

SCALE:	N.T.S.
ISSUE DATE:	04–12–2017
DWG No.	2010070.045B
REFERENCE No.	WW 27

GUIDELINE ONLY

SEWER DEPTH	MIN. PILE CLEARANCES
< 3.0m	1.0m
3m–5m	2.0m
> 5.0m	3.0m



SECTION THROUGH BUILDING AND TRANSMISSION SEWER

NOTES:

1. This detail shall be used as a guideline only. All applications will be assessed on individual basis and conditions imposed could be more specific than these shown.
2. No structural loads are to be placed on public sewer lines.
3. All structural loads on piles shall be absorbed outside the 45° envelope and below the pipe invert level for the first row of piles.
4. Where raft foundations or strip footings are proposed within the 45° envolope, statement from a structural engineer is required to confirm that the foundation design complies with Clause 2.
5. Driven piles are not permitted within 10 metres of a brick sewer or 5 metres of any other sewers.
6. Closed Circuit Television (CCTV) inspections of Transmission sewer only on approval from Watercare Services Ltd.
7. Manholes shall be minimum 1m clear from buildings as per drawing WW20 and building eaves shall be completely clear.
8. Drawings of the proposed works must accurately identify the location of the sewer/s affected and the distances with cross–section details for all structures. Watercare approved registered surveyor must be engaged to carry out the mark out.

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010070.051C .DWG

Watercare

GUIDELINE FOR BUILDING CLOSE TO OR OVER TRANSMISSION WASTEWATER

SCALE:	N.T.S.
ISSUE DATE:	13–07–2018
DWG No.	2010070.051C
REFERENCE No.	WW 28