



64 Westfield Lane
WA-1079
May 2026

DRAINAGE STRATEGY

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This report has been prepared for the sole benefit, use and information of the Client, for the purposes described and the liability of WA Design Consultants in respect of the information contained within the report will not extend to any third party.

REVISION	DATE	ISSUE STATUS	PREPARED BY
-	24.05.26	FOR APPROVAL	M.H

1 INTRODUCTION

- 1.1 WA Design Consultants has been appointed to prepare a drainage strategy for a residential development at 64 Westfield Lane, Cleckheaton, BD19 6DR in support of planning application reference: 2025/62/93317/E
- 1.2 The proposal is for the construction of 3No. dwellings with associated driveways, gardens and access roads in place of the existing residential development at 64 Westfield Lane, Scholes, Cleckheaton, BD10 6BR.
- 1.3 The strategy has been developed with reference to the following drawings and reports and should be read in conjunction with these documents, which are appended to this strategy:
 - JasonBWadeLtd Existing Site Plan: 1637/1
 - JasonBWadeLtd Proposed Site Plan: 1637/2
 - WA Design Consultants Drainage Drawings:
 - WA-1079-D-01-Foul Drainage Layout
 - WA-1079-D-02- Surface Water Drainage Layout & Impermeable Area Plan
 - WA-1079-D-03- Drainage Details Sheet 1 of 2
 - WA-1079-D-04- Drainage Details Sheet 2 of 2
 - Yorkshire Water Pre-Planning Enquiry Response & Sewer Map Records
 - MicroDrainage Surface Water Hydraulic Calculations
 - SuDS Maintenance Schedule

2 EXISTING SITE DETAILS & PROPOSED DEVELOPMENT

- 2.1 As shown in Figure 2.1, the site comprises the remnants of the demolished property at 64 Westfield Lane and extends over an area of approximately 0.124 ha. Site levels are generally flat at approximately 175 m AOD throughout.



Fig 2.1 – Satellite Image Showing Site Boundary

3 FLOOD RISK STATEMENT

- 3.1 Considering the Environment Agency Flood Mapping shown in Figure 3.1, the site is shown to be located within Flood Zone 1 which is defined in the National Planning Policy Framework (NPPF) Planning Practice Guidance (PPG) as land having a less than 1 in 1,000 (0.1%) annual probability of flooding in any given year.

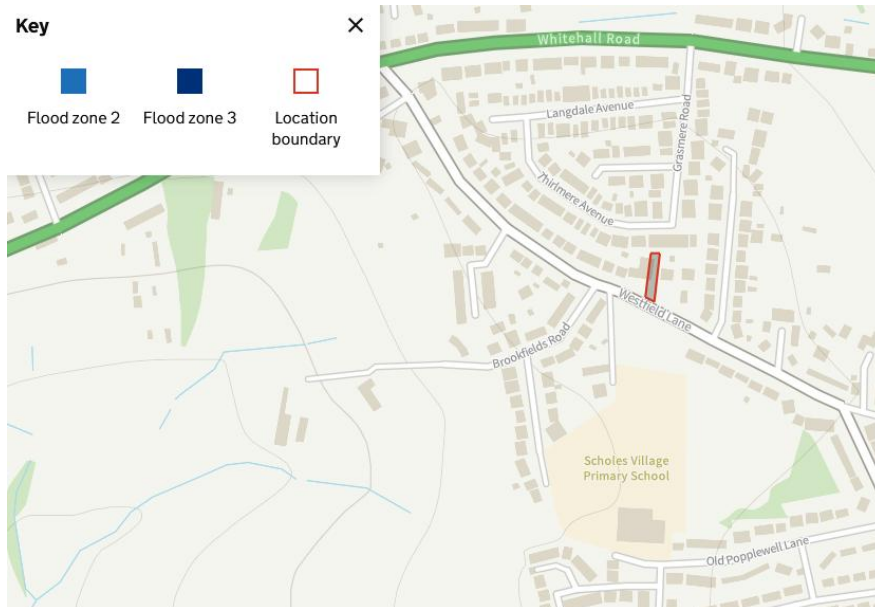


Fig 3.1 – EA Flood Map Data showing site within Flood Zone 1

- 3.2 In accordance with Environment Agency guidance, a site-specific flood risk assessment is not required as the site is in Flood Zone 1 and the total site area is less than 1 hectare.
- 3.3 Whilst a site-specific flood risk assessment is not required the flood risk from surface water has been considered in Fig 3.2.



Fig 3.2 – EA Flood Map Data showing extent of flooding from Surface Water (1 in 100)

3.4 The following conclusions & recommendations have been made after reviewing the information available from the Environment Agency:

- The site is in flood zone 1 and has a very low risk of flooding from rivers or the sea according to EA Flood Map data. As such no further action is required to mitigate flood risk from these sources.
- The site is not at risk of surface water flooding according to EA Flood Map data. In accordance with best practice guidance, and to mitigate any potential risk from localised surface water ponding, the finished floor level will be raised above surrounding ground levels. The attenuation infrastructure and discharge restriction will be designed to replicate the existing greenfield runoff condition where practicable.
- The site is unlikely to be at risk of groundwater or reservoir flooding, according to the Environment Agency Long Term Flood Risk service. As such no further action is required to mitigate flood risk from these sources.

4 SURFACE WATER DRAINAGE

EXISTING SITE CONDITIONS & DRAINAGE

- 4.1 The nearest watercourse is a tributary of Wyke Beck, 360 m to the south-west of the site boundary. Yorkshire Water asset plans (Figure 4.1) identify a 225 mm combined sewer running in Westfield Lane to the south of the site and a 150 mm combined sewer crossing the site boundary in the north-west corner.



Fig 4.1 – Yorkshire Water Sewer Map Extract

PROPOSED DRAINAGE STRATEGY

Surface Water Discharge Hierarchy

- 4.2 The surface water discharge hierarchy outlined in the National Planning Practice Guidance is shown below and the aim should be to discharge surface water runoff from the development as high up the hierarchy as reasonably practicable:
- (1) Discharge to soakaways, or infiltration,
 - (2) Discharge to an appropriate watercourse,
 - (3) Discharge to an existing surface water sewer,
 - (4) Discharge to an existing combined sewer.
- 4.3 In accordance with the surface water discharge hierarchy, soakaways were initially considered for surface water management. However, they have been discounted, owing to the limited space between the dwellings and the site boundary, which precludes the 5 m separation between building foundations and soakaway structures required by Building Control. Soakaways are therefore not proposed.
- 4.4 As soakaways are not suitable, the next step in the discharge hierarchy is discharge to a watercourse. The closest watercourse is a tributary of Wyke Beck, 360 m to the south-west of the site boundary. Direct discharge to this watercourse is neither economical nor practicable, as it would require a surface water drain to cross extensive areas of built-up third-party land.

- 4.5 The next step in the discharge hierarchy is connection to a public surface water sewer, followed by discharge to a public combined sewer. Yorkshire Water asset plans confirm that no public surface water sewer is available in the vicinity of the site; connection to the public combined sewer network has therefore been considered. A pre-development enquiry was submitted to Yorkshire Water; their response and asset maps are appended to this report. Yorkshire Water have confirmed that the 225 mm combined sewer in Westfield Lane is suitable for connection, subject to the discharge rate being limited to 3.5 l/s. Formal approval will be sought by submission of a Section 106 application under the Water Industry Act 1991.

Proposed Impermeable Areas & Proposed Discharge Rate

- 4.6 The surface water discharge from the proposed development will be made up from the following elements:

- Building Roof
- Paved Areas around new development
- Access Roads
- Car Parking Bays

- 4.7 The total proposed impermeable area within the site boundary is 608 m² which equates to a proposed greenfield runoff rate of 0.4 l/s. Discharging at this rate would require an orifice of insufficient diameter to resist blockage reliably under normal operating conditions. A practical minimum discharge rate of 3.5 l/s has therefore been agreed with Yorkshire Water; this ensures the flow control orifice remains adequately sized to operate without susceptibility to blockage.

Urban Creep

- 4.8 A 10% urban creep allowance has been applied to the impermeable area of the dwellings (excluding roads) to account for future extensions & additional hardstanding. The total design impermeable area is therefore 640 m².

Climate Change Allowance

- 4.9 A 45% increase in rainfall intensity has been allowed for in the surface water drainage design to account for climate change in accordance with the upper allowance for the 1% annual exceedance rainfall event within the Aire & Calder Management catchment in line with Environment Agency recommendations. This assumes a 100-year design life.

SuDS Considerations

- 4.10 SuDS have been considered when producing this drainage strategy to provide effective surface water treatment and slow down the rate of surface water runoff in accordance with National Planning Policy recommendations and the Calderdale Council Flood Risk & Drainage Supplementary Planning Document. The following sustainable drainage systems are proposed:
- *Cellular Storage Tank: Underground cellular storage has been selected to accommodate the required attenuation volume within the site's constrained footprint, whilst limiting discharge to the consented rate*

Surface Water Treatment & Future Maintenance Plan

- 4.11 Surface water from residential roofs and driveways below 800 m² presents a low pollution risk and requires no pre-discharge treatment, in accordance with the EA's pollution prevention guidance for businesses and the CIRIA SuDS Manual (C753). Catchpit manholes have nonetheless been incorporated throughout the network as an additional measure of design resilience.
- 4.12 A suitable maintenance plan for all SuDS components can be found in the Appendix and should be developed and implemented by the operator once the drainage proposals have been installed to ensure sufficient operation and treatment is maintained throughout the design life of the development.

Design Summary

- 4.13 The surface water from the proposed development will discharge into the 225 mm combined sewer in Westfield Lane to the south of the site.
- 4.14 Surface water discharge from the development is restricted to 3.5 l/s for all events up to and including the 1 in 100-year return period, inclusive of a climate change allowance, in accordance with the agreed position with Yorkshire Water
- 4.15 A cellular attenuation tank is proposed to accommodate all surface water discharge from the site and will have sufficient capacity to attenuate flows up to and including the 1 in 100-year return period plus a 45% allowance for climate change.
- 4.16 All private surface water drains will be designed and constructed in accordance with BS EN 752:2017 and Building Regulations Approved Document H.
- 4.17 A 10% increase in dwelling impermeable area has been included to account for urban creep (i.e. future extensions & increased hardstanding areas).

5 FOUL WATER DRAINAGE

EXISTING SITE DRAINAGE

- 5.1 Yorkshire Water asset plans (Figure 4.1) identify a 225 mm combined sewer running in Westfield Lane to the south of the site and a 150 mm combined sewer crossing the site boundary in the north-west corner.

PROPOSED DRAINAGE STRATEGY

Discharge Method

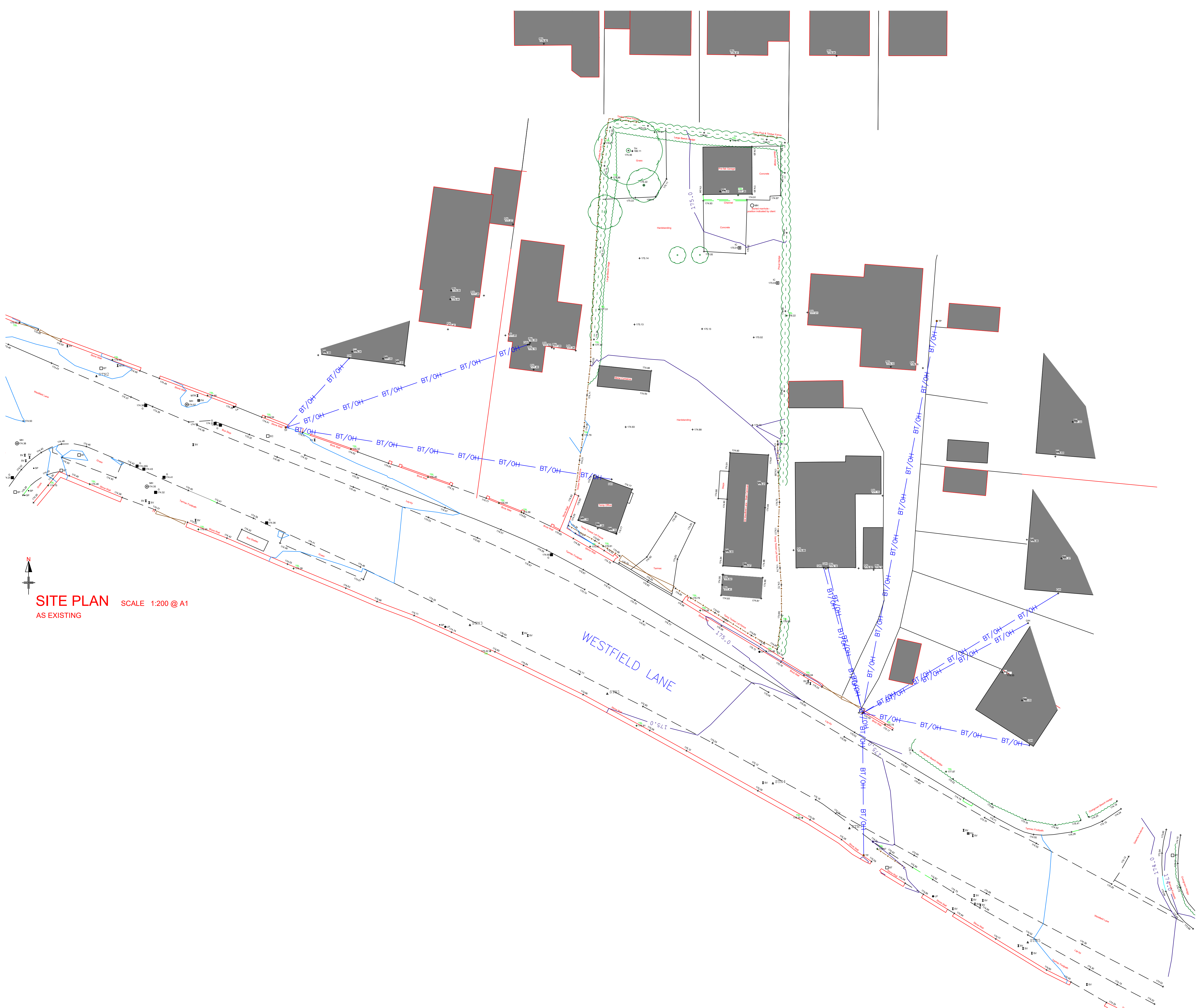
- 5.2 A pre-development enquiry was submitted to Yorkshire Water; their response and accompanying asset maps are appended to this report. Yorkshire Water have confirmed that the 225 mm combined sewer in Westfield Lane is suitable for connection and has sufficient capacity to accommodate the development flows. Formal approval will be sought via a Section 106 application under the Water Industry Act 1991.

Design Summary

- 5.3 Foul water from the proposed development will discharge to the 225 mm combined sewer in Westfield Lane, in accordance with the agreed position with Yorkshire Water.
- 5.4 New foul drains will be provided to serve all foul producing appliances within the proposed development. All drains will be designed in accordance with BS EN 752:2017 and Building Regulations Approved Document H.



APPENDIX A – ARCHITECTURAL INFORMATION



SITE PLAN SCALE 1:200 @ A1
AS EXISTING

GENERAL NOTES
ANY DEVIATION FROM APPROVED DRAWINGS MUST BE AGREED WITH THE BUILDING CONTROL OFFICER, PLANNING DEPT. AND THIS OFFICE BEFORE WORK COMMENCES.

NO CONDITION, BUILDING DEFECT OR ASBESTOS SURVEY HAS BEEN UNDERTAKEN BY JBW

DIMENSIONS OTHER THAN THOSE FIGURED ON THE DRAWINGS MUST BE VERIFIED BY THIS OFFICE. ALL SETTING OUT ON SITE MUST BE VERIFIED BEFORE MANUFACTURE OF COMPONENTS. ALL DISCREPANCIES MUST BE REPORTED TO THE OFFICE BEFORE WORKS COMMENCE. BOUNDARIES AND RIGHTS OF WAY MUST BE ASCERTAINED BEFORE WORKS COMMENCE.

WRITTEN APPROVAL SHOULD BE OBTAINED FROM ADJOINING OWNERS BEFORE WORK COMMENCES ON THE PARTY WALL OR OVER BOUNDARIES OR WITHIN 3m OF EITHER, UNDER THE PARTY WALL ETC. ACT 1994 A STATUTORY NOTICE MUST BE SERVED AS REQUIRED. JBW LTD WILL NOT AUTOMATICALLY SERVE PARTY WALL NOTICES.

JBW LTD WILL NOT ACT AS PRINCIPLE DESIGNER UNDER THE BUILDING SAFETY ACT 2022

ALL WORK AND MATERIALS TO COMPLY WITH RELEVANT B.S. AND C.E. STANDARDS AND CODES OF PRACTICE AND TO BE IN ACCORDANCE WITH BUILDING REGULATIONS.

DOOR AND WINDOW SIZES SHOWN ARE NOMINAL. ACTUAL SIZE OF DOOR AND WINDOW FRAMES SHOULD BE CHECKED BEFORE CONSTRUCTING OPENINGS.

TOUGHENED OR LAMINATED GLASS MUST BE USED IN THE FOLLOWING AREAS (TO BS 6262: PART 4: 1994 CODE OF PRACTICE FOR GLAZING FOR BUILDINGS)

ANY GLAZING BETWEEN FLOOR LEVEL AND 800mm ABOVE FLOOR LEVEL IN WINDOWS.

ANY GLAZING BETWEEN FLOOR LEVEL AND 1500mm ABOVE FLOOR LEVEL IN A DOOR.

ANY GLAZING IN SIDE FRAMES TO DOORS WITHIN 300mm OF THE DOOR UP TO A HEIGHT OF 1500mm AND ABOVE FLOOR LEVEL.

DETAILS AND CALCULATIONS FOR STRUCTURAL STEELWORK AND TIMBER MEMBERS TO BE APPROVED BY BUILDING CONTROL BEFORE WORK COMMENCES. ALL STRUCTURAL ROOF TIMBERS TO BE PRESSURE IMPREGNATED OR SIMILARLY TREATED.

DESIGN RISK ASSESSMENT
UNDER THE CDM REGULATIONS 2015 CLIENTS HAVE A RESPONSIBILITY TO APPOINT A PRINCIPLE CONTRACTOR FOR BUILDING PROJECTS WHEN TWO OR MORE CONTRACTORS ARE ON SITE.

FURTHER CLIENT DUTIES FOR DOMESTIC PROJECTS CAN BE TRANSFERRED TO THE PRINCIPAL DESIGNER AND/OR PRINCIPAL CONTRACTOR

UNDERGROUND SERVICES
THERE ARE UNDERGROUND GAS AND ELECTRICITY SERVICES ON THE SITE. ACCURATELY POSITION ALL UNDERGROUND SERVICES WITHIN THE SITE BEFORE COMMENCEMENT OF ANY EXCAVATIONS FOR FOUNDATIONS, DRAINAGE, ETC. SEE HSE GUIDANCE NOTES HS (G) 47 AVOIDING DANGER FROM UNDERGROUND SERVICES, BT GUIDANCE NOTES APPENDIX 1, NW CABLE. PRECAUTIONS TO PROTECT COMMUNICATIONS APPARATUS, NW WATER. PROTECTION OF MAINS AND SERVICES, BRITISH GAS TRANSCO MEASURES TO PROTECT APPARATUS

OVERHEAD CABLES
THERE ARE OVERHEAD CABLES ADJACENT TO THE SITE. THERE IS A RISK OF ELECTROCUTION. SEE BT GUIDANCE NOTES APPENDIX 1 AND HSE GUIDANCE NOTES 6.

HEAVY COMPONENTS
THERE IS A RISK OF INJURY TO OPERATIVES LIFTING HEAVY COMPONENTS. ARRANGE APPROPRIATE HANDLING AND LIFTING EQUIPMENT

ASBESTOS
CHECK FOR EXISTING ASBESTOS SHEETING TO SOFFITS/LININGS/ETC. ANY ASBESTOS FOUND TO BE REMOVED BY AN APPROVED CONTRACTOR AND DISPOSED OF IN A SAFE MANNER.

SITE SPECIFIC ELEMENTS
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PLANT MOVEMENTS MUST BE CONTROLLED AND PLANNED TO PREVENT PLANT OVERTURNING.

D	
C	
B	
A	

jasonbwade Ltd
Chartered Architectural Technologist

PROJECT
RS DEVELOPMENTS LTD
PROPOSED DWELLINGS
64 WESTFIELD LANE
SCHOLES
CLECKHEATON
BD19 6DR

DRG TITLE
SITE PLAN AS EXISTING

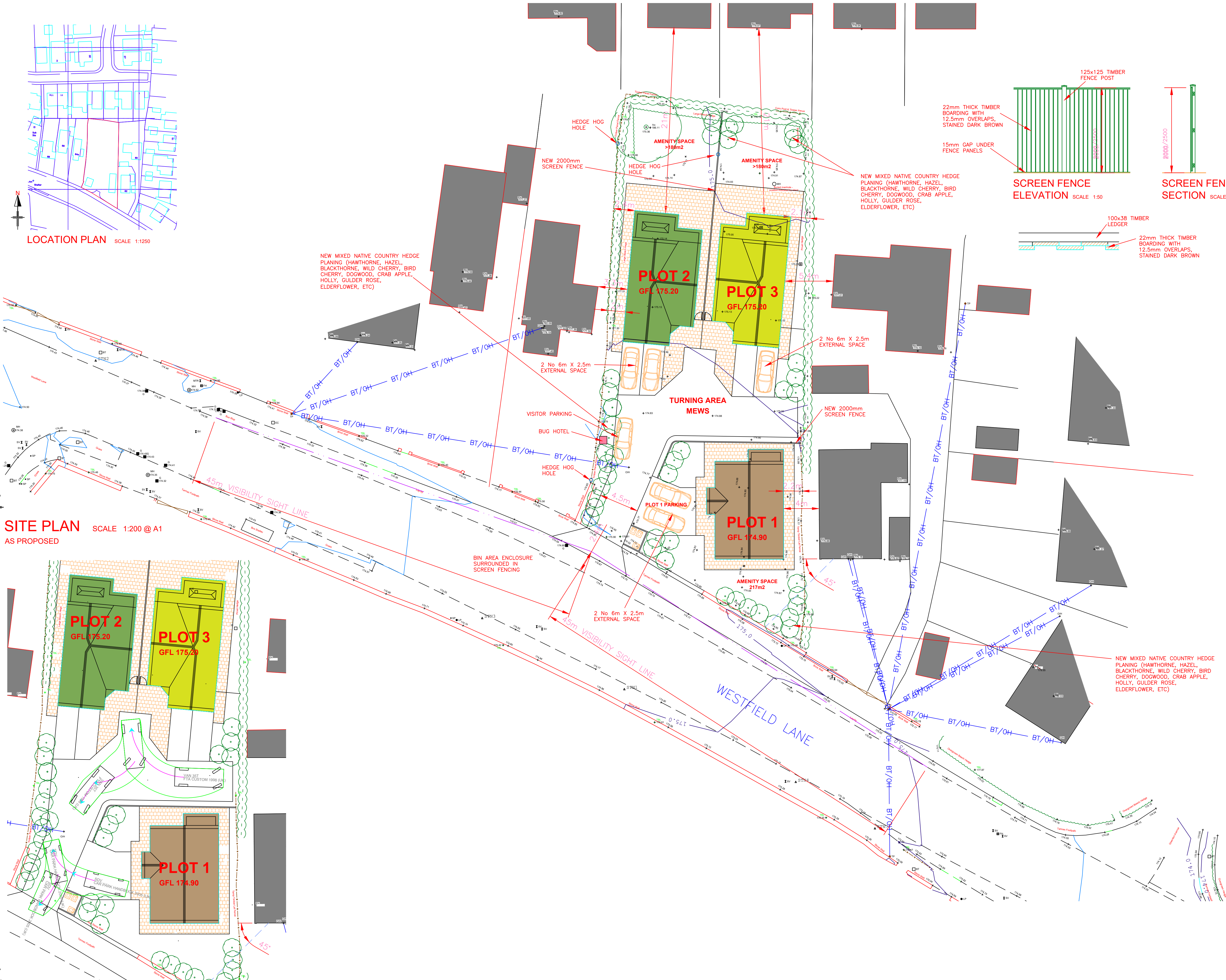
DRG NO
1637/1

REV
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DATE
MARCH 2025

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t 01422 831114
e jbw@jasonbwade.co.uk

CIAT
INSTITUTION



LOCATION PLAN SCALE 1:1250

SITE PLAN SCALE 1:200 @ A1 AS PROPOSED

SITE PLAN VEHICLE TURNING SCALE 1:200 @ A1 AS PROPOSED

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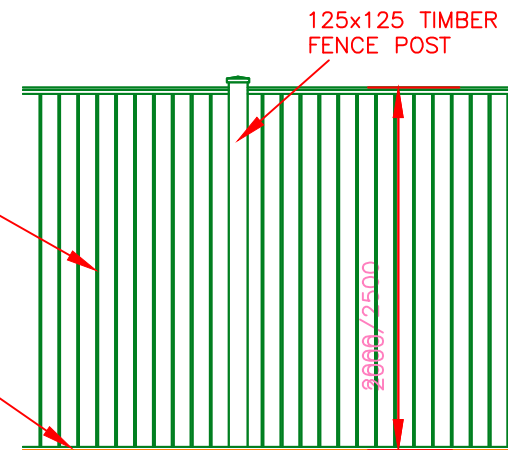
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SCREEN FENCE ELEVATION SCALE 1:50

SCREEN FENCE SECTION SCALE 1:50

D	
C	
B	
A	2.6.25 AMEND FOR PLANNING

jasonbwade
Chartered Architectural Technologist

PROJECT
RS DEVELOPMENTS LTD

PROPOSED DWELLINGS
64 WESTFIELD LANE
SCHOLES
CLECKHEATON
BD19 6DR

DRG TITLE
SITE PLAN AS PROPOSED

DRG NO **1637/2** REV **A**

DATE NOVEMBER 2024

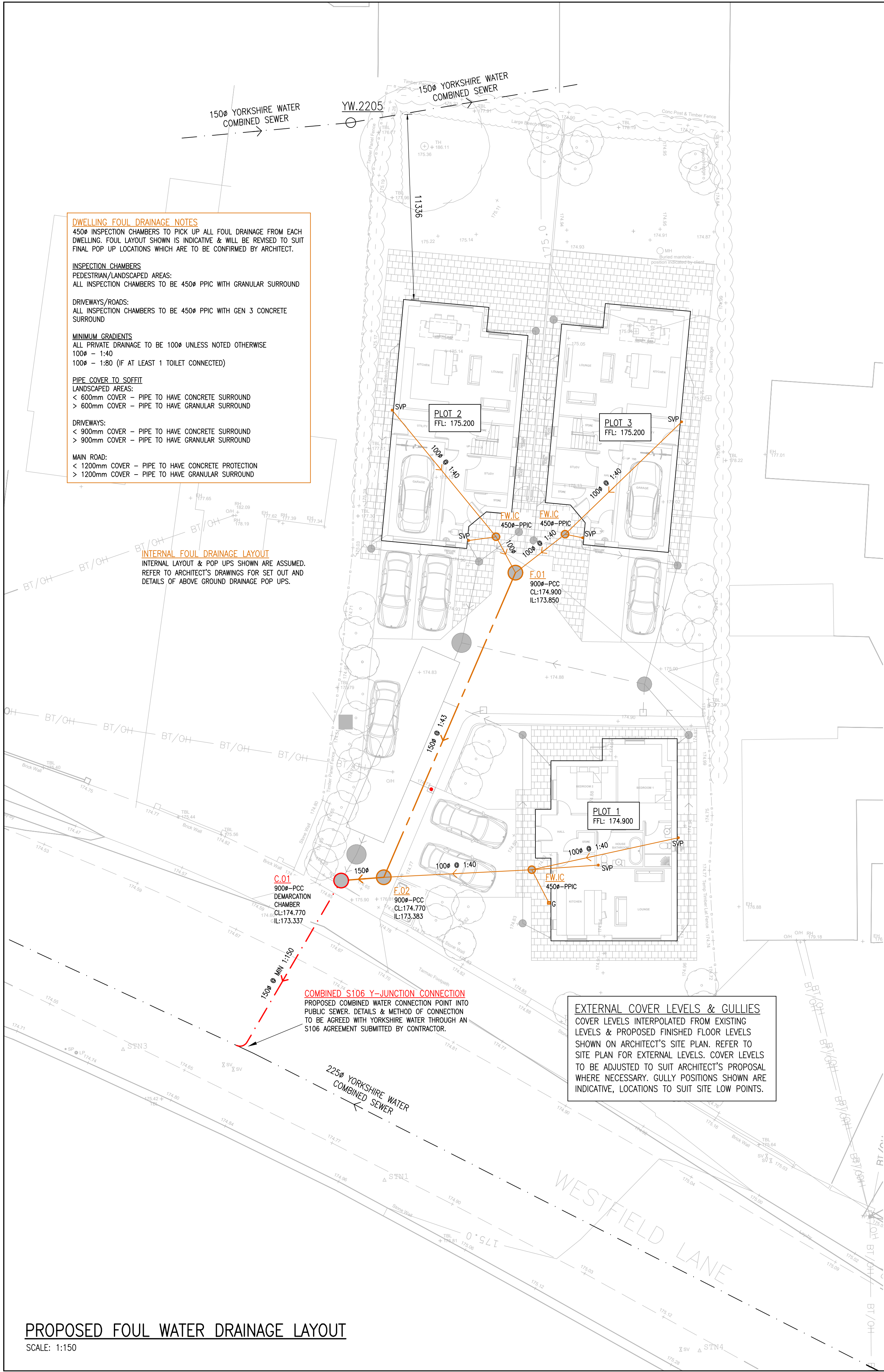
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APPENDIX B – DRAINAGE DRAWINGS



PROPOSED FOUL WATER DRAINAGE LAYOUT

SCALE: 1:150

LEGEND.

- EXISTING FOUL SEWERS
- NEW BRANCH FOUL SEWERS
- NEW MAIN FOUL SEWERS
- CONCRETE ENCASED FW SEWER
- NEW FOUL MANHOLE
- EXISTING FOUL RISING MAIN
- FOUL RISING MAIN
- EXISTING COMBINED SEWERS
- NEW COMBINED SEWERS
- NEW COMBINED MANHOLE
- SVP SOIL VENT PIPE (RODDABLE ACCESS)
- INTERNAL GULLY (TRAPPED & RODDABLE)
- SS STUB STACK
- BD VERTICAL BACK DROP
- DP TRAPPED & RODDABLE CHANNEL DRAIN
- RE RODDING EYE
- ABANDONED SEWER TO BE REMOVED

ADDITIONAL FOUL WATER DRAINAGE NOTES:

- LOCATION OF ALL EXISTING DRAINAGE TO BE CONFIRMED ON SITE PRIOR TO COMMENCEMENT OF WORKS AS IT IS APPROXIMATELY TRANSLATED FROM SURVEY DRAWING.
- CONTRACTOR TO CHECK INVERT LEVELS AND DETAILS OF ALL OUTFALL LOCATIONS PRIOR TO COMMENCING DRAINAGE WORKS. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.
- ALL DRAINAGE AT MANHOLES/ACCESS CHAMBERS TO CONNECT WITH SOFFITS LEVEL UNLESS OTHERWISE NOTED. MANHOLE INVERT LEVELS SHOWN ON PLAN ARE THAT OF LOWEST OUTGOING PIPE.
- ALL FOUL DRAINAGE TO BE 100mm DIA. UNLESS OTHERWISE NOTED.
- ALL INTERNAL 100mm DIA. STACKS TO BE LAID AT FALLS NOT SHALLOWER THAN 1:40 TO SUIT CONNECTION INTO MAIN NETWORK OR NOT SHALLOWER THAN 1:80 IF AT LEAST 1 WC IS CONNECTED.
- WHERE AN SVP/TOILET IS LOCATED AT THE HEAD OF A RUN, IT SHOULD CONNECT DIRECTLY TO THE INSPECTION CHAMBER MAIN CHANNEL RATHER THAN USING A BRANCH CONNECTION. WHERE MULTIPLE SVPs/TOILETS ARE PRESENT, THE STACK SERVING THE MOST TOILETS OR CARRYING THE HIGHEST FLOW SHOULD BE CONNECTED TO THE MAIN CHANNEL WHERE POSSIBLE.
- ALL FOUL BRANCH CONNECTIONS TO BE MADE USING OBLIQUE 45° CONNECTION IN THE DIRECTION OF FLOW OF THE MAIN LINE WHERE POSSIBLE.
- FOR INTERNAL FOUL CONNECTIONS WITHOUT A TOILET/SINK/UTILITY WHERE OBLIQUE CONNECTIONS ARE NOT POSSIBLE, 87.5° CURVED SQUARE BRANCH CONNECTIONS TO BE USED IN DIRECTION OF FLOW OF MAIN LINE.
- FOUL RODDING POINTS SHOULD BE PROVIDED, ABOVE SPILLOVER LEVEL OF CONNECTED APPLIANCES, IN DISCHARGE STACKS TO GIVE ACCESS TO ANY LENGTH OF PIPE WHICH CANNOT BE REACHED FROM ANY OTHER PART OF THE NETWORK.
- ALL DRAINAGE WITHIN 300mm OF UNDERSIDE OF STRUCTURAL SLAB TO HAVE FULL GEN 3 CONCRETE BED AND SURROUND.
- ALL INTERNAL MANHOLE & INSPECTION CHAMBERS TO HAVE SCREW DOWN DOUBLE SEAL ACCESS COVERS.
- ALL INTERNAL & EXTERNAL FOUL WATER INSPECTION CHAMBERS SITUATED IN AREAS WITHOUT VEHICULAR ACCESS TO BE TYPE 3 CHAMBERS WITH 150mm DOT TYPE 1 SURROUND UNLESS NOTED OTHERWISE.
- ALL EXTERNAL FOUL WATER INSPECTION CHAMBERS SITUATED IN AREAS WITH VEHICULAR ACCESS TO BE TYPE 3 CHAMBERS WITH GEN 3 CONCRETE SURROUND UNLESS NOTED OTHERWISE.
- ALL TYPE 3 INSPECTION CHAMBERS WHERE DEPTH TO INVERT OF CHAMBER IS > 1m SHALL HAVE COVER FRAME WITH ACCESS RESTRICTED TO 350mm DIA. OR 300x300mm SQUARE.
- ALL EXTERNAL FOUL WATER MANHOLES TO BE MIN. 1200mm DIA. WIDE WALL (125mm THICK) TYPE 2 PRECAST CONCRETE CHAMBERS UNLESS NOTED OTHERWISE.
- MANHOLE COVER LEVELS ARE SUBJECT TO CONFIRMATION OF FINAL EXTERNAL & INTERNAL LEVELS.
- THE LOAD CLASS OF ALL COVERS, GRATINGS, GULLIES, CHANNELS & FRAMES TO CHAMBERS TO SUIT THEIR LOCATION AS FOLLOWS (REFER TO MANHOLE SCHEDULE FOR CONFIRMATION):
 - A15 - INTERNAL LOCATIONS
 - B125 - EXTERNAL WITH PEDESTRIAN ACCESS ONLY
 - C250 - EXTERNAL LIGHTLY TRAFFICKED AREAS
 - D400 - MAIN ROADS/HIGHWAYS
 - E600 - HGV/LOADING BAY AREAS
- GRATINGS IN PEDESTRIAN AREAS TO HAVE HEEL SAFE ANTI-SLIP COVERS.
- TREE ROOT PROTECTION REQUIRED TO ALL DRAINAGE RUNS WITHIN 5m OF EXISTING OR PROPOSED TREES, DETAILS T.B.C BY LANDSCAPE ARCHITECT.
- ALL DRAINAGE & PUMP FIXTURES AND FITTINGS MUST BE COMPATIBLE WITH THE COMPOSITION OF EFFLUENT BEING CONVEYED.
- ALL PROPRIETARY ITEMS TO BE INSTALLED IN STRICT COMPLIANCE WITH MANUFACTURERS INSTRUCTIONS AND RECOMMENDATIONS.
- REFERENCE SHOULD BE MADE TO ARCHITECT & M&E ENGINEERS DRAWINGS FOR ABOVE GROUND DRAINAGE DETAILS & SET-OUT.
- ALL EXISTING DRAINAGE THAT IS MADE REDUNDANT AS A RESULT OF THE WORKS TO BE GRUBBED UP AND REMOVED.
- THE LAYOUT OF PIPELINES, MANHOLES ETC. IS DESIGNED TO SUIT THE PERMANENT CASE. ADDITIONAL LOADS OVER & ABOVE THOSE DESIGNED FOR MAY ARISE DURING THE CONSTRUCTION PROCESS. THE CONTRACTOR SHALL PROVIDE ANY NECESSARY TEMPORARY PROTECTION TO ENSURE THAT PIPELINES, MANHOLES ETC. ARE NOT DAMAGED DURING THE CONSTRUCTION PHASE.

NOTES

- DO NOT SCALE FROM THIS DRAWING, UTILISE ONLY NUMBERED DIMENSIONS.
- THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS, NOTIFY ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
- UNLESS NOTED OTHERWISE, THIS DRAWING IS FOR PLANNING APPROVAL.
- ALL DRAINAGE TO BE TO THE SATISFACTION OF THE LOCAL AUTHORITY BUILDING CONTROL AND MAIN DRAINAGE SECTIONS ON MATTERS INVOLVING PUBLIC SEWERS.
- ALL PIPEWORK, BENDS AND JUNCTIONS TO BE EXTRA STRENGTH VITRIFIED CLAY TO BS 65:1991 (SURFACE WATER ONLY) & BS EN 295, OR PVCu TO BS EN 1401-1. TO BE AGREED WITH RELEVANT AUTHORITY.
- INVERT LEVELS ON EXISTING DRAINS & OUTFALLS TO BE CHECKED PRIOR TO COMMENCEMENT OF WORKS.
- TRENCH WIDTHS GENERALLY:- AS SMALL AS PRACTICABLE BUT NOT LESS THAN PIPE DIAMETER +300mm OR LARGER IF SPECIFIED. TRENCH SIDES MUST BE VERTICAL FROM BOTTOM UP TO 300mm ABOVE CROWN OF PIPE.
- WHERE DRAINAGE PIPES HAVE LESS THAN 1.2m COVER IN TRAFFICKED AREAS AND LESS THAN 600mm UNDER LANDSCAPED AREAS PIPES SHALL HAVE A FULL CLASS 2 CONCRETE SURROUND. CONCRETE PROTECTION TO BE DISCONTINUED AT EACH PIPE JOINT WITH COMPRESSIBLE MATERIAL. ALL OTHER FLEXIBLE PIPES TO HAVE CLASS 5 GRANULAR BEDDING DETAIL UNLESS OTHERWISE NOTED. ALL OTHER RIGID PIPES TO HAVE CLASS B GRANULAR BEDDING DETAIL UNLESS OTHERWISE NOTED.
- GRANULAR BEDDING:
 - 10mm SINGLE SIZED COARSE AGGREGATE SHALL BE USED ON PIPES NOT EXCEEDING 140mm DIAMETER.
 - 2-14mm WELL GRADED COARSE AGGREGATE MAY BE USED ON PIPES EXCEEDING 140mm BUT NOT EXCEEDING 400mm DIAMETER.
 - 4-20mm WELL GRADED COARSE AGGREGATE MAY BE USED ON PIPES EXCEEDING 400mm DIAMETER.
 - THE DEPTH OF GRANULAR BEDDING UNDER THE PIPES SHALL BE X/6 OR 150mm, WHICHEVER IS GREATER, WHERE X=EXTERNAL DIAMETER OF THE PIPE.
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- ALL EXTERNAL GULLIES TO BE 375mm DIA. MINIMUM, PRECAST CONCRETE, HEAVY DUTY, KITE MARKED & ANTI-THEFT.

PROJECT 64 WESTFIELD LANE, CLECKHEATON, BD19 6DR				
TITLE PROPOSED FOUL DRAINAGE LAYOUT				
PROJECT No. WA-1079	DRAWING No. D-01	AMENDMENT -	DATE DRAWN MAY '26	DRAWN BY MH
Amendment Note				

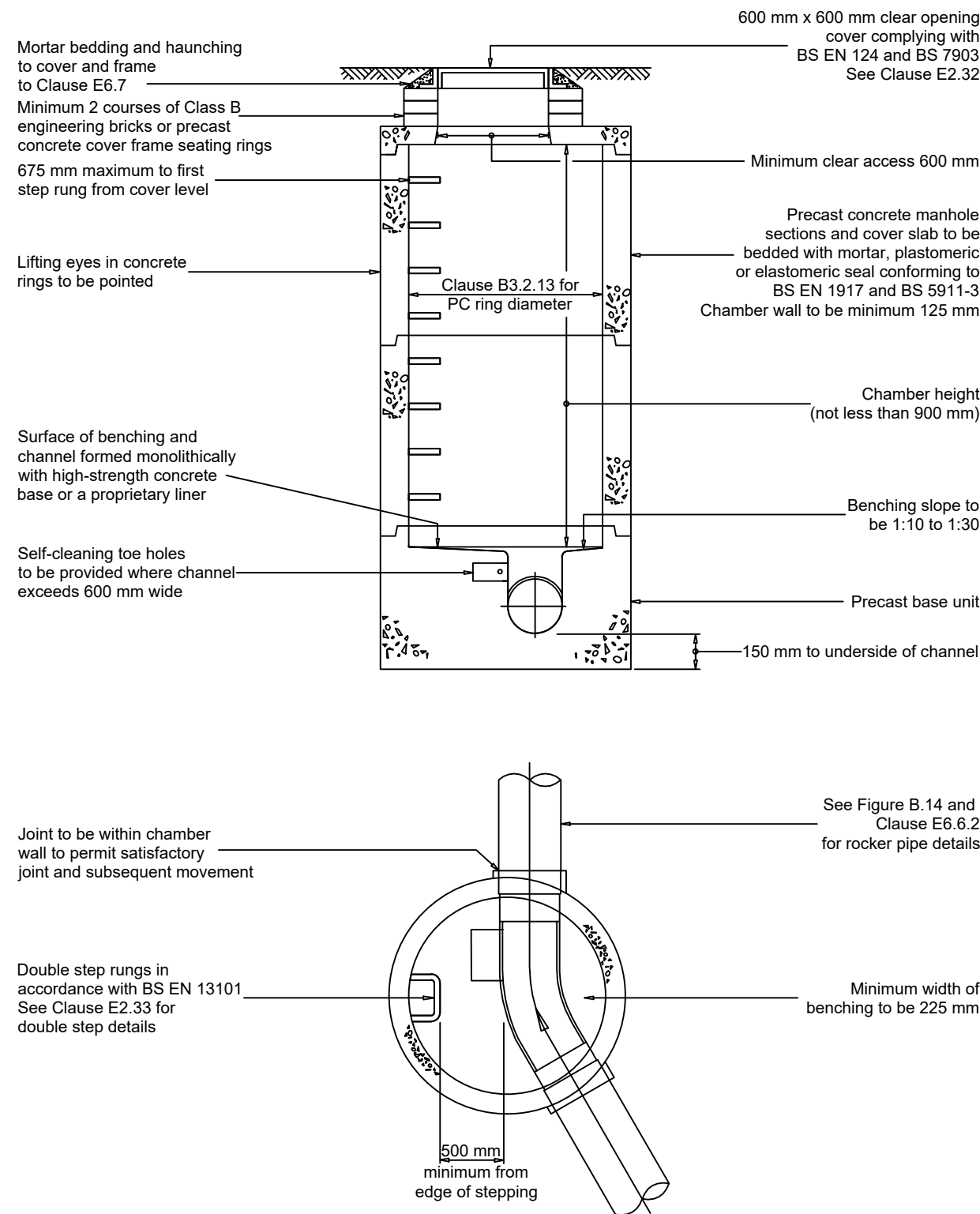
49 Savile Park Road
Halifax, Hx1 2ex
info@wadesignconsultants.co.uk
0788683779



- # IMPERMEABLE AREA PLAN
- SCALE: 1:250

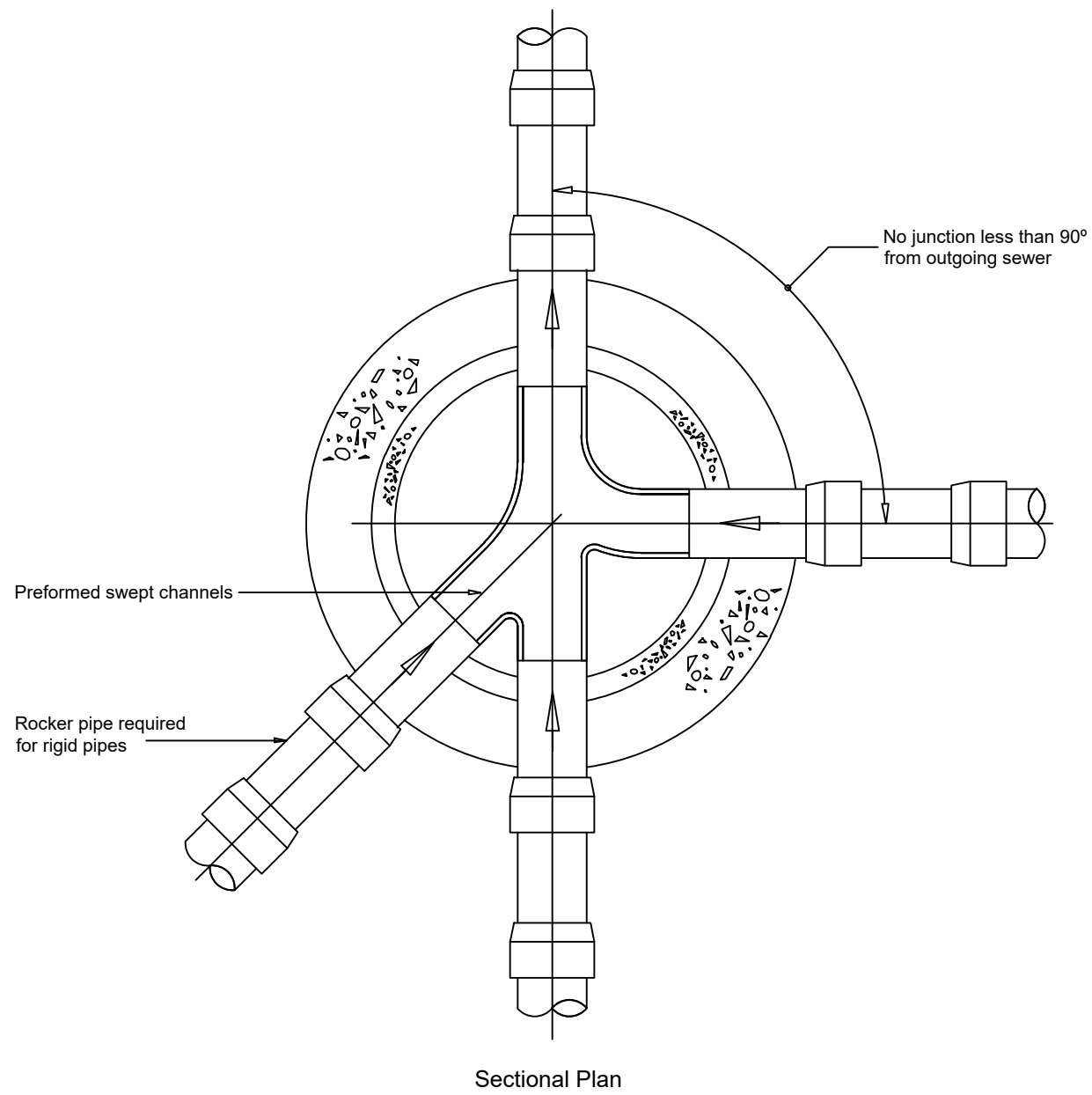


FIGURE B.13
TYPICAL MANHOLE DETAIL - TYPE 2 (Alternative construction detail)
Maximum depth from cover level to soffit of pipe 3.0 m



Not to scale

FIGURE B.14
TYPICAL ARRANGEMENT OF PIPE JUNCTIONS WITHIN MANHOLES

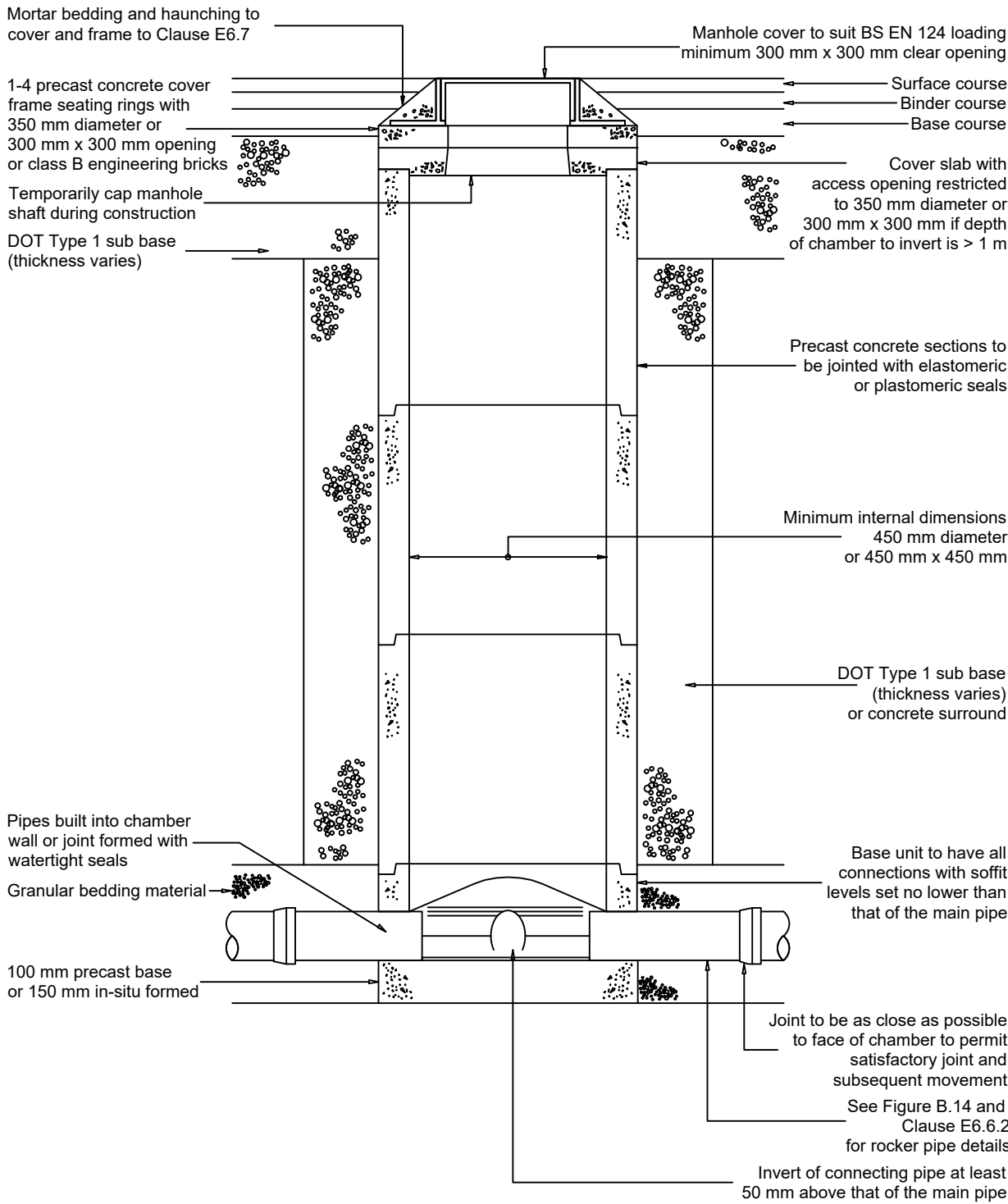


Rigid pipes built into manhole should have a flexible joint as close as feasible to the external face of the structure and the length of the next rocker pipe should be as shown.

Nominal diameter (mm)	Maximum effective length (m)
150 - 600	0.6
601 - 750	1.00
over 750	1.25

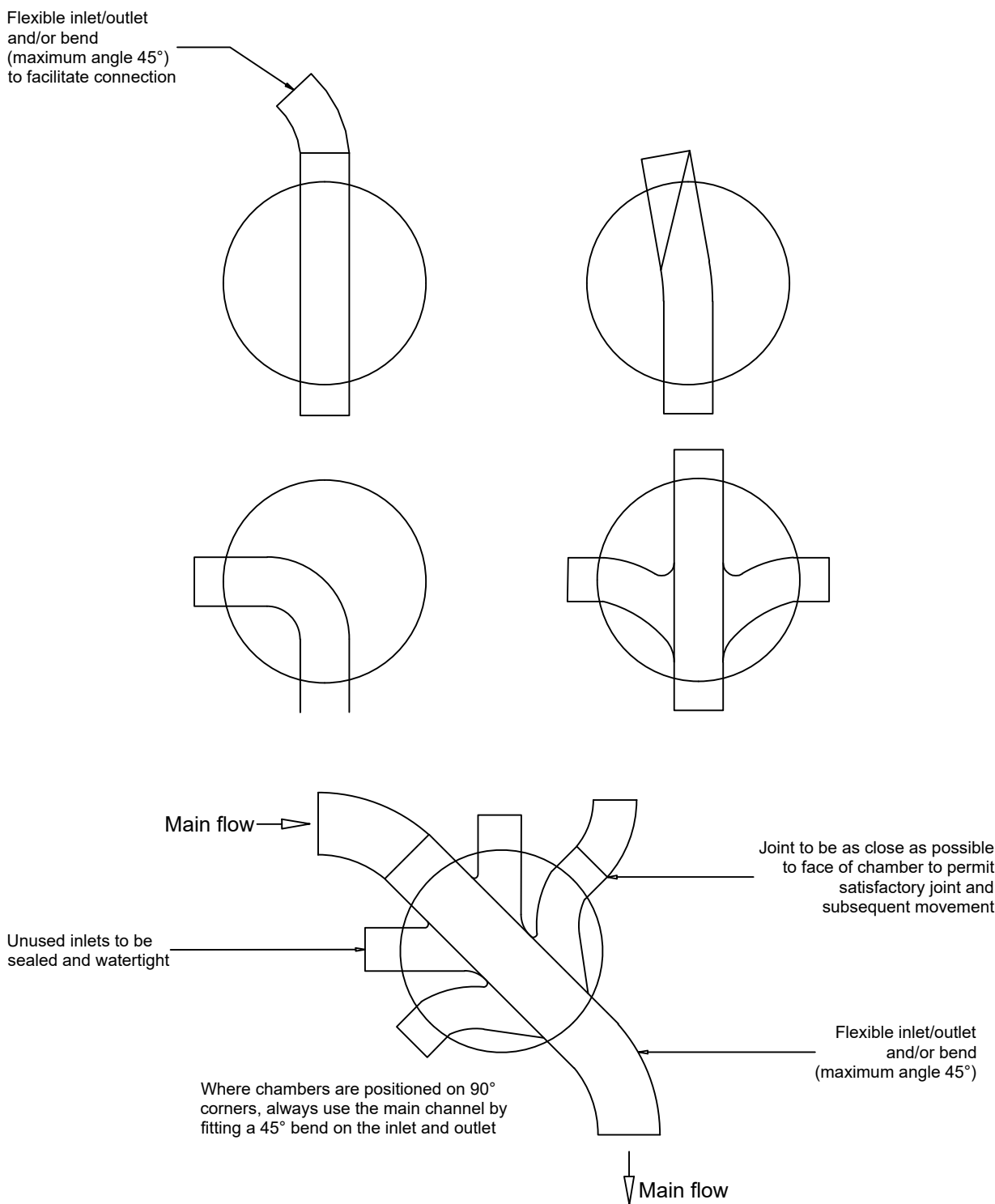
All pipes entering the bottom of the manhole to have soffits level.

FIGURE B.18
TYPICAL INSPECTION CHAMBER DETAIL - TYPE 3 (Rigid material detail)
Maximum depth from cover level to soffit of pipe in areas subject to vehicle loading 3 m, non-entry



Not to scale

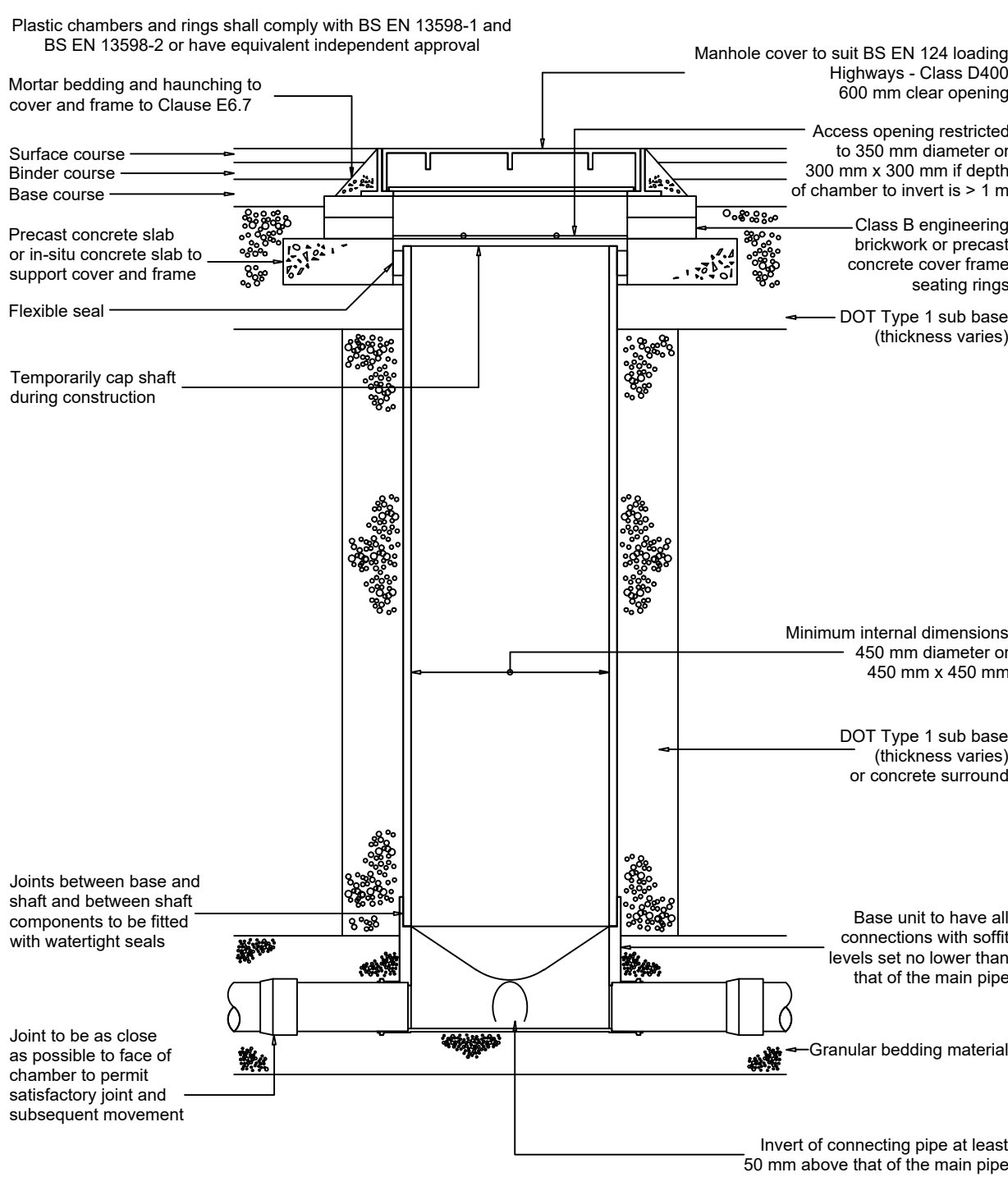
FIGURE B.20
ALTERNATIVE BASE LAYOUTS FOR TYPE 3 CHAMBERS



Note: Where a bend is used immediately outside the manhole, this may be used as the rocker pipe

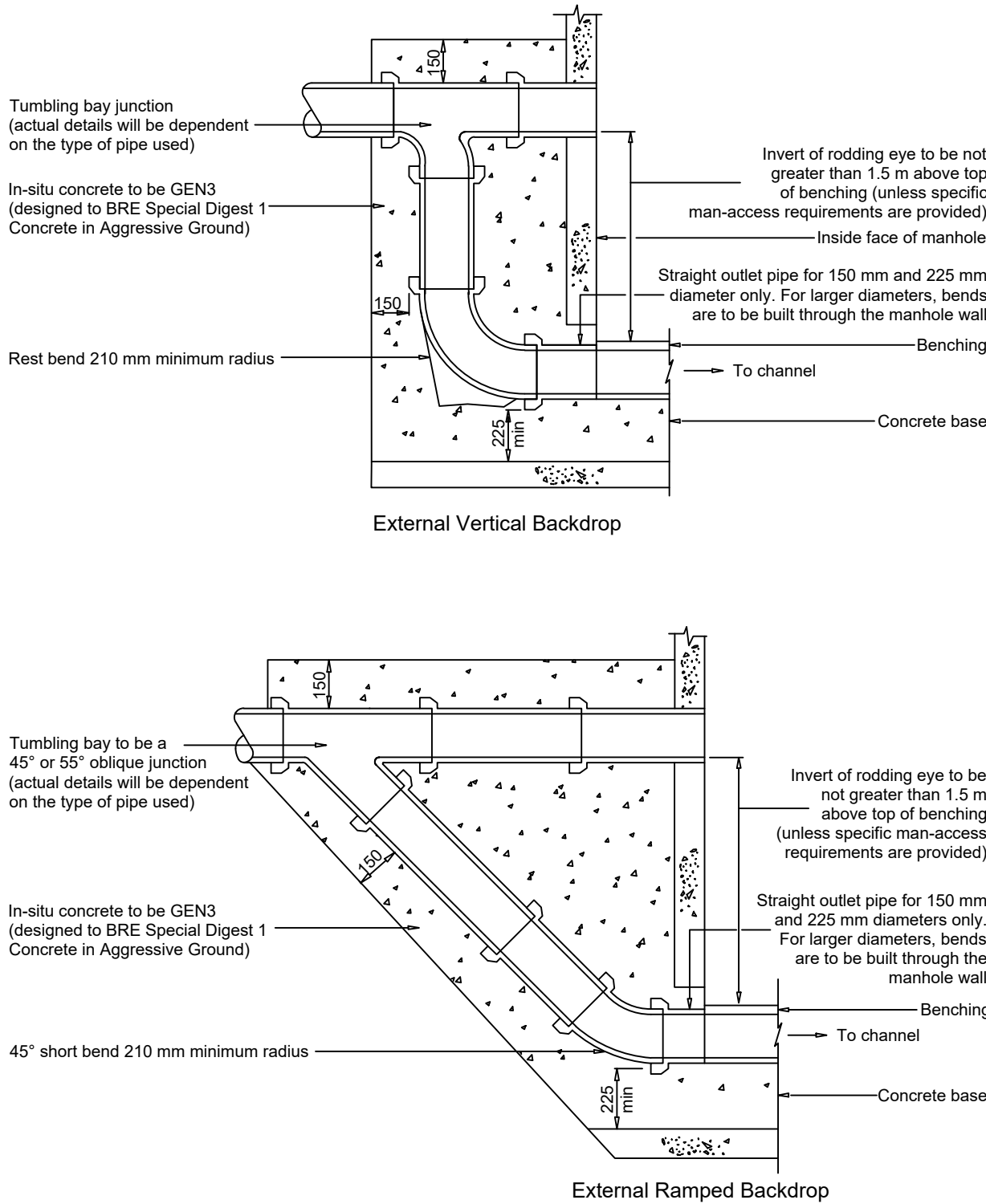
Not to scale

FIGURE B.16
TYPICAL INSPECTION CHAMBER DETAIL - TYPE 3 (Flexible material detail)
Maximum depth from cover level to soffit of pipe in areas subject to vehicle loading 3 m, non-entry



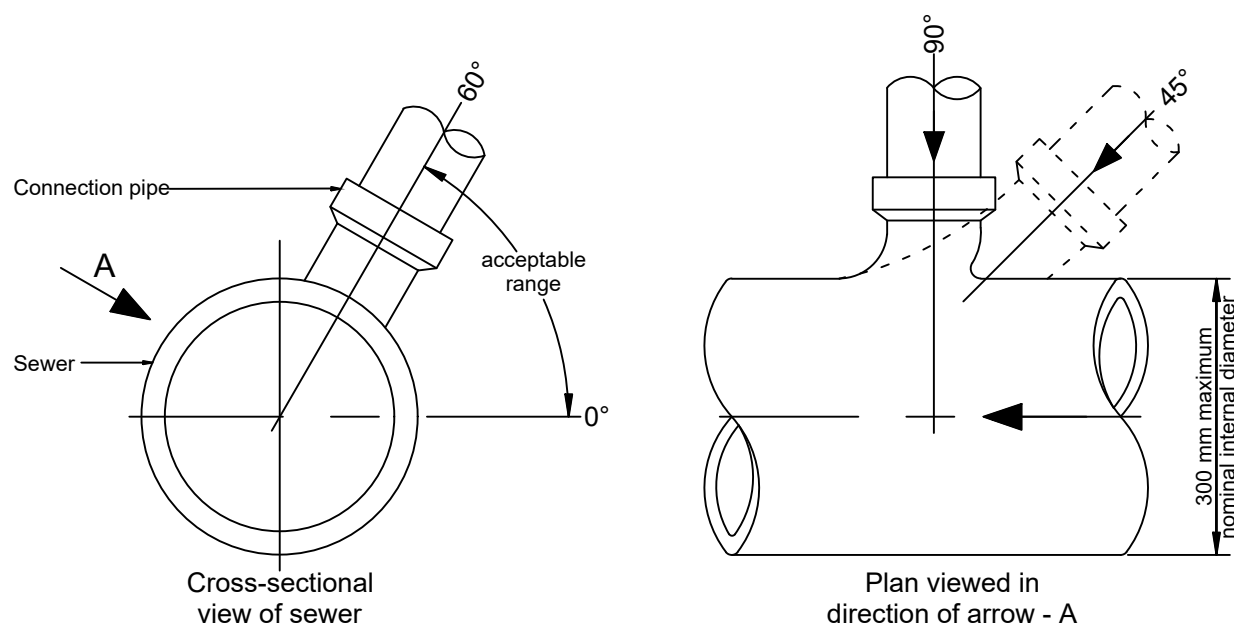
Not to scale

FIGURE B.15
TYPICAL VERTICAL AND RAMPED BACKDROP DETAIL
Note: Steeper gradients are preferred to the use of backdrops.
Type of backdrop to be used to be agreed with Undertaker.



Not to scale, dimensions in millimetres

FIGURE B.24
CONNECTIONS TO SEWER



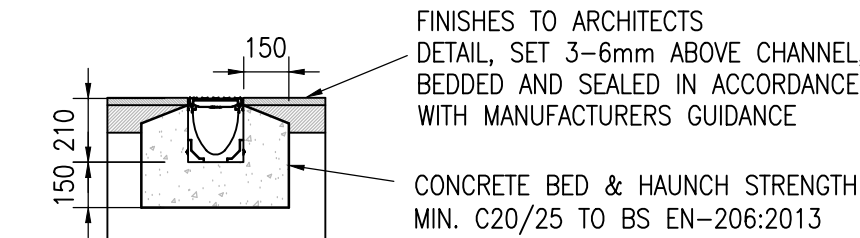
NOTES

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- TRENCH WIDTHS GENERALLY-- AS SMALL AS PRACTICABLE BUT NOT LESS THAN PIPE DIAMETER +300mm OR LARGER IF SPECIFIED. TRENCH SIDES MUST BE VERTICAL FROM BOTTOM UP TO 300mm ABOVE CROWN OF PIPE.
- WHERE DRAINAGE PIPES HAVE LESS THAN 1.2m COVER IN TRAFFICKED AREAS AND LESS THAN 600mm UNDER LANDSCAPED AREAS PIPES SHALL HAVE A FULL CLASS Z CONCRETE SURROUND. CONCRETE PROTECTION TO BE DISCONTINUED AT EACH PIPE JOINT WITH COMPRESSIBLE MATERIAL. ALL OTHER FLEXIBLE PIPES TO HAVE CLASS S GRANULAR BEDDING DETAIL UNLESS OTHERWISE NOTED, ALL OTHER RIGID PIPES TO HAVE CLASS B GRANULAR BEDDING DETAIL UNLESS OTHERWISE NOTED.
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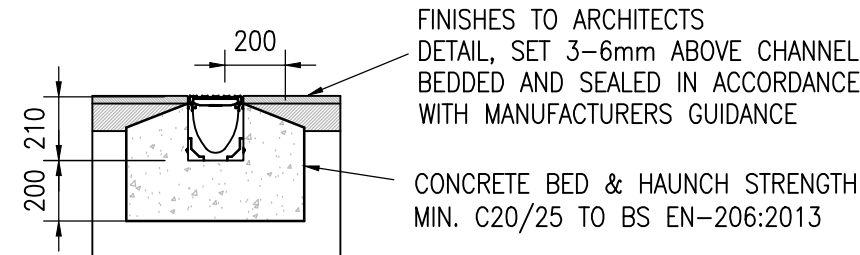
PROJECT	64 WESTFIELD LANE, CLECKHEATON, BD19 6DR			
TITLE	PROPOSED DRAINAGE DETAILS SHEET 1 OF 2			
PROJECT No.	DRAWING No.	AMENDMENT	DATE DRAWN	DRAWN BY
WA-1079	D-03	-	MAY '26	MH
Amendment Note				



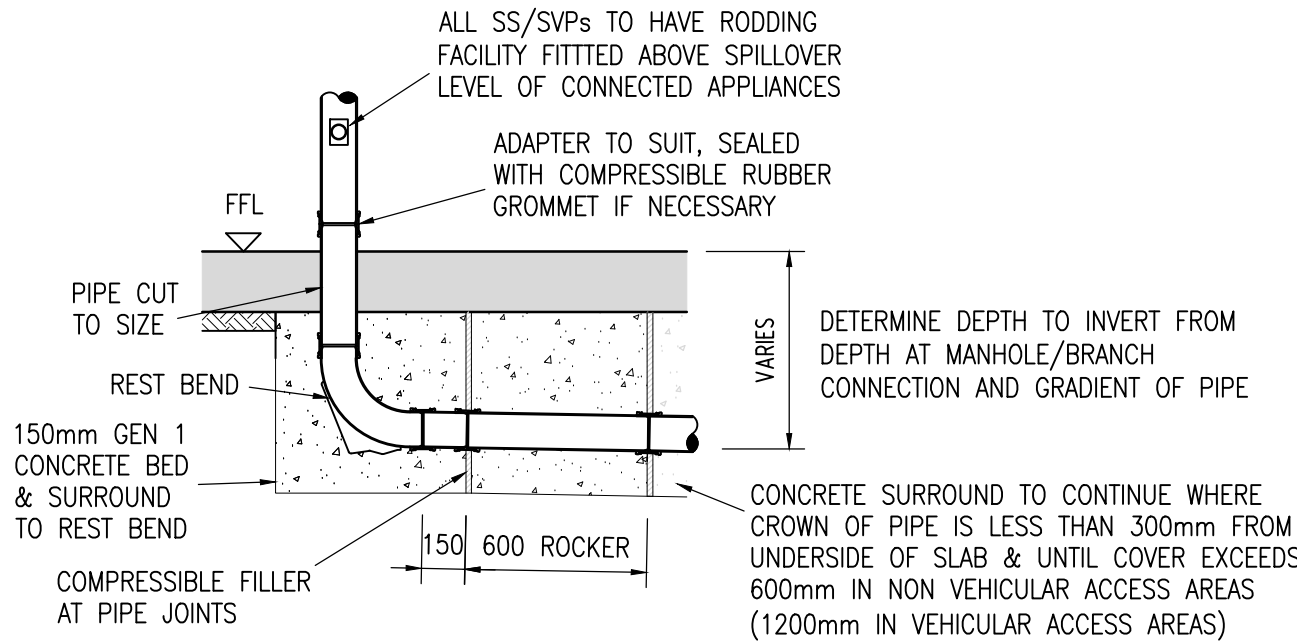
49 Savile Park Road
Halifax, Hx1 2zx
info@wadesignconsultants.co.uk
0788683779



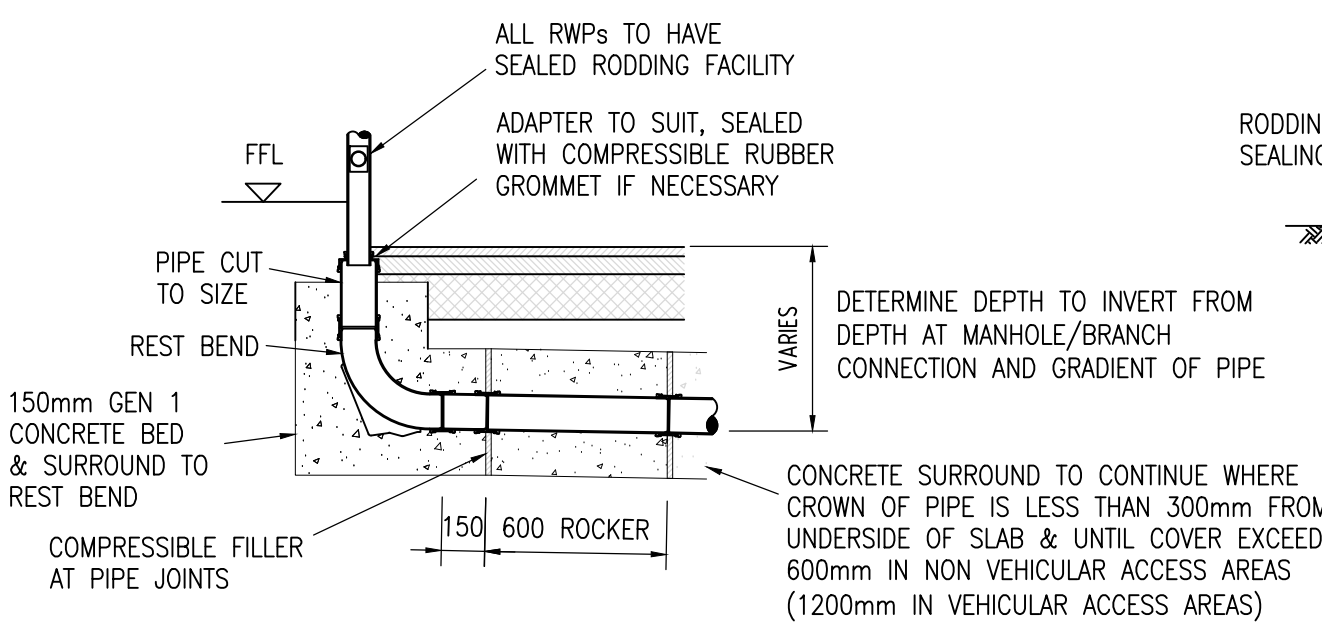
TYPICAL ACO MULTIDRAIN M150D 0.0J DETAIL WITH GRATING TO LOAD CLASS B125/C250.



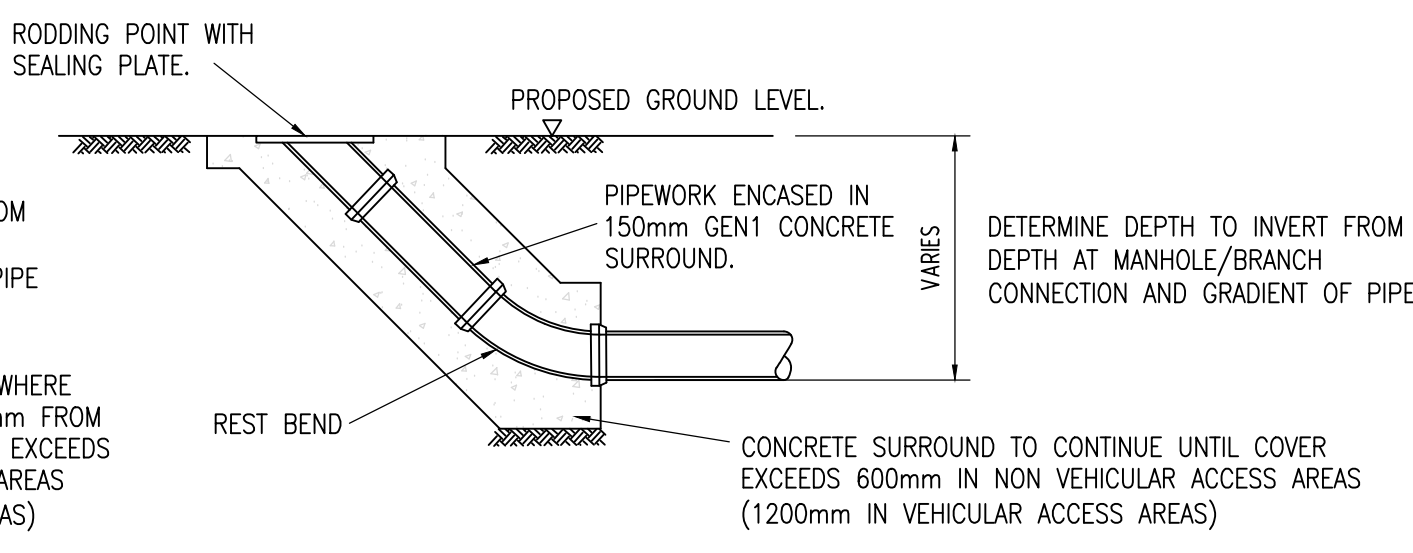
TYPICAL ACO MULTIDRAIN M150D 0.0J DETAIL WITH GRATING TO LOAD CLASS D400.



TYPICAL SS/SVP CONNECTION

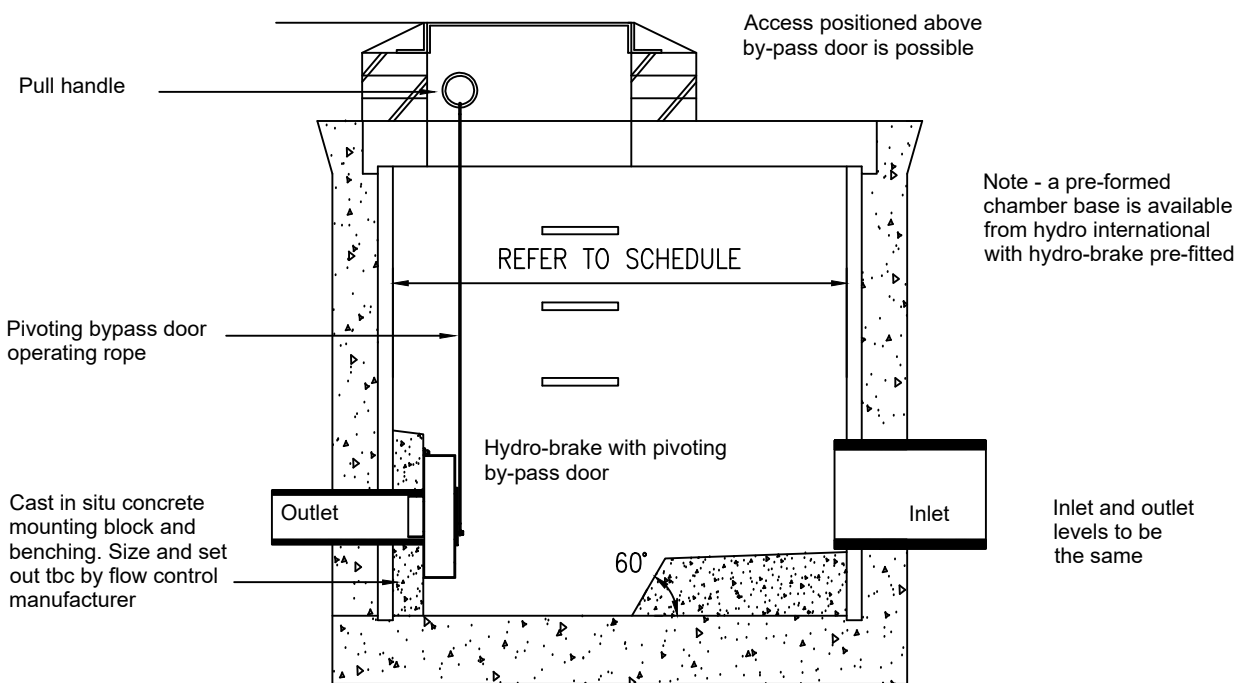


TYPICAL RWP CONNECTION

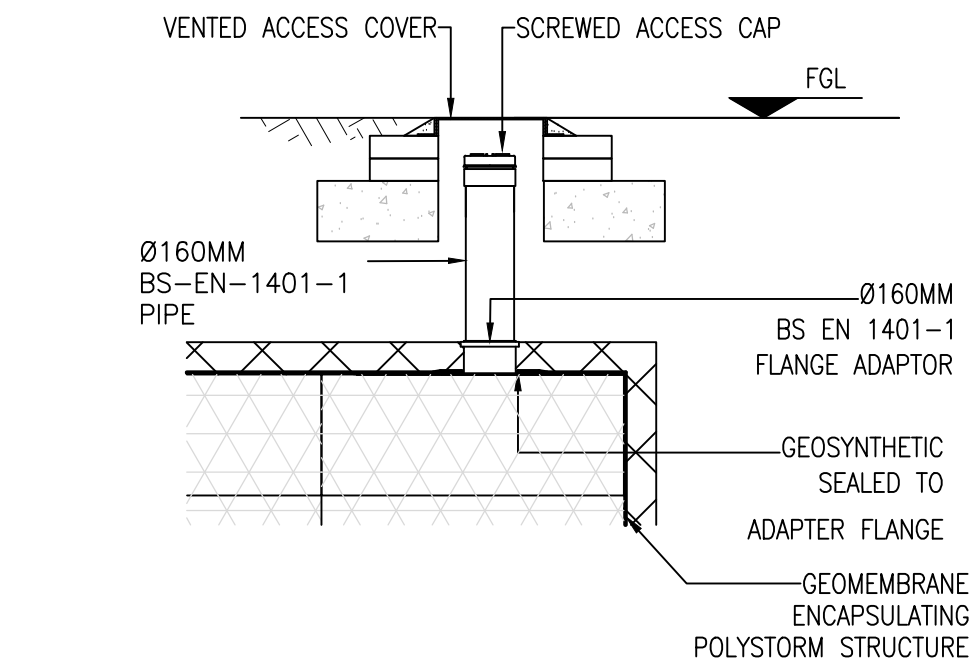
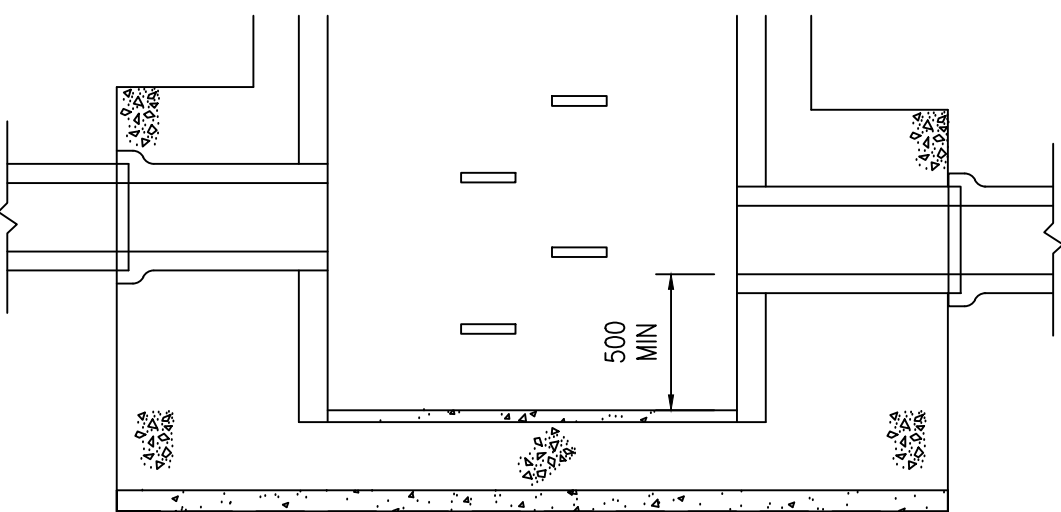


EXTERNAL RODDING EYE DETAIL

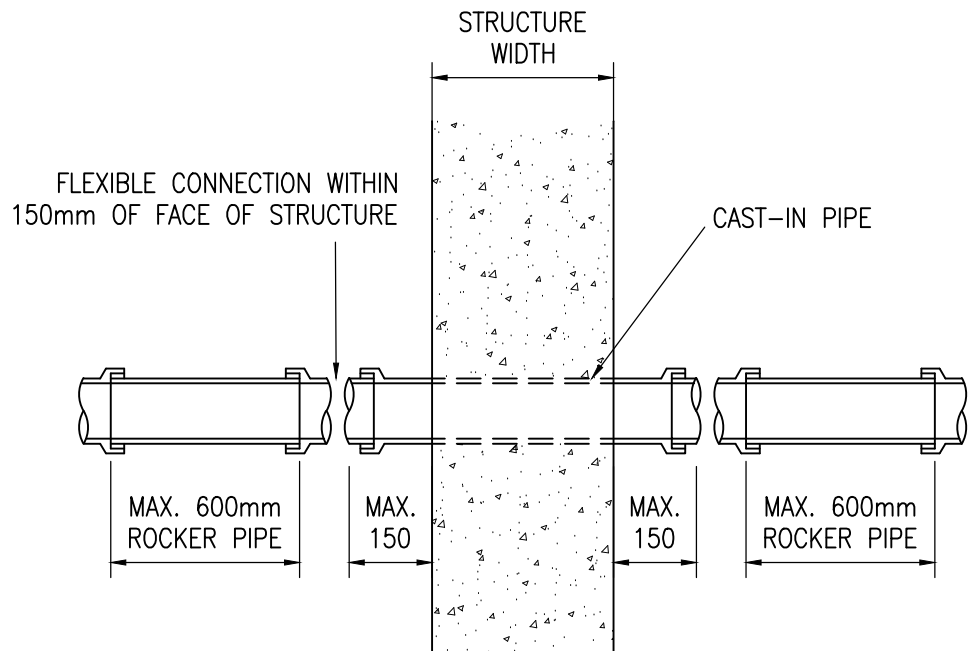
TYPICAL HYDROBRAKE MANHOLE DETAIL
REFER TO HYDRO INTERNATIONAL DRAWINGS FOR SITE SPECIFIC DETAILS



TYPICAL CATCHPIT MANHOLE DETAIL

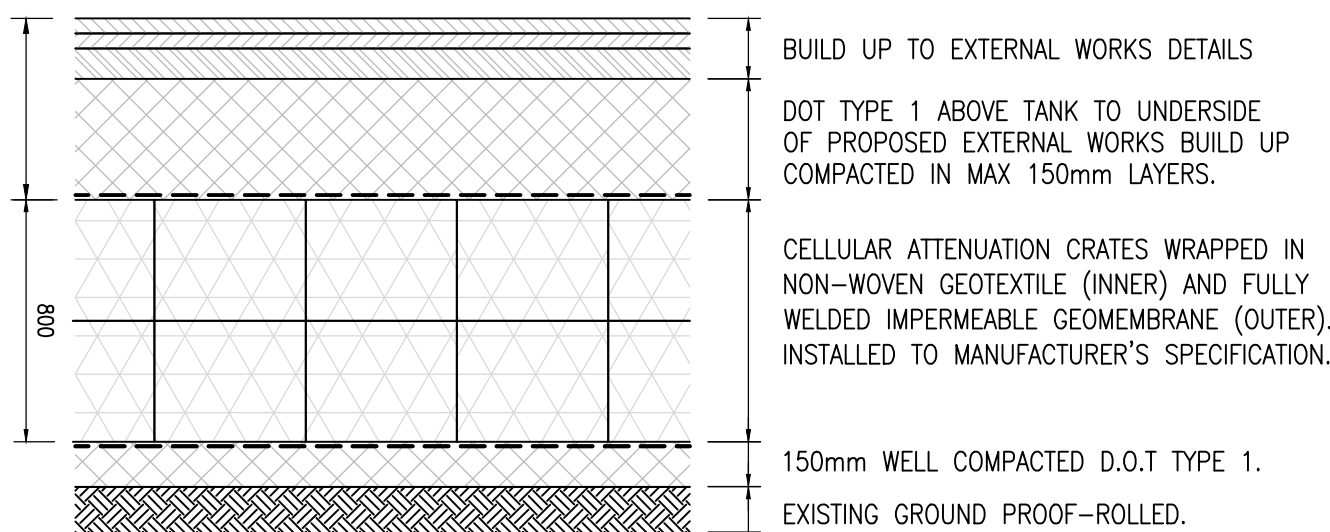


TYPICAL TANK VENTILATION DETAIL

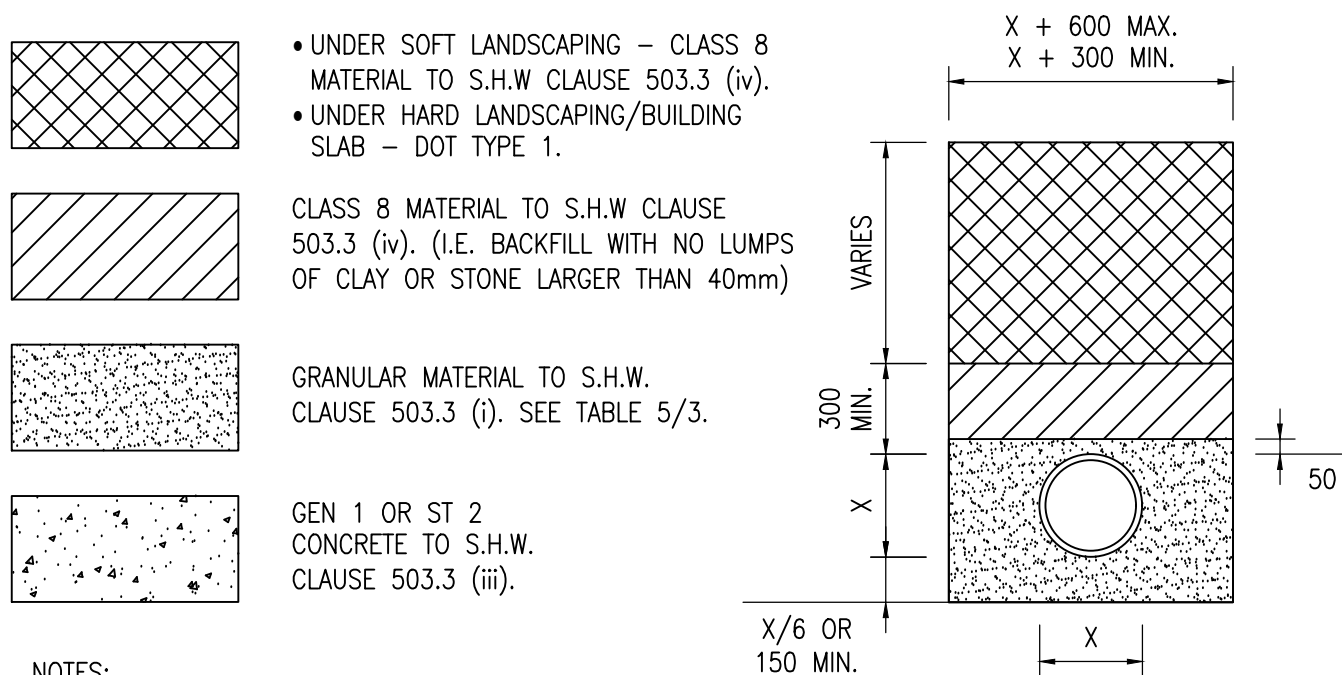


PLAN SHOWING PIPE PENETRATION THROUGH STRUCTURE (ROCKER OPTION)

COVER TO SOFFIT TO SUIT VEHICLE LOADING COVER SLAB MAY BE REQUIRED.

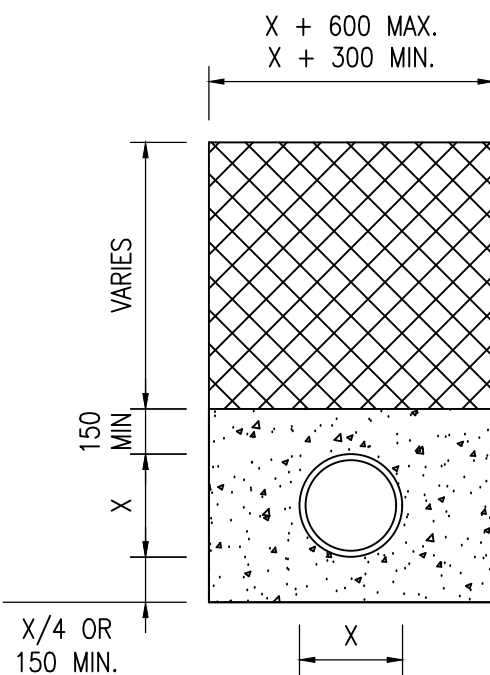


BUILD UP ABOVE ATTENUATION CRATES
UNDER HARD LANDSCAPING



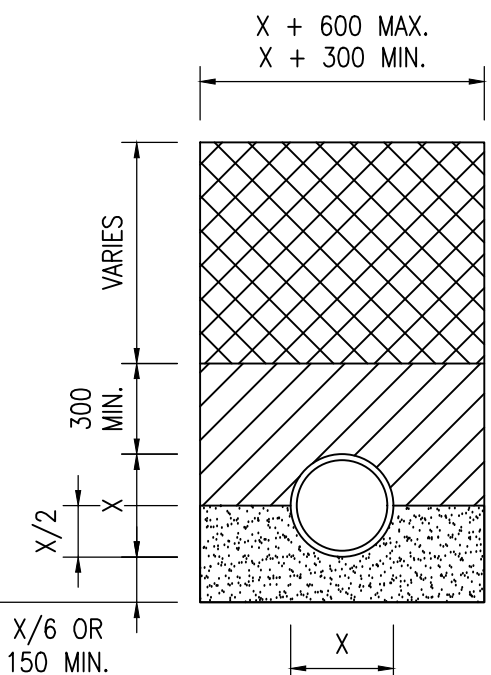
CLASS S BEDDING DETAIL (uPVC/FLEXIBLE PIPES)

FOR USE WHEN COVER TO SOFFIT OF PIPE IS GREATER THAN 600mm IN NON-TRAFFICKED AREAS AND GREATER THAN 1200mm IN AREAS WITH VEHICULAR ACCESS.



CLASS Z BEDDING DETAIL (ALL PIPES)

FOR USE WHEN COVER TO SOFFIT OF PIPE IS GREATER THAN 600mm IN NON-TRAFFICKED AREAS AND LESS THAN 1200mm IN AREAS WITH VEHICULAR ACCESS. MIN. 18mm COMPRESSIBLE BOARD AT ALL PIPE JOINTS

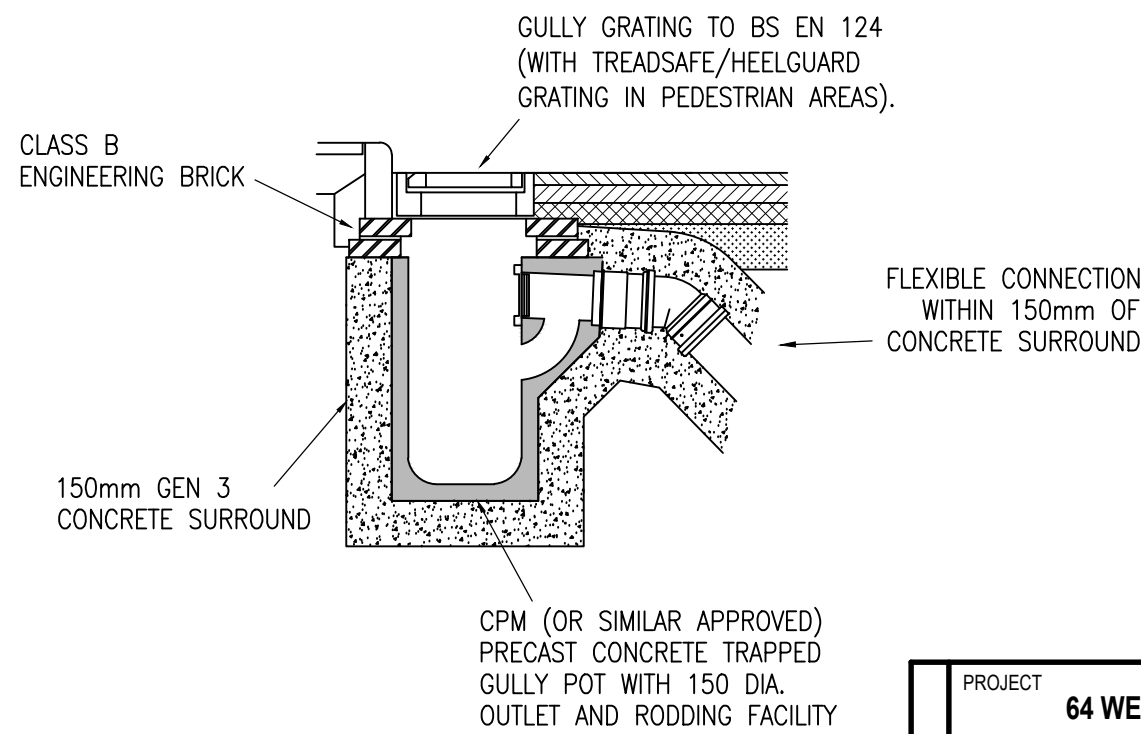


CLASS B BEDDING DETAIL (CLAY/CONCRETE ONLY)

FOR USE WHEN COVER TO SOFFIT OF PIPE IS GREATER THAN 600mm IN NON-TRAFFICKED AREAS AND GREATER THAN 1200mm IN AREAS WITH VEHICULAR ACCESS.

CLASS S/B GRANULAR BEDDING MATERIAL - S.H.W 503 (i) TABLE 5/3 [BS EN 13242] -		
NOMINAL PIPE DIAMETER (mm)	SINGLE SIZED COARSE AGGREGATE (mm)	GRADED COARSE AGGREGATE (mm)
NOT EXCEEDING 140	4/10	-
EXCEEDING 140 BUT NOT EXCEEDING 400	4/10, 6/10 OR 10/20	2/14 OR 4/20
EXCEEDING 400	4/10, 6/14, 10/20 OR 20/40	2/14, 4/20 OR 4/40

CLASS Z COMPRESSIBLE FILLER BOARD DETAILS	
NOMINAL PIPE DIAMETER (mm)	THICKNESS OF COMPRESSIBLE FILLER (mm)
LESS THAN 450	18
450 - 1200	36
GREATER THAN 1200	54



TYPICAL PRECAST CONCRETE ROAD GULLY DETAIL

NOTES

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- NOTES:
- ALL DIMENSIONS ARE IN MILLIMETRES.
 - DIMENSION X IS THE EXTERNAL PIPE DIAMETER.
 - THE MIN/MAX WIDTH OF TRENCH APPLIES ON & BELOW A LINE 300mm ABOVE THE TOP OF THE PIPE. ABOVE THE 300mm LINE TRENCH BACKFILL MATERIAL SHALL BE AS DESCRIBED IN CLAUSE 505 OF S.H.W.
 - CONCRETE SURROUND MAY EXTEND TO SIDES OF TRENCH OR BE OF MINIMUM WIDTH TO PROVIDE 150mm COVER AT EACH SIDE OF THE PIPE.
 - UNTIL THERE IS 300mm COVER OVER CROWN OF PIPE, COMPACT GRANULAR & BACKFILL MATERIAL BY HAND IN 100mm THICK LAYERS.

PROJECT		64 WESTFIELD LANE, CLECKHEATON, BD19 6DR			
TITLE		PROPOSED DRAINAGE DETAILS SHEET 2 OF 2			
PROJECT No.	DRAWING No.	AMENDMENT	DATE DRAWN	DRAWN BY	 Wadesign Consultants. 49 Savile Park Road Halifax, Hx1 2ex info@wadesignconsultants.co.uk 0788683779
WA-1079	D-04	-	MAY '26	MH	
Amendment Note					



APPENDIX C – YORKSHIRE WATER CORRESPONDENCE & SEWER RECORDS



YorkshireWater

**WA Design Consultants
28 Chandos Gardens
Gledhow
Leeds
LS8 1LW**

**Yorkshire Water Services
Land and Property
Western House
Western Way
Halifax Road
Bradford
BD6 2SZ**

Tel: 0345 120 8482

Fax:

**Your Ref:
Our Ref: B/01122**

**Email:
technical.sewerage@yorkshirewater.co.uk**

**For telephone enquiries ring:
George Mullaney on 0345 120 8482**

11th May 2026

Dear Mr Herbert,

**64 Westfield Lane, Scholes, Cleckheaton BD19 6DR – Pre-Planning Sewerage Enquiry
X302829**

Thank you for your recent enquiry and remittance. Our official VAT receipt has been sent to you under separate cover. Please find enclosed a complimentary extract from the Statutory Sewer Map which indicates the recorded position of the public sewers. Please note that as of October 2011 and the private to public sewer transfer, there are many uncharted Yorkshire Water assets currently not shown on our records.

The following comments reflect our view, with regard to the public sewer network only, based on a 'desk top' study of the site and are valid for a maximum period of twelve months:

Existing Infrastructure

There is a 100mm diameter public combined sewer recorded on the site. In this instance, building-over may take place under the control of Part H4 Building Regulations 2010. No trees planted within 5 (five) metres of this public sewer. It may not be acceptable to raise or lower ground levels over the sewer, nor to restrict access to the manholes on the sewer. If you wish to have this sewer diverted under Section 185 of the Water Industry Act 1991 an application should be made in writing. To discuss this matter, please telephone 0345 120



84 82.

Foul Water

Development of the site should take place with separate systems for foul and surface water drainage. The separate system should preferably extend to the public sewer.

Foul water domestic waste can discharge to the 225 mm diameter public combined sewer recorded in Westfield Lane, at a point to the south of the site.

This permission is not an acceptance in respect to any planning conditions imposed under the Grant of Planning Permission.

Surface Water

The developer's attention is drawn to Requirement H3 of the Building Regulations 2010. This establishes a preferred hierarchy for surface water disposal. Consideration should firstly be given to discharge to soakaway, infiltration system and watercourse in that priority order.

Sustainable Drainage Systems (SuDS), for example the use of soakaways and/or permeable hardstanding etc, may be a suitable solution for surface water disposal appropriate in this situation. You are advised to seek comments on the suitability of SuDS in this instance from the appropriate authorities.

As a last resort and subject to providing satisfactory evidence as to why the other methods of surface water disposal have been discounted, curtilage surface water may discharge to the 225 mm diameter public combined sewer recorded in Westfield Lane, at a point to the south of the site.

The surface water discharge from the site to be restricted to not greater than 3.5 (three point five) litres/second. This permission is not an acceptance in respect to any planning conditions imposed under the Grant of Planning Permission.

Other Observations

Any new connection to an existing public sewer will require the prior approval of Yorkshire Water. You may apply online or obtain an application form from our website (www.yorkshirewater.com/developers/sewerage/sewerage-connections/) or by telephoning 0345 120 84 82.

An off-site foul and surface water sewer may be required which may be provided by the developer and considered for Code for Adoption under Section 104 of the Water Industry Act 1991. Please telephone 0345 120 84 82 for advice on sewer adoptions. Alternatively, the developer may in certain circumstances be able to requisition off-site sewers under Section 98 of the Water Industry Act 1991 for which an application must be made in writing.



YorkshireWater

For further information, please telephone 0345 120 84 82.

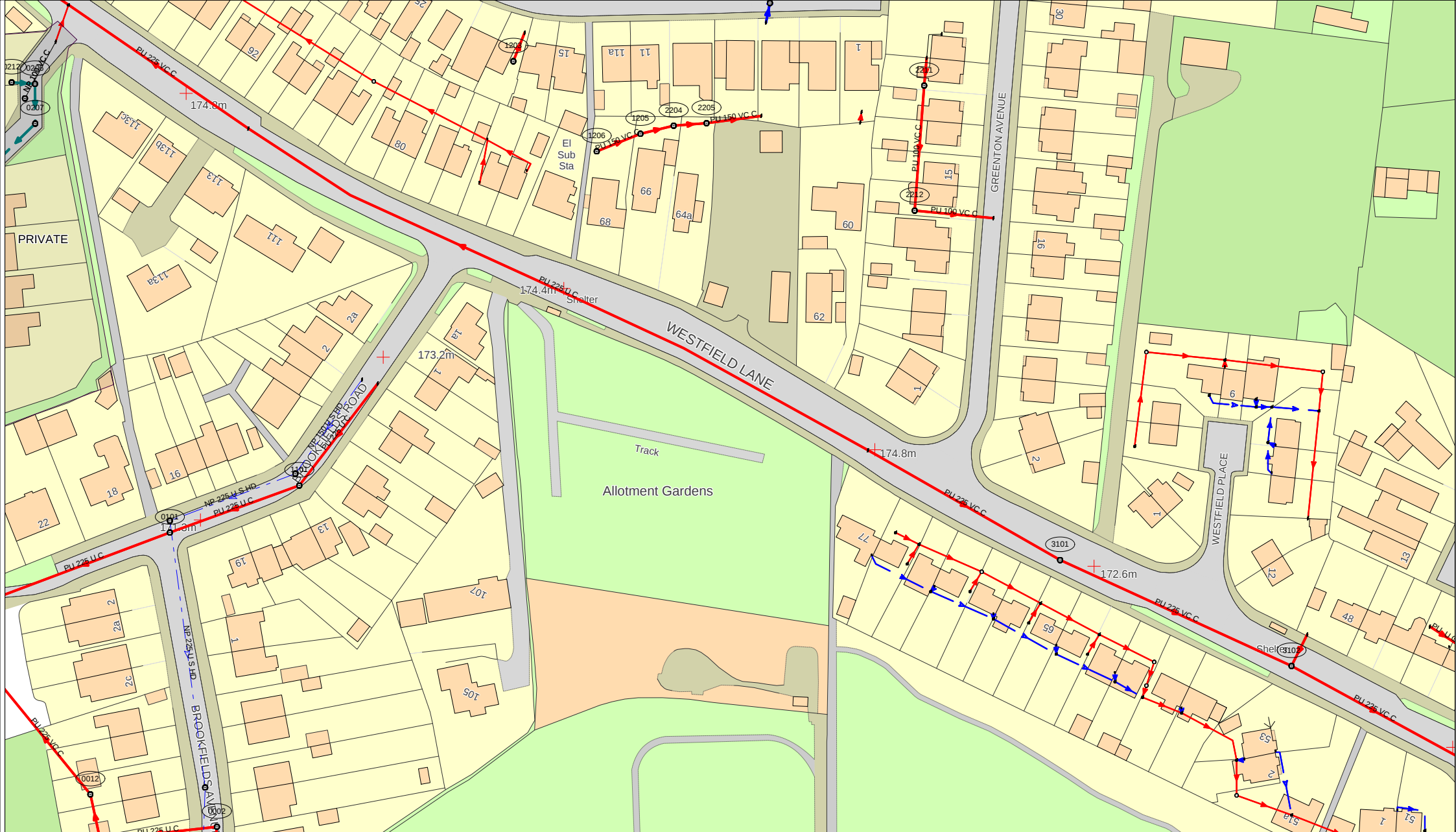
Prospectively adoptable sewers and pumping stations must be designed and constructed in accordance with the Code for Adoption, pursuant to an agreement under Section 104 of the Water Industry Act 1991. We are happy to offer pre-development technical advice on any prospective sites that you would like to put forward for adoption, prior to submission of your adoption application.

An application to enter into a Section 104 agreement must be made in writing prior to any works commencing on site. Please contact our Sewer Adoption, Diversion and Requisition (telephone 0345 120 84 82) or email technical.sewerage@yorkshirewater.co.uk or visit - <https://www.yorkshirewater.com/developers/sewerage/sewer-adoptions/> for further information.

All the above comments are based upon the information and records available at the present time and are valid for a period of 12 months. The information contained in this letter together with that shown on any extract from the Statutory Sewer Map that may be enclosed is believed to be correct and is supplied in good faith. Please note that capacity in the public sewer network is not reserved for specific future development. It is used up on a 'first come, first served' basis. You should visit the site and establish the line and level of any public sewers affecting your proposals before the commencement of any design work.

Yours sincerely

George Mullaney
Town Planning Technician



	416143 : 426131	Map Name : SE1626SW	Title	Partial Key	This plan is furnished as a general guide only and no warranty as to its correctness is given or implied. This plan must not be relied upon in the event of excavations or other works made in the vicinity of public sewers. No house or property connections are shown.	
		Yorkshire Water, PO Box 500, Halifax Road, Bradford BD6 2LZ Contact Name : G Mullaney Contact Tel :	Notes	Foul Sewer = F Combined Sewer = C Surface Water Sewer = SW Trade Sewer = TD Partially Separate = PS		
			(Ody) COPYRIGHT STATEMENTS: Reproduced by permission of Ordnance Survey on behalf of HMSO © Crown copyright and database 2024. All rights reserved Ordnance Survey Licence number AC0000813445			
					Date Req : 11/05/2026, 17:04:09	Date Gen : 11/05/2026, 17:04:35
					Source : Sewer Network Enquiry	



APPENDIX D – SURFACE WATER CALCULATIONS

		Page 1																								
	GREENFIELD RUNOFF RATE 64 WESTFIELD LANE CLECKHEATON																									
Date 24/05/2026	Designed by M.H																									
File TANK (1IN100 +45%) @ 3.5...	Checked by																									
Micro Drainage	Source Control 2020.1.3																									
<u>ICP SUDS Mean Annual Flood</u> Input <table><tr><td>Return Period (years)</td><td>1</td><td>SAAR (mm)</td><td>900</td><td>Urban</td><td>0.000</td></tr><tr><td>Area (ha)</td><td>0.061</td><td>Soil</td><td>0.450</td><td>Region Number</td><td>Region 3</td></tr></table> Results 1/s <table><tr><td>QBAR Rural</td><td>0.4</td></tr><tr><td>QBAR Urban</td><td>0.4</td></tr><tr><td>Q1 year</td><td>0.3</td></tr><tr><td>Q1 year</td><td>0.3</td></tr><tr><td>Q30 years</td><td>0.6</td></tr><tr><td>Q100 years</td><td>0.7</td></tr></table>			Return Period (years)	1	SAAR (mm)	900	Urban	0.000	Area (ha)	0.061	Soil	0.450	Region Number	Region 3	QBAR Rural	0.4	QBAR Urban	0.4	Q1 year	0.3	Q1 year	0.3	Q30 years	0.6	Q100 years	0.7
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Date 24/05/2026 File DRAINAGE (P1).MDX	Designed by MH Checked by																																																											
Micro Drainage Network 2020.1.3																																																												
<u>Free Flowing Outfall Details for Storm</u> <table border="1"> <thead> <tr> <th>Outfall Pipe Number</th> <th>Outfall Name</th> <th>C. Level (m)</th> <th>I. Level (m)</th> <th>Min I. Level (m)</th> <th>D,L (mm)</th> <th>W (mm)</th> </tr> </thead> <tbody> <tr> <td>1.002</td> <td>C.01</td> <td>174.770</td> <td>173.337</td> <td>173.337</td> <td>900</td> <td>0</td> </tr> </tbody> </table> <u>Simulation Criteria for Storm</u> <table border="1"> <tbody> <tr> <td>Volumetric Runoff Coeff</td> <td>1.000</td> <td>Additional Flow - % of Total Flow</td> <td>0.000</td> </tr> <tr> <td>Areal Reduction Factor</td> <td>1.000</td> <td>MADD Factor * 10m³/ha Storage</td> <td>1.000</td> </tr> <tr> <td>Hot Start (mins)</td> <td>0</td> <td>Inlet Coefficient</td> <td>0.800</td> </tr> <tr> <td>Hot Start Level (mm)</td> <td>0</td> <td>Flow per Person per Day (l/per/day)</td> <td>0.000</td> </tr> <tr> <td>Manhole Headloss Coeff (Global)</td> <td>0.500</td> <td>Run Time (mins)</td> <td>60</td> </tr> <tr> <td>Foul Sewage per hectare (l/s)</td> <td>0.000</td> <td>Output Interval (mins)</td> <td>1</td> </tr> </tbody> </table> Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0 <u>Synthetic Rainfall Details</u> <table border="1"> <tbody> <tr> <td>Rainfall Model</td> <td>FSR</td> <td>Profile Type</td> <td>Summer</td> </tr> <tr> <td>Return Period (years)</td> <td>1</td> <td>Cv (Summer)</td> <td>1.000</td> </tr> <tr> <td>Region</td> <td>England and Wales</td> <td>Cv (Winter)</td> <td>0.840</td> </tr> <tr> <td>M5-60 (mm)</td> <td>19.000</td> <td>Storm Duration (mins)</td> <td>30</td> </tr> <tr> <td>Ratio R</td> <td>0.322</td> <td></td> <td></td> </tr> </tbody> </table>			Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)	1.002	C.01	174.770	173.337	173.337	900	0	Volumetric Runoff Coeff	1.000	Additional Flow - % of Total Flow	0.000	Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	1.000	Hot Start (mins)	0	Inlet Coefficient	0.800	Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000	Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60	Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1	Rainfall Model	FSR	Profile Type	Summer	Return Period (years)	1	Cv (Summer)	1.000	Region	England and Wales	Cv (Winter)	0.840	M5-60 (mm)	19.000	Storm Duration (mins)	30	Ratio R	0.322		
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<u>Online Controls for Storm</u> <u>Hydro-Brake® Optimum Manhole: S.03, DS/PN: 1.002, Volume (m³): 1.9</u> <table><tr><td>Unit Reference</td><td>MD-SHE-0092-3500-0820-3500</td></tr><tr><td>Design Head (m)</td><td>0.820</td></tr><tr><td>Design Flow (l/s)</td><td>3.5</td></tr><tr><td>Flush-Flo™</td><td>Calculated</td></tr><tr><td>Objective</td><td>Minimise upstream storage</td></tr><tr><td>Application</td><td>Surface</td></tr><tr><td>Sump Available</td><td>Yes</td></tr><tr><td>Diameter (mm)</td><td>92</td></tr><tr><td>Invert Level (m)</td><td>173.350</td></tr><tr><td>Minimum Outlet Pipe Diameter (mm)</td><td>150</td></tr><tr><td>Suggested Manhole Diameter (mm)</td><td>1200</td></tr></table> <table><tr><th>Control Points</th><th>Head (m)</th><th>Flow (l/s)</th><th>Control Points</th><th>Head (m)</th><th>Flow (l/s)</th></tr><tr><td>Design Point (Calculated)</td><td>0.820</td><td>3.5</td><td>Kick-Flo®</td><td>0.531</td><td>2.9</td></tr><tr><td>Flush-Flo™</td><td>0.244</td><td>3.5</td><td>Mean Flow over Head Range</td><td>-</td><td>3.0</td></tr></table> The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated <table><tr><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th></tr><tr><td>0.100</td><td>2.9</td><td>1.200</td><td>4.2</td><td>3.000</td><td>6.4</td><td>7.000</td><td>9.6</td></tr><tr><td>0.200</td><td>3.5</td><td>1.400</td><td>4.5</td><td>3.500</td><td>6.9</td><td>7.500</td><td>9.9</td></tr><tr><td>0.300</td><td>3.5</td><td>1.600</td><td>4.8</td><td>4.000</td><td>7.3</td><td>8.000</td><td>10.2</td></tr><tr><td>0.400</td><td>3.4</td><td>1.800</td><td>5.0</td><td>4.500</td><td>7.7</td><td>8.500</td><td>10.5</td></tr><tr><td>0.500</td><td>3.1</td><td>2.000</td><td>5.3</td><td>5.000</td><td>8.1</td><td>9.000</td><td>10.8</td></tr><tr><td>0.600</td><td>3.0</td><td>2.200</td><td>5.5</td><td>5.500</td><td>8.5</td><td>9.500</td><td>11.1</td></tr><tr><td>0.800</td><td>3.5</td><td>2.400</td><td>5.8</td><td>6.000</td><td>8.9</td><td></td><td></td></tr><tr><td>1.000</td><td>3.8</td><td>2.600</td><td>6.0</td><td>6.500</td><td>9.2</td><td></td><td></td></tr></table>			Unit Reference	MD-SHE-0092-3500-0820-3500	Design Head (m)	0.820	Design Flow (l/s)	3.5	Flush-Flo™	Calculated	Objective	Minimise upstream storage	Application	Surface	Sump Available	Yes	Diameter (mm)	92	Invert Level (m)	173.350	Minimum Outlet Pipe Diameter (mm)	150	Suggested Manhole Diameter (mm)	1200	Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	0.820	3.5	Kick-Flo®	0.531	2.9	Flush-Flo™	0.244	3.5	Mean Flow over Head Range	-	3.0	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	2.9	1.200	4.2	3.000	6.4	7.000	9.6	0.200	3.5	1.400	4.5	3.500	6.9	7.500	9.9	0.300	3.5	1.600	4.8	4.000	7.3	8.000	10.2	0.400	3.4	1.800	5.0	4.500	7.7	8.500	10.5	0.500	3.1	2.000	5.3	5.000	8.1	9.000	10.8	0.600	3.0	2.200	5.5	5.500	8.5	9.500	11.1	0.800	3.5	2.400	5.8	6.000	8.9			1.000	3.8	2.600	6.0	6.500	9.2		
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		Page 4																		
	SURFACE WATER CALCULATIONS 64 WESTFIELD LANE CLECKHEATON																			
Date 24/05/2026	Designed by MH																			
File DRAINAGE (P1).MDX	Checked by																			
Micro Drainage	Network 2020.1.3																			
<u>Storage Structures for Storm</u> <u>Cellular Storage Manhole: S.03, DS/PN: 1.002</u> Invert Level (m) 173.370 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>30.0</td><td>0.0</td><td>0.801</td><td>0.0</td><td>0.0</td></tr><tr><td>0.800</td><td>30.0</td><td>0.0</td><td></td><td></td><td></td></tr></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	30.0	0.0	0.801	0.0	0.0	0.800	30.0	0.0			
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		SURFACE WATER CALCULATIONS 64 WESTFIELD LANE CLECKHEATON		Page 6					
Date 24/05/2026 File DRAINAGE (P1).MDX		Designed by MH Checked by							
Micro Drainage		Network 2020.1.3							
<u>30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>									
<u>Simulation Criteria</u>									
Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 1.000 Hot Start Level (mm) 0 Inlet Coefficient 0.800 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000 Foul Sewage per hectare (l/s) 0.000									
Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0									
<u>Synthetic Rainfall Details</u>									
Rainfall Model FSR Ratio R 0.322 Region England and Wales Cv (Summer) 1.000 M5-60 (mm) 19.000 Cv (Winter) 1.000 Margin for Flood Risk Warning (mm) 150.0 DVD Status OFF Analysis Timestep Fine Inertia Status OFF DTS Status ON Profile(s) Summer and Winter Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080 Return Period(s) (years) 1, 30, 100 Climate Change (%) 45, 45, 45									
									Water
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)
1.000	S.01	15 Summer	30	+45%	30/15 Summer				174.240
1.001	S.02	15 Summer	30	+45%	1/15 Summer				174.153
1.002	S.03	120 Summer	30	+45%	1/15 Summer				173.920

Technical Specification

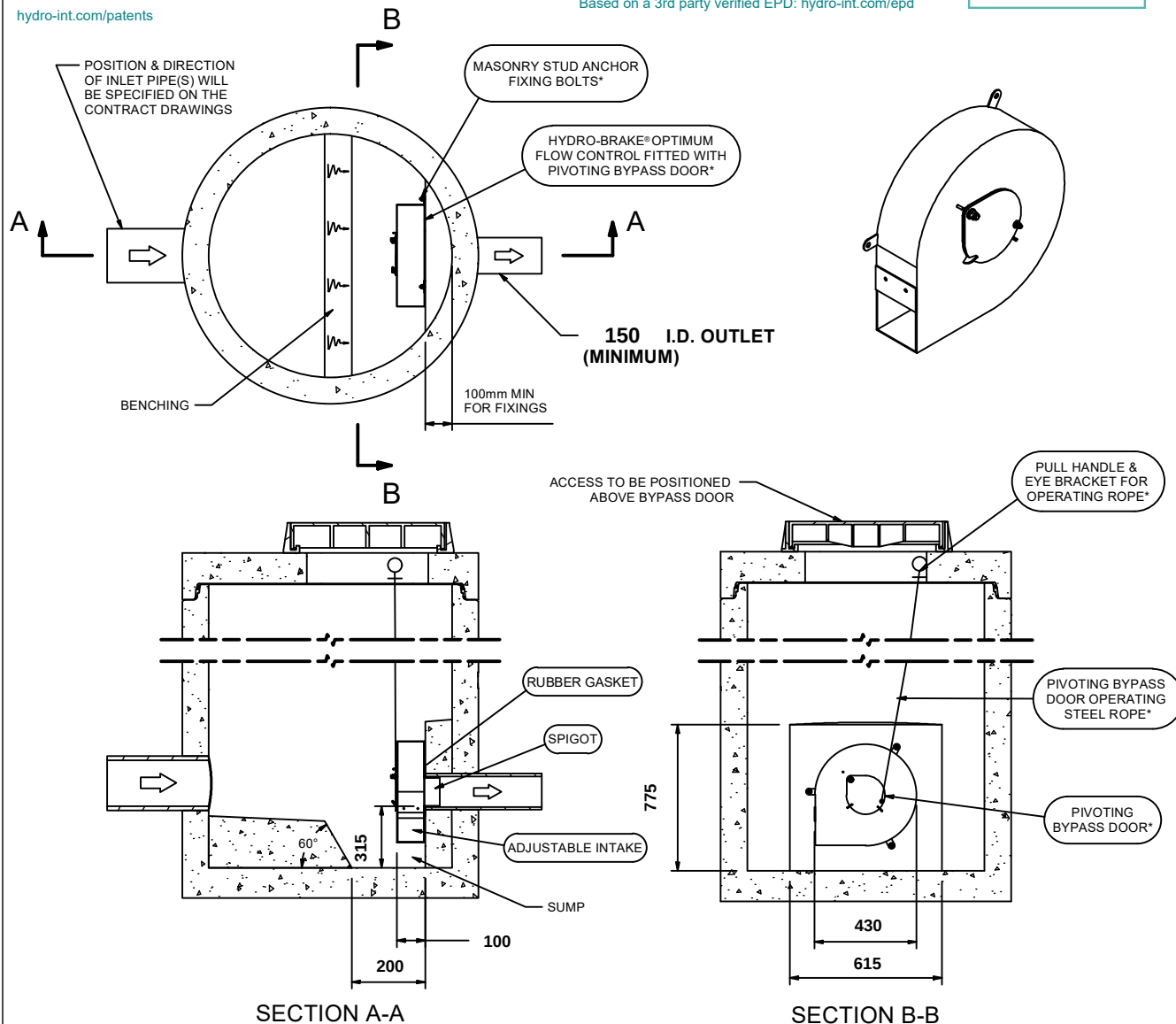
Control Point	Head (m)	Flow (l/s)
Primary Design	0.820	3.500
Flush-Flo™	0.244	3.493
Kick-Flo®	0.531	2.870
Mean Flow		3.035

hydro-int.com/patents

This Hydro-Brake® Optimum includes:

- All in 3 mm Grade 304L stainless steel
- Integral pivoting by-pass door allowing clear line of sight through to outlet, c/w operating rope
- Media blasted for corrosion resistance
- Variable flow rate post installation via adjustable inlet (if necessary)
- Indicative Weight: 10 kg
- Product Carbon Footprint: 44.63 kgCO2e

Based on a 3rd party verified EPD: hydro-int.com/epd



IMPORTANT: LIMIT OF HYDRO INTERNATIONAL SUPPLY
 THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
 FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
 ALL CIVIL AND INSTALLATION WORK BY OTHERS
 * WHERE SUPPLIED
 HYDRO-BRAKE® IS A REGISTERED TRADEMARK FOR FLOW CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY
 HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

DESIGN ADVICE



The head/flow characteristics of this SHE-0092-3500-0820-3500 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.
The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.

**Hydro
International**
 A CRH COMPANY

DATE	22/05/2026 22:15
SITE	64 Westfield Lane
DESIGNER	Michael Herbert
REF	

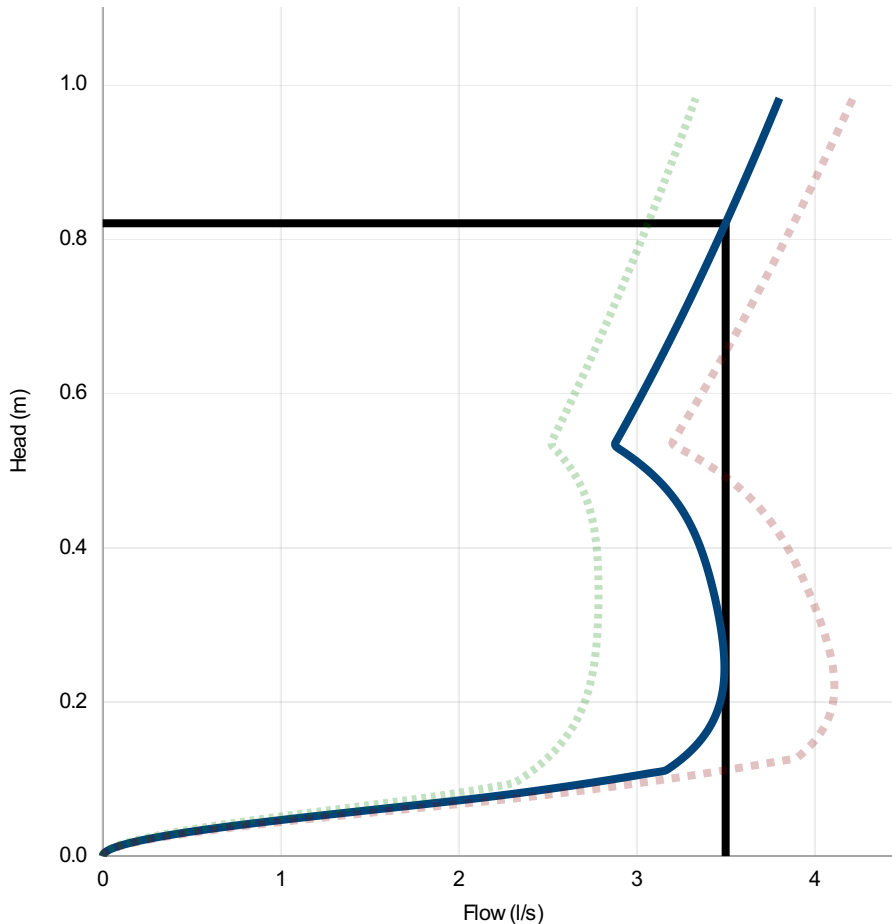
SHE-0092-3500-0820-3500
 Hydro-Brake® Optimum

Technical Specification

	Original Setting		Minimum Setting		Maximum Setting	
Control Point	Head (m)	Flow (l/s)	Head (m)	Flow (l/s)	Head (m)	Flow (l/s)
Primary Design	0.820	3.500	0.820	3.064	0.820	3.882
Flush-Flo™	0.244	3.493	0.340	2.786	0.220	4.111
Kick-Flo®	0.531	2.870	0.533	2.513	0.533	3.192
Mean Flow		3.035		2.535		3.451



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Head (m)	Flow (l/s)
0.000	0.000
0.028	0.402
0.057	1.379
0.085	2.440
0.113	3.178
0.141	3.325
0.170	3.416
0.198	3.468
0.226	3.490
0.254	3.492
0.283	3.481
0.311	3.461
0.339	3.435
0.368	3.403
0.396	3.364
0.424	3.313
0.452	3.244
0.481	3.147
0.509	3.014
0.537	2.884
0.566	2.953
0.594	3.019
0.622	3.084
0.650	3.147
0.679	3.209
0.707	3.269
0.735	3.328
0.763	3.386
0.792	3.443
0.820	3.499

DESIGN ADVICE



The head/flow characteristics of this SHE-0092-3500-0820-3500 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.

The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.

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DATE 22/05/2026 22:15

Site 64 Westfield Lane

DESIGNER Michael Herbert

Ref

SHE-0092-3500-0820-3500

Hydro-Brake® Optimum



APPENDIX E – SuDS MAINTENANCE SCHEDULE

Project Title:	64 Westfield Lane		
Job Ref:	WA-1079	Date:	21.05.26

Proposed SuDS Maintenance Schedule

The following maintenance schedule has been produced in line with CIRIA C753 'The SuDS Manual' recommendations for 64 Westfield Lane. Prior to the completion of the development, ownership & maintenance responsibility for the site drainage network should be clearly defined and agreed between the developer, landowners, & maintenance contractor.

Party Responsible for Implementing Maintenance Schedule: **Landowner(s)**

Refer to following drawings for details: **WA-1079-D-01, D-02, D-03, D-04**

Table 1 – Pipe, Manhole & Gully Maintenance Schedule

Maintenance Schedule	Action	Frequency
Regular Maintenance	Cleaning of gutters and filters on downpipes and brushing/sweeping of leaves debris that may cause blockages in gullies.	Annually
	Inspect for sediment and debris in pre-treatment components (i.e., catchpits and gully silt traps), and inside manhole rings.	Annually (or as required)
Occasional Maintenance	Remove sediment/debris from pre-treatment components (i.e., catchpits).	As required, based on regular inspections
Remedial Actions	Trimming of roots that may be causing blockages and patch repair of pipework that has cracked or deformed.	As required
	Repair/rehabilitate manhole and gully inlets & outlets.	As required
Monitoring	Inspect silt traps and note rate of sediment accumulation	Monthly in 1 st year, then annually
	Check to ensure gullies and manholes are emptying fully.	Annually

Table 2 – Cellular Attenuation Tank Maintenance Schedule – Tank supplier should be contacted once confirmed for product specific maintenance requirements

Maintenance Schedule	Action	Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then annually.
	Remove debris from the catchment surface (where it may cause risks to performance [i.e., leaves]).	Monthly (or as required)
	Remove sediment from pre-treatment structures (i.e., catchpits)	Annually (or as required)
Remedial Actions	Repair/rehabilitate inlets, outlets and vents.	As required
Monitoring	Inspect/check all inlets, outlets and vents to ensure that they are in good condition and operating as designed.	Annually
	Survey inside of tank for sediment build-up and remove if necessary.	Every 5 years (or as required)