

- UTILITIES HAZARD**
- F!** WORKS ARE IN CLOSE PROXIMITY OR CROSS THE ROUTE OF EXISTING FUEL OR COMBINED SEWER. EXACT LOCATION AND LEVEL TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION START.
 - S!** WORKS ARE IN CLOSE PROXIMITY OR CROSS THE ROUTE OF EXISTING SURFACE DRAIN, SEWER OR CULVERT. EXACT LOCATION AND LEVEL TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION START.
 - E!** WORKS ARE IN CLOSE PROXIMITY OR CROSS THE ROUTE OF EXISTING HIGH OR LOW VOLTAGE OVER HEAD OR BELOW GROUND CABLE. EXACT LOCATION TO BE CONFIRMED.
 - T!** WORKS ARE IN CLOSE PROXIMITY OR CROSS THE ROUTE OF EXISTING BRITISH TELECOM OVER HEAD OR BELOW GROUND CABLE. EXACT LOCATION TO BE CONFIRMED.
 - G!** WORKS ARE IN CLOSE PROXIMITY OR CROSS THE ROUTE OF EXISTING GAS MAIN. LOCATION TO BE CONFIRMED.
 - U!** WORKS ARE IN CLOSE PROXIMITY OR CROSS THE ROUTE OF EXISTING UNKNOWN UTILITIES. EXACT LOCATION TO BE CONFIRMED.
 - W!** WORKS ARE IN CLOSE PROXIMITY OR CROSS THE ROUTE OF EXISTING WATER MAIN. EXACT LOCATION TO BE CONFIRMED.
- EVERYDAY OR LOW RISK HAZARDS HAVE NOT BEEN INDICATED ON THIS DRAWING, NEITHER HAVE HAZARDS THAT SHOULD BE OBVIOUS TO A COMPETENT CONTRACTOR.
- SHOULD ANY ADDITIONAL HAZARDS BE IDENTIFIED THE CONTRACTOR SHOULD NOTIFY ALL THE RELEVANT PROJECT TEAM MEMBERS.

- Sewer Adoption Construction Notes**
 Design and Construction Guidance
 Sewerage Sector Guidance Appendix C V2.0
 1. General
- 1.1. All dimensions are given in millimetres unless otherwise stated.
 - 1.2. All levels are referred to Ordnance Datum.
 - 1.3. Where this drawing uses data reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO, © Crown copyright and database rights (2019) OS Licence 1000354003.
 - 1.4. Statutory Undertakers apparatus details where shown are for illustrative purposes only as such their locations and depths cannot be guaranteed. Reference should be made to the relevant statutory body for appropriate location detection measures prior to commencing excavation.
 - 1.5. The planning, design and construction of sewers shall be in accordance with Design and Construction Guidance for foul and surface water sewers offered for adoption under the Code for Adoption Agreements for water and sewerage companies operating wholly or mainly in England ("the Code") Approved Version 2.0.6.10 March 2020, the Civil Engineering Specification for the Water Industry 7th Edition and South West Water amendments to Civil 7. Engineering Specification for the Water Industry 7th Edition dated May 2011.
 - 1.6. Figure reference below refers to Figures in SSG Design and Construction Guidance V2.0.
 - 1.7. The Contractor is to comply in all respects with current Building Legislation and British Standards. This drawing must be read and checked by the Contractor against any structural, geotechnical or other specialist documentation available.
 - 1.8. Where work is required to be carried out within or adjacent to any sewer, there shall be regard of the relevant provisions of The Classification, and Management of Confined Space Entries published by Water UK.
 - 1.9. This drawing is to be read in conjunction with all other relevant Sewer and Highway Adoption drawings, documents and specifications.
 - 1.10. Existing critical levels marked (*) are to be verified by trial excavation prior to commencement of construction.
 - 1.11. Existing levels marked (?) are to be confirmed.
 - 1.12. This drawing is not intended to show details of foundations, ground conditions or contaminants. Any suspected contamination found by the Contractor is to be reported to the Consultant and further investigated by a suitable expert appointed by the Contractor.
 - 1.13. Setting out to be based on information shown on the Developer's drawings and not by 11 scaling. Discrepancies are to be reported to the Consultant.
 - 1.14. Preliminary and tender stage drawings shall not be used for construction.
 2. Materials
 - 2.1. Vitrified clay pipes and fittings for sewers shall have flexible mechanical joints. Pipes for foul sewers and surface water sewers shall comply with the relevant requirements of BS EN 295-1, BS 65 (surface water pipes only) for pipe crushing strengths of 40kN/m up to and including 150mm dia, 45kN/m for 225mm dia and 72kN/m for 300mm dia.
 - 2.2. Un-reinforced and reinforced concrete pipes and fittings shall comply with the relevant provisions of BS EN 1916 and BS 5911:Part 1 and shall be Class 120 to conform with EN1916/BS5911. All pipes and fittings shall have gasket type joints of spigot and socket or rebate form.
 - 2.3. PVC Ultrabir (150mm, 225mm and 300mm

diameters) solid wall pipes, joints and fittings for gravity sewers and drains shall comply with the relevant provisions of BS 4860, BS 5481 or BS EN 1401-1 respectively. PVC Ultrabir solid wall pipes shall be laid in lengths no greater than 3.0m.

Ductile iron pipes, fittings and joints shall comply with BS EN 598 for sewerage applications. Site applied external protection of ductile iron pipes shall comprise the covering of the pipes with lay flat polythene sleeving securely held in place with adhesive tape at pipe joints and intermediate positions. Factory applied external protection formed of plastic sleeving or plastic tape shall have the protection of joints and repairs to any damage carried out in accordance with the manufacturer's instructions.

Polyethylene pressure pipes for rising mains shall comply with the relevant provisions of BS EN 13244-2. The colour shall be BLACK. Polyethylene fittings, including fusion joints and electrofusion fittings shall comply with the relevant provisions of BS EN 13244-3. HDPE pipework shall conform to BS EN1295-1 for pipe strengths detailed on the scheme drawings.

Polyethylene (Ridgistor XL) structured wall pipes, joints and fittings for gravity sewers and drains 750-3000mm diameters manufactured in accordance with BS EN 13476-1 & BS EN13476-2 is classed as a guidance document for pipe $\phi > 1200$ mm to stiffness, classification 8 (PP-SNB) shall carry the BSF Kitemark, be BBA approved & adoptable by the relevant provisions of BS EN 13476-1 & WIS 4-35-01 v2, and will meet WRc Code of Practice for high pressure water jetting tolerance.

Polypropylene (Twinwall) structured wall pipes, joints and fittings for gravity sewers and drains 225-600mm diameters manufactured to stiffness classification 8 (PP-SNB) shall carry the BSF Kitemark, be BBA approved & adoptable by water companies and fully comply with the relevant provisions of BS EN 13476-1 & WIS 4-35-01 v2, and will meet WRc Code of Practice for high pressure water jetting tolerance.

Polypropylene (Twinwall) structured wall pipes, joints and fittings for gravity sewers and drains 225-600mm diameters manufactured to stiffness classification 8 (PP-SNB) shall carry the BSF Kitemark, be BBA approved & adoptable by water companies and fully comply with the relevant provisions of BS EN 13476-1 & WIS 4-35-01 v2, and will meet WRc Code of Practice for high pressure water jetting tolerance.

Thermoplastics pipes, joints and fittings for gravity sewers shall comply with the relevant provisions of BS EN 1401-1, BS EN 1852 and BS EN 12666-1.

Short length pipes built into manholes together with rockers pipes shall be of the material consistent with the sewer pipe length.

Vitrified clay channels to be used in constructed manholes for pipework up to 300mm diameter. Channel material to be agreed for pipework above 300mm diameter. Sewers should be laid in straight lines in both the vertical alignment (profile) and horizontal alignment (plan) except the bends up to 45 degrees may be laid immediately outside 3.1.5 inspection chambers (see Figure B.13).

Manhole and inspection chamber cover loading shall be in accordance with manhole schedule for specific chamber locations. In-fill type 2 covers should not be used. Where a cover is located in an area of block paving, the bottom of the frame should be 150 mm deep.

Manhole and inspection chamber covers and frames shall comply with the relevant provisions of BS EN 124, BS 7903 and Highway Agency 3.2.2. Guidance Document HA 104/09 shall have a minimum square opening of 400 x 600mm. Covers shall be double triangle for 675mm square openings and be provided with loose

bolting connections. They shall be of a non-racking design which does not rely on the use of cushion inserts. Inspection chambers covers on foul-only sewers shall be of low leakage types in order to prevent excessive surface water ingress. As a minimum, Class D 400 covers shall be used in carriageways of roads (including pedestrian streets), hard shoulders and parking areas used by all types of road vehicles. Class B 125 shall be used in footways, pedestrian areas and comparable locations. All inspection chamber covers shall be the non-ventilating type and shall have closed keyways.

All ironwork to be kitemarked by BSI or certified by equal inspection authority. The use of ladders or steps in manholes, wet wells and valve chambers shall comply with the following: Steel plastic encapsulated MH single steps shall not be used in MHs of a greater depth than 1.0m. Steel plastic encapsulated double steps may be provided in MHs up to 3.0m in depth. Ladders shall be provided in accordance with BS 4211 in MHs between 3.0, 3.9 & 6.0m deep. MHs greater than 6.0m deep shall be specially designed and have intermediate landings. Access holes in intermediate landings shall be provided with galvanised mild steel gratings to prevent persons falling through. The design of deep MHs shall permit the use of a winch or lifting gear mounted at ground level in case of emergencies.

Only low carbon steel or stainless steel ladders classification 8 (PP-SNB) shall be acceptable. Proposed adoptable sewers are only permitted to have other sewer/gully connections and other services laid at an angle of between 45 degrees and 90 degrees across the line with a vertical clearance in excess of 300mm.

Red coloured plastic marker tape at least 150mm wide is to be laid at a minimum of 200mm above the soffit of the pipe. The tape shall be printed with a description of the service in bold capital letters throughout its length, in intervals not exceeding 700mm and shall incorporate a corrosion resistant tracing system for non-metallic pipes.

The minimum depth of cover to the crown of gravity pipes without protection should be as follows:

- 3.1.1. domestic gardens and pathways without any possibility of vehicular access, 0.35m;
- 3.1.2. domestic driveways, parking areas and yards with height restrictions to prevent the entry by vehicles with a gross vehicle weight in excess of 7.5tonnes, 0.5m;
- 3.1.3. domestic driveways, parking areas and narrow streets without footways (e.g., mews developments) with limited access for vehicles with gross vehicle weight in excess of 7.5tonnes, 0.9m;
- 3.1.4. agricultural land and public open space, 0.9m;
- 3.1.5. other highways and parking areas with unrestricted access to vehicles with a gross vehicle weight in excess of 7.5tonnes, 1.2m.

If the depth of cover to the crown of the pipe is less than the values above one of the following protection measures should be provided:

- 3.1.1. a concrete slab in accordance with Figure B.18;
- 3.1.2. a concrete surround with flexible joints in accordance with Figure B.19;
- 3.1.3. a ductile iron pipe of an adequate strength should be used. Where connections are made to adoptable sewer pipelines laid in

ductile iron, a ductile iron junction pipe shall be used.

Protection of pipes laid at shallow depths, joints for concrete encased pipes and protection of pipes penetrating single leaf boundary walls shall be provided in accordance with SSG Design and Construction Guidance V2.0. Figures B.27, B.28 and B.29 respectively. Minimum backdrop height shall be 1m. The Contractor is responsible for all pipe fittings and resistance to thrusts. When the proposed site drainage connects to the public sewerage system either by new junction, new manhole or at an existing manhole, it will require the submission of an application for sewer connection form to SWW Ltd prior to works commencing.

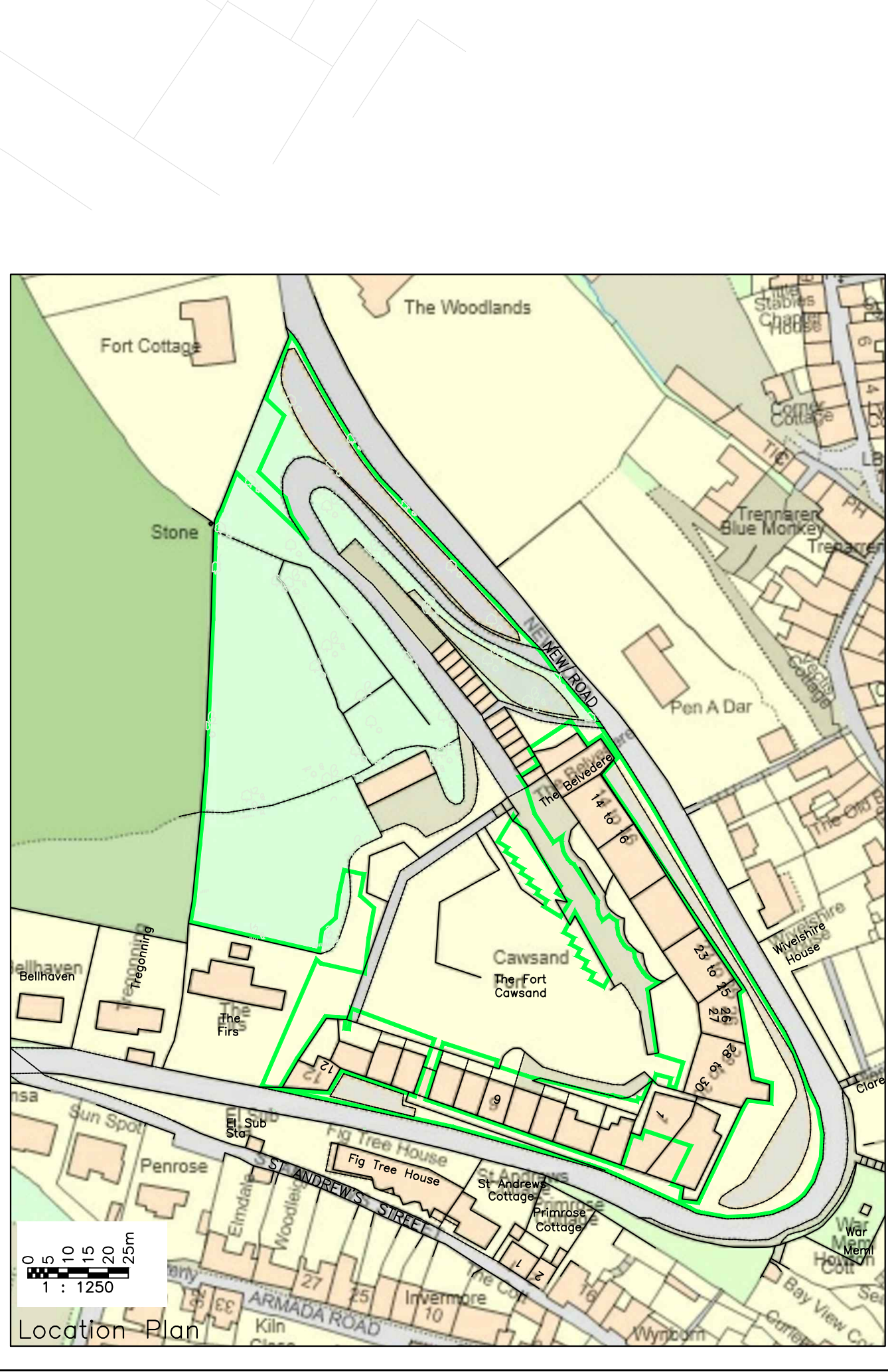
Private drainage and utility services to be laid 150mm wide concrete surround to ground level to be provided to frames in unmade ground. All constructed manholes using pre-cast sections shall have joints sealed using Tokstrip and lifting eyes are to be pointed with resin drainage mortar.

Manholes with outgoing pipework greater than 375mm dia shall be fitted with guide bars, safety chains or other safety devices.

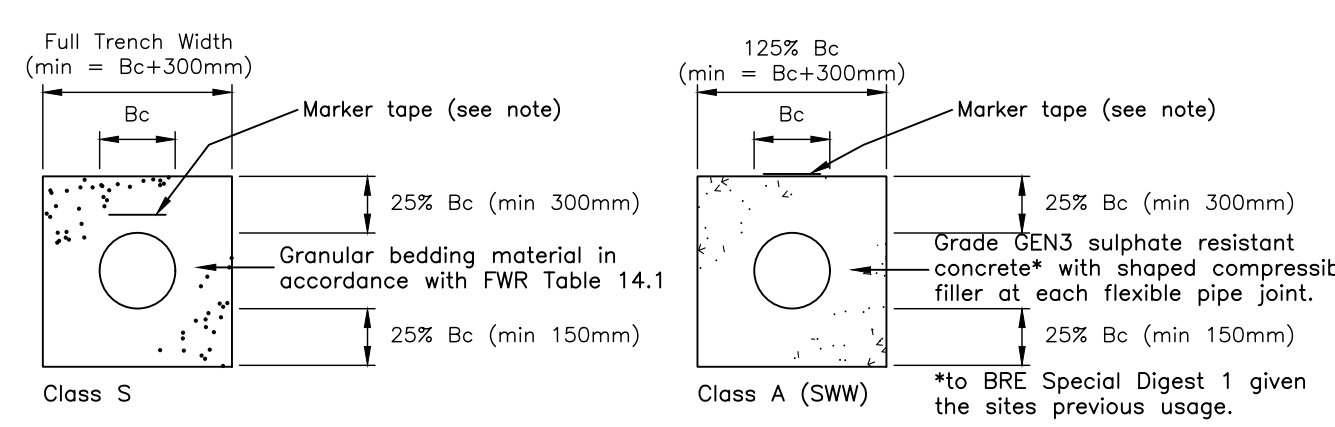
No private drainage surface water run-off is permitted to discharge onto adoptable highway.

No tree, shrub or bush shall be planted close to a sewer or lateral drain than the canopy width at mature height without special precautions in accordance with Clause B5.5. No tree shall be planted directly over sewers or where excavation onto the sewer would require removal of the tree. The following shallow rooting shrubs are generally suitable for planting close to sewers and lateral drains:

- 3.1.1. Berberis candidula; (Paleleaf barberry)
- 3.1.2. Berberis julianae; (Wintergreen barberry)
- 3.1.3. Ceanothus burkwoodii; (California lilac 'Burkwood')
- 3.1.4. Cotoneaster dammeri; (Bearberry cotoneaster)
- 3.1.5. Cotoneaster skoghalm; (Cotoneaster x suecicus, 'Skoghalm')
- 3.1.6. Cytisus varieties or Sarothamnus; ((Common or Scotch) Broom)
- 3.1.7. Euonymus japonica; (Japanese spindle)
- 3.1.8. Euonymus radicans; Variety of Euonymus (Fortune's spindle or wintercreeper)
- 3.1.9. Mahonia varieties; can be included in the genus Berberis, most common name is M. aquifolium (Oregon grape)
- 3.1.10. Potentilla varieties; most varieties are types of cinquefoil. Also includes Common tormentil, silverweed and barren strawberry
- 3.1.11. Skimmia japonica; (Skimmia)
- 3.1.12. Spiraea japonica; (Japanese spirea or Japanese meadowsweet)
- 3.1.13. Veronica varieties; (Speedwell)
- 3.1.14. Viburnum davidii; (David viburnum)
- 3.1.15. Viburnum tinus; (Laurustinus)



MARKER TAPE
 Red coloured PVC or heavy gauge polyethylene sheathing marker tape of least 150mm wide shall be laid at a minimum of 200mm above the soffit of the pipe. The tape shall be printed with the words "GRAVITY SEWER" or "PUMPED SEWER" in bold capital letters throughout its length and at intervals not exceeding 700mm and shall incorporate a corrosion resistant tracing system for non-metallic pipes.



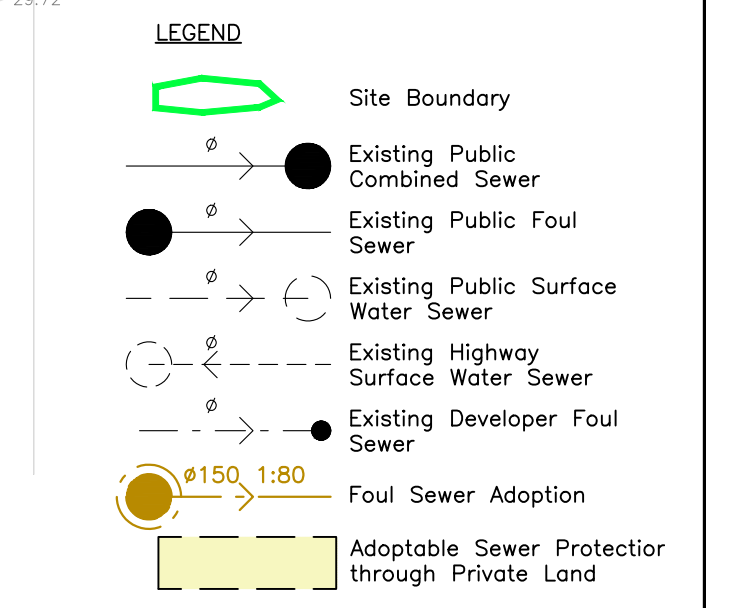
Pipe Trench Beddings

Foundation for Water Research Table 14.1
 Granular bedding and sidewall materials for flexible pipes.

Nominal size of pipes (mm)	Maximum particle size (mm)	Granular materials	Maximum compaction fraction value for granular materials
100	10	10mm nominal single size	0.15
Over 100 to 150	15	10 or 14mm nominal single size or 14mm to 5mm graded	0.15
Over 150 to 300	20	10, 14 or 20mm nominal single size or 20mm to 5mm graded	0.15
Over 300 to 600	20	14 or 20mm nominal single size or 14mm to 5mm graded or 20mm to 5mm graded	0.15
Over 600	40	14, 20 or 40mm single size or 20mm to 5mm graded or 40mm to 5mm graded	0.15

NOTES

- (a) Imported granular materials to include aggregates to BS 882, air cooled blast furnace slag to BS 1047 and sintered pulverised fuel ash to BS 3797.
- (b) Material excavated from trenches dug through land contaminated with domestic, building or industrial waste should not be used as bedding or side fill material.
- (c) Air cooled blast furnace slag and sintered pulverised fuel ash are not recommended for use with ductile iron or steel pipelines because of the risk of corrosion.



B 28 Oct 22/ATCL cp Approved.
 A 28 Sept 22/ATCL cp Other colours to black.
 23/Oct/21/ATCL cp First issue

Rev	Date	By	Eng	Details

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Drawing Status
APPROVED

Client
Cawsand Fort Management Company Ltd

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Cawsand The Fort, New Road

Drawing Title
S104 Foul Sewer Adoption Plan

Drawn	Checked	Date
North	Atcl	28 Oct 22

Scale @ A1
 1:200

Scheme	Dwg No.	Rev.
AT2445	02	B