

**CIVIL ENGINEERING NOTES
GENERAL**

- DO NOT SCALE FROM THIS DRAWING.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT.
- THE DEVELOPMENT LAYOUT AND SURVEY HAVE BEEN TAKEN FROM CIVILS CONTRACTING LTD'S FOUL DRAINAGE LAYOUT DRG. NO. 2210-50 REV A DATED JANUARY 22.
- THE APPROXIMATE LOCATION OF EXISTING FOUL WATER SEWERS HAS BEEN REPRODUCED FROM UTILITY COMPANY RECORDS. BJR CANNOT THEREFORE GUARANTEE THE ACCURACY OF THIS INFORMATION.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO RECORD THE POSITION, SIZE, DEPTH, MATERIAL AND TYPE OF ALL EXISTING UTILITY MAINS AND SERVICES (E.G. POWER, GAS, TELECOMS, WATER, SEWERAGE) IN CLOSE PROXIMITY TO THE PROPOSED WORKS PRIOR TO CONSTRUCTION COMMENCING ON SITE.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO CHECK ALL LEVELS AND SETTING OUT INFORMATION PRIOR TO CONSTRUCTION WORKS COMMENCING ON SITE. ANY DISCREPANCIES MUST BE REPORTED TO THE PROJECT MANAGER IMMEDIATELY.
- SIGNING, LIGHTING AND GUARDING OF ROADWORKS SHALL BE UNDERTAKEN IN ACCORDANCE WITH CHAPTER 8 OF THE TRAFFIC SIGNS MANUAL AND THE CODE OF PRACTICE SAFETY AT STREET WORKS AND ROAD WORKS PUBLISHED BY THE DEPARTMENT FOR TRANSPORT. TRAFFIC CONTROL SYSTEMS ARE TO BE AGREED WITH THE HIGHWAY AUTHORITY AND RELEVANT PERMITS OBTAINED. VEHICULAR AND PEDESTRIAN ACCESS MUST BE MAINTAINED THROUGHOUT THE DURATION OF THE WORKS.
- EXCAVATIONS WITHIN ROOT PROTECTION AREAS SHALL BE UNDERTAKEN STRICTLY IN ACCORDANCE WITH THE ARBORICULTURIST'S DETAILED METHOD STATEMENT, BS 5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION AND CONSTRUCTION, NUGJ VOLUME 4' GUIDANCE FOR THE PLANNING, INSTALLATION AND MAINTENANCE OF UTILITY APPARATUS IN PROXIMITY TO TREES.
- NEW UTILITY SERVICES ARE TO BE INSTALLED IN ACCORDANCE WITH NUGJ VOLUME 2 'GUIDANCE ON THE INSTALLATION OF NEW SERVICES TO DEVELOPMENT SITES'.

DRAINAGE - DESIGN STANDARDS

- DRAINAGE SYSTEMS TO REMAIN PRIVATE SHALL BE DESIGNED AND INSTALLED TO MEET THE REQUIREMENTS OF BS EN 752 - BUILDING REGULATION DOCUMENT H AND NHBC STANDARDS.
- DRAINAGE SYSTEMS TO BE ADOPTED UNDER S104 WATER INDUSTRY ACT (WIA) 1991 MUST BE DESIGNED AND INSTALLED TO MEET THE REQUIREMENTS OF THE CURRENT DESIGN AND CONSTRUCTION GUIDANCE FOR FOUL & SURFACE WATER SEWERS OFFERED FOR ADOPTION.
- SUSTAINABLE DRAINAGE SYSTEMS (SUDS) MUST BE DESIGNED, INSTALLED AND MAINTAINED IN ACCORDANCE WITH CIRIA REPORT C697 THE SUDS MANUAL 2015.
- UNLESS OTHERWISE SHOWN MINIMUM PIPE SIZES AND GRADIENTS FOR DRAINAGE SYSTEMS OUTSIDE BUILDINGS SHALL BE:
FOUL WATER:
<=10 DWELLINGS / MIN 1 WC CONNECTED - 100 DIA @ 1:80
>>10 DWELLINGS / MIN 5 WCs CONNECTED - 150 DIA @1:150
SURFACE WATER:
CONSULT WITH PROJECT MANAGER
- WHERE NEW BRANCH CONNECTIONS ARE MADE WITHIN TRADITIONAL BENCHED CHAMBERS, THE WHOLE OF THE BENCHING ON THAT SIDE IS TO BE REMOVED AND RE-BENCHED.
- DRAINS TO BE ABANDONED SHALL BE HIGH PRESSURE, JETTED AND FILLED WITH CLASS G3 GROUT OR REMOVED COMPLETELY AND BENCHING MADE GOOD IN EXISTING MANHOLES.
- PIPES OF DIFFERENT DIAMETERS TO BE LAID SOFFIT TO SOFFIT.
- RAINWATER DOWNPIPES CONNECTED DIRECT TO A DRAIN MUST INCORPORATE A RODDING ACCESS FITTING ABOVE GROUND LEVEL.
- DRAINS RUNS TO BE FLUSHED THROUGH AND DEBRIS REMOVED PRIOR TO FINAL TESTING AND HANDOVER.
- REMOVABLE RODDING POINT TO BE PROVIDED AT THE BASE OF ALL RAINWATER DOWNPIPES IF NO ADJACENT UNDERGROUND RODDING POINT IS BEING INSTALLED.
- WHERE DRAIN TO DRAINSEWER CONNECTIONS ARE MADE THESE SHALL BE VIA 45 DEGREE OBLIQUE JUNCTIONS.

SPECIFICATION NOTES

DRAINAGE - MATERIALS AND WORKMANSHIP

- ALL WORKS WHICH ARE SUBJECT TO THE REQUIREMENTS IMPOSED BY SCHEDULE 1 TO THE BUILDING REGULATIONS SHOULD, IN ACCORDANCE WITH REGULATION 7, BE CARRIED OUT WITH PROPER MATERIALS AND IN A WORKMANLIKE MANNER. WORKMANSHIP SHOULD BE IN ACCORDANCE WITH BS 8000 WORKMANSHIP ON BUILDING SITES PART 14: CODE OF PRACTICE FOR BELOW GROUND DRAINAGE.
- ALL WORKS TO BE ADOPTED UNDER S104 WIA 1991 SHALL BE IN UNDERTAKEN IN ACCORDANCE WITH THE CURRENT DESIGN AND CONSTRUCTION GUIDANCE FOR FOUL & SURFACE WATER SEWERS OFFERED FOR ADOPTION.

CONCRETE

- STANDARD CONCRETE MIXES SHALL BE IN ACCORDANCE WITH BS EN 206-1 AND BS 8500 TABLES A.13, A.14, AND A.15 WITH A 20MM NOMINAL MAXIMUM SIZE AGGREGATE AND A SLUMP CLASS S2 FOR A TARGET 70MM.
- ALL IN-SITU CONCRETE SHALL BE STANDARD MIX GENS UNLESS OTHERWISE STATED.
- ALL STRUCTURAL CONCRETE SHALL BE C28/35 UNLESS OTHERWISE STATED.
- THE CONCRETE DESIGN SULPHATE CLASS AND CHEMICAL CLASS SHALL BE TO BS 8500 AND EN 206-1 FOR THE APPROPRIATE GROUND CONDITIONS. REFER TO GEOTECHNICAL ENGINEERS REPORT.
- ALL CEMENT SHALL BE PORTLAND (CEM1) COMPLYING WITH THE PROVISIONS OF BS EN 197-1.
MORTAR - CLASS M1 OR CAT.12 = 1½/3 [CEMENT:LIME:SAND]
CEMENT GROUT - CLASS G3 = 1:10 [CEMENT:SAND]

MANHOLES AND INSPECTION CHAMBERS

- PRECAST CHAMBERS TO BE IN ACCORDANCE WITH BS EN 1917.
- POLYPROPYLENE CHAMBERS TO BE IN ACCORDANCE WITH BS EN 13698.
- CLAY BRICKS, CALCIUM SILICATE BRICKS AND PRECAST CONCRETE MASONRY UNITS SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 771.
- MORTAR SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 998.
 - CLASS A15 AREAS INACCESSIBLE TO MOTOR VEHICLES
 - CLASS B125 FOOTWAY / PEDESTRIAN AREAS/DRIVEWAYS
 - CLASS D250 GULLY GRATINGS ADJACENT KERB LINES
 - CLASS D400 CARRIAGEWAYS
 - CLASS E600 AREAS SUBJECT TO HIGH WHEEL LOADS
 - CLASS F900 AREAS SUBJECT TO PARTICULARLY HIGH LOADS

PIPES AND FITTINGS

- GRAVITY PIPES AND FITTINGS FOR UNDERGROUND SEWERAGE SHALL COMPLY WITH THE RELEVANT STANDARDS:
 - VITRIFIED CLAY BS EN 295-1
 - DUCTILE IRON BS EN 598
 - PVC-U BS 4660 & BS EN 1401
 - THERMOPLASTIC STRUCTURED WALL PIPES BS EN 13476-1 & WIS-35-01
 - CONCRETE BS EN 1916 & BS 5911-1

NOTE PVC-U & THERMOPLASTIC PIPES WHICH WILL BE ADOPTED MUST BE ABLE TO RESIST JETTING PRESSURES OF 2,600 PSI.
- PRESSURE PIPES AND FITTINGS FOR UNDERGROUND SEWERAGE SHALL COMPLY WITH THE RELEVANT STANDARDS:
 - DUCTILE IRON BS EN 598
 - POLYETHYLENE BS EN 13244-2 & -3 [COLOUR BLACK]

MARKER TAPE TO BE RED PVC AND SHALL BE PRINTED WITH THE WORDS 'PRESSURE SEWER' IN BOLD CAPITAL LETTERS ALONG ITS LENGTH AND SHALL INCORPORATE A CORROSION RESISTANT TRACING SYSTEM FOR NON-METALLIC PIPES.
- PIPES STRENGTH CLASSES TO BE:
 - VITRIFIED CLAY PIPES: 40 KN/m (100-225 mm DIA)
 - CONCRETE PIPES: CLASS C120 (300-600 mm DIA)

PIPE BEDDING, SURROUND AND BACKFILL

- IMPORTED GRANULAR MATERIAL SHALL COMPLY WITH BS EN 1610:1998 SECTION 5.3.3.1.
- BEDDING AND SURROUND MATERIAL TO BE EITHER 10mm SINGLE SIZED FOR PIPES UP TO 300 DIA AND 14mm SINGLE SIZED FOR PIPES >300 TO 600 DIA OR GRADED 20mm DOWN PRIMARY GRANULAR MATERIAL OR RECYCLED AGGREGATE MATERIAL TO BRE DIGEST 433 CLASS RCA [II] OR RCA [III] WITH A COMPACTION FRACTION VALUE <0.2.
- SELECTED BACKFILL MATERIAL SHOULD BE READILY COMPACTABLE, FREE FROM VEGETABLE MATTER, FROZEN MATERIAL, EXCLUDE LARGE PIECES OF CLAY >100mm AND STONES >40mm IN SIZE.
- MAIN BACKFILL MATERIAL SHALL BE SELECTED AS DUG MATERIAL IN SOFT LANDSCAPED AREAS AND TYPE 1 GRANULAR SUB-BASE MATERIAL TO SHW CLAUSE 803 IN HARD LANDSCAPED AREAS, COMPACTED IN LAYERS NOT EXCEEDING 250MM IN DEPTH. NO MECHANICAL COMPACTION SHOULD BE USED UNTIL THE FIRST 300mm LAYER HAS BEEN PLACED.

PACKAGE PUMPING SYSTEMS

- PACKAGE PUMPING SYSTEMS MUST HAVE BRITISH BOARD OF AGREEMENT (BBA) TECHNICAL APPROVALS FOR CONSTRUCTION.
- THE DESIGN & CONSTRUCTION OF THE PUMPING STATIONS FOR USE INSIDE BUILDINGS SHALL BE IN ACCORDANCE WITH BS EN 12056-4.
- PUMP CONFIGURATION SHALL BE DUTY/STANDBY.
- WET WELL CHAMBERS SHALL BE VENTED.
- THE CONTROL PANEL SHALL BE LOCATED AS DESCRIBED ON THE DRWGS. A VISUAL ALARM SHALL BE FIXED TO THE CONTROL KIOSK TO GIVE A WARNING IN THE EVENT OF A POWER/PUMP FAILURE.
- PRESSURE PIPELINES SHALL BE TESTED IN ACCORDANCE WITH IGN 4-01-03 MARCH 2011. TEST PRESSURE SHALL BE 1.5 x MAXIMUM OPERATING PRESSURE.
- ALL PUMPING STATIONS SHALL BE INSPECTED & MAINTAINED REGULARLY AS AGREED/ARRANGED BETWEEN THE CLIENT AND THE PUMP SUPPLIER.

POLLUTION PREVENTION

- THE CONTRACTOR'S ATTENTION IS DRAWN TO THE CONTROL OF POLLUTION PROVISIONS IN THE WATER RESOURCES ACT 1991. HE SHALL TAKE ALL NECESSARY PRECAUTIONS TO ENSURE THAT NO POLLUTING DISCHARGE EITHER SOLID OR LIQUID IS MADE TO ANY WATERCOURSE OR TO UNDERGROUND STRATA AND THAT ANY WORK CARRIED OUT IN A WATERCOURSE SHALL BE REMOVED IMMEDIATELY IT IS SAFE TO DO SO.

SUDS INFILTRATION STRUCTURES

- SUDS INFILTRATION STRUCTURES HAVE BEEN DESIGNED BASED ON THE SOIL INFILTRATION RATES PROVIDED BY CIVILS CONTRACTING LTD DATED DEC 2021. SOAKAGE TESTS WERE UNDERTAKEN AT 14 LOCATIONS ACROSS THE SITE. A SOIL INFILTRATION RATE OF 0.4m/hr HAS BEEN USED FOR DESIGN PURPOSES. BJR CANNOT BE HELD RESPONSIBLE FOR THE ACCURACY OF THIS DATA, OR FOR ANY VARIATIONS IN INFILTRATION RATES ACROSS THE SITE.
- SOME, OTHERWISE PERMEABLE SOILS AND SOFT ROCKS (eg CHALK) CAN HAVE THEIR PERMEABILITY SIGNIFICANTLY REDUCED BY SMEARING OF THE SURFACE DURING EXCAVATION, ESPECIALLY BY MECHANICAL EXCAVATORS. THE EXPOSED SURFACE OF THE SOIL MUST BE MANUALLY CLEANED OF ANY SMEARING BEFORE THE GEOTEXTILE AND GRANULAR FILL SURROUNDING THE CHAMBER ARE INSTALLED. THIS CAN BE ACHIEVED BY SCORING THE EXPOSED SURFACES OF THE EXCAVATION WITH A RAKE.
- INFILTRATION DEVICES ARE TO BE CHECKED REGULARLY TO ENSURE THEY ARE EMPTYING AND DEBRIS/SEDIMENT REMOVED ON A REGULAR BASIS.

Notes:

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FOR THE DISCHARGE OF PLANNING CONDITIONS 13 AND 38

A	FOR APPROVAL	SBR	CJM	15.03.22
Rev	Description	Drn	Chk	Date

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Client
CIVILS CONTRACTING LTD.

Project
**FORMER SYNGENTA WORKS,
 HAMSTEAD LANE,
 YALDING, KENT [BUSINESS PARK]**

Drawing
DRAINAGE SPECIFICATION NOTES

FOR APPROVAL

Scale @ A1	Date	Drawn by	Checked
N/A	FEB 22	SBR	CJM

Job No.	Drng. No.	Rev
22-0042	C10500	A