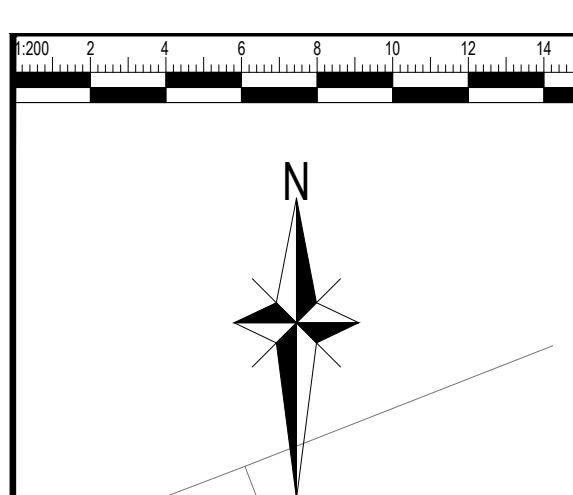




INFILTRATION TANK
CALCULATED ATTENUATION VOLUME REQUIRED: 54m³
9m x 6m x 0.8m x 0.95% VOID EFFECTIVE STORAGE ASSUMPTIONS:
• INFILTRATION RATE OF 9.742 x 10⁻³ m/s (0.35 m/hr) HAS BEEN ADOPTED FOR THE SIDES OF THE INFILTRATION TANK.
CORRESPONDING TO THE LOWEST INFILTRATION RATE
RECORDED DURING THE SITE INVESTIGATION ON 07.09.26.
• A RATE OF 4.871 x 10⁻³ m/s (0.175 m/hr), HALF THE ADOPTED SIDE RATE, HAS BEEN USED FOR THE BASE OF THE TANK TO ALLOW FOR POTENTIAL SILT BUILD UP.
• SAFETY FACTOR APPLIED WITHIN HYDRAULIC CALCULATION 2.0.
• TOTAL CONTRIBUTING IMPERMEABLE AREA : 0.217 HA.
• DESIGN EVENT: 1 IN 100 YEAR + 45% CLIMATE CHANGE ALLOWANCE.
• URBAN CREEP: +10% APPLIED TO THE ROOF AREAS OF THE PROPOSED DWELLINGS.

NON-RETURN VALVES NOT PROPOSED AT THIS STAGE DUE TO THE ELEVATED CONNECTION/BACKFLOW ARRANGEMENT DOWNSTREAM BACKFLOW PROTECTION TO BE REVIEWED AT DETAILED DESIGN STAGE SUBJECT TO CONFIRMATION OF DOWNSTREAM SEWER SURCHARGE LEVELS AND LIMITED UTILITIES REQUIREMENTS.
NEW CHAMBER BUILT ON EXISTING UU COMBINED 3000 SEWER AT LOCATION OF EXISTING LAMP HOLE
CW02 (1350 /15000 TBC)
CL 143.110
IL 140.390 (1500) BD
DIL 2.720m (1500)
IL 138.590 TBC (3000)
DIL 4.520 TBC (3000)

TABLE 1 CONTRIBUTING AREAS COMPARISON		
	SQ M	HA
SITE AREA	3345	0.335
EXISTING IMPERMEABLE AREAS	360	0.036
EXISTING PIMP %	11%	
EXISTING LANDSCAPED / GRAVEL AREAS	2985	0.299
PROPOSED IMPERMEABLE AREAS POSITIVELY DRAINIED	2145	0.215
PROPOSED PIMP %	64%	
PROPOSED LANDSCAPED AREAS	1200	0.120

TABLE 2 SURFACE WATER DISCHARGE HIERARCHY ASSESSMENT	
WATER HARVESTING	WATER BUTTS TO DWELLINGS ARE PROPOSED AS PART OF THE STRATEGY.
IN TO THE GROUND - INFILTRATION	INFILTRATION WITHIN GLACIOFLUVIAL DEPOSITS BELOW MADE GROUND WILL BE UTILISED TO CONFIRM DESIGN INFILTRATION COEFFICIENT OF 9.742 x 10⁻³ m/s (0.35 m/hr)
TO A SURFACE WATER BODY	DISCHARGE TO THE WATER BODY WITHIN THE PARK (CIRCA 170m AWAY) HAS BEEN DISCOUNTED DUE TO THE SIGNIFICANT OFF-SITE DRAINAGE ROUTE THROUGH PUBLIC OPEN SPACE AND ASSOCIATED TECHNICAL, LAND OWNERSHIP, COST AND MAINTENANCE CONSTRAINTS.
TO A SURFACE WATER SEWER, HIGHWAY DRAIN, OR ANOTHER SURFACE WATER DRAINAGE SYSTEM;	NOT FEASIBLE - NO PUBLIC SURFACE WATER SEWERS OR SUITABLE ALTERNATIVE DRAINAGE SYSTEMS NEARBY.
TO A COMBINED SEWER	IF VERIFICATION INFILTRATION TESTING CONFIRMS INFILTRATION IS NOT VIABLE, DISCHARGE IS PROPOSED TO THE EXISTING COMBINED PUBLIC SEWER IN ST. ALBAN'S STREET AS THE ALTERNATIVE OPTION.

TABLE 3 DISCHARGE RATE COMPARISON				
	QBAR	Q1 L/S	Q30 L/S	Q100 L/S
FEH22 GREENFIELD RUNOFF RATE	0.9	0.8	1.5	1.8
Q (l/s) BROWNFIELD - MODIFIED RATIONAL METHOD (11% PIMP)		2.0	8.3	10.8
Q (l/s) BROWNFIELD WITH 50% BETTERMENT		1.0	4.2	5.3
MAXIMUM PROPOSED DISCHARGE RATE AGREED WITH UNITED UTILITIES VIA PRE-DEVELOPMENT ENQUIRY UU REFERENCE NUMBER: 08992657		5.0		

TABLE 4 ATTENUATION VOLUME ESTIMATION	
	ATTENUATION VOLUME V (m³) Contributing area = 0.217 ha Discharge rate = 5l/s
2YR (100% AEP)	13m³ < V< 30m³
30YR (3.3% AEP)	52m³ < V< 84m³
100YR+CC (1% AEP)	120m³ < V< 201m³

KEY

- SITE BOUNDARY - 3345m² (0.339ha)
- ROOF AREAS (APARTMENT BLOCK) - 709m² (0.071ha)
- ROOF AREA (HOUSES) - 223m² (0.0223ha)
- ROOF AREA (HOUSES) WITH 10% URBAN CREEP: 245.3m² (0.0245ha)
- BIN STORE AREA ROOF - 33m² (0.0033ha)
- HARDSTANDINGS - 1180m² (0.118ha)
- TOTAL IMPERMEABLE AREAS - 2145m² (0.215)
- PROPOSED PERCENTAGE OF IMPERMEABLE AREA (PIMP) 64%
- TOTAL PROPOSED CONTRIBUTING AREAS TO BE POSITIVELY DRAINIED INCLUDING 10% URBAN CREEP (HOUSES) - 2167.3m² (0.217ha)
- GREENFIELD/LANDSCAPED AREA - 1110m² (0.111ha)
- EXISTING COMBINED WATER PUBLIC SEWER
- EXISTING COMBINED WATER ACCESS CHAMBER
- EXISTING COMBINED WATER LAMP HOLE
- PROPOSED PRIVATE SURFACE WATER
- PROPOSED PRIVATE FLOW CONTROL CHAMBER
- PROPOSED PRIVATE FOUL WATER
- PROPOSED COMBINED WATER MANHOLE (S106 Agreement with United Utilities)
- PROPOSED RAIN WATER PIPE
- PROPOSED SOIL PIPE/SOIL VENT PIPE
- PROPOSED RODDING EYE
- PROPOSED SURFACE WATER GULLY
- PROPOSED FOUL WATER GULLY
- DRAINAGE CHANNEL - PEDESTRIAN AREAS
- DRAINAGE CHANNEL - VEHICULAR AREAS
- PROPOSED PERMEABLE SURFACES MINIMUM 300 mm SUB-BASE STORAGE LAYER WITH 30% VOID RATIO SUBJECT TO CBR TESTING AT FORMATION LEVEL
- PROPOSED SURFACE WATER INFILTRATION STORAGE STRUCTURE (95% VOID RATIO) INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S DESIGN AND INSTRUCTIONS.
- 5m MINIMUM INFILTRATION TANK SETBACK FROM BUILDINGS AND HIGHWAYS
- PERMEABLE SURFACE SUB-BASE DIFFUSER UNIT
- BIORETENTION AREAS WITH FLUSH OR DROP/INLET KERB RSCHMATIC ARRANGEMENT HYDROPLANTER FLEX OR SIMILAR APPROVED WITH INSPECTION CHAMBER AND OVERFLOW
- WATER BUTT WITH SUDS PLANTER
- PROPOSED FFL LEVELS

PRELIMINARY SCHEME
FOR COMMENT AND REVIEW ONLY.
DESIGN IS BASED UPON INFORMATION AVAILABLE AT THE TIME.
DESIGN IS SUBJECT TO FULL REVIEW AS ADDITIONAL INFORMATION BECOMES AVAILABLE.
DESIGN IS SUBJECT TO FULL REVIEW UPON RECEIPT OF COMMENTS FROM/:

- DEVELOPMENT CONTROL
- LA PLANNING AUTHORITY
- ENVIRONMENT AGENCY
- LA HIGHWAYS DEPARTMENT
- SEWERAGE UNDERTAKER

SOURCE INFORMATION USED:			
1.	TOPOGRAPHICAL SURVEY		
1.1.	Malcolm Hughes 620321 August 2024.		
2.	SEWER RECORDS		
2.1.	UUPS-ORD-708519 (16-02-26)		
2.2.	Partial CCTV survey provided by client WRC WINCAN 23.04.2026		
3.	LAYOUT INFORMATION		
3.1.	19146-PA-00-ZZ-M2-A-1200-L - Proposed Site Plan		
4.	INFILTRATION TESTING		
4.1	IGE Consulting, Soil Infiltration Test Letter Report, Ref. 3931-05/HA, dated 8th September 2026.		

PLANNING DRAWING - NOT FOR CONSTRUCTION

- NOTES**
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER HBL DRAWINGS ISSUED FOR THIS PROJECT
- ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN METERS UNLESS OTHERWISE SPECIFIED.
 - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELATED DRAWINGS AND SPECIFICATIONS.
 - THE DRAINAGE CONTRACTOR IS RESPONSIBLE TO MAKING AN APPLICATION TO ANY SEWERAGE UNDERTAKER PRIOR TO CONSTRUCTION OF ANY CONNECTION INTO A PUBLIC MANHOLE.
 - THE ENGINEER IS TO BE NOTIFIED OF ANY DISCREPANCIES TO THE DETAILS SHOWN ON THE DRAWING AND ANY UNRECORDED CONNECTIONS NOT SHOWN ON THE DRAWINGS.
 - THE CONTRACTOR IS RESPONSIBLE FOR CHECKING DIMENSIONS AND LEVELS AND FOR CONFIRMING THE GIVEN LEVEL OF OUTFALL INTO PUBLIC SEWER, WATERCOURSE OR OTHER OUTFALL PRIOR TO CONSTRUCTION WORKS COMMENCING.
 - UNTIL TECHNICAL APPROVAL HAS BEEN OBTAINED FROM THE RELEVANT AUTHORITIES ALL DRAWINGS ISSUED ARE AS PRELIMINARY AND NOT FOR CONSTRUCTION. SHOULD THE CONTRACTOR COMMENCE SITE WORK PRIOR TO APPROVAL BEING GIVEN, IT IS ENTIRELY AT THEIR OWN RISK.
 - TO PROTECT THE DRAINAGE SYSTEM FROM CONSTRUCTION SITE DERIVES, THE CONTRACTOR SHALL ENSURE THAT STOPPERS ARE SECURELY PLACED IN ALL CONNECTIONS IMMEDIATELY UPSTREAM OF THE TANK, ONLY TO BE REMOVED ONCE THE FINAL CLEANING OF THE ROADS/ DRAINAGE HAS BEEN COMPLETED.
 - THE DESIGN IS BASED ON THE INFORMATION AVAILABLE ON THE DATE OF ISSUE FROM OTHER PARTIES (E.G. ARCHITECT AND M&E ENGINEER). IT IS SUBJECT TO CHANGE RESULTING FROM UPDATES TO THE AVAILABLE INFORMATION FROM OTHERS.
 - NEW DRAINS AND SEWERS TO BE AS FOLLOWS:
9.1. CONSTRUCTION AND MATERIALS OF PRIVATE SURFACE, FOUL & COMBINED WATER SEWERAGE SYSTEM TO BE IN ACCORDANCE WITH "BUILDING REGULATIONS - APPROVED DOCUMENT H" & "BS EN 752:2017 DRAIN AND SEWER SYSTEMS OUTSIDE BUILDINGS"
 - CONSTRUCTION AND MATERIALS OF PUBLIC SURFACE, FOUL & COMBINED WATER SEWERS TO BE IN ACCORDANCE WITH "DESIGN & CONSTRUCTION GUIDANCE, SEWERAGE SECTOR GUIDANCE APPENDIX C" AND IN ACCORDANCE WITH LOCAL SEWERAGE UNDERTAKER
 - MINIMUM PIPE SIZE FOR ADAPTABLE SURFACE WATER DRAINAGE IS 150mmDN
 - 150mmDN AT MIN 1:100 FOR 10 DWELLINGS OR LESS
 - 150mmDN AT MIN 1:150 FOR GREATER THAN 10 DWELLINGS
 - MINIMUM PIPE SIZE FOR ADAPTABLE FOUL WATER DRAINAGE IS 100mmDN
 - 100mmDN 1:40 WHERE 10 DWELLINGS OR LESS AND NO WC
 - 100mmDN 1:80 WHERE GREATER THAN 10 DWELLINGS AND AT LEAST 1 WC
 - ALL ROAD GULLY PIPEWORK SPURS TO BE 150mmDN UNLESS OTHERWISE SPECIFIED
 - LOAD CLASS SELECTION TO COMPLY WITH BS EN 124
 - LOAD CLASS A15 - AREAS INACCESSIBLE TO MOTOR VEHICLES
 - LOAD CLASS B125 - FOOTWAYS, PEDESTRIAN AREAS
 - LOAD CLASS D250 - GULLY TOPS IN KERBSIDE CHANNELS OF ROADS
 - LOAD CLASS D400 - CARRIAGEWAYS OF ROADS HEAVY DUTY
 - LOAD CLASS E600 - AREAS IMPOSING HIGH WHEEL LOADS
 - LOAD CLASS F900 - AREAS IMPOSING PARTICULARLY HIGH WHEEL LOADS
 - ALL FOUL DRAINS BENEATH BUILDINGS AND FROM SOIL VENT PIPES, GULLIES AND WC CONNECTIONS BE 100mmDN AT A GRADIENT NOT LESS THAN OF 1:40.
 - ALL FOUL CONNECTIONS TO BE FULLY TRAPPED AND EACH FOUL CONNECTION TO A BRANCH DRAIN TO HAVE FULL RODDING ACCESS (E.G. LOW-LEVEL RODDING ACCESS).
 - RAINWATER DOWN PIPES ARE TO CONNECT TO A DRAIN VIA A REST BEND.
 - WHERE DRAINAGE IS COMBINED A "P" TRAP MUST BE PROVIDED ABOVE PROPOSED FLOOR SLAB LEVEL.
 - MINIMUM DEPTH OF COVER TO THE CROWN OF GRAVITY PIPES WITHOUT PROTECTION SHOULD BE AS FOLLOWS (IN ACCORDANCE WITH "DESIGN & CONSTRUCTION GUIDANCE, SEWERAGE SECTOR GUIDANCE APPENDIX C")
15.1. 300mm - DOMESTIC GARDENS AND PATHWAYS WITHOUT ANY POSSIBILITY OF VEHICULAR ACCESS.
15.2. 500mm - DOMESTIC DRIVEWAYS, PARKING AREAS AND YARDS WITH HEIGHT RESTRICTIONS TO PREVENT ENTRY BY VEHICLES WITH A GROSS WEIGHT IN EXCESS OF 7.5 TONNES.
15.3. 600mm - DOMESTIC DRIVEWAYS, PARKING AREAS AND NARROW STREETS WITH LIMITED ACCESS FOR VEHICLES WITH A GROSS WEIGHT IN EXCESS OF 7.5 TONNES.
15.4. 900mm - AGRICULTURAL LAND & PUBLIC OPEN SPACE
15.5. 1200mm - HIGHWAYS AND PARKING AREAS WITH UNRESTRICTED ACCESS TO VEHICLE WITH A GROSS WEIGHT IN EXCESS OF 7.5 TONNES.
 - BACKFILL TO DRAINAGE TRENCHES UNDER CARRIAGEWAYS TO BE TYPE 1 SUB-BASE MATERIAL, ELSEWHERE BACKFILL TO BE FREE DRAINING READILY AVAILABLE COMPACTABLE MATERIAL FREE FROM RUBBISH, ORGANIC MATTER, FROZEN SOIL, CLAY LUMES AND LARGE STONES, TO BE COMPACTED IN LAYERS NOT EXCEEDING 250mm THICK
 - A FLEXIBLE JOINT SHALL BE PROVIDED AS CLOSE AS IS FEASIBLE TO THE OUTSIDE FACE OF ANY STRUCTURE INTO WHICH A PIPE IS BUILT, COMPATIBLE WITH THE SATISFACTORY COMPLETION AND SUBSEQUENT MOVEMENTS OF THE JOINT. LENGTH OF THE NEXT PIPE (ROCKER PIPE) IS TO BE IN ACCORDANCE WITH THE TABLE BELOW
17.1. 150-600mmDN - 600mm LONG ROCKER PIPE
17.2. 601-750mmDN - 1000mm LONG ROCKER PIPE
17.3. 751mmDN AND ABOVE - 1250mm LONG ROCKER PIPE
 - PIPE CROSSOVERS TO HAVE MINIMUM OF 300mm CLEARANCE BETWEEN OUTSIDE TOP OF THE LOWER PIPE AND OUTSIDE BOTTOM OF THE UPPER PIPE, WHERE THIS CANNOT BE ACHIEVED A SEPARATION, CONCRETE SURROUND WHICH WILL EXTEND NOT LESS THE 1000mm EACH SIDE OF THE CROSSING POINT, THE EXTENT OF THE CONCRETE SHOULD BE WITHIN 150mm OF THE DETAIL PIPE JOINT. THE CONCRETE SPECIFICATION SHOULD BE IN ACCORDANCE WITH THE STANDARD DETAILS FOR PIPE BED AND SURROUND AS ISSUED BY THE ENGINEER.
 - CONCRETE MIXES INDICATED ON THIS DRAWING ARE DESIGNATED MIXES CONFORMING TO BS 5500-1:2008. ALL CONCRETE TO BE CASTED IN ACCORDANCE WITH GUIDANCE FOR CARRYING OUT TESTING ON SITE TO CONFIRM SULPHATE LEVEL CLASSIFICATION.
 - ALL PRIVATE MANHOLES AND INSPECTION CHAMBERS TO BE CONSTRUCTED IN ACCORDANCE WITH "BUILDING REGULATIONS - APPROVED DOCUMENT H" & "BS EN 752:2017 DRAIN AND SEWER SYSTEMS OUTSIDE BUILDINGS"
 - ALL MANHOLES AND INSPECTION CHAMBERS TO BE ADOPTED TO BE CONSTRUCTED IN ACCORDANCE WITH "IN ACCORDANCE WITH "DESIGN & CONSTRUCTION GUIDANCE, SEWERAGE SECTOR GUIDANCE APPENDIX C" AND IN ACCORDANCE WITH LOCAL SEWERAGE UNDERTAKER
 - CCTV SURVEY OF ALL THE DRAINAGE SHOULD BE CARRIED OUT ON COMPLETION OF THE BUILDING WORKS AND PASSED ON TO THE CLIENT.
 - ANY EXISTING DRAINAGE INFRASTRUCTURE TO BE RETAINED TO HAVE NEW COVERS AND FRAMES TO SUIT NEW LEVELS AND SURFACING.
 - WHERE DRAINAGE RUNS PASS BELOW FOUNDATIONS, PIPES TO BE ENCASED IN MIN 100mm CONCRETE SURROUND AND SURROUND WRAPPED IN 50mm COMPRESSIBLE MATERIAL (TOP & SIDES) PIPE SLEEVED THROUGH FOUNDATIONS AND FITTED WITH ROCKER PIPE. FOUNDATIONS ADJACENT TO DRAIN RUN TO BE DEEPEENED LOGICALLY TO INVERT OF DRAINAGE PIPE TO AVOID SURCHARGE LOADING WHERE DRAINAGE RUNS PASS ABOVE FOUNDATIONS, PROVIDE 65mm DEEP PRE-STRESSED CONCRETE TIES e.g. NAYLOR Ref P100.

PLEASE NOTE HBL ASSOCIATES ARE USING NEW AND UPDATED TITLE BOX TEMPLATES. THEREFORE, PRESENTATION MAY DIFFER BETWEEN TECHNICAL DRAWINGS.

REV.	DATE	DRAWN	DESCRIPTION	CHKD	APPRD
P08	06.10.2026	DK	INFILTRATION TANK RESIZING	JLB	MS
P07	20.08.2026	ES	PLANNING ISSUE (HYDRAULIC MODEL P05 INFILTRATION)	MS	MS
P06	05.06.2026	ES	PLANNING ISSUE (HYDRAULIC MODEL P04)	MS	MS
P05	29.05.2026	ES	PLANNING ISSUE (HYDRAULIC MODEL P03)	MS	MS
P04	22.05.2026	ES	RAINWATER HARVESTING TANK POSITION INDICATED	ES	RJ
P03	21.05.2026	ES	PRE-PLANNING ISSUE (SITE PLAN 1200_J)	ES	RJ
P02	14.05.2026	ES	REVISED TO UPDATED SITE PLAN (1200_G)	ES	RJ
P01	20.02.2026	SP	FIRST ISSUE - FOR COMMENTS	ES	RJ

STATUS		DESCRIPTION	STATUS
FOR INFORMATION			S2

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PROJECT
**LAND ON DRAKE STREET
ROCHDALE**

DRAWING TITLE
PROPOSED DRAINAGE STRATEGY PLAN

CLIENT
GREAT PLACES HOUSING GROUP

HBL REF.	DATE	SCALE(S)	
11524	16.02.26	1:200	A1
DRAWN	ES	CHECKED	MS
DRAWING No.	11524-HBL-XX-XX-DR-C-5103		
		REV.	P08