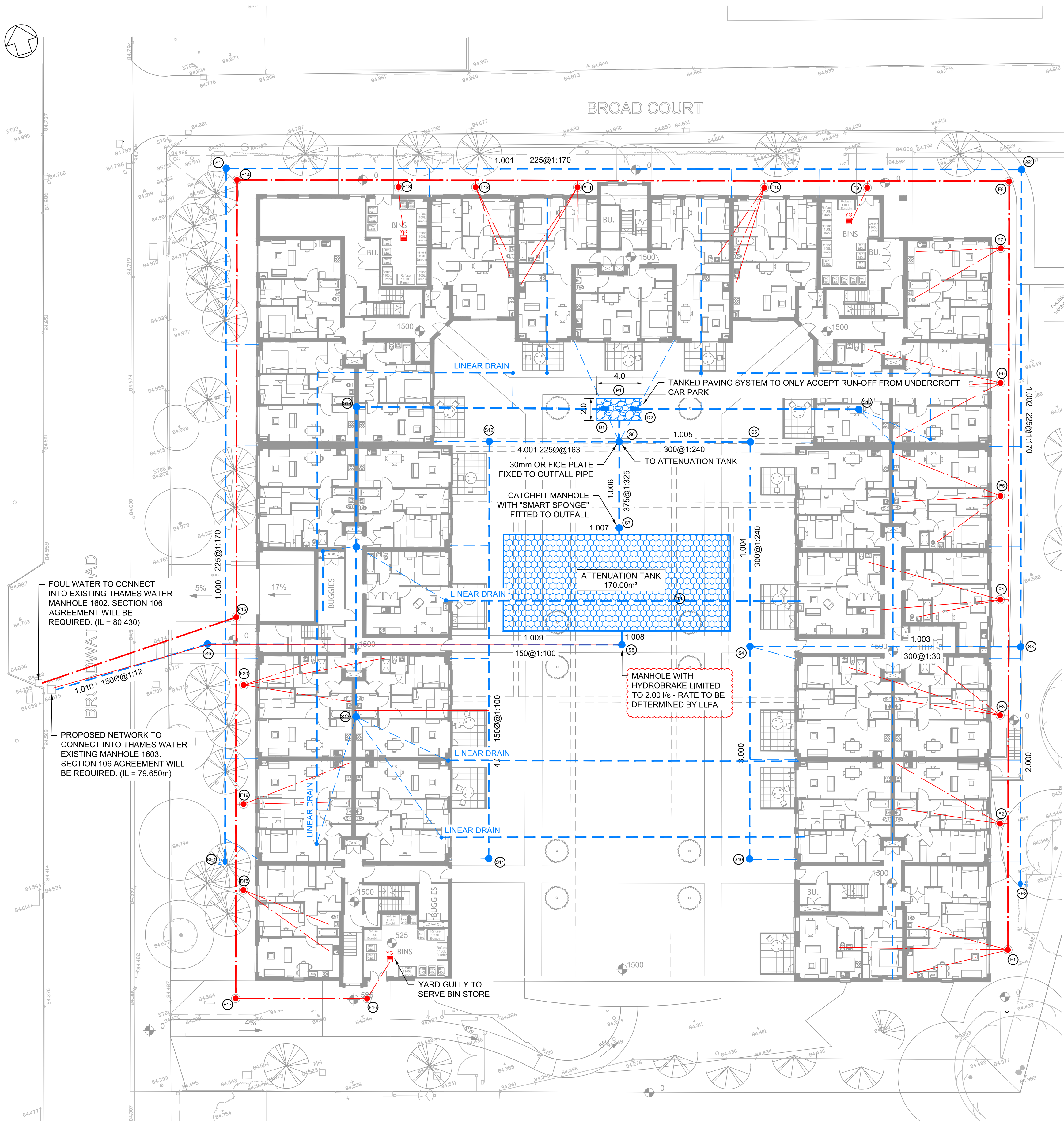
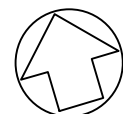




- DESIGN NOTES**
- EXISTING (BROWNFIELD) RUN OFF RATE (1 YEAR STORM) APPROX 86.0 l/s BASED ON A FULLY IMPERMEABLE AREA OF 6254m²
 - GREEN FIELD RUN OFF RATE (1 YEAR STORM) IS 0.10 l/s
 - ATTENUATION TANK HAS BEEN SIZED TO ACCOMMODATE A 1:100 YEAR STORM EVENT + 40% CLIMATE CHANGE
 - 1No. OUTFALL DISCHARGE CONTROLLED BY HYDROBRAKE LIMITED TO A RATE OF 2.0 l/s (RATE AGREED WITH LLFA)
 - ALL DOWN POINTS CONNECTING INTO THE BELOW GROUND NETWORK TO FILTER THROUGH NAYLOR "SMART SPONGES"
 - SuDS TREATMENT FOR UNDERCROFT CAR PARK HAS BEEN INCLUDED TO SATISFY LOCAL COUNCIL REQUIREMENTS.

MANHOLE NOTES

- BD = BACKDROP MANHOLE
HB = HYDROBRAKE MANHOLE (SEE HYDROBRAKE SCHEDULE)
CP = CATCHPIT MANHOLE (SEE NOTE 2 BELOW)
RE = RODDING EYE
RG = INSITU RG MANHOLE (CAST INTEGRAL WITH GF SLAB)
SFA = SEWERS FOR ADOPTION MANHOLE TYPE
- CATCHPIT INVERT LEVELS REFER TO OUTGOING PIPE - FOR SUMP LEVEL DEDUCT 300mm (TYPE 3 or 4 MH) OR 600mm (TYPE 5 MH)
- COVER LEVELS ARE INDICATIVE ONLY - ACTUAL COVER LEVELS & INCLINATION SHALL MATCH THE FINISHED GROUND LEVEL
- EXISTING MANHOLE COVERS SHALL BE RAISED / LOWERED & INCLINATION ADJUSTED TO SUIT THE FINISHED GROUND LEVEL
- LEVELS SHOWN IN BOLD ITALICS ARE TAKEN FROM RECORD DRAWINGS OR INTERPOLATED FROM EXISTING LEVELS - TO BE CONFIRMED BY SITE SURVEY
- WHERE REQUIRED EXISTING MANHOLE BENCHING SHALL BE BROKEN OUT & REFORMED TO SUIT NEW CONNECTIONS
- ALL CIRCULAR GRADE B125 MANHOLE COVERS/FRAMES TO BE CAST IRON
- 'R' SUFFIX TO COVER DETAILS DENOTES RECESSED COVER/FRAME SUITABLE TO ACCEPT SURFACE FINISHES (MANHOLE COVERS LTD 8100 SERIES BLOCK PAVOIR INFILL COVER FACTA AA LOAD RATING (5 tonne) OR SIMILAR APPROVED
- 'D/S' SUFFIX TO COVER DETAILS INDICATES BOLT-DOWN DOUBLE-SEAL RECESSED COVER SUITABLE TO ACCEPT FLOOR FINISHES (HOWE GREEN VISEDGE OR SIMILAR APPROVED)

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NOTES

- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE BELOW GROUND DRAINAGE SPECIFICATION AND ALL RELEVANT ARCHITECTS, M&E CONSULTANTS, SERVICES & SPECIALIST CONTRACTOR'S DRAWINGS.
- WHERE NOTES ON THIS DRAWING DIFFER FROM THE SPECIFICATION, CLARIFICATION SHALL BE SOUGHT FROM THE ENGINEER.
- THE WORKS DESCRIBED AND SPECIFIED ON THIS & ASSOCIATED DRAWINGS SHALL BE UNDERTAKEN IN ACCORDANCE WITH CURRENT HEALTH & SAFETY LEGISLATION. REFERENCE SHALL ALSO BE MADE TO THE PRE-CONSTRUCTION INFORMATION PACK PREPARED BY THE CDM CO-ORDINATOR FOR THE PROJECT.
- ALL PRIVATE DRAINAGE SHALL COMPLY WITH THE BUILDING REGULATIONS. WHERE DRAINAGE IS TO BE ADOPTED IT SHALL COMPLY WITH SEWERS FOR ADOPTION 6th EDITION.
- PIPE BEDDINGS SHALL BE IN ACCORDANCE WITH THE PIPE MANUFACTURER'S RECOMMENDATIONS, TAKING ACCOUNT OF THE DEPTH & LOADING IN RELATION TO THE PIPE STRENGTH. THE CONTRACTOR SHALL ISSUE BEDDING PROPOSALS TO THOMASONS FOR APPROVAL.
- ALL LEVELS RELATE TO ORDNANCE DATUM (NEWLYN) UNO.
- PIPES ENTERING/EXITING MANHOLES SHALL HAVE LEVEL SOFFITS UNO.
- DETAILS OF EXISTING SEWERS (LINE/LEVEL/PIPE SIZES ETC) SHALL BE CONFIRMED BY THE CONTRACTOR ON SITE PRIOR TO THE CONSTRUCTION OF ANY DRAINAGE WORKS. THE CONTRACTOR SHALL ESPECIALLY CHECK THE INVERT LEVELS OF ALL OUTFALLS IN RELATION TO EXISTING SEWERS TO ENSURE THE PROPOSED DESIGN CAN BE ACHIEVED. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER.
- BEFORE DRAINAGE WORKS COMMENCE THE CONTRACTOR SHALL CONFIRM THE DEPTH, SIZE & LOCATION OF ALL EXISTING DRAINAGE/SERVICES TO BE CROSSED. ANY CONFLICT IN LEVELS BETWEEN EXISTING DRAINAGE/SERVICES & NEW DRAINAGE SHALL BE REPORTED TO THE ENGINEER.
- FOR SETTING-OUT OF SOIL & VENT PIPES, STUB STACKS AND RAINWATER PIPES REFER TO ARCHITECT'S DRAWINGS.
- ALL SVP/SS CONNECTIONS SHALL BE 100mm Ø LAID AT 1:40 MIN UNO.
- ALL RWP CONNECTIONS SHALL BE 100mm Ø LAID AT 1:59 MIN UNO. ALL ROAD GULLY CONNECTIONS SHALL BE 150mm Ø.
- RAINWATER PIPES NOT CONNECTED TO AN INSPECTION CHAMBER SHALL BE CONNECTED DIRECTLY TO DRAIN (NO ACCESS GULLY).
- ADOPTED DRAINAGE PIPEWORK TO BE HEPWORTH SUPERSLEEVE VITRIFIED CLAY DRAINAGE SYSTEM TO BS EN 295 OR SIMILAR APPROVED. ALL JOINTS TO BE FLEXIBLE. PIPES TO BE LAID IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- PRIVATE DRAINAGE PIPEWORK TO BE EITHER HEPWORTH SUPERSLEEVE VITRIFIED CLAY DRAINAGE SYSTEM TO BS EN 295 (OR SIMILAR APPROVED) OR HEPWORTH UPVC DRAINAGE SYSTEM TO BE EN 1401 (OR SIMILAR APPROVED). ALL JOINTS TO BE FLEXIBLE. PIPES TO BE LAID IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- WHERE CROWN OF VC PIPE IS LESS THAN 1200mm BELOW FINISHED ROAD LEVEL, PIPE SHALL BE PROTECTED WITH A CONCRETE BRIDGING SLAB.
- WHERE CROWN OF UPVC OR VC PIPE IS LESS THAN 600mm BELOW FINISHED LANDSCAPE LEVEL, PIPE SHALL BE PROTECTED WITH A CONCRETE BRIDGING SLAB.
- PCC MANHOLE COMPONENTS (INCLUDING BASE, MANHOLE RINGS, COVER SLABS & CONCRETE SURROUND) SHALL PROVIDE CLASS 3 SULPHATE RESISTANCE TO BRE SPECIAL DIGEST 1
- ALL 90° CONNECTIONS SHALL BE MADE WITH A 45° BEND & 45° JUNCTION.
- PIPES PASSING OVER FOUNDATIONS SHALL HAVE PCC LINTELS OVER. PIPES PASSING THROUGH FOUNDATIONS SHALL BE APPROPRIATELY SLEEVED.
- ALL FLOWS FROM EXISTING BUILDINGS SHALL BE MAINTAINED DURING CONSTRUCTION.
- ALL INTERNAL SVP/SS/RWP STACKS SHALL HAVE ACCESS FITTINGS AT 1.5M ABOVE GROUND FLOOR LEVEL.
- EXISTING PIPE RUNS FOR RE-USE SHALL BE CLEANED BY MEANS OF HIGH PRESSURE WATER JETTING & DEBRIS REMOVED
- ADOPTED SEWERS / MANHOLES TO BE ABANDONED SHALL BE GROUTED TO WATER AUTHORITY REQUIREMENTS
- PRIVATE SEWERS / MANHOLES TO BE ABANDONED SHALL BE GRUBBED OUT
- THRESHOLD DRAINS SHALL BE PROVIDED AT EXTERNAL DOORS
- ALL EXCAVATIONS WITHIN TREE ROOT ZONES TO BE CARRIED OUT BY HAND (NO MACHINERY TO BE USED)
- REFER TO DRG No's C12885-xxx FOR DRAINAGE DETAILS.

MANHOLE SCHEDULE

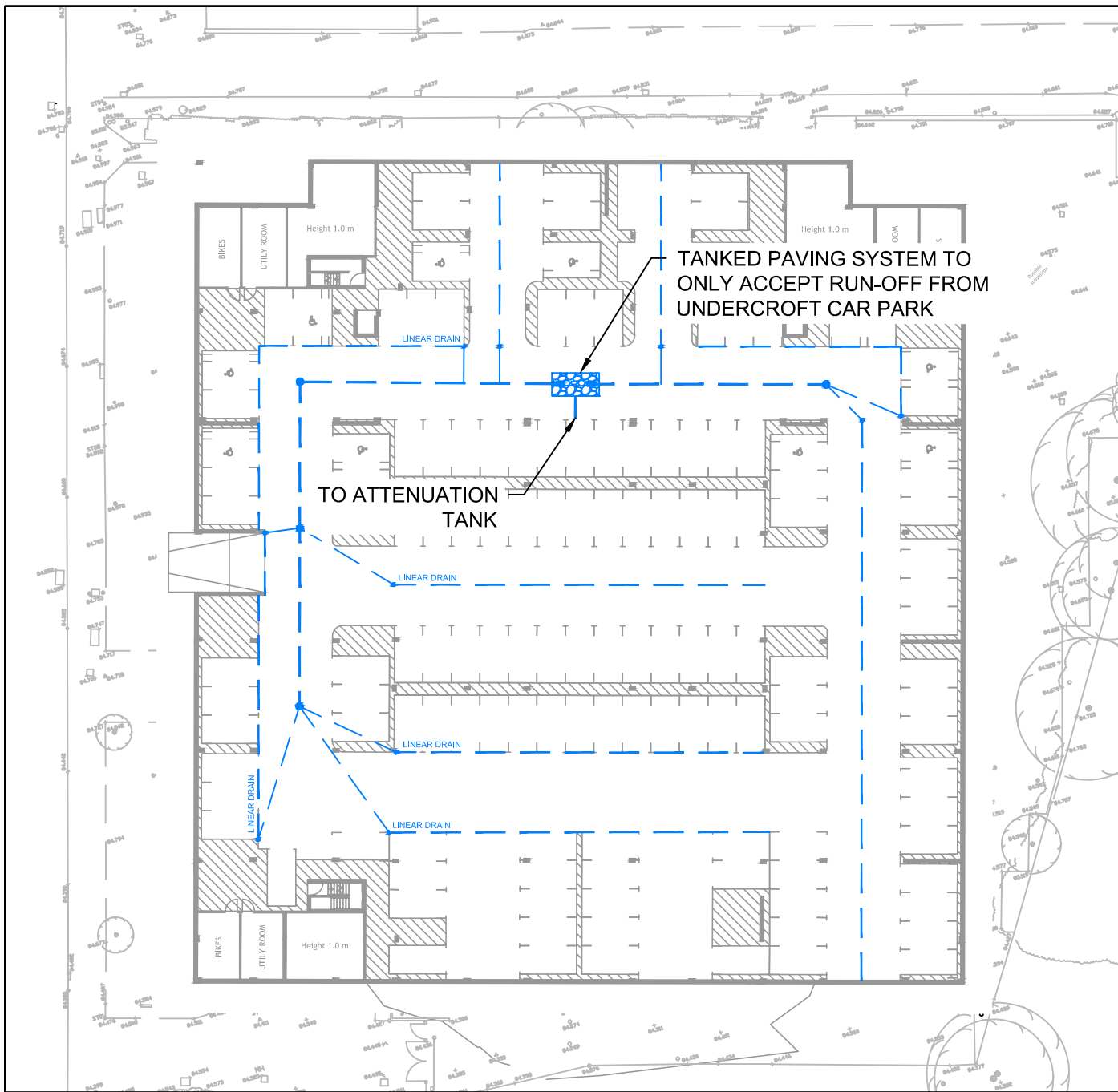
MH REF	COVER	INVERT	DEPTH	MH DIA	MH TYPE	COVER DETAILS
FOUL WATER DRAINAGE						
F1	84.409	82.830	1.579	450		
F2	84.501	83.751	0.750	450		
F3	84.606	83.856	0.750	450		
F4	84.533	83.783	0.750	450		
F5	84.339	83.589	0.750	450		
F6	84.610	83.860	0.750	450		
F7	84.520	83.770	0.750	450		
F8	84.646	83.896	0.750	450		
F9	84.642	83.892	0.750	450		
F10	84.743	83.993	0.750	450		
F11	84.674	83.924	0.750	450		
F12	84.684	83.934	0.750	450		
F13	84.780	84.030	0.750	450		
F14	84.887	84.137	0.750	450		
F15	84.778	80.631	4.147	450		
F16	84.351	83.601	0.750	450		
F17	84.562	83.044	1.518	450		
F18	84.608	83.858	0.750	450		
F19	84.708	83.958	0.750	450		
F20	84.694	83.944	0.750	450		

MANHOLE SCHEDULE

MH REF	COVER	INVERT	DEPTH	COVER DETAILS
EXISTING DRAINAGE				
ExF1	84.660	80.430	4.230	EXISTING MANHOLE
ExS1	84.575	79.650	4.925	EXISTING MANHOLE

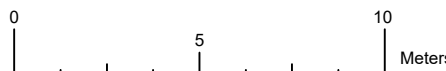
MANHOLE SCHEDULE

MH REF	COVER	INVERT	DEPTH	MH DIA	MH TYPE	COVER DETAILS
STORM WATER DRAINAGE						
RE1	84.632	83.632	1.000			
RE2	84.520	83.170	1.350			
S1	84.897	83.267	1.630			
S2	84.644	82.788	1.856			
S3	84.580	82.616	1.964			
S4	83.600	81.781	1.819			
S5	83.600	81.706	1.894			
S6	83.600	81.583	2.017			30mm ORIFICE
S7	83.600	81.559	2.041			
S8	83.600	81.085	2.515			
S9	84.740	80.706	4.034			
S10	83.600	82.300	1.300			
S11	83.600	82.250	1.350			
S12	83.600	81.803	1.797			
S13	-	-	#####			
S14	-	-	#####			
S15	-	-	#####			
S16	-	-	#####			
D1	-	-	#####			DIFFUSER
D2	-	-	#####			DIFFUSER
P1	-	-	#####			PERMEABLE PAVING



BASEMENT LAYOUT

SCALE 1:500



**BROADWATER ROAD
WELWYN GARDEN CITY**

DRAINAGE STRATEGY

Status
PLANNING

Project No.	Zone	Level	Role	Drawing No.	Revision
C12885	ZZ	XX	C	0001	P3
Scale	Drawn	Chkd	Passed	Date	Size
1:200	CC	-	-	19.08.19	A1