



HBL ASSOCIATES LTD
DRAINAGE MAINTENANCE SCHEDULE

For
Residential Development
The Limes
816 Wilmslow Road Manchester M20 2RN
On Behalf Of
Property Alliance Group

HBL Ref: 6633-HBL-XX-XX-RP-D-0001

REV: 01

A decorative graphic in the bottom right corner of the page, consisting of several overlapping, parallel lines in black and blue, forming a stylized, angular shape.

CHECKING LEVEL KEY:

- 1 – Checked by Originator
- 2 – Checked by another engineer
- 3 – Full arithmetical & theoretical check

Rev	Date	Details	Prepared By	Reviewed By
01	July'20	Information	AP	AS

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1. INTRODUCTION

- 1.1 The proposed drainage system for The Residential Development adopts a series of measures to control the rate of storm water discharge and the quality of the water in line with current practice.
- 1.2 It is important that the drainage system is maintained to ensure that all elements including the adopted SuDS components operate effectively for their lifetime.
- 1.3 This drainage maintenance plan will be incorporated within the Operation and Maintenance (O&M) manual for the site and should be accessible to those who undertake maintenance.
- 1.4 This document should be read in conjunction with the site drainage system drawings.

2. OPERATION AND MAINTENANCE REQUIREMENTS - GENERAL OBJECTIVES.

- 2.1 Maintenance of systems during construction and for agreed period after the development is complete will be the responsibility of the developer or future operator.
- 2.2 The developer should take measures to prevent debris of any kind entering the surface water drainage system.
- 2.3 Any specialist or proprietary products that has been specified, should be installed in accordance with the manufacturer's design and details and should be issued by the manufacturer with specific maintenance regime, which should be included within the Operation and Maintenance Manual for the site.
- 2.4 The developer or operator will keep records of maintenance activities, silt removal operations. This information can be used to make modification to the ongoing maintenance plan which will be adopted by Building Management Company upon completion.
- 2.5 Requirements for ongoing maintenance of the drainage network/components within the curtilage of the site will form part of the Operation and Maintenance Manual for the site and will be undertaken by the Building Management Company. Building Management Company details to be provided within the Operation and Maintenance Manual for the site.
- 2.6 Requirements for ongoing maintenance of the existing sewers remain responsibility of the United Utilities.

3. TYPICAL MAINTENANCE TASKS

- 3.1 All drainage systems, whether piped or SuDS systems require regular maintenance.
- 3.2 The maintenance of the SuDS system should be included alongside other regular maintenance tasks.
- 3.3 The table below gives an overview of typical maintenance tasks and the frequency with which they need to be undertaken.

TABLE 4.1. Drainage Systems - Typical Maintenance Tasks

DRAINAGE SYSTEMS - TYPICAL MAINTENANCE TASKS		
ACTIVITY	INDICATIVE FREQUENCY	TYPICAL TASKS
Routine/ Regular Maintenance	Monthly to annually (for typical care of SuDS components)	<ul style="list-style-type: none">• Litter picking• Inspection of inlets, outlets and control of structures
Occasional Maintenance	Annually (dependent on the design)	<ul style="list-style-type: none">• Silt control• Vegetation management around components• Suction, sweeping of pavings,• Silt removal from catch pits,
Remedial Maintenance	As required (tasks to repair problems due to damage)	<ul style="list-style-type: none">• Inlet/outlet repair,• Erosion repairs,• Reinstatement of edgings• Reinstatement following pollution• Removal of silt build up.

Inspection and control chambers

- 3.4 Inspect monthly during year 1 to check for damage and blockages.
- 3.5 Annual inspection after leaf fall thereafter removing all accumulated debris and silt. Check control tubes flow freely.

Attenuation Structures

- 3.6 Maintenance to be undertaken strictly according to manufacturer's specification and details. As a general guide, the following typical maintenance schedule is presented within table below:

TABLE 4.2. Attenuation Storage Tanks - Typical Maintenance

ATTENUATION STORAGE TANKS – TYPICAL MAINTENANCE		
MAINTENANCE SCHEDULE	REQUIRED ACTION	TYPICAL FREQUENCY
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then
	Remove debris from catchment surface (where it may cause risks to performance)	Monthly
	Remove sediment from pre-treatment structures and/ or internal forebays	Annually, or as required
Remedial Maintenance	Repair/rehabilitation of inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually and after large storms
	Survey inside of tank for sediment build up and remove if necessary	Every 5 years or as required

CIRIA SUDS MANUAL 2015 RECOMMENDATIONS

Silt Traps & Sump Units on Channel Drains

- 3.7 Maintenance to be undertaken strictly according to manufacturer's specification and details. As a general guide, the following typical maintenance schedule is presented within table below:

TABLE 4.3. Silt Traps - Typical Maintenance

SILT TRAPS – TYPICAL MAINTENANCE		
MAINTENANCE SCHEDULE	REQUIRED ACTION	TYPICAL FREQUENCY
Routine maintenance	Inspection	Monthly.
	Litter/debris removal.	Monthly or as required.
Occasional Maintenance	Sediment removal - Silt baskets should be emptied and/or filters changed.	6 monthly or as required.
Remedial Maintenance	Repair (as a result of damage)	As required.

CIRIA SUDS MANUAL 2015 RECOMMENDATIONS

Permeable Surfaces

- 3.8 Many of the specific maintenance activities for permeable surfaces can be undertaken as part of the general site cleaning contract.
- 3.9 A routine management and maintenance program to keep the surface in good condition and free of debris and weed growth, will help to sustain the porosity, quality and longevity of the system.
- 3.10 Maintenance to be undertaken strictly according to paving manufacturer's specification and details. As a general guide, the following typical maintenance schedule is presented within table below:

TABLE 4.4. Permeable Surfaces - Typical Maintenance

PERMEABLE SURFACES/ SUDSPAVE OR SIMILAR APPROVED – TYPICAL MAINTENANCE		
MAINTENANCE SCHEDULE	REQUIRED ACTION	TYPICAL FREQUENCY
Routine Maintenance	Inspection	Monthly.
	Litter/debris removal.	Monthly or as required.
Occasional Maintenance	Sediment removal - Silt baskets should be emptied and/or filters changed on any silt traps chambers downstream (where applicable).	6 monthly or as required.
Remedial Maintenance	Repair (as a result of damage)	As required.

CIRIA SUDS MANUAL 2015 RECOMMENDATIONS

4. RECORD INFORMATION

Record drawings in PDF format

- 4.1 Appendix A contains record drawings of the drainage plan.

Name and contact details of responsible organisation.

For contact detail of the organisation responsible for maintaining and managing the drainage infrastructure, refer to Table 1:

Company Name:	Alliance City Living
Point of Contact:	Customer Service Executive Team or Kostas Chaidos
Telephone No:	0161 509 7635
Postal Address:	Address: Urban Bubble, Sevendale House, 7 Dale Street, Manchester, M1 1JA

Table 1 – Management Company Contact Details

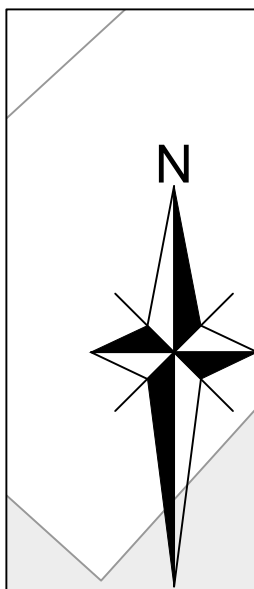
5. APPENDIX A – RECORD DRAWINGS

Node ID	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Node Type	MH Type	Connections	Link ID	IL (m)	Dia (mm)	Link Type
1	384630.129	390770.705	36.000	1.108	450		Manhole	Inspection Chamber	0	1.000	34.836	100	Circular
2	384639.943	390781.689	35.600	0.853	450		Manhole	Inspection Chamber	1	1.000	34.682	100	Circular
3	384648.129	390754.878	36.000	1.300	450		Manhole	Inspection Chamber	0	1.001	34.682	100	Circular
4	384657.816	390765.721	36.000	1.861	450		Manhole	Inspection Chamber	1	1.001	34.108	100	Circular
5	384660.831	390768.596	36.000	2.009	1050		Manhole	Precast Concrete	2	1.002	34.108	100	Circular
7	384653.324	390777.217	34.190	0.560	450		Manhole	Inspection Chamber	1	1.003	34.108	100	Circular
8	384657.957	390774.050	34.190	0.598	450		Manhole	Inspection Chamber	0	3.001	33.630	100	Circular
6	384647.177	390783.660	34.190	0.500	450		Manhole	Inspection Chamber	0	3.002	33.592	100	Circular
10	384671.157	390778.446	35.950	2.638	450		Manhole	Inspection Chamber	0	1.004	33.338	150	Circular
9	384662.028	390769.738	35.950	2.470	450		Manhole	Precast Concrete	1	1.005	33.338	150	Circular
12	384683.745	390790.452	36.000	2.879	1200		Manhole	Precast Concrete	1	1.003	33.480	100	Circular
13	384681.607	390792.657	36.000	3.009	1200		Manhole	Precast Concrete	2	1.006	33.233	225	Circular
14	384666.386	390802.319	37.000	3.667	450		Manhole	Inspection Chamber	0	1.007	32.998	225	Circular
11	384693.425	390799.375	36.000	2.625	450		Manhole	Inspection Chamber	0	6.000	33.333	150	Circular
15	384671.339	390803.247	35.700	2.758	1200		Manhole	Precast Concrete	0-1	1.003	33.991	100	Circular
CW1	384675.876	390807.575	35.700	2.800	1200		Manhole	Precast Concrete	0-2	5.000	33.375	150	Circular

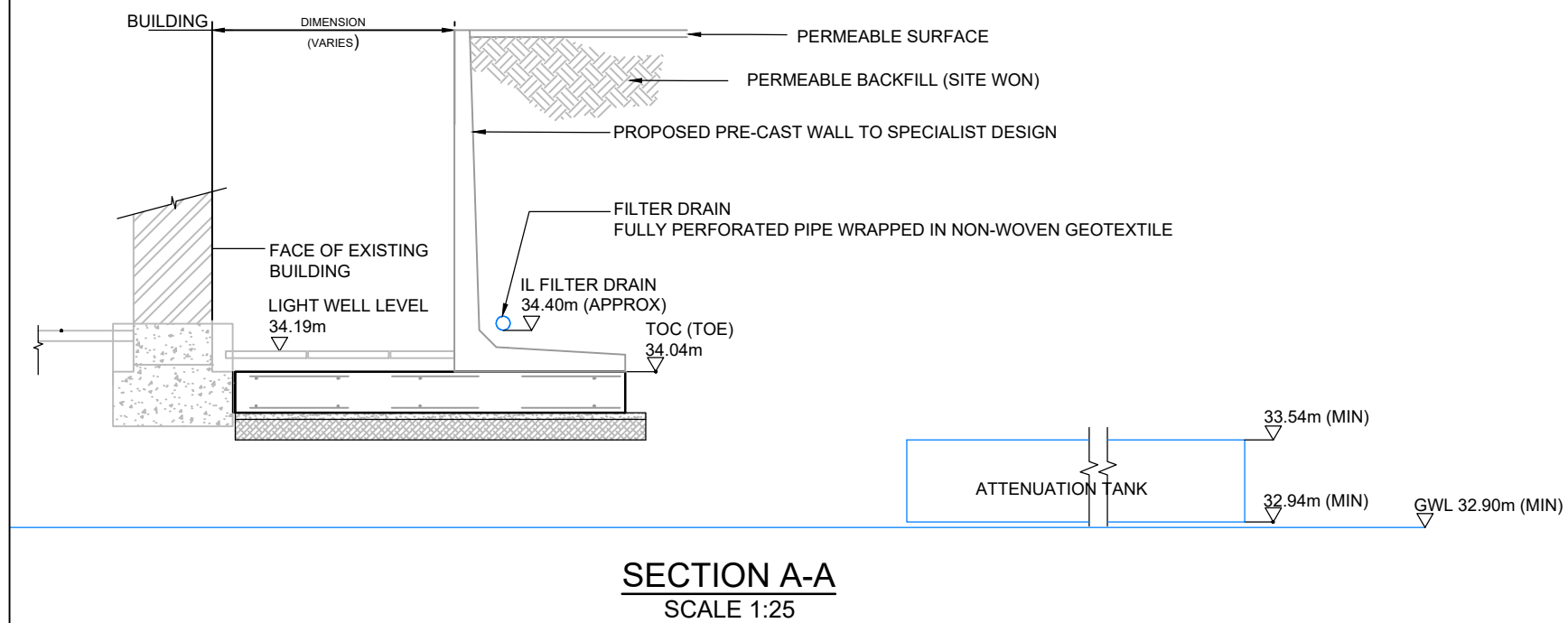
SURFACE WATER MANHOLE SCHEDULE

Node ID	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Node Type	MH Type	Connections	Link ID	IL (m)	Dia (mm)	Link Type
1	384639.035	390779.281	35.600	1.600	450		Manhole	Inspection Chamber	0	1.000	34.473	100	Circular
2	384654.869	390765.082	35.950	2.537	450		Manhole	Inspection Chamber	1	1.000	33.968	100	Circular
3	384668.161	390778.349	35.950	2.760	450		Manhole	Inspection Chamber	0	1.001	33.968	150	Circular
4	384671.810	390781.832	36.000	2.850	450		Manhole	Inspection Chamber	1	1.002	33.318	150	Circular
5	384686.234	390795.528	36.000	2.990	450		Manhole	Inspection Chamber	0	1.003	33.178	150	Circular
CW1	384675.876	390807.575	35.700	2.800	900		Manhole	Precast Concrete	1	1.004	33.008	150	Circular

FOUL WATER MANHOLE SCHEDULE



TOTAL PERMEABLE/POROUS SURFACES FOR DISCHARGE VIA INFILTRATION = 970 SQ M = 0.097 HA
• AREA 1 = REAR HARVESTINGS = 89 SQ M = 0.009 HA
• AREA 2 = SIDE ACCESS = 240 SQ M = 0.024 HA
• AREA 3 = FRONT CAR PARK = 640 SQ M = 0.064 HA
TOTAL CONTRIBUTING AREA FOR ATTENUATION AND CONTROLLED DISCHARGE @ SL/S = 1257 SQ M = 0.126 HA



DO NOT SCALE FROM THIS DRAWING

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER HBL DRAWINGS ISSUED FOR THIS PROJECT
- NOTES
- 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 FOR 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 DERBIES, 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:
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 REQUIREMENTS.
MINIMUM PIPE SIZE FOR ADAPTABLE SURFACE WATER DRAINAGE IS 150mmDN
9.3.1 100mmDN AT MIN 1:100 FOR 10 DWELLINGS OR LESS
9.3.2 MINIMUM PIPE SIZE FOR ADAPTABLE FOUL WATER DRAINAGE IS 100mmDN
9.4 100mmDN 1:40 WHERE 10 DWELLINGS OR LESS AND NO WC
9.4.1 100mmDN 1:80 WHERE GREATER THAN 10 DWELLINGS AND AT LEAST 1 WC
9.4.2 ALL ROAD GULLY PIPEWORK SPURS TO BE 150mmDN UNLESS OTHERWISE SPECIFIED
 - LOAD CLASS SELECTION TO COMPLY WITH BS EN 124
10.1 LOAD CLASS A15 - AREAS INACCESSIBLE TO MOTOR VEHICLES
10.2 LOAD CLASS B125 - FOOTWAYS, PEDESTRIAN AREAS, ETC
10.3 LOAD CLASS D250 - GULLY TOPS IN KERBSIDE CHANNELS OF ROADS
10.4 LOAD CLASS D400 - CARRIAGEWAYS OF ROADS (HEAVY DUTY)
10.5 LOAD CLASS E800 - AREAS IMPOSING HIGH WHEEL LOADS
10.6 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 350mm - 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 900mm - 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 LUMPS 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 (SUB-BASE, CURB, KERB, ETC) 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 IS TO BE FORMED WHICH WILL EXTEND NOT LESS THAN 100mm EACH SIDE OF THE CROSSING POINT. THE EXTENT OF THE CONCRETE SHOULD BE WITHIN 150mm OF A FLEXIBLE 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 8500-2:2008. ALL CONCRETE TO BE SULPHATE RESISTANT. CONTRACTOR SHOULD ALLOWANCE FOR CARRYING OUT TESTING ONSITE 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 REQUIREMENTS.
 - COTV SURVEY OF ALL THE DRAINAGE SHOULD BE CARRIED OUT ON COMPLETION OF THE BUILDING WORKS AND PASSED ON TO THE CLIENT.

C10	OCT'22	AD	CONSTRUCTION RECORD	ALS	ALS
C09	MAR'22	DC	GENERAL AMENDMENTS	ALS	ALS
C08	SEPT'21	ES	SECTION A-A ADDED	ALS	ALS
C07	JUL'21	ES	SW11 OMITTED, NOTES UPDATED,	AP	ALS
C06	MAR'21	AP	REFERENCES UPDATED, SCHEDULES ADDED	AP	ALS
C05	MAR'21	AP	BELOW GROUND FW PIPES 100mm TO 150mm	AP	ALS
C04	MAR'21	AP	DRAINAGE LAYOUT REVISED	AP	ALS
C03	DEC'20	AP	TOWNHOUSE & TANK DESIGN AMENDED	AP	ALS
C02	DEC'20	AP	MINOR AMENDMENTS TO RWP AND SVP'S	AP	ALS
C01	JUL'20	HM	ISSUED FOR CONSTRUCTION	ALS	ALS
T1	SEP'19	AP	INTERNAL DRAINAGE LAYOUT REVISED	ALS	ALS
T0	SEP'19	HM	ISSUED FOR TENDER	ALS	ALS
REV.	DATE	DRAWN	DESCRIPTION	CHKD	APPRD
STATUS: DESIGN					STATUS

CONSTRUCTION RECORD

CR



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Consulting Civil & Structural Engineers

PROJECT

PROPOSED RESIDENTIAL DEVELOPMENT
THE LIMES, DIDSBURY

DRAWING TITLE

PROPOSED DRAINAGE PLAN

CLIENT

PROPERTY ALLIANCE GROUP

HBL REF.	DATE	SCALE(S)	
6633	JULY 2019	1:150	A1
DRAWN	CHECKED	APPROVED	
A.PRINCE	AP	ALS	
DRAWING No.	6633-HBL-XX-XX-DR-D-0301		
REV.	C10		