



**192 – 194 Leigh Road, Eastleigh,
Hampshire SO50 9DX**

**Surface & Foul Water Drainage Strategy
dated January 2023**

1.0 Background Information

- 1.1 The site known as 192 – 194 Leigh Road, Eastleigh SO50 9DX is shown by the Google map image included within Appendix A.
- 1.2 The land within the site boundary currently consists of 3 no. two storey brick built residential units with associated car parking and garden as shown by the google image and the existing site layout plans included within Appendix B.
- 1.3 The proposed development comprises the demolition of the existing buildings and construction of a new three storey apartment block with associated car parking and garden as shown by the architectural drawings included within Appendix C.
- 1.4 The existing hardstanding and building areas currently discharge to existing soakaways on the site.
- 1.5 The existing foul drainage discharges to an existing foul drainage manhole on the site as shown on HDL drawing no. 22-3982-511 included within Appendix F.
- 1.6 This drainage strategy has been formed in accordance with the requirements of the Flood & Water Management Template included within Appendix I.

2.0 Sensitivity of Discharge Points

- 2.1 The Code of Practice for Sustainable Drainage Systems provides a flexible approach to drainage systems with a wide range of components and includes a hierarchy of techniques. These are:-
 1. Prevention - The use of good site design and housekeeping measures on site to prevent run-off and pollution.
 2. Source Control - Control of run off at or very near to its source.
 3. Site Control - Management of water from several sub catchment areas.
 4. Regional Control - Management of run off from several sites, typically in a detention pond or wetland.
- 2.2 With the above in mind surface water disposal will respect the hierarchy of techniques outlined above.

- 2.3 Source control is to be introduced in the following ways:-

Surface water will be discharged to soakaway in a similar manner to that which exists on the site.

- 2.4 Rainfall within soft landscaped areas will be allowed to permeate through the ground in order to mimic as closely as possible the natural drainage from the site before development.
- 2.5 The extract from the British Geological Society map, included within Appendix D, shows that the prevailing superficial deposits are sand and gravel; thus indicating that soakaways will be feasible on the site.

3.0 Existing Surface Water Flows

- 3.1 The site is a brownfield site with existing surface water flows discharging to soakaways. HDL drawing no. 22-3982-901, included within Appendix E, shows that the extents of impermeable roofs and hardstanding areas are to be marginally increased by the redevelopment of the site.

4.0 Existing Drainage Network

- 4.1 Existing surface water flows discharge to soakaways.

5.0 Failures of the Existing Drainage Regime

- 5.1 There are no records of failures of the existing drainage regime.

6.0 Proposed Drainage Patterns

- 6.1 The Hamill Davies drainage drawings, included within Appendix F, show that the site is to be laid out in a similar manner to that of the existing with surface water patterns following existing ground levels.
- 6.2 The proposed soakaway is shown on the HDL drawings, included within Appendix F, with sufficient storage to contain the 1 in 100 year storm with a 40% climate change allowance to store surface water run off from proposed roofs and hardstanding areas together with a 10% allowance for urban creep. HDL drawing no. 22-3982-901, included within Appendix E, shows pre and post development roof and hardstanding areas. The impermeable areas will increase marginally as a result of the development.

7.0 Surface Water Treatment

- 7.1 Surface water treatment is to be achieved, in accordance with Ciria SuDS Manual C753, with a catchpit installed to catch silt deposits prior to discharge of surface water to the adjacent soakaway.

8.0 Infiltration

- 8.1 Discharge of surface water via infiltration, as shown by the British Geological map included within Appendix C, is feasible on this site.
- 8.2 The assumed soil infiltration rate, contained within Appendix G, is to be confirmed by future site investigation works.

9.0 Storage

- 9.1 The calculations included within Appendix D & E demonstrate that sufficient storage will be provided for the proposed soakaway to accept the 1 in 100 year storm with 40% climate change allowance during periods of high rainfall.
- 9.2 HDL drawing no. 22-3982-511 within Appendix F includes for a soakaway below the car park hardstanding to accept the surface water discharge from the roofs and the car park.

10.0 Run off Exceedance Design Criteria

- 10.1 The run off exceedance design criteria has been considered and hardstanding areas will be formed with falls as per the existing ground levels. Building finished floor levels will be set at sufficient height to ensure that the buildings are not at risk from run off in times of exceedance.

11.0 Maintenance Regimes

- 11.1 The inspection chambers directly upstream of the soakaway will be formed as catchpit manholes. These manholes will be inspected on an annual basis and cleaned out to remove silt by the management company who will be responsible for the maintenance of drainage elements within the overall property boundary.
- 11.6 The residential management company will be responsible for areas of the site including external areas and on-site foul and surface water drainage. Gullies will be inspected and cleaned out after heavy periods of rainfall and during the autumn fall.

12.0 Urban Creep

- 12.1 The drainage calculations, included within Appendices G & H, include for a 10% allowance for urban creep; even though the site is to be developed to its full extent as dictated by the planning authority with no scope for expansion.

13.0 Construction Phase

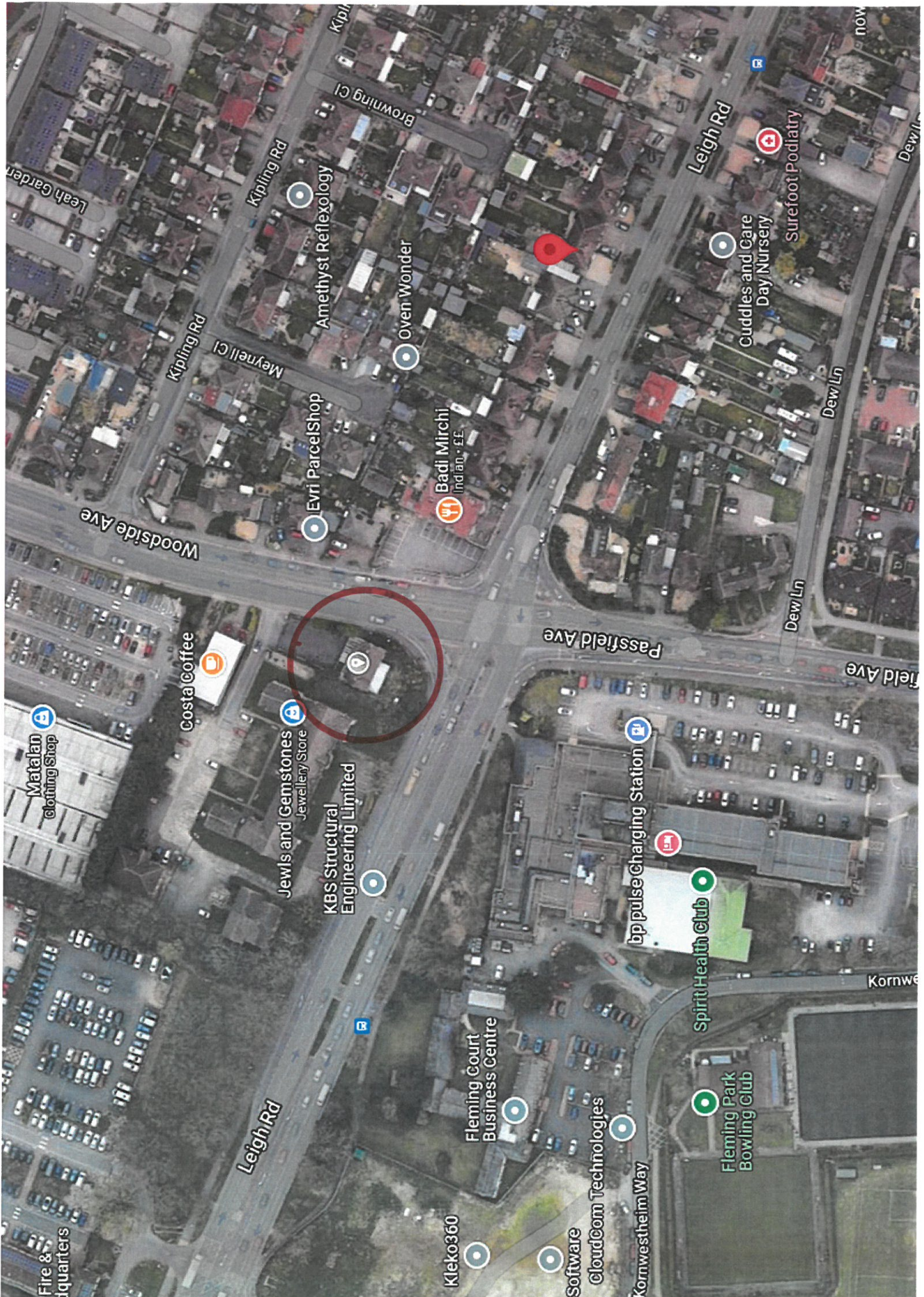
- 13.1 The soakaway is to be installed as the first phase of the development to deal with surface water run off during the construction period.

14.0 Foul Drainage

- 14.1 The existing foul drainage system discharges to the Southern Water public sewer system below Woodside Avenue and Leigh Road as shown by HDL drawing no. 22-3982-511 included within Appendix F.
- 14.2 The redevelopment proposals allow for the new properties to be connected to the public sewer system via an existing manhole, as shown by the HDL drainage layout plan no. 22-3981-511, included within Appendix F.
- 14.3 A section 106 application will be made to Southern Water for the connection of the foul drainage to the existing foul sewer in the public highway.

Appendix A

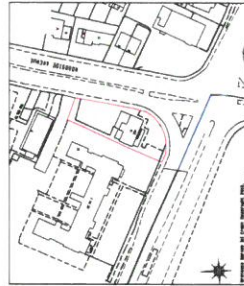
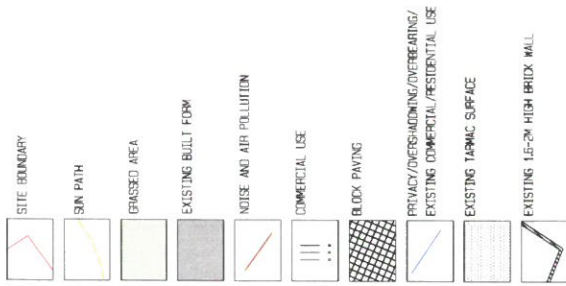
**Location Plan
Google Images**



Appendix B

Existing Site Layout Plans

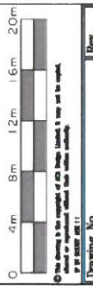




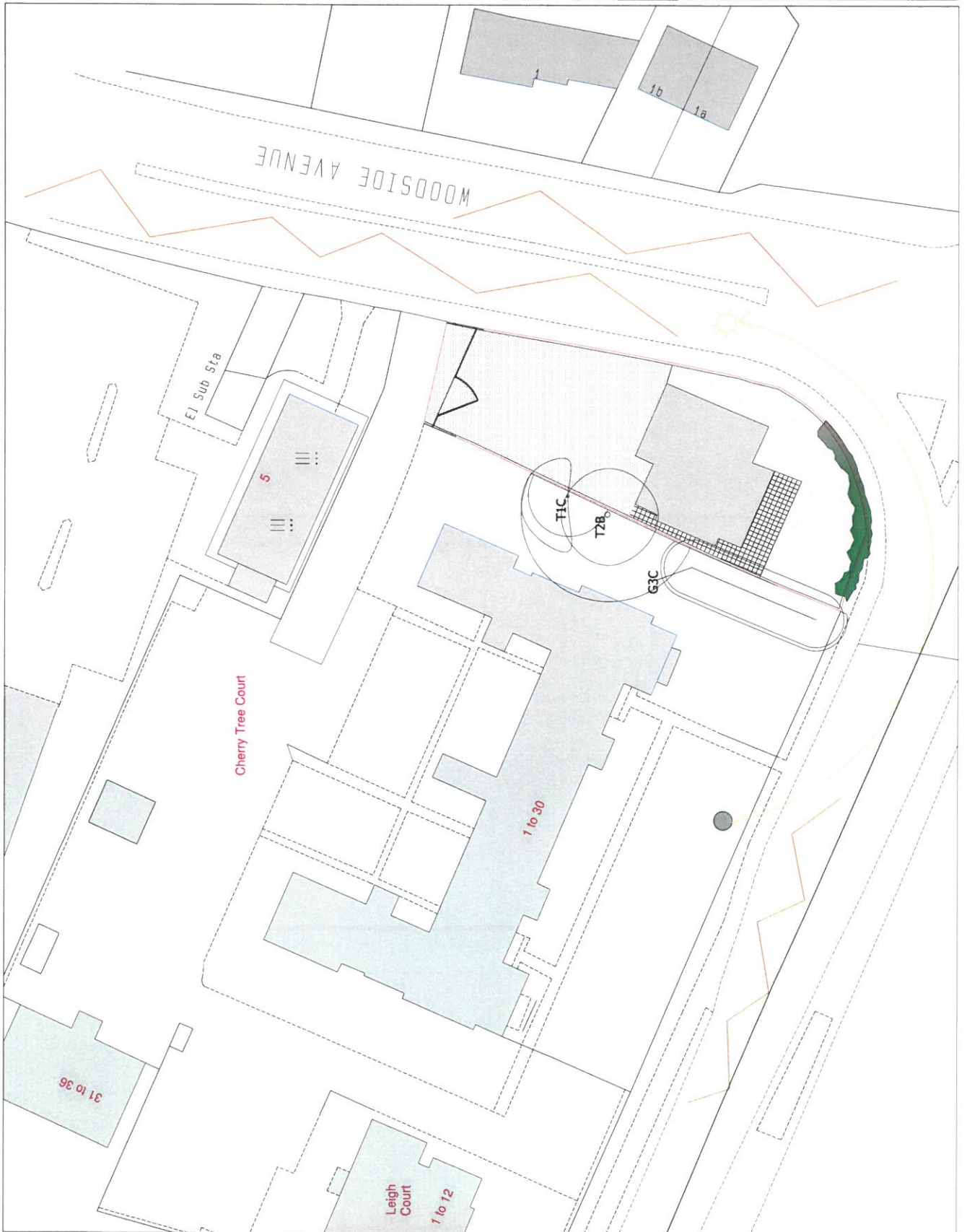
ACA ARCHITECTURAL DESIGN LTD
 9 WOODSIDE AVENUE
 EASTLEIGH
 S260 9DS
 Tel: 0781791622 or Email: acaarchitecturaldesign@gmail.com

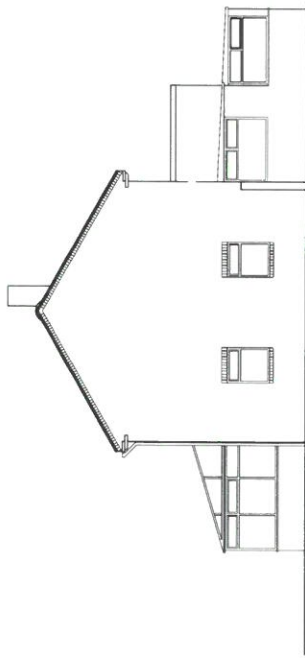
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 Project Title:
 192-194 Leigh Road,
 Eastleigh, S260 9DX

Drawing Title:
 Existing Block And Location Plans
 Scale:
 1:200 & 1:1250 On A1 Paper
 Drawn By:
 AC

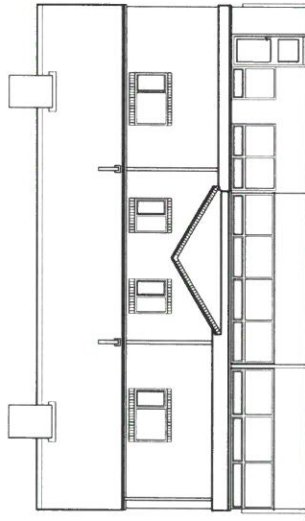


Drawing No:
 2021/01
 Date:

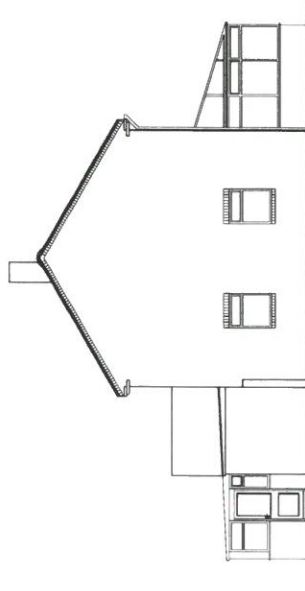




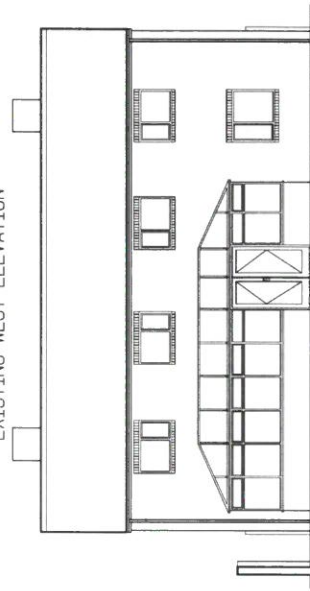
EXISTING EAST ELEVATION



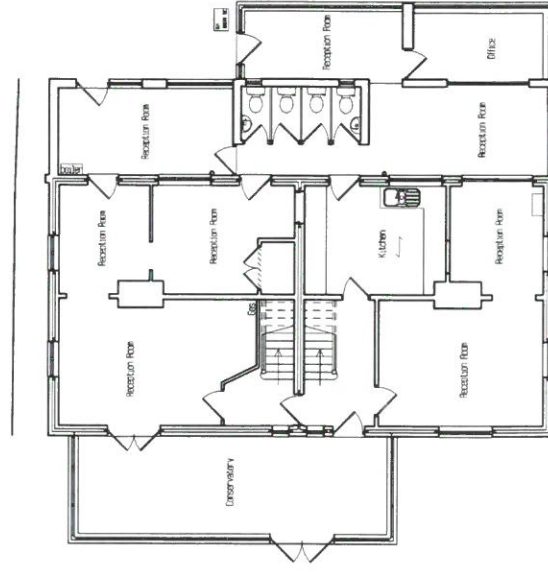
EXISTING NORTH ELEVATION



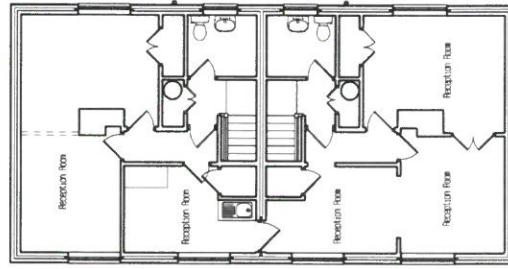
EXISTING WEST ELEVATION



EXISTING SOUTH ELEVATION



EXISTING GROUND FLOOR PLAN



EXISTING FIRST FLOOR PLAN

ACA ARCHITECTURAL DESIGN LTD 9 WOODSIDE AVENUE EASTLEIGH S050 9ES Tel: 07817616023 or Email: acadesign@gmail.com	
Client 1 Connection Holdings Ltd	
Project Title 192-194 Leigh Road, Eastleigh, S050 9DX	
	
Drawing Title EXISTING PLANS AND ELEVATIONS	
Scale 1:100 On A2 Paper	Drawn By AC
0 2m 4m 6m 8m 10m	
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Drawing No. 2021/02	Rev.

Appendix C

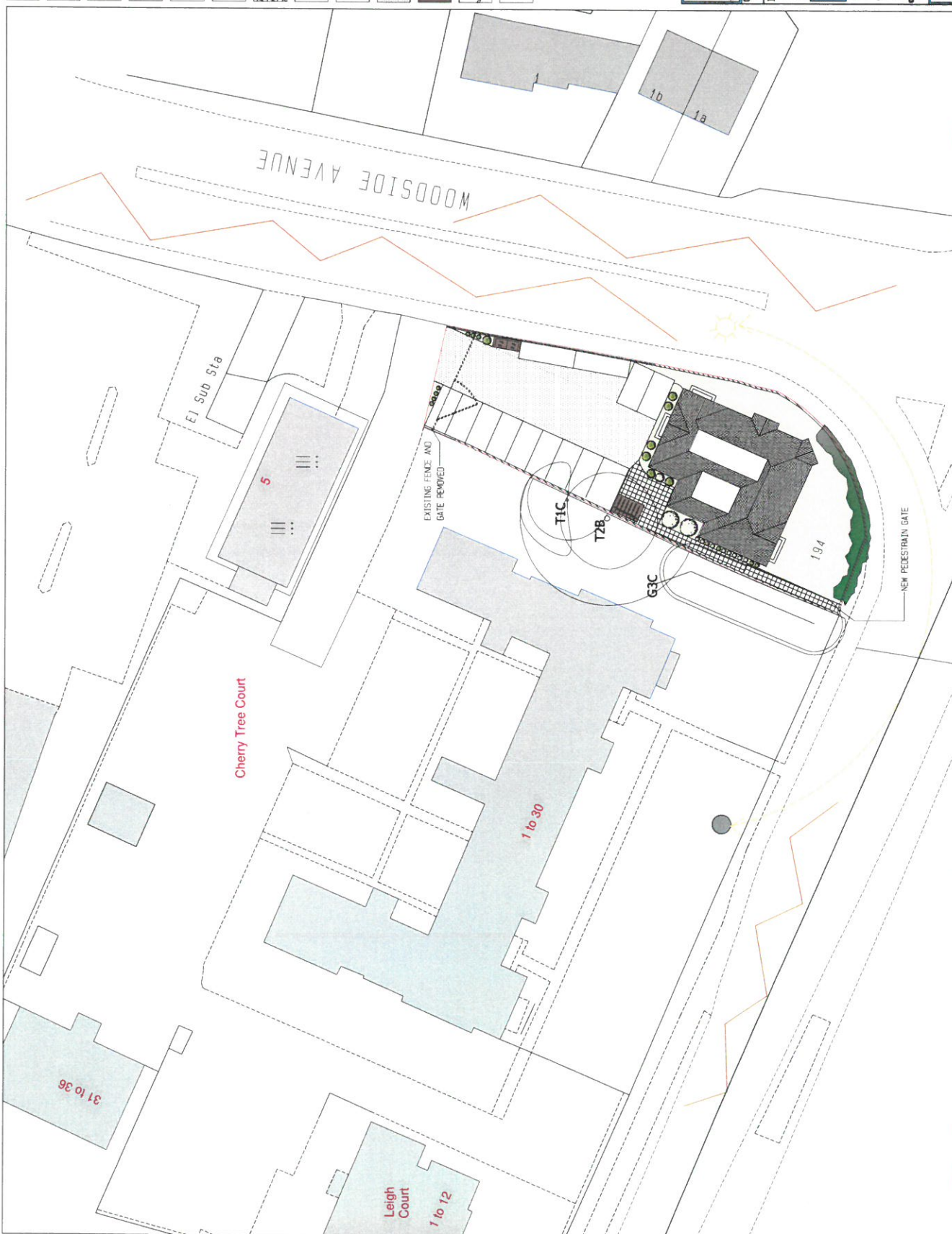
Proposed Site Layout Plans

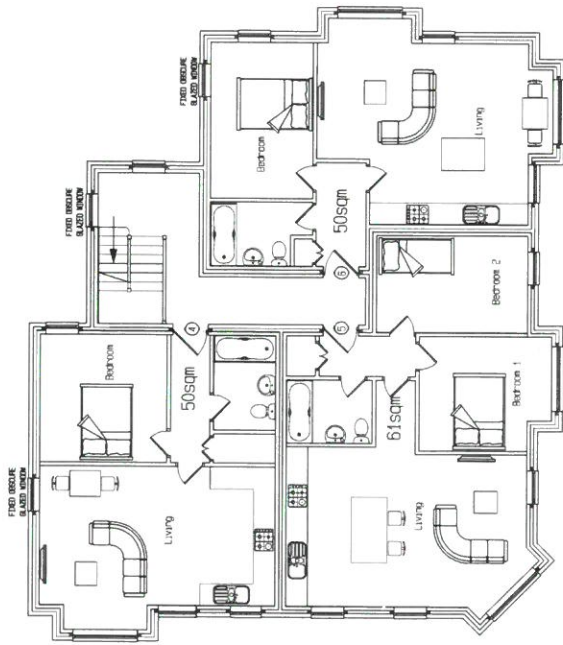
- SITE BOUNDARY
- SUN PATH
- GRASED AREA
- EXISTING BUILT FORM
- NOISE AND AIR POLLUTION
- COMMERCIAL USE
- REMOVABLE BLOCK PAVING
- PRIVACY/DIVERS-ADJACING/OVERHEARING/EXISTING COMMERCIAL/RESIDENTIAL USE
- 13 CAR PARK SPACES
- EXISTING TARMAC SURFACE
- BIN SIDE 2 X 1100 LITRE & CYCLE SIDE
- EXISTING 1.5-2M HIGH BRICK WALL
- LOW LEVEL PLANTING

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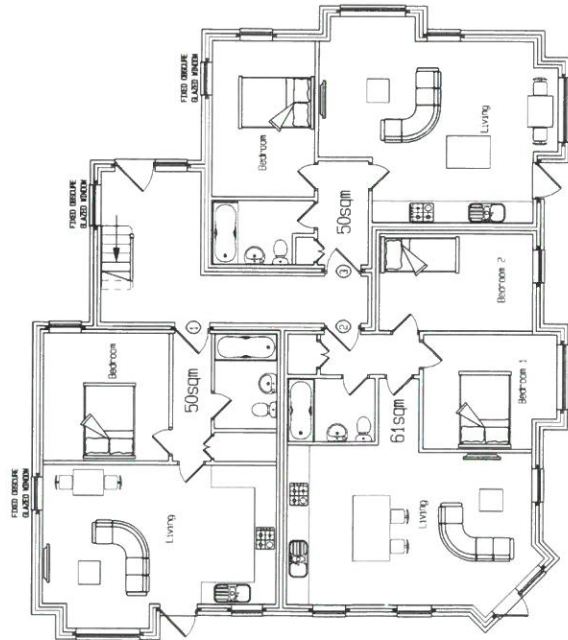
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Project Title: 192-194 Leigh Road, Eastleigh, S260 9DX
Drawing Title: Proposed Plan Site Plan
Drawn By: AC
Date: 12/03/20
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North Arrow:

Scale: 0 4m 8m 12m 16m 20m
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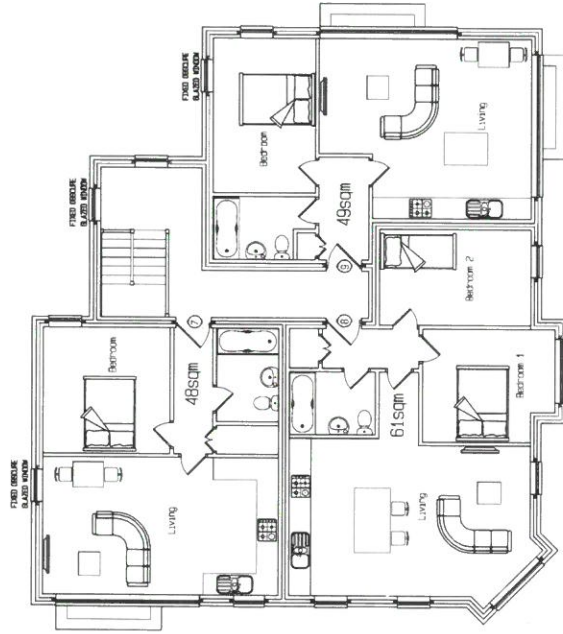




PROPOSED FIRST FLOOR PLAN



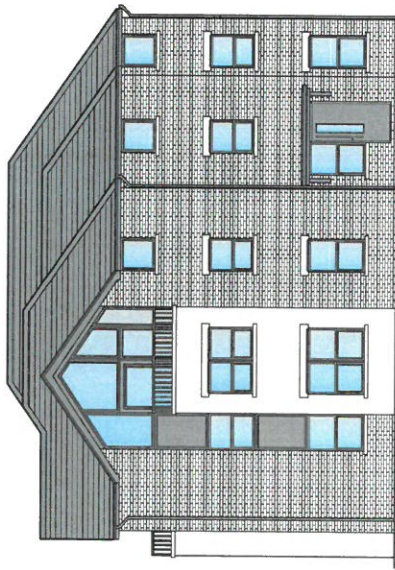
PROPOSED GROUND FLOOR PLAN



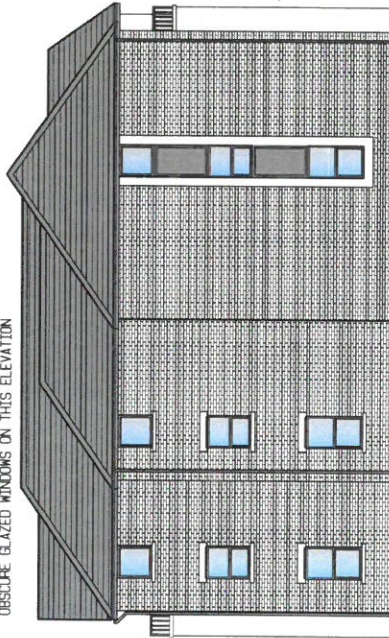
PROPOSED SECOND FLOOR PLAN

ACA ARCHITECTURAL DESIGN LTD 9 WOODSIDE AVENUE EASTLEIGH S050 9ES Tel: 07817616023 or Email: acaedesign@gmail.com		Client 1 Connection Holdings Ltd		Project Title 192-194 Leigh Road, Eastleigh, S050 9DX		Drawing Title Proposed Plans And Elevations		Drawn By AC	
Scale 1:100 On A2 Paper		0 2m 4m 6m 8m 10m		© This drawing is the copyright of ACA Design Limited. It may not be copied, altered or reproduced without their written authority. IF IN DOUBT ASK !!!		Drawing No. 2021/04		Rev.	

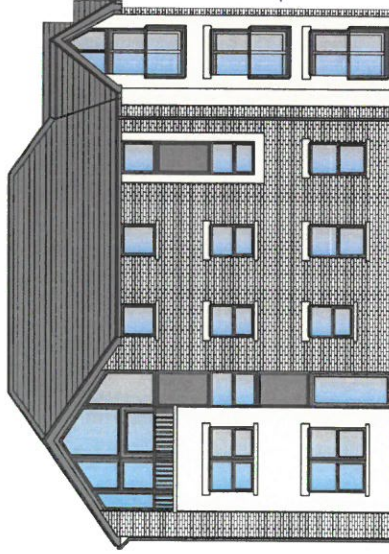
NOTE:
OBSCURE GLAZED WINDOWS ON THIS ELEVATION



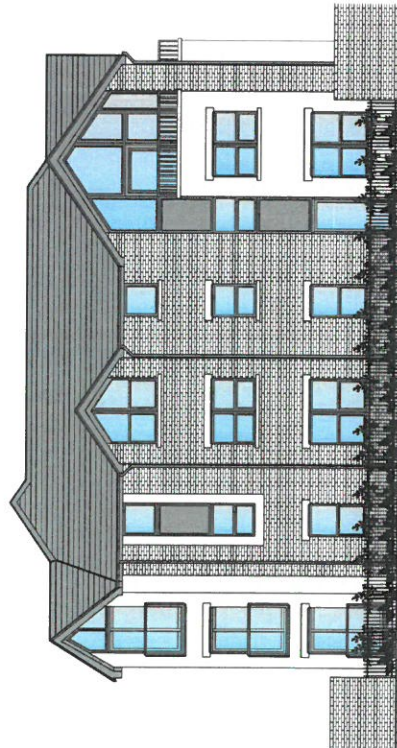
PROPOSED NORTH ELEVATION



PROPOSED WEST ELEVATION

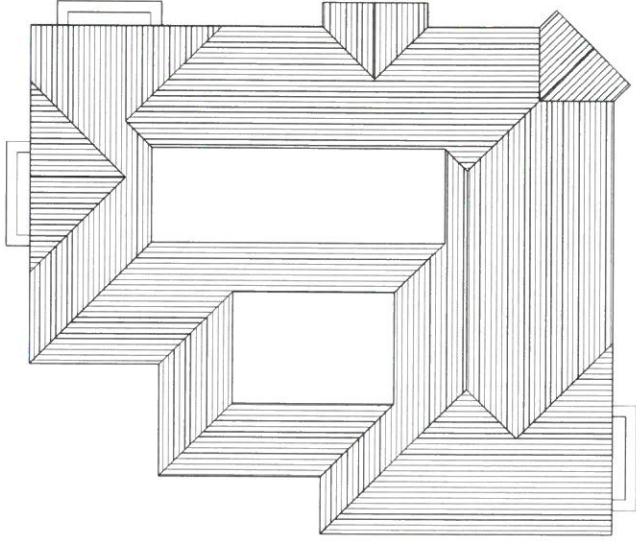


PROPOSED SOUTH ELEVATION



PROPOSED EAST ELEVATION

- WIENERBERGER HERITAGE BLEND
STOCK FACING BRICK
- ETERNIT GARGSDALE 600X300 SLATE
- ANTHRACITE GREY WINDOWS/DOORS
WITH STONE HEADERS AND CILLS



PROPOSED ROOF PLAN

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Client 1 Connection Holdings Ltd	
Project Title 192-194 Leigh Road, Eastleigh, S050 9DX	
Drawing Title Proposed Elevations & Roof Plan	
Scale 1:100 On A2 Paper	Drawn By AC
0 2m 4m 6m 8m 10m	
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Drawing No. 2021/05	Rev.

Appendix D

Geological Map Extract



Superficial deposits

More Information

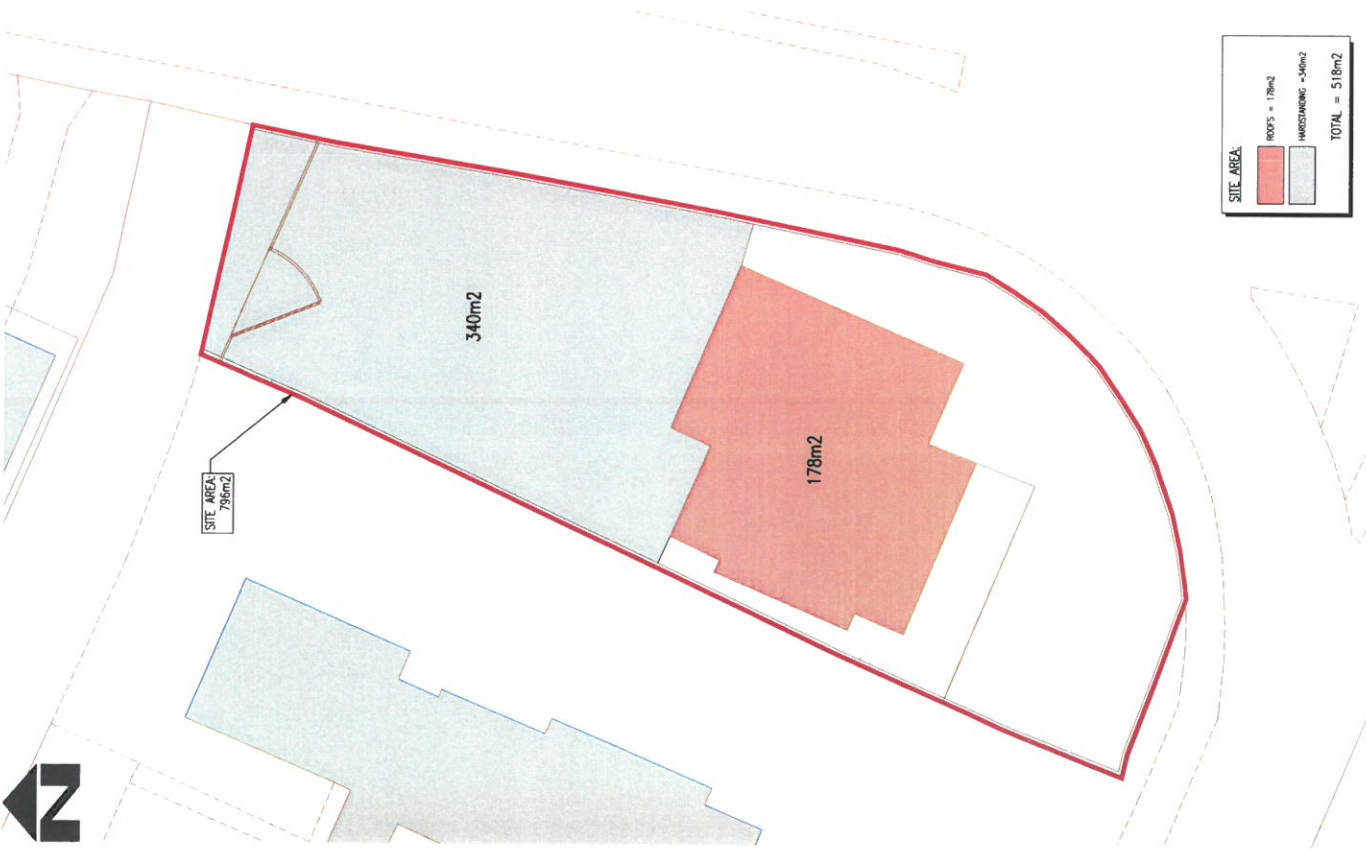
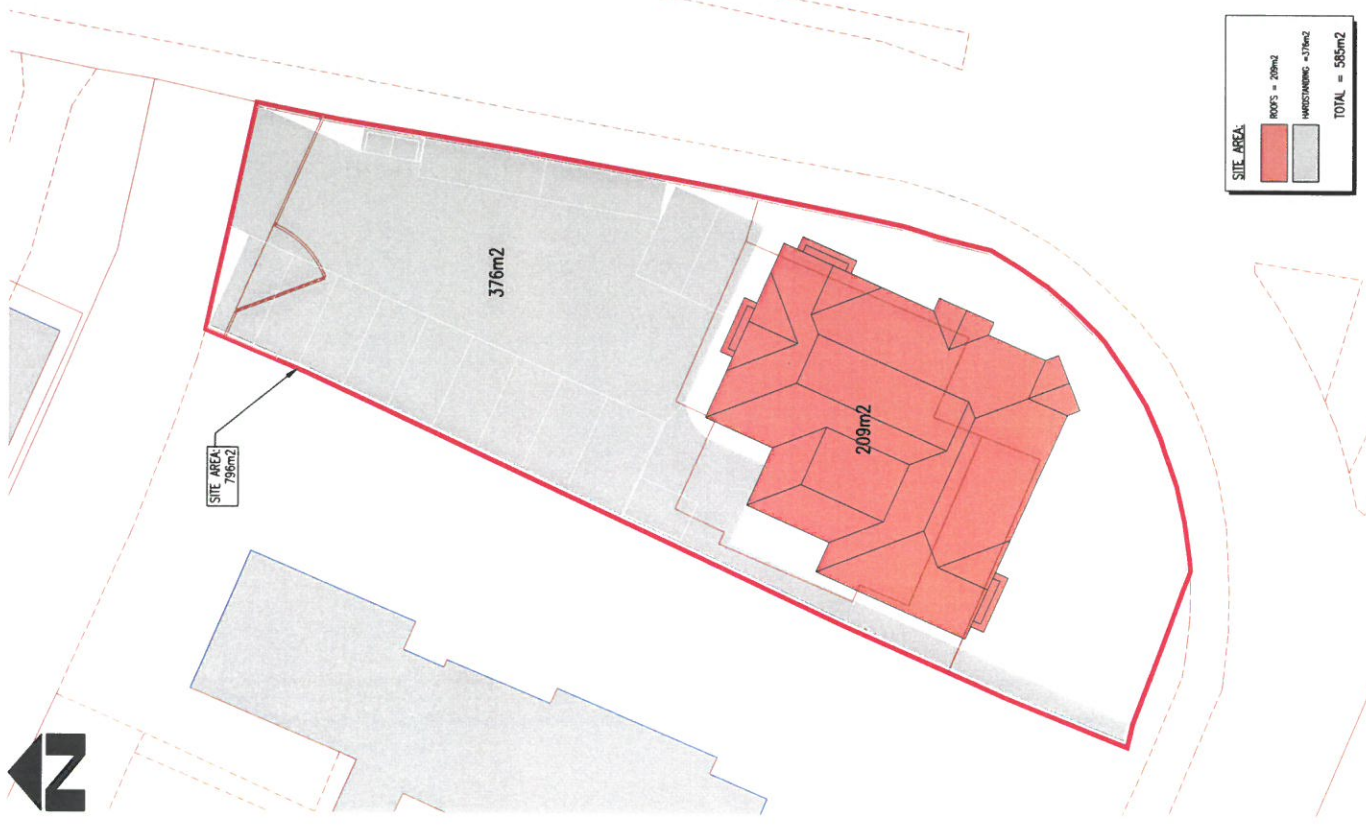
Appendix E

Pre & Post Development Areas

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3. ANY DIMENSIONS/LEVELS INDICATED "M" REFER TO ASSUMED/EXISTING DIMENSIONS WHICH ARE TO BE SITE CHECKED PRIOR TO THE COMMENCEMENT OF ANY WORK.

P1	PRELIMINARY		180/11.22	180/11.22	180/11.22
Vehicle	Insured		Reported to Police and Insured	Reported to Police and Insured	Reported to Police and Insured
ORIGINAL DRAWING SIZE - A1			3-40'S.		
CND REF.					

		HAMIL DAVIES LIMITED Consulting Civil and Structural Engineers	
Name CONNECTION HOLDINGS LIMITED		Date 11/25/91	
Address 187-194 LESGH ROAD, EASTLEIGH		District 11/25/91	
Building IMPERVIOUS AREAS		Design 11/25/91	
Project PRELIMINARY		Drawing 11/25/91	
Name Mr. J. J. J. J.		Address 11/25/91	
Phone 01469 953 596		Fax 22-3882-901	
E-mail 11/25/91		P1 11/25/91	



PRE-DEVELOPMENT IMPERMEABLE AREAS

POST-DEVELOPMENT IMPERMEABLE AREAS

Appendix F

Drainage Plans

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3. ANY DIMENSIONS/LEVELS INDICATED "M" REFER TO ASSUMED/EXISTING DIMENSIONS WHICH ARE TO BE SITE CHECKED PRIOR TO THE COMMENCEMENT OF ANY WORK.

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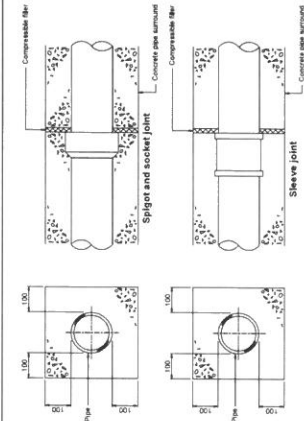
	EXISTING FOL WATER MANHOLE/DRAINAGE
	EXISTING SURFACE WATER MANHOLE/DRAINAGE
	SOIL & VENT PIPE (100mm) / INSPECTION CHAMBER
	SUMMER PIPE (100mm) / INSPECTION CHAMBER
	SOILY
	RODDING EYE (100mm)
	CATCHPIT MANHOLE

54 SOAKAWAY 9.5(L) x 4.0(W) x 1.2m(DP.) BELOW PIPE INLET. SOAKAWAY SIZE TO BE CONFIRMED ON COMPLETION OF PERCOLATION TESTING.

[illegible]

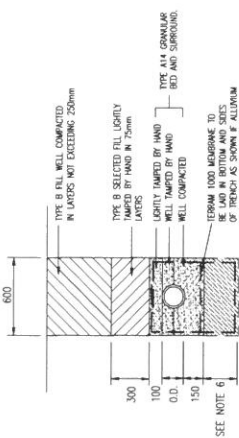
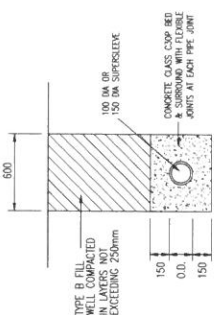
 HAMIL DAVIES LIMITED Consulting Civil and Structural Engineers		CONNECTION HOLDINGS LIMITED 192-194 LEIGH ROAD, EASTLEIGH LONDON W15 6TH		PROPOSED DRAINAGE LAYOUT		Drawn: HL Designed: HL Checked: HL Date: 1-12-81		No: 72
Title: PRELIMINARY		Scale: 1:100		Date: 22-3-82		No: 511		No: 72
Title: SEWAGE		Scale: 1:100		Date: 22-3-82		No: 511		No: 72

- NOTES:
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 3. ANY DIMENSIONS INDICATED "MIN" REFER TO ASSUMED/EXISTING DIMENSIONS WHICH ARE TO BE SITE CHECKED PRIOR TO THE COMMENCEMENT OF ANY WORK.



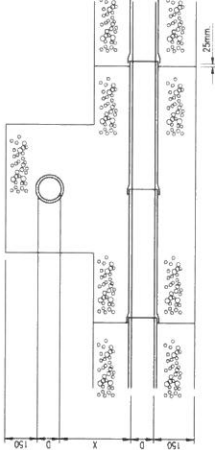
PIPE SIZE	TRENCH WIDTH
150 DIA.	800mm
225 DIA.	1000mm
300 DIA.	1200mm
375 DIA.	1400mm
450 DIA.	1500mm

PIPE TRENCH TABLE



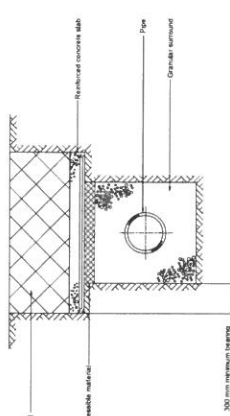
PIPE BEDDING DETAIL - TYPE 2

PIPE BEDDING DETAIL FOR CONCRETE TO PIPES
LESS THAN 300mm IN UNNOTCHED AREAS

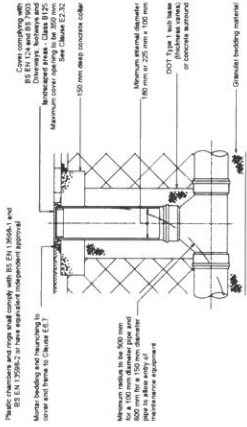


THIS DETAIL TO BE USED WHEN DIMENSION "X" BETWEEN OUTSIDE OF PIPE BARRELS IS LESS THAN 300mm OR THE DIAMETER OF THE LARGER PIPE

SECTION X-X



PROTECTION OF PIPES LAID AT SHALLOW DEPTHS.

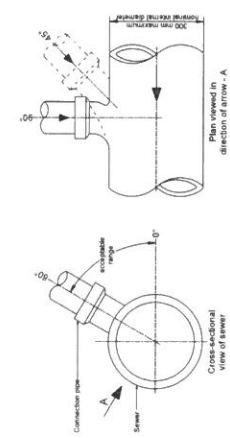


Note: Where the access chamber is in the highway the Highway Authority can have specific requirements

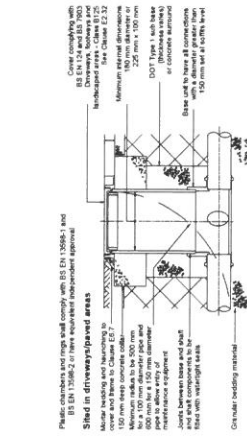
TYPICAL INSPECTION CHAMBER DETAIL
TYPE 4 (Alternative construction detail)

Maximum depth from cover level to soffit of pipe 2 m, non-entry

Not to scale



TYPICAL PIPE CONNECTIONS TO SEWER.



TYPICAL INSPECTION CHAMBER DETAIL
TYPE 4 (Flexible material detail)

Maximum depth from cover level to soffit of pipe 2 m, non-entry

Not to scale

PRELIMINARY

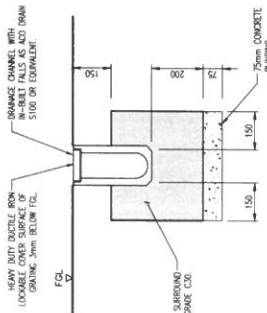
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ORIGINAL DRAWING SIZE - A1				
CAD REF				

ADL HAMIL DAVES LIMITED Consulting Civil Structural Engineers		Drawn: HDS Checked: HDS Design: HDS Project: 22-3882-551 Date: 16/11/22
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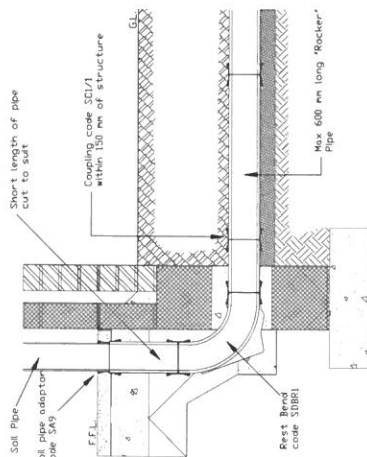
1. CONNECTION HOLDINGS LIMITED 192-194 LEIGH ROAD, EASTLEIGH Hampshire, UK Tel: 01489 833 596 Fax: 01489 833 595		Drawn: HDS Checked: HDS Design: HDS Project: 22-3882-551 Date: 16/11/22
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NOTES

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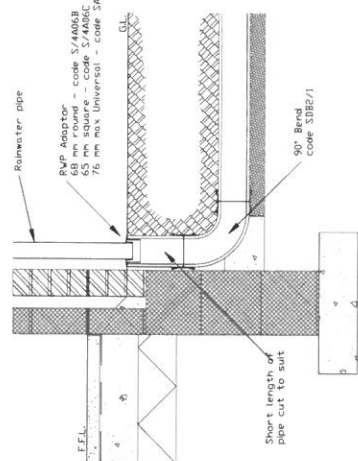


ACO DRAIN DETAIL 1.
SCALE 1:10
TYPICAL INLETS NOTED OTHERWISE.

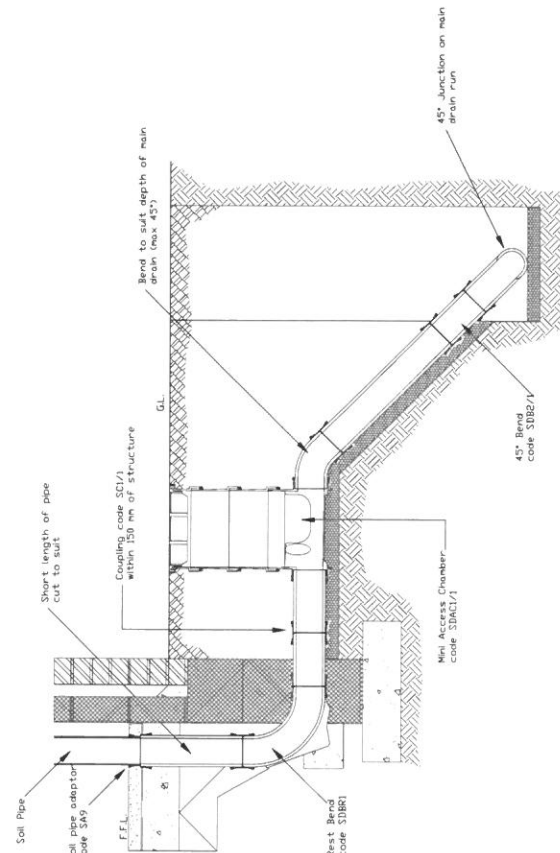


SOIL & VENT PIPE / STUB STACK / W.C. CONNECTION DETAIL.
SCALE 1:10

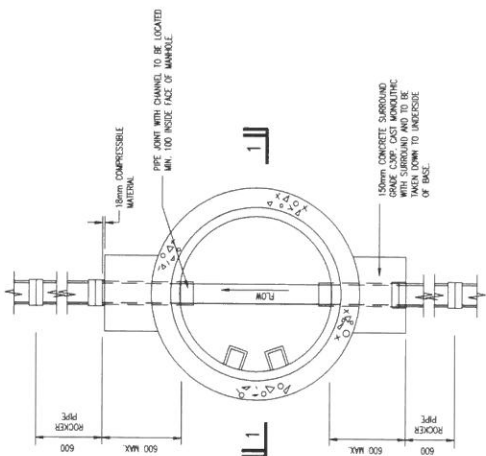
GARDEN SOAKAWAY DETAIL
SCALE 1:10



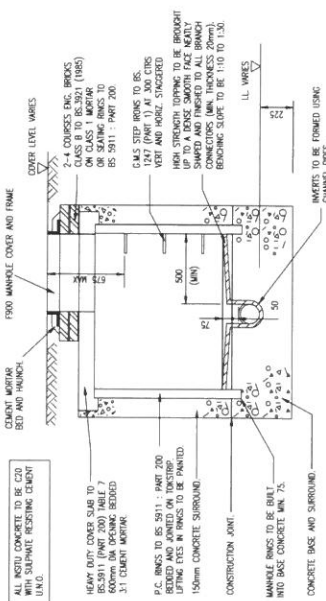
EXTERNAL RWP CONNECTION DETAIL.
SCALE 1:10



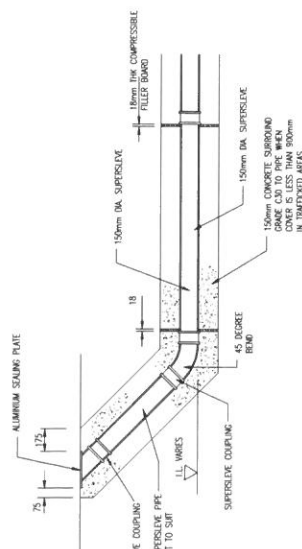
INSPECTION CHAMBER POSITIONED OFF MAIN DRAIN RUN APPLICATION DETAIL.
SCALE 1:10



PLAN ON MANHOLE TYPE B
SCALE 1:20



SECTION 1-1
SCALE 1:20



LIGHT DUTY RODDING EYE DETAIL

PRELIMINARY

Project	192-194 LEIGH ROAD, EASTLEIGH	Drawn	HL	Scale	AS SHOWN
Client	PRELIMINARY	Designed	HL	Checked	HL
Author	HL	Reviewed	HL	Approved	HL
Date	01/08/2018	Project No.	22-5982-552	Sheet No.	P1

Appendix G

Percolation Test Results

Assumed Soil Infiltration Rate

$3.0 \times 10^{-5} \text{ m/s}$

Appendix H

Soakaway Calculations

Project 192 - 194 Leigh Road, Eastleigh				Job no. 22-3982	
Calcs for SA				Start page no./Revision 1	
Calcs by B.H.	Calcs date 16/01/2023	Checked by	Checked date	Approved by	Approved date

SOAKAWAY DESIGN

In accordance with BRE Digest 365 - Soakaway design

Tedds calculation version 2.0.04

Design rainfall intensity

Location of catchment area	Other
Impermeable area drained to the system	A = 585.0 m ² ✓
Return period	Period = 100 yr ✓
Ratio 60 min to 2 day rainfall of 5 yr return period	r = 0.350
5-year return period rainfall of 60 minutes duration	M5_60min = 20.0 mm
Increase of rainfall intensity due to global warming	p _{climate} = 50 % ✓

Soakaway / infiltration trench details

Soakaway type	Rectangular
Minimum depth of pit (below incoming invert)	d = 1194 mm
Width of pit	w = 4000 mm
Length of pit	l = 9500 mm
Percentage free volume	V _{free} = 95 %
Soil infiltration rate	f = 30.0 × 10 ⁻⁶ m/s
Wetted area of pit 50% full	a _{s50} = l × d + w × d = 16117195 mm ²

Table equations

Inflow (cl.3.3.1)	I = M100 × A
Outflow (cl.3.3.2)	O = a _{s50} × f × D
Storage (cl.3.3.3)	S = I - O

Duration, D (min)	Growth factor Z1	M5 rainfalls (mm)	Growth factor Z2	100 year rainfall, M100 (mm)	Inflow (m ³)	Outflow (m ³)	Storage required (m ³)
5	0.36;	10.7;	1.92;	20.6;	12.03;	0.15;	11.88
10	0.51;	15.2;	1.99;	30.3;	17.71;	0.29;	17.42
15	0.62;	18.5;	2.02;	37.3;	21.84;	0.44;	21.40
30	0.79;	23.6;	2.02;	47.6;	27.83;	0.87;	26.96
60	1.00;	30.0;	1.97;	59.1;	34.57;	1.74;	32.83
120	1.22;	36.7;	1.92;	70.3;	41.14;	3.48;	37.66
240	1.50;	44.9;	1.85;	83.1;	48.61;	6.96;	41.65
360	1.69;	50.7;	1.81;	91.5;	53.54;	10.44;	43.10
600	1.95;	58.4;	1.75;	102.4;	59.89;	17.41;	42.48
1440	2.48;	74.4;	1.64;	122.3;	71.56;	41.78;	29.78

Required storage volume S_{req} = 43.10 m³

Soakaway storage volume S_{act} = l × d × w × V_{free} = 43.10 m³

PASS - Soakaway storage volume

Time for emptying soakaway to half volume t_{s50} = S_{req} × 0.5 / (a_{s50} × f) = 12hr 22min 50s

PASS - Soakaway discharge time less than or equal to 24 hours

Appendix I

Flood & Water Management Template

	Information required:
1	Background information on the proposed design. Including proposal; site; plans of surface water drainage and any SuDS featured in the scheme
2	Evidence that the applicant understands the sensitivity of discharge points relating to the receiving water body. Where this is main river or discharging through contaminated land the LPA may have to consult the Environment Agency (EA)
3	Evidence of and information on the existing surface water flow paths of undeveloped (greenfield) sites
4	Evidence of and information on the existing drainage network for previously developed (brownfield) sites
5	Identification of and information on areas that may have been affected by failures in the existing drainage regime
6	Evidence that the proposed drainage will follow the same pattern as the existing . This avoids directing flow to other locations.
7	Information evidencing that the correct level of water treatment exists in the system in accordance with the Ciria SuDS Manual C753
8	Where infiltration is used for drainage , evidence that a suitable number of infiltration tests have been completed. These need to be across the whole site; within different geologies and to a similar depth to the proposed infiltration devices. Tests must be completed according to the BRE 365 method or another recognised method including British Standard BS 5930: 2015
9	If not using infiltration for drainage - Existing and proposed run-off rate calculations completed according to a suitable method such as IH124 or FEH. Information is available from UK Sustainable Drainage: Guidance and Tools. Calculations must show that the proposed run off rates do not exceed the existing run-off rates. This must be shown for a one in one year event plus climate change and a one in one hundred year event plus climate change.
10	If not using infiltration for drainage - Existing and proposed run-off volume calculations completed according to a suitable method such as IH124 or FEH. Calculations must show that, where reasonably practical, runoff volume should not exceed the greenfield runoff volume for the same event. This must be shown for a 1 in 100 year, 6 hour rainfall event
11	Evidence that enough storage/attenuation has been provided without increasing the runoff rate or volume. This must be shown for a 1 in 100 year plus climate change event
12	Evidence that runoff exceeding design criteria has been considered . Calculations and exceedance flow diagram/plans must show where above ground flooding might occur and where this would pool and flow.
13	Maintenance regimes of entire surface water drainage system including individual SuDS features, including a plan illustrating the organisation responsible for each element. Evidence that those responsible/adopting bodies are in discussion with the developer. For larger/phased sites, we need to see evidence of measures taken to protect and ensure continued operation of drainage features during construction.
14	Evidence that Urban Creep has been considered in the application and that a 10% increase in impermeable area has been used in calculations to account for this.