



Civil Engineers & Transport Planners

Pound Lane Cottage,
Hurst, Reading

Drainage Strategy

January 2026

262073/DS/IR/KL/01



Civil Engineers & Transport Planners

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1 INTRODUCTION

1.1 Scope

1.1.1 Lanmor Consulting has been commissioned to prepare a Drainage Strategy for the proposed development at the site of Pound Lane Cottage, Pound Lane, Hurst, Reading. This report has been prepared in support of a planning application for development at the site.

1.1.2 This report will consider the proposed drainage regime for the site and sets out the Sustainable urban Drainage System (SuDS) strategy for the development including discharge rates and any requirements for attenuation.

1.1.3 The information within this report will be refined, modified, and updated as the detailed design is progressed. The scope of the works for this drainage strategy report is outlined below:

- Review available data in relation to on-site drainage and other drainage networks near the site.
- Review of the ground conditions for the suitability of Sustainable Drainage Systems (SuDS).
- Consider the use of SuDS as an option for disposal of surface water runoff from the proposed development.
- Undertake drainage assessments to establish attenuation requirements to deal with any increase in surface water runoff from the development.

2 SITE LOCATION AND DESCRIPTION

2.1 Location

2.1.1 The site comprises of the open grass land, currently laid out as a hard standing. The total area of the site is approximately 180m, which excludes the access road

2.1.2 Figure 2.1 below shows the location of the site.



Figure 2.1 – Site Location

2.2 Proposed Development

2.2.1 The proposed application seeks approval for replacement of the half the site with a gravel hardstanding, with the other half laid out to open grazing land and 2 timber sheds.

2.2.2 Access to the site is from Pound lane, the proposed development is shown on drawing 25-P107-01 included in Appendix A.

2.3 Regional Geology

- 2.3.1 The British Geological Survey indicates that the site sits on a sedimentary bedrock formation of London Clay Formation-Clay and silt. These sedimentary rocks are marine in origin. They are detrital and comprise coarse- to fine-grained slurries of debris from the continental shelf flowing into a deep-sea environment, forming distinctively graded beds.
- 2.3.2 No superficial deposits have been recorded overlaying the London Clay formation.

3 PROPOSED DRAINAGE STRATEGY

3.1 Existing Drainage

- 3.1.1 The site is currently open land and there are no drainage networks on site, along the eastern boundary of the site is open ditch.

3.2 Proposed Surface Water Drainage

- 3.2.1 The proposed development involves laying a gravel hardstanding over approximately 50% of the site. The remainder will be open pastureland for grazing. The pastureland will be similar to the current situation so no drainage of this area is necessary as it will mimic the existing.
- 3.2.2 The northern area of the site will be an area for open storage so will be constructed with a permeable gravel surface. The construction will allow any rainfall to soak through the gravel layer into the underlying soil as per the current situation. However, the geology of the site is London Clay so infiltration will be limited.
- 3.2.3 To estimate the potential infiltration rates a trial pit was excavated to a depth of 600mm as shown in photograph 1, after one hour the water level in the bottom of the excavation rose to 60mm, the testing was abandoned due to the high-water table. The investigations demonstrated that infiltration is not viable



Photo 1 – Excavation with Ground Water

- 3.2.4 The permeable hardstanding will be unlined so infiltration into the ground is possible but likely to be limited, therefore the paving will be designed with a discharge to the ditch to the west. The timber sheds proposed will discharge to ground and soak in the permeable construction or over ground and soakaway.
- 3.2.5 The greenfield runoff rate from the hardstanding was estimated using the IH124, however a rate of 0.0l/s was returned. It is not possible to restrict the runoff from the site to 0.0l/s, therefore the discharge from the paving will be restricted by 20mm orifice the minimum allowed under the new National Standards for Sustainable Drainage System (SuDS).
- 3.2.6 Drawing 262073/DS/01 included in Appendix B show shows the proposed drainage strategy layout. The permeable paving has been designed with a 300mm thick gravel subbase to accommodate a 1 in 100 year event plus an allowance of 40% for climate change. The Full calculations for the permeable paving are included in Appendix B.

4 SURFACE WATER / SUDS MAINTENANCE AND TREATMENT

4.1 SuDS Treatment

4.1.1 As part of the CIRIA SuDS Manual C753, Section 26 provides guidance regarding methods for managing pollution risks from surface water runoff. Part of the assessment is to determine which land use classification the proposed development falls under. Table 26.1 of the CIRIA Report C753 sets the approaches to water quality risk management. For this site the Simple Index Approach will be used.

4.1.2 Table 26.2 in C753 reproduced as Table 5.1, shows the potential hazard indices for different land uses. The development will consist of residential flats, it is concluded that the site should be classed within the sections shown in Table 4.1 below.

TABLE 26.2 Pollution hazard indices for different land use classifications				
Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways ¹	Medium	0.7	0.6	0.7
Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways ¹	High	0.8 ²	0.8 ²	0.9 ²

Table 4.1 – CIRIA SuDS Manual C753 (Land use classifications)

4.1.3 The pastureland is considered not to generate a pollution hazard but the hardstanding has a “medium” pollution hazard, generating 0.7 total suspended solids, 0.6 metals and 0.7 hydro-carbons.

4.1.4 The proposed development will incorporate permeable paving for storage and disposal of runoff from the site. Suitable measures offered by SuDS features are set out in CIRIA report.

4.1.5 Table 26.3 of C753 reproduced below as Table 4.2 sets out the mitigation indices provided by SuDS features for discharge to surface waters.

TABLE 26.3 Indicative SuDS mitigation indices for discharges to surface waters			
Type of SuDS component	Mitigation indices¹		
	TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4 ²	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond ⁴	0.7 ³	0.7	0.5
Wetland	0.8 ³	0.8	0.8
Proprietary treatment systems ^{5,6}	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

Table 4.2 – CIRIA SuDS Manual C753 (Mitigation Indices to Surface Water)

4.1.6 The permeable paving will provide mitigation of 0.7 for total suspended solids, 0.6 for metals and 0.7 for hydrocarbons. These are all greater than the pollution hazard indices identified in table 4.1 above.

4.1.7 The above assessment has demonstrated that the proposed SuDS features will provide a suitable level of treatment appropriate to the type of development proposed, and therefore is compliant with standard 4.

4.2 SuDS Maintenance

4.2.1 Regularly inspecting the surface water drainage network for blockages and clearing unwanted debris / silt from the system should improve the performance of the surface water network and decrease the need for future repairs. In the event that road gullies become blocked, high pressure water jets can be used to clear the gully and ensure they are functioning correctly, this should be undertaken by certified trained professionals.

- 4.2.2 The level and frequency of maintenance required on site to maintain the drainage system is dependent on the type of facility. The type of maintenance will fall into one of three categories “regular maintenance”, “occasional maintenance” and remedial maintenance”.
- 4.2.3 Regular maintenance of the drainage and SuDS features will include, inspections, removal of litter / debris and sweeping of the surfaces. Occasional maintenance will include removal of sediment etc. and remedial maintenance structural repairs and infiltration reconditioning.
- 4.2.4 The drainage and SuDS elements used in the development should after an initial inspection following completion be inspected monthly for first 12 months and after significant storms. Thereafter the following maintenance regime should be implemented and adjusted if the 12-month monitoring process has identified any issues.
- 4.2.5 Following completion of the development, the responsibility for the maintenance of the SuDS will fall on the management company that will be set up by the developer to manage the development upon completion of the works.
- 4.2.6 The following maintenance regime is recommended for the SuDS features in the development and should be adjusted to suit site requirements following the initial inspections if required.
- 4.2.7 For Permeable Paving Areas, the following maintenance is recommended:

Permeable Paving Maintenance Schedule		
	Required Action	Typical Frequency
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer’s recommendations – pay particular attention to areas where water runs onto pervious surfaces from adjacent impermeable areas as this area is most likely to collect the most sediment.
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate	As required- once per year on less frequently used pavements

	applied directly into the weeds by an applicator rather than spraying	
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Inspect for evidence of poor operation and/or weed growth - if required, take remedial action.	Three-monthly, 48 hours after large storms in the first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

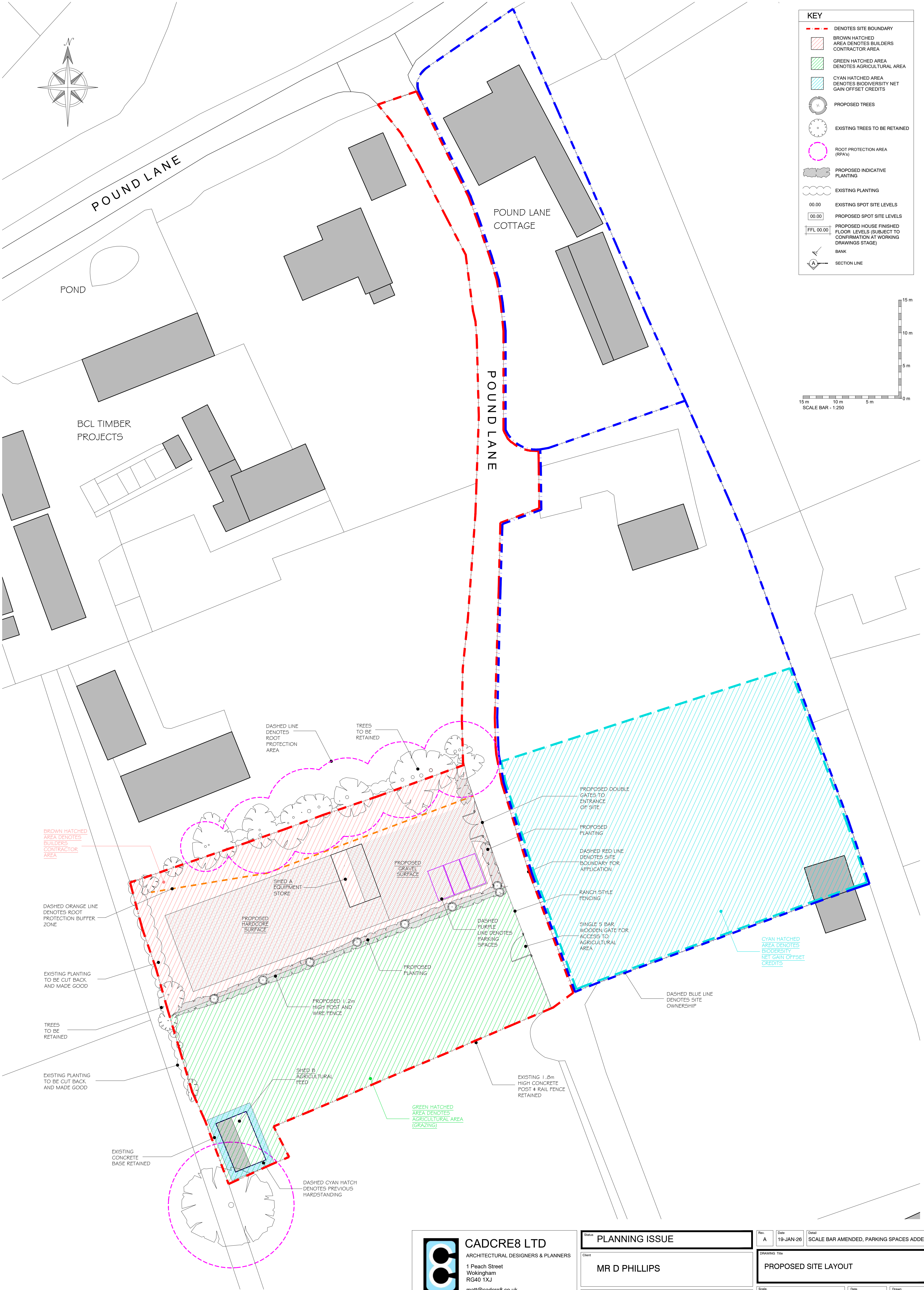
Table 4.3 – Permeable Paving Maintenance Schedule

5 SUMMARY AND CONCLUSION

- 5.1.1 This Drainage Strategy has been prepared to demonstrate how the proposed development at the site at 374 Ewell Road, Tolworth will be served in terms of the disposal of surface water drainage.
- 5.1.2 The use of SuDS has been considered as part of this strategy and where possible it has been incorporated into the design. The geology of the area consists of London Clay so infiltration has been discounted there is an adopted sewer in the adjacent road that that could serve the development.
- 5.1.3 The proposed drainage will use a combination of greenroofs and permeable paving for the disposal of surface water runoff. These have been designed to cater for all events up to and including a 1 in 100-year storm plus 40% climate change allowance.
- 5.1.4 This drainage statement has clearly demonstrated that the proposed development can be served in terms of discharge of surface water runoff from the site without increasing the risk of flooding in the area. Given the above we can see no reason to preclude development on this site on the grounds of there being insufficient capacity to deal with the runoff from the proposed development.

APPENDIX A

Drawing 25-P107-01 – Proposed Site Layout



KEY

DENOTES SITE BOUNDARY

BROWN HATCHED AREA DENOTES BUILDERS CONTRACTOR AREA

GREEN HATCHED AREA DENOTES AGRICULTURAL AREA

CYAN HATCHED AREA DENOTES BIODIVERSITY NET GAIN OFFSET CREDITS

PROPOSED TREES

EXISTING TREES TO BE RETAINED

ROOT PROTECTION AREA (RPA's)

PROPOSED INDICATIVE PLANTING

EXISTING PLANTING

00.00

EXISTING SPOT SITE LEVELS

00.00

PROPOSED SPOT SITE LEVELS

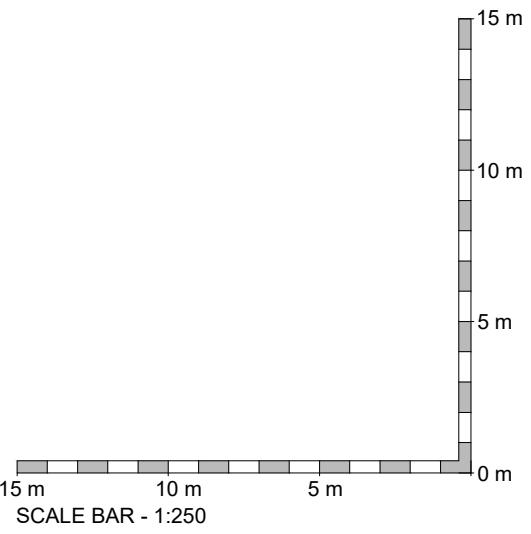
FFL 00.00

PROPOSED HOUSE FINISHED FLOOR LEVELS (SUBJECT TO CONFIRMATION AT WORKING DRAWINGS STAGE)

BANK

A

SECTION LINE



SITE LAYOUT
(1:250)

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PLANNING ISSUE

MR D PHILLIPS

POUNDLANE COTTAGE, POUND LANE, HURST, READING

Rev. A

Date 19-JAN-26

Detail SCALE BAR AMENDED, PARKING SPACES ADDED

DRAWING Title

PROPOSED SITE LAYOUT

Scale: 1:250 @ A1

Date JAN-26

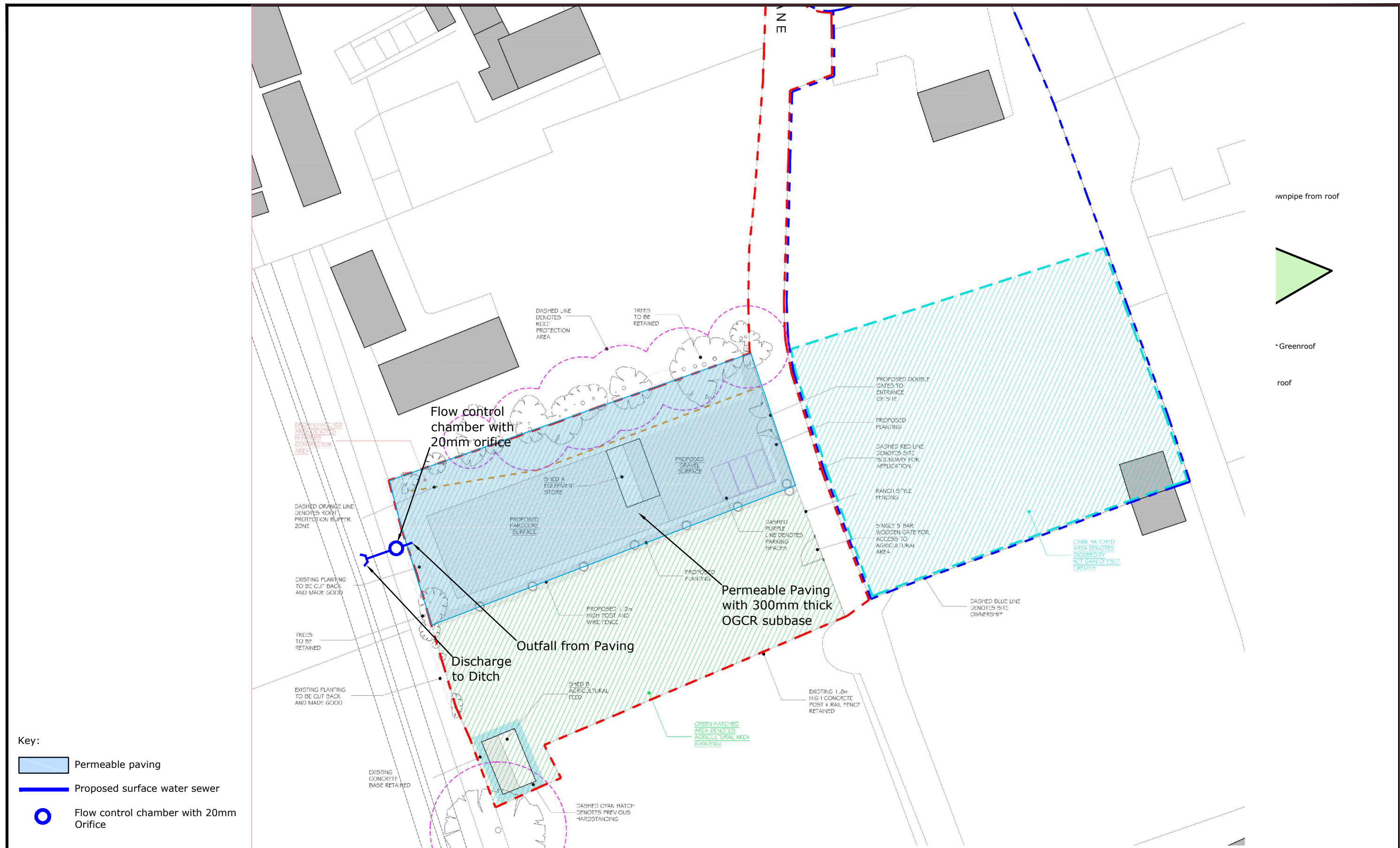
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DRAWING No. 25 - P107 - 01

Rev. A

APPENDIX B

Drawing 262073/DS/01 – Proposed Drainage Strategy



Mr D Phillips

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Drainage Strategy

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SCALE 1:500

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PRJ No. 262073

DWG No. 262073/DS/01

APPENDIX C

MicroDrainage Calculation

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S1	0.010	4.00	15.000	600	208.072	-137.078	0.300
S2			15.000	600	206.529	-137.641	0.350
S3			15.000	600	202.325	-139.107	0.400
J1			15.000		222.347	-132.406	0.270

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	S1	S2	1.643	0.600	14.700	14.650	0.050	32.9	100	4.02	50.0
1.001	S2	S3	4.452	0.600	14.650	14.600	0.050	89.0	100	4.11	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.350	10.6	1.7	0.200	0.250	0.010	0.0	27	0.986
1.001	0.815	6.4	1.7	0.250	0.300	0.010	0.0	36	0.692

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	1.643	32.9	100	Circular	15.000	14.700	0.200	15.000	14.650	0.250
1.001	4.452	89.0	100	Circular	15.000	14.650	0.250	15.000	14.600	0.300

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S1	600	Manhole	Adoptable	S2	600	Manhole	Adoptable
1.001	S2	600	Manhole	Adoptable	S3	600	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S1	208.072	-137.078	15.000	0.300	600				
						0	1.000	14.700	100
S2	206.529	-137.641	15.000	0.350	600		1	1.000	14.650
						0	1.001	14.650	100
S3	202.325	-139.107	15.000	0.400	600		1	1.001	14.600
J1	222.347	-132.406	15.000	0.270					

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.950	Drain Down Time (mins)	10080	Check Discharge Volume	x
Winter CV	0.950	Additional Storage (m³/ha)	0.0		

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
10	0	0	0
30	0	0	0
30	25	0	0
100	0	0	0
100	40	0	0

Node S2 Online Orifice Control

Flap Valve	x	Replaces Downstream Link	x	Diameter (m)	0.020
Downstream Link	1.001	Invert Level (m)	14.650	Discharge Coefficient	0.600

Node S1 Porous Paving Storage Structure

Underdrain Link Type	Circular	Base Inf Coefficient (m/hr)	0.00000
Underdrain Diameter (mm)	100	Side Inf Coefficient (m/hr)	0.00000
Underdrain Velocity	Colebrook-White	Safety Factor	2.0
Underdrain ks (mm) / n	0.600	Porosity	0.30
Underdrain Length (m)	3.000	Invert Level (m)	14.700
Underdrain Slope (1:X)	100.0	Time to half empty (mins)	
Underdrain Height above base (m)	0.000		

Inlets

J1

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	96.0	96.0	0.300	96.0	106.4

Results for 10 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute summer	S1	124	14.779	0.079	1.3	1.8228	0.0000	OK
180 minute summer	S2	124	14.779	0.129	1.1	0.0364	0.0000	FLOOD RISK
180 minute summer	S3	124	14.614	0.014	0.3	0.0000	0.0000	OK
180 minute summer	J1	124	14.779	0.049	0.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute summer	S1	1.000	S2	1.1	0.251	0.103	0.0119	
180 minute summer	S2	1.001	S3	0.3	0.404	0.044	0.0031	3.7
180 minute summer	J1	Porous Paving	S1	0.4	0.167	0.060		

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	S1	94	14.805	0.105	1.5	2.5961	0.0000	FLOOD RISK
120 minute winter	S2	94	14.805	0.155	1.1	0.0439	0.0000	FLOOD RISK
120 minute winter	S3	94	14.615	0.015	0.3	0.0000	0.0000	OK
120 minute winter	J1	98	14.805	0.075	0.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	S1	1.000	S2	1.1	0.365	0.104	0.0129	
120 minute winter	S2	1.001	S3	0.3	0.417	0.049	0.0033	4.3
120 minute winter	J1	Porous Paving	S1	-0.5	0.104	-0.082		

Results for 30 year +25% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	S1	100	14.834	0.134	1.9	3.4308	0.0000	FLOOD RISK
120 minute winter	S2	100	14.834	0.184	1.1	0.0520	0.0000	FLOOD RISK
120 minute winter	S3	100	14.616	0.016	0.3	0.0000	0.0000	OK
120 minute winter	J1	100	14.834	0.104	0.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	S1	1.000	S2	1.1	0.390	0.102	0.0129	
120 minute winter	S2	1.001	S3	0.3	0.427	0.053	0.0036	5.3
120 minute winter	J1	Porous Paving	S1	-0.7	-0.113	-0.114		

Results for 100 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	S1	98	14.837	0.137	2.9	3.5125	0.0000	FLOOD RISK
120 minute summer	S2	98	14.836	0.186	1.2	0.0528	0.0000	FLOOD RISK
120 minute summer	S3	98	14.616	0.016	0.3	0.0000	0.0000	OK
120 minute summer	J1	98	14.836	0.106	0.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute summer	S1	1.000	S2	1.2	0.404	0.109	0.0129	
120 minute summer	S2	1.001	S3	0.3	0.428	0.054	0.0036	5.5
120 minute summer	J1	Porous Paving	S1	-0.9	-0.145	-0.155		

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	S1	114	14.902	0.202	2.7	5.4154	0.0000	FLOOD RISK
120 minute winter	S2	114	14.902	0.252	1.1	0.0713	0.0000	FLOOD RISK
120 minute winter	S3	114	14.617	0.017	0.4	0.0000	0.0000	OK
120 minute winter	J1	118	14.902	0.172	0.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	S1	1.000	S2	1.1	0.446	0.106	0.0129	
120 minute winter	S2	1.001	S3	0.4	0.448	0.063	0.0040	7.7
120 minute winter	J1	Porous Paving	S1	-1.1	-0.139	-0.179		