

Job No: 2518E

18th June 2026

32 Linksway, Northwood, Middlesex, HA6 2XB
Proposed Re-Development of the above site with 1 new residential house

Surface Water Drainage

Existing situation

The existing site is a brownfield site of approximately 0.209ha.

The existing house appears to drain to the public surface water sewer in Linksway.

$A_p = 0.040$ hectares (existing site impermeable area)

Proposed (1 house development)

A_{p1} house and garage (roofs) = 0.031 ha

A_{p2} driveway = 0.023 ha

Total A_p = 0.054 ha (post development)

It has been established that there are no ditches, or watercourses in the vicinity of the site and that the sub-soil is predominantly clay and not suitable for a traditional soakaway system of drainage.

Due to the fact that the existing surface water manhole on site is too shallow to drain the new building and provide sufficient below ground attenuation, it is proposed that a deep bore soakaway will be installed and testing carried out. For the purpose of this strategy, we will assume that the borehole will be able to accept a minimum of 8 litres per second, to be confirmed by the borehole company during installation.

From the attached hydraulic modelling it can be seen that the proposed surface water network and deep bore soakaway can accommodate the 1 in 100 year storm event with an allowance for climate change, over the 1 in 10 year storm event required by Building Regulations for soakaways. (based on the preliminary rate of 8 litres per second.)

Rainwater Harvesting

A rainwater harvesting tank has been proposed at the rear of the property under the patio, providing 1500 litres of water for irrigation. This tank will be filled during rainfall from part of the roof of the house.

Maintenance Management Plan

The maintenance requirements for each proposed SuDS component is given below, based on the CIRIA report C753 "The SuDS Manual".

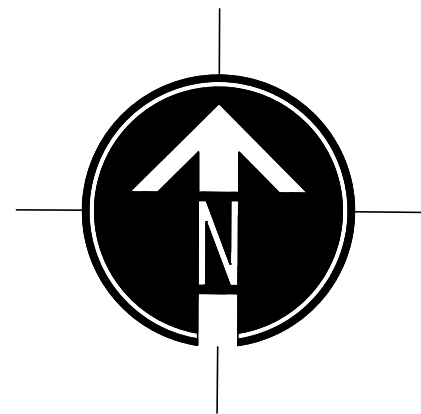
The maintenance of the drainage system will be the responsibility of the property owner.

Water Quality

The run-off from the roof is generally accepted to be clean water that does not pose any risk to groundwater. The domestic driveway will drain via aco drainage channels and silt traps, the relatively low trafficked domestic driveway is not considered to be a risk to groundwater.

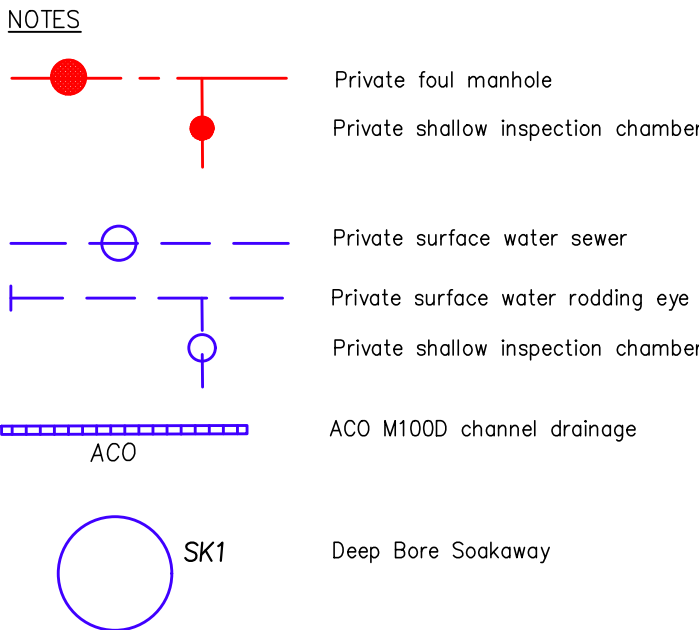
Drainage Pipes and Inspection Chambers

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove sediment and debris from inspection chambers and channel drainage in accordance with the manufacturers guidance.	Annually
	Cleaning of gutters and any filters on downpipes.	Annually
	Remove any root ingress	As required
Occasional Maintenance	CCTV Survey of drains to check for cracking, misalignment, blockage.	10 year interval



UNDERGROUND HOME RAINWATER
HARVESTING TANK.
ALL TO BE INSTALLED IN
ACCORDANCE WITH THE
MANUFACTURERS REQUIREMENTS.

NEW DEMARCATION CHAMBER. DEPTH
OF EXISTING PIPE TO BE INVESTIGATED
IN THIS LOCATION, EXISTING
CONNECTION TO THE PUBLIC SEWER TO
BE UTILISED IF POSSIBLE. OTHERWISE A
NEW JUNCTION CONNECTION TO THE
PUBLIC FOUL SEWER SHOULD BE MADE.
SUBJECT TO A SECTION 106
APPLICATION TO CONNECT.



Deep bore soakaway assumed to have an outflow rate of
8 litres per second, pending on site installation and
testing. Calculations to be amended on receipt of
results.

Private drainage to be an 'OSMA' underground drainage system,
flexibly jointed, or similar approved. All private sewer pipes are
to be 100mm dia, unless shown otherwise, and to be laid in
accordance with the manufacturers instructions. All pipes to be
obtained from an approved manufacturer.

ALL COVERS AND FRAMES WITHIN TRAFFICKED AREAS TO
BE BS EN 124 C250 HEAVY DUTY AND TO BE INSTALLED
IN ACCORDANCE WITH THE MANUFACTURERS DETAILS.

NOTE: ALL COVER LEVELS ARE APPROXIMATE

NOTE: EXISTING SEWER LOCATIONS AND INVERT LEVELS MUST
BE CONFIRMED PRIOR TO ANY ON-SITE DRAINAGE WORKS, ANY
DISCREPANCIES TO BE REPORTED IMMEDIATELY.

NOT FOR CONSTRUCTION

D.J.Barton Associates

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Client DUSEK DESIGN ASSOCIATES LTD

Job PROPOSED REDEVELOPMENT
32 LINKSWAY, NORTHWOOD
MIDDLESEX, HA6 2XB

Title DRAINAGE STRATEGY LAYOUT

Scale 1 IN 100

Date JUNE 2026

Drg. No.

2418/E/1

Rev.

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH
THE ARCHITECTS LAYOUT.
ANY DISCREPANCIES ARE TO BE REPORTED IMMEDIATELY

THIS DRAWING IS NOT TO BE USED FOR SETTING OUT OF BUILDINGS

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
SK1	0.023		62.700	1500	508506.583	190664.397	2.069	60.631
S1	0.000		62.550	450	508498.363	190662.365	1.719	60.831
S2	0.004	4.00	62.900	450	508495.440	190674.187	1.116	61.784
S3	0.002	4.00	62.900	450	508490.692	190673.191	1.036	61.864
S4	0.010	4.00	63.400	450	508475.153	190669.620	0.900	62.500
S5	0.003	4.00	62.400	450	508501.321	190650.400	1.419	60.981
S6	0.003	4.00	62.350	450	508494.706	190648.572	1.284	61.066
S7	0.009	4.00	62.000		508485.556	190646.245	0.800	61.200

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)
2.000	S7	S6	9.400	0.600	61.200	61.066	0.134	70.1	150	4.13	50.0
2.001	S6	S5	6.800	0.600	61.066	60.981	0.085	80.0	150	4.23	50.0
2.002	S5	S1	12.000	0.600	60.981	60.831	0.150	80.0	150	4.41	50.0
1.000	S4	S3	16.000	0.600	62.500	61.864	0.636	25.2	150	4.13	50.0
1.001	S3	S2	4.800	0.600	61.864	61.784	0.080	60.0	150	4.19	50.0
1.002	S2	S1	12.200	0.600	61.784	61.480	0.304	40.1	150	4.32	50.0
1.003	S1	SK1	8.000	0.600	60.831	60.631	0.200	40.0	150	4.49	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)
2.000	1.202	21.2	1.2	0.650	1.134	0.009	0.0	24	0.651
2.001	1.125	19.9	1.6	1.134	1.269	0.012	0.0	29	0.679
2.002	1.125	19.9	2.0	1.269	1.569	0.015	0.0	33	0.727
1.000	2.015	35.6	1.4	0.750	0.886	0.010	0.0	20	0.976
1.001	1.301	23.0	1.6	0.886	0.966	0.012	0.0	27	0.757
1.002	1.593	28.2	2.2	0.966	0.920	0.016	0.0	28	0.940
1.003	1.596	28.2	4.2	1.569	1.919	0.031	0.0	39	1.148

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)
2.000	9.400	70.1	150	Circular	62.000	61.200	0.650	62.350	61.066	1.134
2.001	6.800	80.0	150	Circular	62.350	61.066	1.134	62.400	60.981	1.269
2.002	12.000	80.0	150	Circular	62.400	60.981	1.269	62.550	60.831	1.569
1.000	16.000	25.2	150	Circular	63.400	62.500	0.750	62.900	61.864	0.886
1.001	4.800	60.0	150	Circular	62.900	61.864	0.886	62.900	61.784	0.966
1.002	12.200	40.1	150	Circular	62.900	61.784	0.966	62.550	61.480	0.920
1.003	8.000	40.0	150	Circular	62.550	60.831	1.569	62.700	60.631	1.919

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
2.000	S7		Junction		S6	450	Manhole	Adoptable
2.001	S6	450	Manhole	Adoptable	S5	450	Manhole	Adoptable
2.002	S5	450	Manhole	Adoptable	S1	450	Manhole	Adoptable
1.000	S4	450	Manhole	Adoptable	S3	450	Manhole	Adoptable
1.001	S3	450	Manhole	Adoptable	S2	450	Manhole	Adoptable
1.002	S2	450	Manhole	Adoptable	S1	450	Manhole	Adoptable
1.003	S1	450	Manhole	Adoptable	SK1	1500	Manhole	Adoptable

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
Rainfall Events	Singular	Skip Steady State	x
FSR Region	England and Wales	Drain Down Time (mins)	240
M5-60 (mm)	20.000	Additional Storage (m³/ha)	20.0
Ratio-R	0.400	Starting Level (m)	
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
10	0	0	0
30	0	0	0
100	0	0	0
100	40	0	0

Node SK1 Online Depth/Flow Control

Flap Valve	x	Invert Level (m)	60.631	Design Flow (l/s)	8.0
Replaces Downstream Link	✓	Design Depth (m)	2.100		
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.010	8.000	2.000	8.000	2.100	8.000

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.30%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SK1	12	60.785	0.154	10.4	0.3063	0.0000	OK
30 minute winter	S1	18	60.884	0.053	4.4	0.0085	0.0000	OK
15 minute summer	S2	10	61.819	0.035	3.1	0.0080	0.0000	OK
15 minute winter	S3	10	61.898	0.034	2.3	0.0067	0.0000	OK
15 minute summer	S4	10	62.524	0.024	1.9	0.0090	0.0000	OK
15 minute winter	S5	10	61.020	0.039	2.9	0.0078	0.0000	OK
15 minute summer	S6	10	61.102	0.036	2.3	0.0073	0.0000	OK
15 minute winter	S7	10	61.229	0.029	1.7	0.0065	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)
15 minute winter	SK1	Depth/Flow		8.0				4.6
30 minute winter	S1	1.003	SK1	4.4	1.650	0.156	0.0242	
15 minute summer	S2	1.002	S1	3.1	1.033	0.110	0.0366	
15 minute winter	S3	1.001	S2	2.3	0.765	0.100	0.0144	
15 minute summer	S4	1.000	S3	1.9	0.812	0.053	0.0378	
15 minute winter	S5	2.002	S1	2.9	0.697	0.146	0.0515	
15 minute summer	S6	2.001	S5	2.3	0.675	0.116	0.0232	
15 minute winter	S7	2.000	S6	1.7	0.615	0.080	0.0261	

Results for 10 year Critical Storm Duration. Lowest mass balance: 99.47%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SK1	13	61.145	0.514	14.9	1.0233	0.0000	OK
15 minute winter	S1	13	61.153	0.322	9.1	0.0511	0.0000	SURCHARGED
15 minute summer	S2	10	61.827	0.043	4.7	0.0099	0.0000	OK
15 minute summer	S3	10	61.906	0.042	3.5	0.0084	0.0000	OK
15 minute summer	S4	10	62.529	0.029	2.9	0.0110	0.0000	OK
15 minute winter	S5	13	61.156	0.175	4.4	0.0352	0.0000	SURCHARGED
15 minute winter	S6	13	61.155	0.089	3.5	0.0184	0.0000	OK
15 minute summer	S7	10	61.235	0.035	2.6	0.0080	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)
15 minute winter	SK1	Depth/Flow		8.0				6.6
15 minute winter	S1	1.003	SK1	8.4	1.637	0.297	0.1408	
15 minute summer	S2	1.002	S1	4.7	1.159	0.167	0.0495	
15 minute summer	S3	1.001	S2	3.5	0.851	0.152	0.0197	
15 minute summer	S4	1.000	S3	2.9	0.907	0.081	0.0516	
15 minute winter	S5	2.002	S1	4.4	0.762	0.221	0.2113	
15 minute winter	S6	2.001	S5	3.5	0.758	0.176	0.0970	
15 minute summer	S7	2.000	S6	2.6	0.689	0.122	0.0356	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.69%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SK1	13	61.369	0.738	15.6	1.4671	0.0000	OK
15 minute winter	S1	13	61.377	0.546	10.7	0.0869	0.0000	SURCHARGED
15 minute summer	S2	10	61.833	0.049	5.9	0.0112	0.0000	OK
15 minute summer	S3	10	61.912	0.048	4.4	0.0095	0.0000	OK
15 minute summer	S4	10	62.533	0.033	3.7	0.0125	0.0000	OK
15 minute winter	S5	13	61.381	0.400	5.3	0.0805	0.0000	SURCHARGED
15 minute winter	S6	13	61.381	0.315	4.9	0.0648	0.0000	SURCHARGED
15 minute winter	S7	13	61.384	0.184	3.3	0.0413	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SK1	Depth/Flow		8.0				8.7
15 minute winter	S1	1.003	SK1	8.2	1.591	0.293	0.1408	
15 minute summer	S2	1.002	S1	5.9	1.231	0.210	0.0585	
15 minute summer	S3	1.001	S2	4.4	0.899	0.191	0.0235	
15 minute summer	S4	1.000	S3	3.7	0.971	0.104	0.0615	
15 minute winter	S5	2.002	S1	5.2	0.763	0.262	0.2113	
15 minute winter	S6	2.001	S5	4.2	0.796	0.212	0.1197	
15 minute winter	S7	2.000	S6	3.3	0.733	0.155	0.1655	

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.80%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SK1	14	61.708	1.077	15.6	2.1419	0.0000	OK
15 minute winter	S1	14	61.715	0.884	11.4	0.1406	0.0000	SURCHARGED
15 minute summer	S2	10	61.839	0.055	7.5	0.0128	0.0000	OK
15 minute winter	S3	10	61.919	0.055	5.6	0.0109	0.0000	OK
15 minute summer	S4	10	62.537	0.037	4.7	0.0140	0.0000	OK
15 minute winter	S5	14	61.718	0.737	6.4	0.1482	0.0000	SURCHARGED
15 minute winter	S6	14	61.718	0.652	8.3	0.1344	0.0000	SURCHARGED
15 minute winter	S7	14	61.720	0.520	4.3	0.1169	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SK1	Depth/Flow		8.0				10.9
15 minute winter	S1	1.003	SK1	7.8	1.611	0.277	0.1408	
15 minute summer	S2	1.002	S1	7.5	1.312	0.266	0.0942	
15 minute winter	S3	1.001	S2	5.6	0.952	0.244	0.0282	
15 minute summer	S4	1.000	S3	4.7	1.028	0.132	0.0738	
15 minute winter	S5	2.002	S1	5.6	0.748	0.281	0.2113	
15 minute winter	S6	2.001	S5	4.5	0.803	0.226	0.1197	
15 minute winter	S7	2.000	S6	4.2	0.747	0.199	0.1655	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.70%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	SK1	24	62.236	1.605	15.4	3.1923	0.0000	OK
30 minute winter	S1	24	62.243	1.412	9.2	0.2245	0.0000	SURCHARGED
30 minute winter	S2	25	62.246	0.462	8.0	0.1067	0.0000	SURCHARGED
30 minute winter	S3	25	62.247	0.383	6.0	0.0758	0.0000	SURCHARGED
15 minute summer	S4	10	62.544	0.044	6.6	0.0167	0.0000	OK
30 minute winter	S5	24	62.246	1.265	6.1	0.2542	0.0000	FLOOD RISK
30 minute winter	S6	24	62.247	1.181	4.7	0.2433	0.0000	FLOOD RISK
15 minute summer	S7	13	62.000	0.800	6.0	0.1898	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute winter	SK1	Depth/Flow		8.0				20.6
30 minute winter	S1	1.003	SK1	7.0	1.639	0.250	0.1408	
30 minute winter	S2	1.002	S1	8.0	1.313	0.283	0.2148	
30 minute winter	S3	1.001	S2	6.0	0.998	0.260	0.0845	
15 minute summer	S4	1.000	S3	6.6	1.110	0.185	0.1566	
30 minute winter	S5	2.002	S1	4.6	0.738	0.229	0.2113	
30 minute winter	S6	2.001	S5	4.9	0.755	0.245	0.1197	
15 minute summer	S7	2.000	S6	4.7	0.799	0.219	0.1655	

