

BYFIELDS,
NYTON ROAD
WESTERGATE
CHICHESTER
WEST SUSSEX
PO20 3UQ

FLOOD RISK ASSESSMENT/DRAINAGE STATEMENT.

FEBRUARY 2021

REVISION A

Prepared By	Date	Revision
Louis Weller	03/03/2021	A

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1. Introduction

LRW Civil Designs Ltd have been appointed by Elizabeth Halton to provide a Flood Risk Assessment for the construction of a new residential dwelling located on Nyton Road, Westergate, West Sussex herein referred to as 'The development site'.

This Flood Risk Assessment (FRA) is to be submitted as part of the planning application for the development of the site.

This Flood Risk Assessment has been prepared in accordance with Communities & Local Government, National Planning Policy Framework (NPPF), Planning Practice Guidance (PPG).

2. Site Description

2.1 Site location and surrounding area

The development site is located on Nyton Road, which is situated close to the village of Westergate in West Sussex. The development site is in a rural setting. Grid reference SU 93713 05604. See figures 2.1.1 to 2.1.3.

The existing site in total is approximate 1690 m² (0.169Ha). However, a parcel of the land will be developed on giving an approximate development site of 700m² (0.070Ha) in size. The development site in it existing state consists of soft landscaping and is deemed a greenfield site.

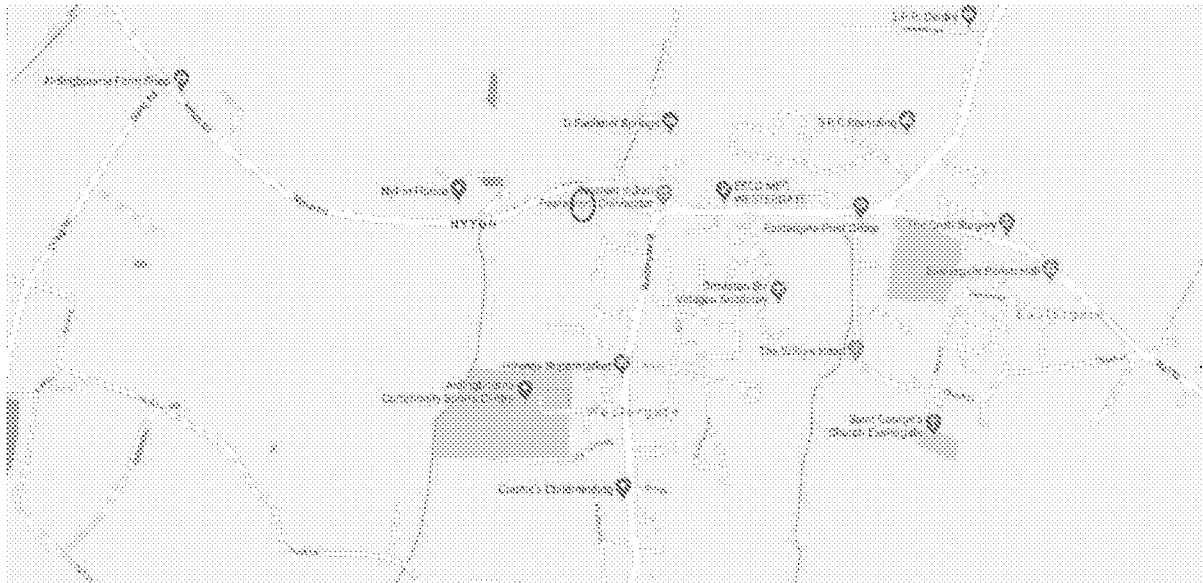


FIGURE 2.1.1 SITE LOCATION

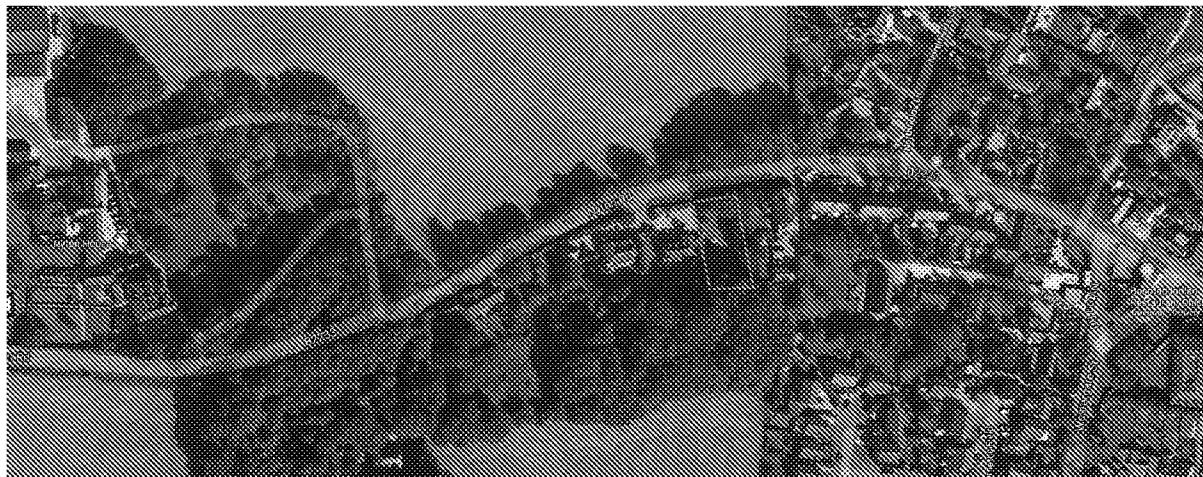


FIGURE 2.1.2 SITE LOCATION



FIGURE 2.1.3 SITE BOUNDARY

2.2 Geology

British Geological Survey maps indicate that the substrata beneath the site is London Clay Formation.

A full Site Investigation has not been carried out. Historical borehole data is available on the BGS mapping website. The borehole closest to the site 600m to the south west ref no. SU90NW71 indicates clay, silt and chalk will be found to a depth of 3m. At a depth below 3m the borehole indicates there is evidence of gravels, flint and chalk. Given the varied ground conditions soakage tests have recently been undertaken where results can be found in Appendix C.

Groundwater was not encountered during the investigations carried out in February 2021. For the site's surface water drainage strategy soakaways are proposed. Any SUDS features will be located 1m above the ground water level.

The BGS mapping confirms there are superficial deposits recorded at the site. River Terrace Deposits (undifferentiated) - Sand, Silt And Clay. Superficial Deposits formed up to 3 million years ago in the Quaternary Period. Local environment previously dominated by rivers.

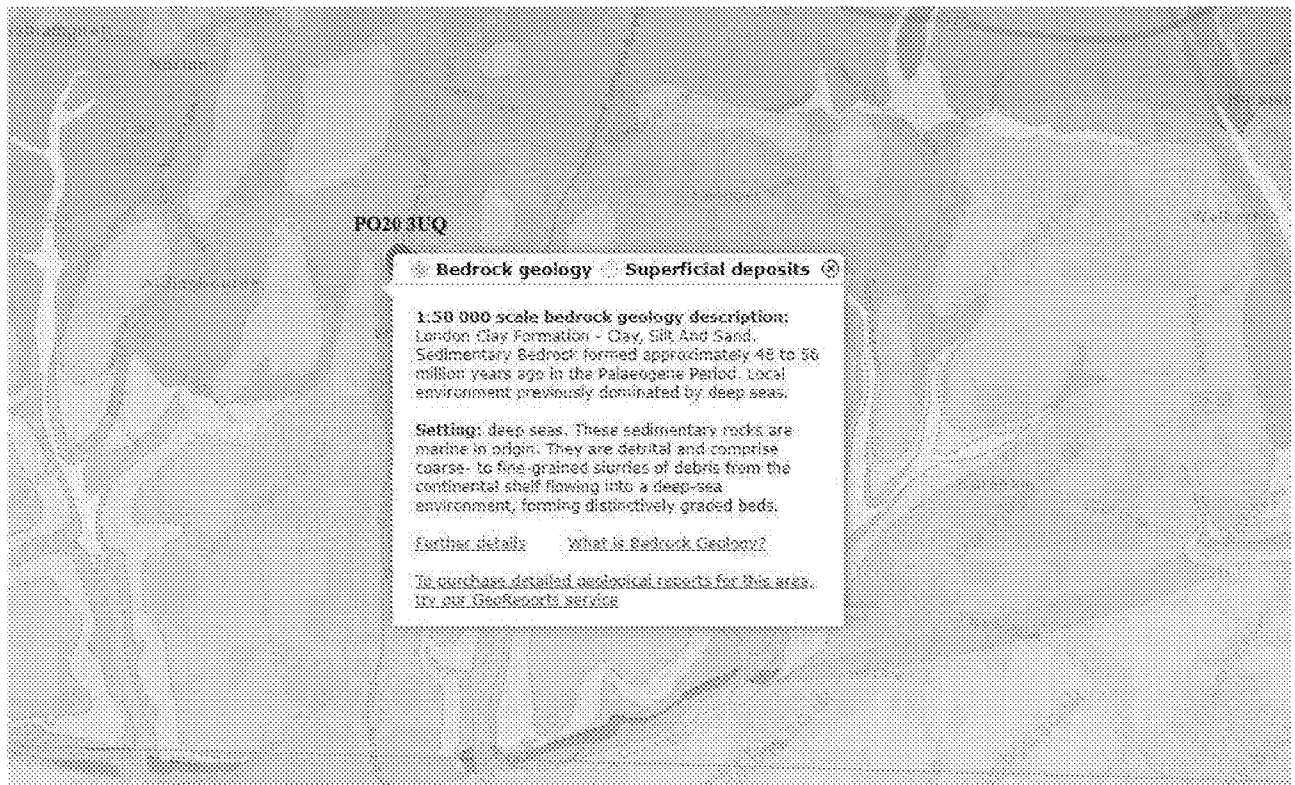


FIGURE 2.2.1 British Geological Survey Map

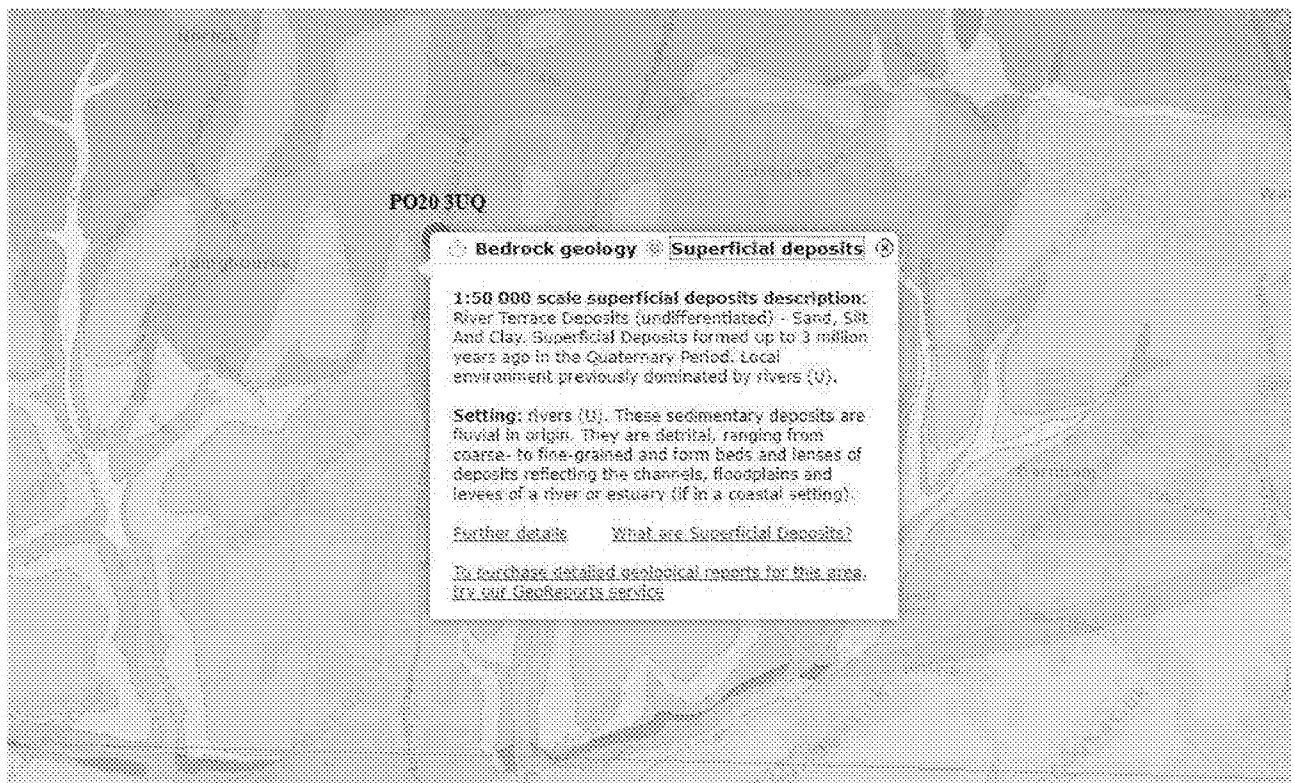


FIGURE 2.2.2 British Geological Survey Map

2.3 Site Topography

The Development site falls gently from north to south at an approximate gradient of 1:120.

Refer to Appendix A for a topographical survey of the site.

3. Potential Sources of Flooding

3.1 Requirement for an FRA

3.1.1 The NPPF Section 103 footnote 20 requires that a site-specific Flood Risk Assessment (FRA) is prepared for *'proposals of 1 hectare or greater in Flood Zone 1.....or in an area within Flood Zone 1 which has critical drainage problems....and may be subject to other sources of flooding.'* This is also confirmed within the 'Flood Risk and Coastal Change' section of the PPG.

3.1.2 The site is less than 1ha in area, and therefore a site-specific FRA is not required unless the site is shown to be located within a *'Critical Drainage Area'* (CDA) or is subject to other sources of flooding.

3.1.3 To establish the above, a review of the West Sussex County Council Strategic Flood Risk Assessment (SFRA) report and has been undertaken to obtain information on any historic flooding records and critical drainage problems in relation to the site and the vicinity.

3.2 Environment Agency Information

Fluvial Flooding (Rivers and Sea)

3.2.1 The EA produces flood maps for the UK, which show the areas at risk of fluvial and tidal flooding.

The Flood Zones are defined in Table 1 of the NPPF PPG ('Flood Risk and Coastal Change' section) as follows:

- Flood Zone 1 'Low Probability' – Land with less than a 1 in 1000 (<0.1%) annual probability of river or sea flooding.
- Flood Zone 2 'Medium Probability' – Land with between a 1 in 100 (1.0%) and 1 in 1000 (0.1%) annual probability of river flooding, or between a 1 in 200 (0.5%) and 1 in 1000 (0.1%) annual probability of sea flooding;
- Flood Zone 3 'High Probability' – Land with greater than a 1 in 100 (>1.0%) annual

probability of flooding from river flooding, or greater than a 1 in 200 (>0.5%) annual probability of flooding from the sea.

3.2.2 Figure 3.2.1 shows that the site is located within Flood Zone 1 'Low Probability' and is not affected by flooding from rivers or the sea. The nearest watercourse is unnamed and passes the site to the north of Nyton Road.



Figure 3.2.1 Environment Agency; Flood risk from rivers or the sea

Pluvial Flooding (Flood Risk from Surface Water)

3.2.3 The mapping assesses flooding resulting from severe rainfall events based on the following three scenarios:

- 1 in 30 (3.3%) annual probability rainfall event ('High' risk);
- 1 in 100 (1.0%) annual probability rainfall event ('Medium' risk);
- 1 in 1000 (0.1%) annual probability rainfall event ('Low' risk).

3.2.4 Land with a lower than a 1 in 1000 (<0.1%) annual probability of surface water flooding is at 'Very low' risk.

3.2.5 Figure 3.2.2 indicates that the site has a 'Low' risk of surface water flooding. Therefore (1.0%) annual probability rainfall event and is not affected by flooding from surface water.



Figure 3.2.2 Environment Agency; Flood risk from surface water

3.2.6 It should be noted that the surface water maps are generated using a generic methodology on a national scale, whereby rainfall is routed over a ground surface model. The analysis does not take account of any specific local information on below-ground drainage infrastructure and infiltration, although an adjustment is included in urban areas to account for the impact of sewerage and a standard infiltration allowance based on soil type.

Tidal

3.2.7 The site is located 12km north of the English Channel and is therefore not at any risk of tidal flooding.

3.3 Groundwater

The risk of groundwater flooding is typically highly variable and heavily dependent upon local conditions at any particular time.

The site is located within a low groundwater vulnerability Zone. During site investigations in February 2021 no groundwater was recorded to a depth of 1.6m below ground level.

3.4 Reservoirs/Canals and other artificial sources

There are no Reservoirs, Canals or Artificial sources surrounding the site and therefore the site is not at risk of flooding from these sources.

4. Existing Drainage

4.1.1 An existing Public foul sewer runs through the southern part of the site travelling from west to east at a depth of approximately 2.2m. Southern Water manhole ref no.7501. A pre development enquiry will need to be submitted to the water authority to confirm what impact the development of the new facility may have on the public sewer with regards to capacity. The existing house has a direct connection into the public foul sewer. Refer to Appendix ? drainage strategy plan.

In a normal event, a 3m easement is usually put in place to safeguard the public sewer from any future development, therefore depending on its location in relation to the new building, a Section 185 sewer diversion agreement may be required during the design phase of the project.

4.1.2 Private surface water drainage is located at the development site picking up surface water run-off from the existing dwelling. It is believed these properties are draining to ground via soakaways due to there being no public sewers or watercourses within the vicinity of the site.

5. Strategic Flood Risk Assessment

A Strategic Flood Risk Assessment (SFRA) was carried out in January 2010, the SFRA was produced for West Sussex County Council.

The purpose of the SFRA was to assess and map flood risk from groundwater, surface water, sewer and river sources taking into account climate change predictions.

The SFRA highlights that the county has had significant flooding in the past. However, the development site area is located in Flood Zone 1 as described in the SFRA and is therefore deemed to be low risk from groundwater and fluvial flooding.

6. Development Proposals

It is proposed to construct a new residential dwelling on an existing plot. The new build will be located next to the existing dwelling therefore it is not proposed to carry out any demolition works. The proposals indicate there will be an increase in hardstanding area following construction due to the existing site being soft landscaping serving the existing property.

The SuDS manual and Building Regulations set out a hierarchy of drainage methods to ensure that developments maximise the use of sustainable drainage technique. The Hierarchy favours infiltration methods of disposal over other methods such as watercourse and sewers, as detailed below;

- Utilise infiltration techniques.
- Attenuate rainwater in ponds or open water features for gradual release
- Attenuate rainwater by storing in tanks or sealed water features for gradual release.
- Discharge rainwater direct to a watercourse
- Discharge rainwater to a surface water sewer/drain
- Discharge rainwater to a combined sewer

BRE 365 soakage testing was carried out in February 2021. From the 3no. tests carried out the infiltration rates are as follows; 8.32-5m/sec , 9.09-5m/sec and 5.71-5m/sec were recorded. For the purpose of this report and drainage strategy an infiltration rate of 5.71-5m/sec will be used.

The proposed strategy will be to discharge the surface water to ground via a crate soakaway system. The crates will be sited 5m from and structure and a minimum 3m from the known public foul sewer.

Foul drainage from the development will be directed via gravity into the existing private foul manhole located to the rear of the property as shown in Appendix D.

7. Flood Risk Management Measures

7.1 Finished Floor Levels

The footprint of the new building will be located outside of the flood zone. The finished floor level should be designed to a suitable level (approximately 99.950mAOD) so as not to be at risk of surface water flooding. The stated finish floor level is consistent with the existing residential dwelling which

is to remain at the site.

7.2 Flood Resilient Construction

The new building is sited in Flood Zone 1. However, to mitigate against the potential flood risk to the building, flood resilient construction needs to be incorporated into the design and construction of the building.

Electrics should be located as high as practical possible above the floor level with a recommendation of 500mm. The floor slab and structure should be designed to resist prolonged periods of standing water.

7.3 Flood Warning System

The site owners and occupiers should sign up to the Environment Agency Flood Warning Scheme (<https://fwd.environment-agency.gov.uk/app/olr/register>) so that they are aware of the possible onset of flooding and can prepare for the site flooding. This is a free service which allows flood warnings to be received by phone, text or email.

Further update information can also be found during a flood event at the following locations:

Contact Details for the Environment Agency:

Call Floodline on 0345 9881188

Web site: <https://www.gov.uk/check-if-youre-at-risk-of-flooding>

8. Summary and Conclusions

The footprint of the new building is located in flood zone 1.

The proposed development site is to 1no. residential property.

The finished floor level should be designed to a suitable level (approximately 99.950m AOD) to protect against the risk of surface water flooding.

Any infiltration feature used as part of the surface water drainage strategy is to be designed to cater for the 1% (1:100 year storm) with 40% additional storage to allow for climate change.

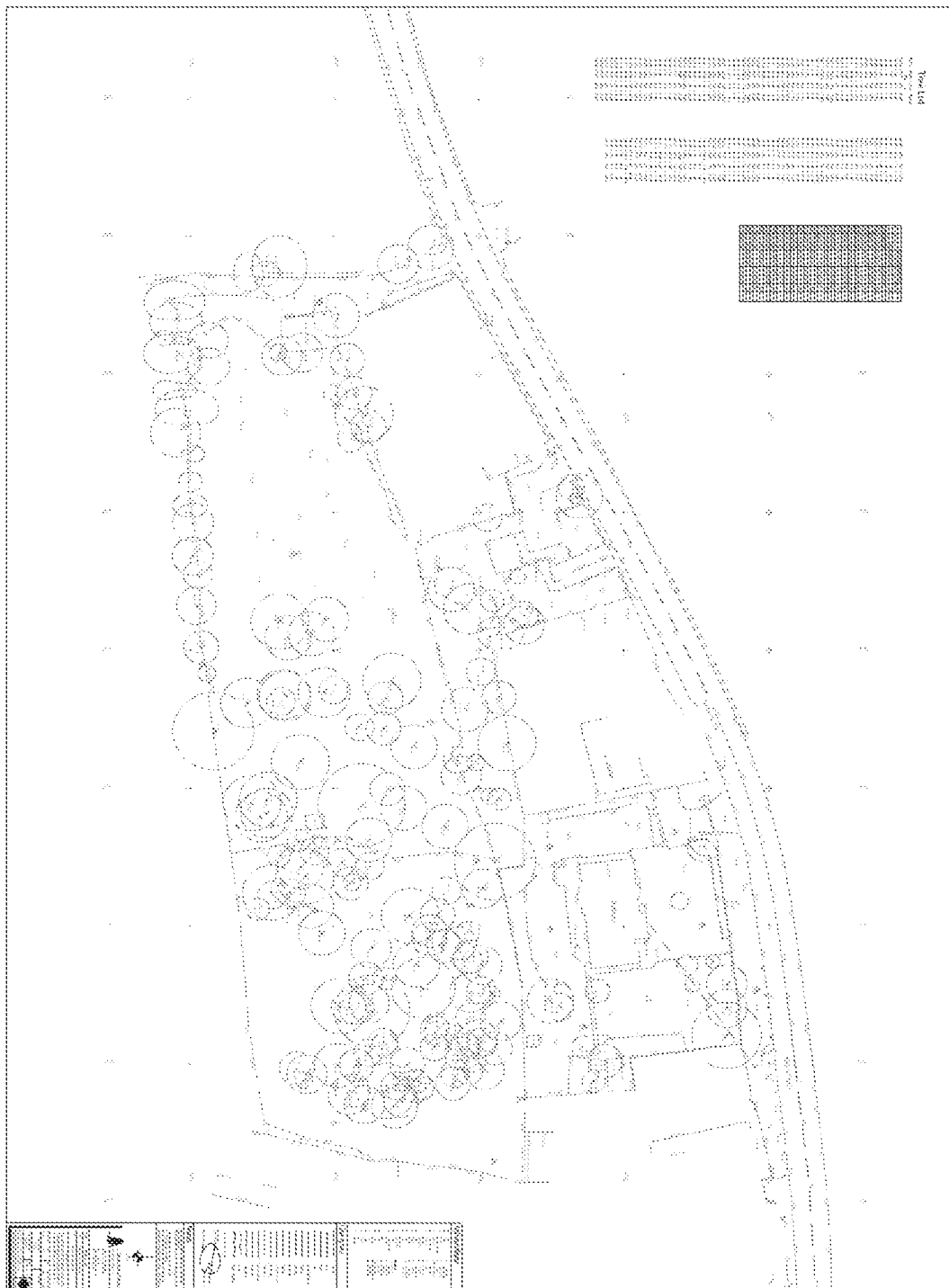
The proposed surface water drainage system will need to ensure the system can withstand the 1:30 year storm event within the network with no flooding.

Exceedance routing plans should be provided where the system floods during the 1:100yr + CC event. The drainage strategy as set out in this report caters for the 1:100 yr +40% climate change event below ground.

The owner of the property will be responsible the maintenance of the system. See Appendix G.

The drainage system has been designed in accordance with Communities & Local Government, National Planning Policy Framework (NPPF) and Planning Practice Guidance (PPG).

Appendix A – Topographical Survey



Appendix C – Soakage Test Results

Percolation Test Results

Client: Elizabeth Halton

Address: Byfields, Nyton Road, Westergate, Chichester, West Sussex, PO20 3UQ

Test hole 1

Width/m	Length/m	Depth/m
0.6	1	1.6

Percolation test (date/start time)		Time taken to drain from 75-25%
15/02/2021	17:30	32m 04s
16/02/2021	08:06	29m 20s
16/02/2021	12:01	46m 44s

Test hole 1 results:

Soil filtration rate:
$$F = \frac{V(p75-25)}{A(p50) \times T(p75-25)}$$

$V(p75-25)$ = Volume of the hole from 25% to 75% depth ($L \times W \times (D75\% - D25\%)$)

$A(p50)$ = Internal surface area of the hole up to 50% of the depth and including the base area

$T(p75-25)$ = The time for the hole to drain from 75% to 25% full in seconds

Test 1 results:
$$F = \frac{V(p75-25)}{A(p50) \times T(p75-25)}$$

$$V = 1.6 \times 0.6 \times (1.2 - 0.4) = 0.48 \text{ m}^3$$

$$A = 0.75[2 \times (1 + 0.6)] + (1 \times 0.6) = (0.75 \times 3.2) = 2.4 + 0.6 = 3 \text{ m}^2$$

$$T = \text{time for hole draining from 75\% to 25\%} = 32 \text{m} 04 \text{s}$$

$$F = \frac{0.48 \text{ m}^3}{3 \text{ m}^2 \times 1924} = 8.32 \times 10^{-5} \text{ m/sec}$$

Test 2 results:
$$F = \frac{V(p75-25)}{A(p50) \times T(p75-25)}$$

$$V = 1.6 \times 0.6 \times (1.2 - 0.4) = 0.48 \text{ m}^3$$

$$A = 0.75[2 \times (1 + 0.6)] + (1 \times 0.6) = (0.75 \times 3.2) = 2.4 + 0.6 = 3 \text{ m}^2$$

$$T = \text{time for hole draining from 75\% to 25\%} = 29 \text{ m20s}$$

$$F = \frac{0.48 \text{ m}^3}{3 \text{ m}^2 \times 1760} = 9.09^{-5} \text{ m/sec}$$

Test 3 results:
$$F = \frac{V(p75-25)}{A(p50) \times T(p75-25)}$$

$$V = 1.6 \times 0.6 \times (1.2 - 0.4) = 0.48 \text{ m}^3$$

$$A = 0.75[2 \times (1 + 0.6)] + (1 \times 0.6) = (0.75 \times 3.2) = 2.4 + 0.6 = 3 \text{ m}^2$$

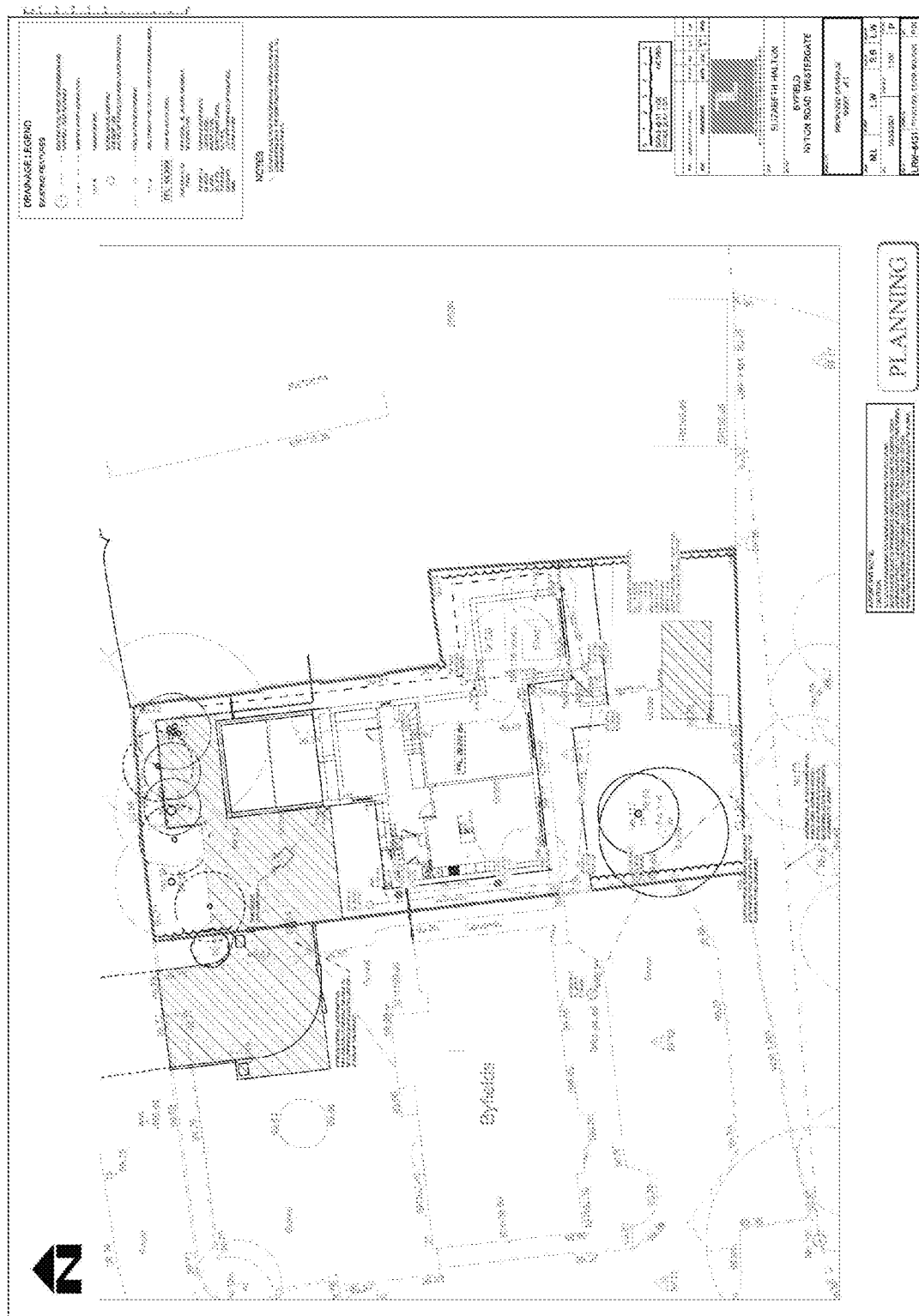
$$T = \text{time for hole draining from 75\% to 25\%} = 46 \text{ m44s}$$

$$F = \frac{0.48 \text{ m}^3}{3 \text{ m}^2 \times 2804} = 5.71^{-5} \text{ m/sec}$$

Completed by: Joe bain

date: 16/02/2021

Appendix D – Drainage Strategy Plans



Appendix E – Hydraulic Calculations



LRW Civil Designs Ltd

85 Crooked Lane, Birdham

Chichester,

West Sussex, PO20 7ET

File: P11011 - Byfields_Hydraulic Calculations

Network: Storm Network

Louis Weller

01.03.2021

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Byfields,

Nyton Road, Westergate

Surface Water Calculations

Design Settings

Rainfall Methodology

Return Period (years)

Additional Flow (%)

FSR Region

M5-60 (mm)

Ratio-R

CV

Time of Entry (mins)

FSR

1

0

England and Wales

20.000

0.400

0.750

5.00

Maximum Time of Concentration (mins)

Maximum Rainfall (mm/hr)

Minimum Velocity (m/s)

Connection Type

Minimum Backdrop Height (m)

Preferred Cover Depth (m)

Include Intermediate Ground

Enforce best practice design rules

30.00

50.0

1.00

Level Soffits

0.200

1.200

✓

x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Width (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.011	5.00	99.960	475		1059.018	2055.413	0.628
2	0.005	5.00	99.960	475		1060.498	2042.669	0.811
3	0.004	5.00	99.965	475		1072.830	2049.623	0.600
4	0.003	5.00	99.963	475		1073.668	2042.155	0.854
5	0.005	5.00	99.960	1200	675	1071.856	2041.654	0.975
S/WAY			99.650	1200		1072.417	2036.859	0.734

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	1	2	12.830	0.600	99.332	99.149	0.183	70.1	100	0.23	50.0
1.001	2	5	11.400	0.600	99.149	98.985	0.164	86.5	100	0.44	50.0
1.002	3	4	7.500	0.600	99.365	99.109	0.256	29.3	100	0.09	50.0
1.003	4	5	1.800	0.600	99.109	98.985	0.124	18.5	100	0.10	50.0
1.004	5	S/WAY	4.820	0.600	98.985	98.916	0.069	69.9	100	0.62	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	0.999	7.2	1.5	0.600	0.711	0.011	0.0	31	0.725
1.001	0.904	7.3	2.2	0.711	0.675	0.016	0.0	37	0.803
1.002	1.431	11.2	0.5	0.750	0.714	0.004	0.0	15	0.739
1.003	2.038	16.0	0.9	0.754	0.675	0.007	0.0	17	1.122
1.004	0.922	7.2	3.8	0.875	0.694	0.028	0.0	51	0.931

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	12.830	70.1	100	Circular	99.960	99.332	0.628	99.960	99.149	0.711
1.001	11.400	86.5	100	Circular	99.960	99.149	0.711	99.960	98.985	0.675
1.002	7.500	29.3	100	Circular	99.965	99.365	0.600	99.963	99.109	0.754
1.003	1.800	18.5	100	Circular	99.963	99.109	0.754	99.960	98.985	0.675
1.004	4.820	69.9	100	Circular	99.960	98.985	0.975	99.650	98.916	0.694

Link	US Node	Dia (mm)	Width (mm)	Node Type	MH Type	DS Node	Dia (mm)	Width (mm)	Node Type	MH Type
1.000	1	475		Manhole	Adoptable	2	475		Manhole	Adoptable
1.001	2	475		Manhole	Adoptable	5	1200	675	Manhole	Adoptable
1.002	3	475		Manhole	Adoptable	4	475		Manhole	Adoptable
1.003	4	475		Manhole	Adoptable	5	1200	675	Manhole	Adoptable
1.004	5	1200	675	Manhole	Adoptable	S/WAY	1200		Manhole	Adoptable

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)
1	1059.018	2055.413	99.960	0.628	475					
2	1060.498	2042.669	99.960	0.811	475			0 1.000 99.332 100		
3	1072.830	2049.623	99.965	0.600	475			1 1.000 99.149 100		
4	1073.688	2042.155	99.963	0.854	475			0 1.001 99.149 100		
5	1071.856	2041.654	99.960	0.975	1200	675		0 1.002 99.365 100		
S/WAY	1072.417	2036.859	99.650	0.734	1200			1 1.003 98.985 100		
								2 1.001 98.985 100		
								0 1.004 98.985 100		
								1 1.004 98.916 100		

Simulation Settings

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

Storm Durations

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)				
15	30	60	120	180	240	360	480	600	720	960	1440
1	0	0	0	100	40	0	0				
30	0	0	0								

Node S/WAY Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.20556	Invert Level (m)	98.916	Depth (m)	0.500
Side Inf Coefficient (m/hr)	0.20556	Time to half empty (mins)	99	Inf Depth (m)	1.300
Safety Factor	2.0	Pit Width (m)	3.000	Number Required	1
Porosity	0.95	Pit Length (m)	6.000		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year 15 minute summer	109.521	30.991	1 year 60 minute winter	32.179	12.800
1 year 15 minute winter	76.857	30.991	1 year 120 minute summer	30.053	7.942
1 year 30 minute summer	71.439	20.215	1 year 120 minute winter	19.966	7.942
1 year 30 minute winter	50.133	20.215	1 year 180 minute summer	23.233	5.979
1 year 60 minute summer	48.435	12.800	1 year 180 minute winter	15.102	5.979

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year 240 minute summer	18.475	4.882	30 year 600 minute winter	13.498	5.404
1 year 240 minute winter	12.274	4.882	30 year 720 minute summer	17.490	4.687
1 year 360 minute summer	14.169	3.646	30 year 720 minute winter	11.754	4.687
1 year 360 minute winter	9.210	3.646	30 year 960 minute summer	14.215	3.743
1 year 480 minute summer	11.185	2.956	30 year 960 minute winter	9.416	3.743
1 year 480 minute winter	7.431	2.956	30 year 1440 minute summer	10.161	2.723
1 year 600 minute summer	9.182	2.511	30 year 1440 minute winter	6.829	2.723
1 year 600 minute winter	6.274	2.511	100 year +40% CC 15 minute summer	488.233	138.153
1 year 720 minute summer	8.203	2.199	100 year +40% CC 15 minute winter	342.620	138.153
1 year 720 minute winter	5.513	2.199	100 year +40% CC 30 minute summer	320.551	90.705
1 year 960 minute summer	6.768	1.782	100 year +40% CC 30 minute winter	224.948	90.705
1 year 960 minute winter	4.483	1.782	100 year +40% CC 60 minute summer	214.603	56.713
1 year 1440 minute summer	4.949	1.326	100 year +40% CC 60 minute winter	142.677	56.713
1 year 1440 minute winter	3.326	1.326	100 year +40% CC 120 minute summer	129.587	34.246
30 year 15 minute summer	268.706	76.035	100 year +40% CC 120 minute winter	86.094	34.246
30 year 15 minute winter	188.566	76.035	100 year +40% CC 180 minute summer	97.729	25.149
30 year 30 minute summer	174.929	49.499	100 year +40% CC 180 minute winter	63.526	25.149
30 year 30 minute winter	122.757	49.499	100 year +40% CC 240 minute summer	75.977	20.078
30 year 60 minute summer	116.589	30.811	100 year +40% CC 240 minute winter	50.477	20.078
30 year 60 minute winter	77.459	30.811	100 year +40% CC 360 minute summer	56.677	14.585
30 year 120 minute summer	70.438	18.615	100 year +40% CC 360 minute winter	36.841	14.585
30 year 120 minute winter	46.797	18.615	100 year +40% CC 480 minute summer	43.979	11.622
30 year 180 minute summer	53.298	13.715	100 year +40% CC 480 minute winter	29.219	11.622
30 year 180 minute winter	34.645	13.715	100 year +40% CC 600 minute summer	35.604	9.738
30 year 240 minute summer	41.604	10.995	100 year +40% CC 600 minute winter	24.327	9.738
30 year 240 minute winter	27.641	10.995	100 year +40% CC 720 minute summer	31.433	8.424
30 year 360 minute summer	31.221	8.034	100 year +40% CC 720 minute winter	21.125	8.424
30 year 360 minute winter	20.295	8.034	100 year +40% CC 960 minute summer	25.432	6.697
30 year 480 minute summer	24.324	6.428	100 year +40% CC 960 minute winter	16.847	6.697
30 year 480 minute winter	16.160	6.428	100 year +40% CC 1440 minute summer	18.055	4.839
30 year 600 minute summer	19.756	5.404	100 year +40% CC 1440 minute winter	12.134	4.839

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File: P11011 - Byfields_Hydraulic Calculations

Network: Storm Network

Louis Weller

01.03.2021

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Byfields,

Nyton Road, Westergate

Surface Water Calculations

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.42%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	99.384	0.052	3.8	0.0274	0.0000	OK
15 minute winter	2	12	99.226	0.077	5.5	0.0232	0.0000	OK
15 minute winter	3	10	99.389	0.024	1.4	0.0075	0.0000	OK
60 minute winter	4	60	99.193	0.084	1.2	0.0207	0.0000	OK
60 minute winter	5	60	99.193	0.208	4.9	0.1898	0.0000	OVERCHARGED
60 minute winter	S/WAY	60	99.192	0.276	4.6	5.0319	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute winter	1	1.000	2	3.8	0.790	0.521	0.0664
15 minute winter	2	1.001	5	5.1	0.688	0.702	0.0815
15 minute winter	3	1.002	4	1.4	0.900	0.123	0.0216
60 minute winter	4	1.003	5	1.6	0.391	0.097	0.0134
60 minute winter	5	1.004	S/WAY	4.6	0.967	0.637	0.0377
60 minute winter	S/WAY	Infiltration		0.7			

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Network: Storm Network

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01.03.2021

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Byfields,

Nyton Road, Westergate

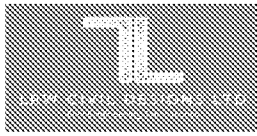
Surface Water Calculations

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.42%

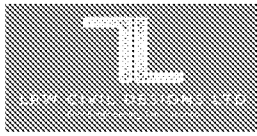
Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	12	99.699	0.367	6.9	0.1940	0.0000	FLOOD RISK
120 minute winter	2	114	99.603	0.454	3.2	0.1366	0.0000	SURCHARGED
120 minute winter	3	114	99.602	0.237	0.8	0.0736	0.0000	SURCHARGED
120 minute winter	4	114	99.602	0.493	1.4	0.1217	0.0000	SURCHARGED
120 minute winter	5	114	99.602	0.617	5.0	0.5631	0.0000	SURCHARGED
120 minute winter	S/WAY	116	99.600	0.684	4.8	9.3325	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute winter	1	1.000	2	5.2	0.808	0.722	0.1004
120 minute winter	2	1.001	5	2.9	0.591	0.399	0.0892
120 minute winter	3	1.002	4	0.8	0.712	0.071	0.0587
120 minute winter	4	1.003	5	1.1	0.394	0.072	0.0141
120 minute winter	5	1.004	S/WAY	4.8	0.925	0.662	0.0377
120 minute winter	S/WAY	Infiltration		0.9			

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Appendix F – Maintenance Plan



P A G E | 1

BYFIELDS,
NYTON ROAD
WESTERGATE
CHICHESTER
WEST SUSSEX
PO20 3UQ

DRAINAGE SYSTEM
MAINTENANCE REQUIREMENTS.

March 2021

REVISION A

CONTENTS

1. INTRODUCTION
2. RESPONSIBILITIES
3. TIME TABLE FOR IMPLEMENTATION
4. COMPONENTS OF THE SYSTEM
5. MAINTENANCE SCHEDULES
 - 5.1. Pipes, foul and surface water system. Clay or Plastic.
 - 5.2. Flow Control Manholes
 - 5.3. Inspection Chambers
 - 5.4. Permeable Paving
 - 5.5. Diffuser Units

1 INTRODUCTION

The purpose of this document is to set out the maintenance requirements for the drainage system at Freeland Close, Chichester.

The foul drainage system has been designed such that foul water flows from the dwellings drain into the public foul sewer located in Freeland Close within the Highway.

The surface water drainage system has been designed such that surface water flows falling on roofs and hard paved surfaces drain into a private surface water sewer system which discharges into ground via a crate soakaway system.

2 RESPONSIBILITIES

This document covers the maintenance requirements of the Drainage systems. The ownership/responsibility of both the foul and surface water drainage systems installed to serve the development will be by the eventual owner of the property.

3 TIMETABLE FOR IMPLEMENTATION

The Private Drainage system will fall under a defects maintenance period for 1 year following sign off of the completed work. During this period, any defects found will be rectified by the contractor. At the end of this period the system will be CCTV surveyed to confirm that the system is in working order.

Following the end of the defect's maintenance period. The Private Drainage system will then fall under the responsibility of the eventual owner of the property.

4 COMPONENTS OF THE SYSTEM

The following components form the Private drainage system and need to be maintained as indicated within this document. Refer to drawings LRW-S429-DB-XX-ZZ-500-0501 (Appendix A) for the drainage layout and details.

- Pipes, foul and surface water system. Clay or Plastic
- Flow Control Manholes
- Catchpit Manholes
- Crate Soakaway

5 MAINTENANCE SCHEDULES

The below sets out the requirements for maintenance of the Private Drainage system.

The maintenance requirements are based on durations and the occurrence of severe storms. However, should water be found ponding on any hard surface around channel drains, road gullies or foul drains become blocked then this visual identifier will trigger the requirements for investigation and maintenance.

A severe storm is defined as any aspect of weather that poses risk to life, property or requires the intervention of authorities. Severe weather warnings will be issued by the Met Office.

The appointed maintenance company, in this instance, Chichester District Council are to keep a log of all maintenance and remedial works carried out at the site.

5.1 PIPES, FOUL AND SURFACE WATER SYSTEM, CLAY OR PLASTIC

To be checked annually by CCTV survey and debris removed by high pressure jetting. A list of defects should be compiled with high, medium, and low risk of failure. High risk defects should be fixed immediately, medium risk should be fixed within 6 months and low risk to be monitored annually.

5.2 FLOW CONTROL MANHOLES

Not Applicable

5.3 INSPECTION CHAMBERS

To be checked annually and after a severe storm by visual survey and debris removed. A list of defects should be compiled and with high, medium, and low risk of failure. High risk defects should be fixed immediately, medium risk should be fixed within 6 months and low risk to be monitored annually.

5.4 PERMEABLE PAVING

Not Applicable

5.5 DIFFUSER UNITS

To be checked annually by CCTV survey and debris removed by LOW pressure jetting and jet vac.