



**PROPOSED REDEVELOPMENT AT
NYTON HOUSE
NYTON ROAD, WESTERGATE
PO20 3UL**

**FLOOD RISK AND DRAINAGE
ASSESSMENT REPORT**

On Behalf of: Nyton House

Cowan Consultancy Ltd
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4400 Parkway
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EG/404100/EG

**8 November 2018
(Revised 22.3.19)**

Landguard Manor
Landguard Manor Road
Shardln
Isle of Wight
PO37 7JB

Ref.: 404100
Nyton House
Flood Risk Assessment Report

22 March 2019

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1. Introduction

Instructions were received in September 2018 to carry out a Flood Risk and Drainage Assessment on the site and proposed development.

We understand that a planning application is to be issued and this report has been produced to accompany this.

The reasons for the report are also to ensure a satisfactory provision to alleviate any residual flood risk and propose foul and surface water drainage to prevent increase in flood risk, maintain a sustainable drainage scheme and to maintain discharge water quality. A Flood Risk and Drainage Assessment in accordance with the current recommendations given in the National Planning Policy Framework, which has now superseded PPS25, has been produced in relation to the requirements of the code for sustainable homes.

Following a desk study and research with local authorities and the Environment Agency, this report has been prepared to determine the risk of flooding on the site for the proposed development and to put forward recommendations to protect the development, its users and surrounding properties from any increase in potential flood risk and measures to improve water quality.

2. The Existing Site

Appendix A contains a location plan for the site showing existing site details including existing building and surfaces on the site. The site can be found at grid reference SU 93480 05570.

Currently the site is used as a care home with associated outbuildings including garage and office. There is also a gravel access road onto the site as well as numerous gravel garden paths and some hardstanding areas. The majority of the site area is lawned, planted or forested areas.

The proposed re-development involves a new build dementia wing within the existing lawned area to the North West corner of the site. The development means that the majority of the access drive and pathways on the site will remain unchanged with only some areas of landscaping being created between the areas of the existing care home and the new wing.

Appendix B contains the existing site topographical plan. Appendix C provides proposed plans for the new development as well.

The site is to be found to the Northern side of Nyton Road. The site is generally flat. There are currently numerous mature trees surrounding the site and there is a detailed Arboriculture report available for the site. The existing storm water on site we understand drains to soakaways on the site, though the exact locations of these are not known.

The local sewerage network as noted on the Southern Water drainage records can be found in Appendix F. It shows that there is a main foul sewer within Nyton Road. We understand that the existing foul discharge from the site enters the foul sewer within Nyton Road through the existing inspection chamber near the garage on the site. The existing foul drainage on the site is likely to be at or near full capacity so it is proposed that the new extension and proposed future wing will have its own new foul drainage system which will require a new connection into the sewer within Nyton Road.

3. Geology

A study was made of the local British Geological Survey mapping and it was found that the site is underlain by Head Deposits, gravel, sand and silts overlaying London Clay at depth. The findings of the map will need to be confirmed by a site investigation, however we these parameters have been used to estimate soil infiltration rates for the preliminary soakaway designs undertaken within this report.

4. Policy Background

The Government's sustainable development strategy (SDS) makes it a requirement to assess appropriate procedures for developments in areas at risk of flooding. This is to avoid any unnecessary increase in requirements for flood defences.

The NPPF requires that developers making planning applications on sites that are potentially at risk from flooding should consult with the EA, and where appropriate produce a flood risk assessment (FRA). The aim is to assess the potential risk for the development, demonstrating how flood risk will be managed onsite ensuring that flood risk is not increased elsewhere. The EA flood matrix was consulted and showed that a flood risk assessment is appropriate for this site.

5. Flood Risk Maps and Available Information

Appendix D contains a copy of the EA Flood Map for this area. This shows that the renovation site is within flood Zone 1, classed as Land having a less than 1 in 1,000 annual probability of river or sea flooding.

The available flood mapping also shows that the site has no risk of flooding from surface water flooding.

6. Risk Assessment

Consultations have been held with the EA and the available flood data. The information from the EA depicts that the proposed development site lies partially within Flood Zone 1 - an area where the chance of flooding from the sea has been assessed as less than 0.1% in any year (1 chance in 1000 in any year).

Therefore the site is not as risk of flooding from Rivers or the sea. There is also no risk from surface water flooding identified by the flood mapping. This shows that the storm water runoff from the site should be controlled as is required as part of a new development.

7. Effects on Existing Drainage Strategy

New developments and renovations must ensure that their drainage strategy does not increase flood risk onsite or elsewhere, and must account for flows from roads and overland as possible source for onsite flood, in order to manage, prevent and control runoff flow patterns. The NPPF guidance's advises that 'both the rates and volumes of runoff from new developments should be no greater than the rates prior to the proposed development'.

Currently, the proposed development site is within a rural setting with the majority of the area proposed for the development / redevelopment currently permeable lawned / soft landscaped area. We have investigated the site and found that the existing foul sewer on site is probably at or near its capacity. Also evidence would indicate that the storm water from the existing buildings on site is directed into soakaways on the site, as there are no public storm water drainage sewers in the area.

Calculations provided within Appendix E provide the existing and proposed storm water run-off for the site during the 1 in 100 year event with a 40% allowance for climate change.

During a 6 hour storm event for the above noted storm the storm water runoff from the existing site = 136.2 m³, which equates to a discharge rate of 6.30 L/s.

During a 6 hour storm event for the above noted storm the storm water runoff from the proposed site = 160.2 m³, which equates to a discharge rate of 7.42 L/s.

Therefore an additional volume of 24.0m³ of storm water runoff will be created as a result of the renovation development.

The new development will have a small impact on the foul water flow due to the additional foul water discharge from the site. The foul water discharge on the site will not affect flood risk as it will be directed into the local foul sewer network and it will be ensured that adequate capacity is provided by the correct application process with the local sewerage undertaker, in this case Southern Water.

8. Sequential and Exception Test

Sequential and exception tests are required to prove that developments provide wider sustainability benefits to the community that outweigh flood risk. The NPPF classifies 'areas at risk of flooding' as land within Flood Zones 2 and 3, or land within Flood Zone 1 which have critical drainage problems and which have been notified as so to the local planning authority by the EA.

The aim of the sequential test is to steer developments towards flood zone 1 and avoid areas at risk. The information obtained from the EA states that our development site is within a flood zone 1. The site is a re-development or an already developed site and therefore the development is suitable.

9. Conclusion and Recommendation

Investigation results have shown that according to the EA flood mapping and data part of the site of the proposed development is within a flood zone 1 with associated flood risk.

Storm water drainage discharge from the site will increase due to the re-development works. Therefore in order to maintain the exiting storm water discharge from the site we are proposing to mitigate this by installing new soakaways on the site to ensure that no storm water runs off of the site and all is dealt with within the site boundary. The details of these soakaways can be seen on the proposed drainage drawing in Appendix G, along with the calculations for sizing the soakaway within Appendix E (Note that currently the soakaways have been sized using estimated soil infiltration rates for the Sandy / silty soil, these assumptions will need to be confirmed during the design phase by undertaking on site soil testing).

The calculations have shown that in order to deal with the proposed 1in100 year storm event with a 40% allowance for climate change the following soakaway size is required:

The arrangement of the new areas on site mean that the following soakaway is appropriate – New Wing – 1 No. 8.0x4.0x1.20m deep soakaway will be required for this area. The soakaways will be positioned at least 5.0m from any foundations. The bottom of the soakaway will also need to have a minimum of 1.0m freeboard above the highest ground water level on the site (This will need to be confirmed via ground water monitoring on the site when the site investigation is carried out)

There is an existing foul water connection from the existing site, however it is proposed to provide a new connection into the foul sewer within Nyton Road for the new development area. The foul water discharge from the site will increase slightly but will not be significant and will not affect flood risk on the site. This foul water will be connected into the foul sewer now present within Nyton Lane. The proposed drainage plan within Appendix G shows the proposed new connection location. The correct permissions and spare capacity checks will need to be undertaken as part of the development and Southern Water will need to be contacted to confirm this.

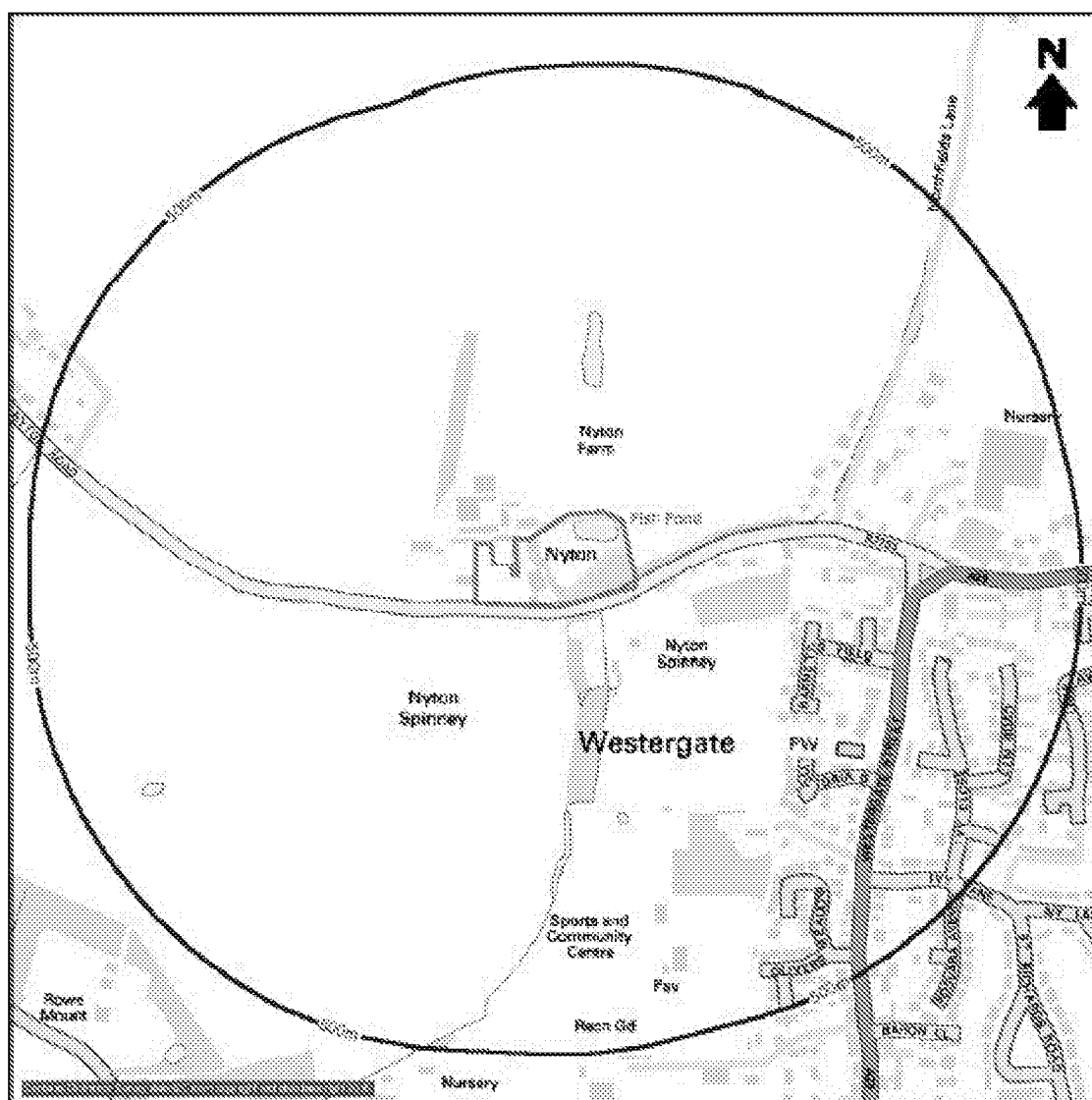
Therefore we believe that this report should address the flooding and drainage issues that could be associated with the site and shows that the redevelopment of the site is feasible from a drainage / flood water perspective.

ELVIN GOMERY
B.Eng (Hons.)

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APPENDIX

A. Site Location Plan



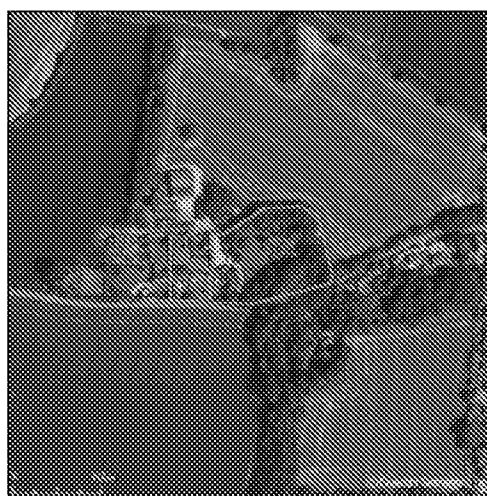
Site
Nyton House Residential Home, Nyton
Road, Westergate, CHICHESTER, PO20 3UL

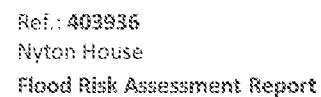
Grid Reference
493500, 105590

Report Reference
SAS_107695572_1_1

Customer Reference
RDS/HIL243-1

Size of Site
13927 m²





C. Proposed Development Plans

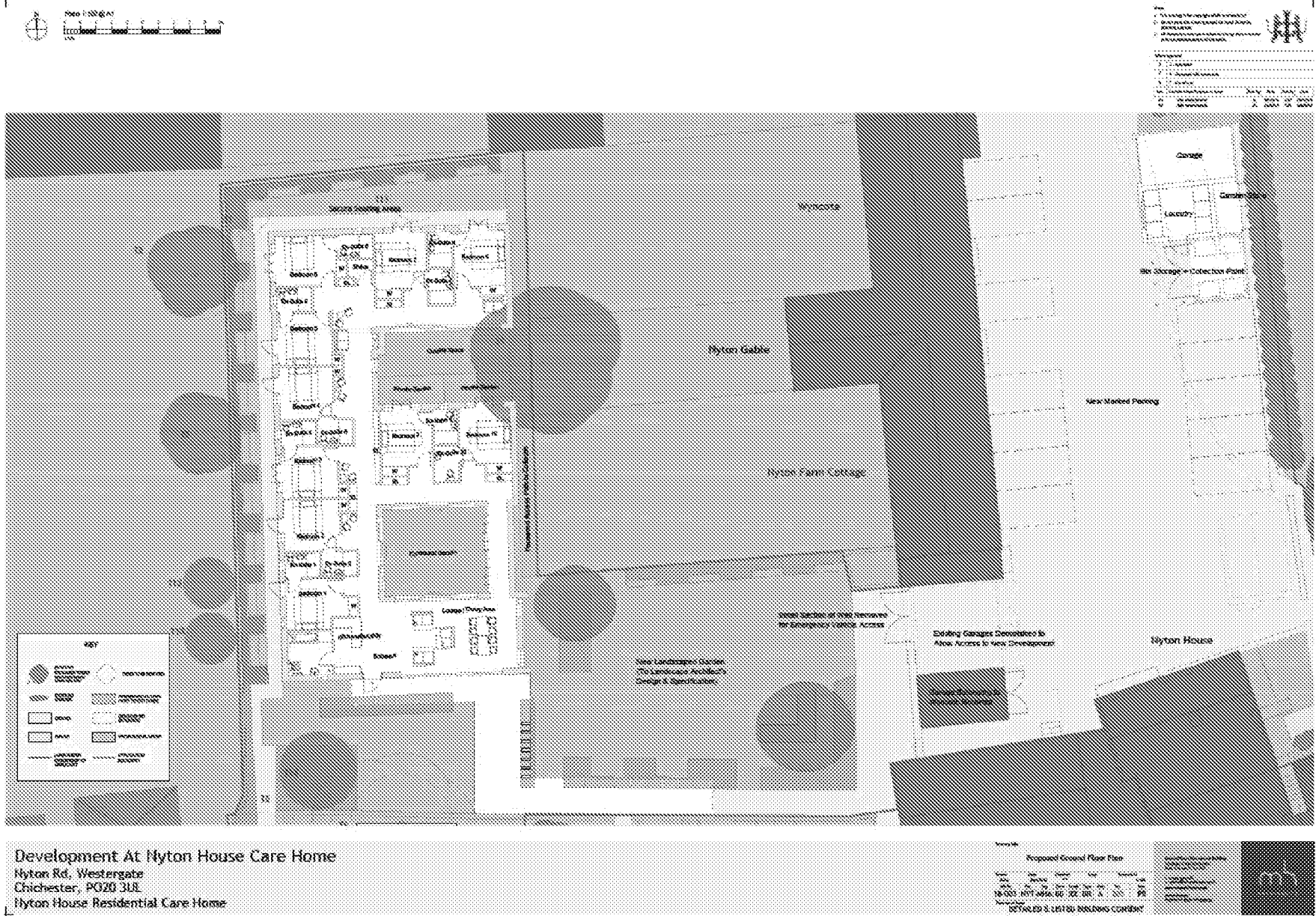


Ref.: 404100

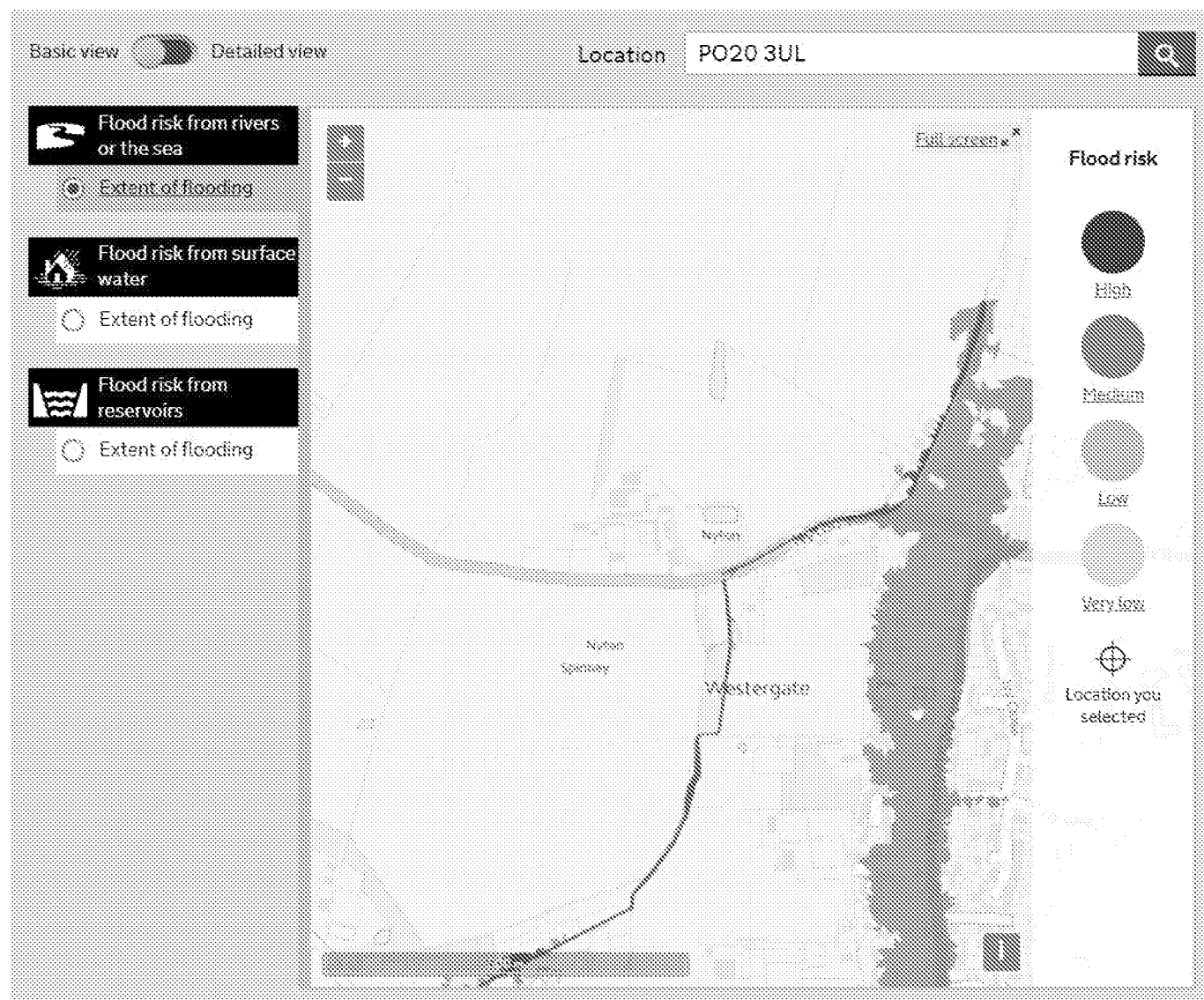
Land adj to Knowle Lane

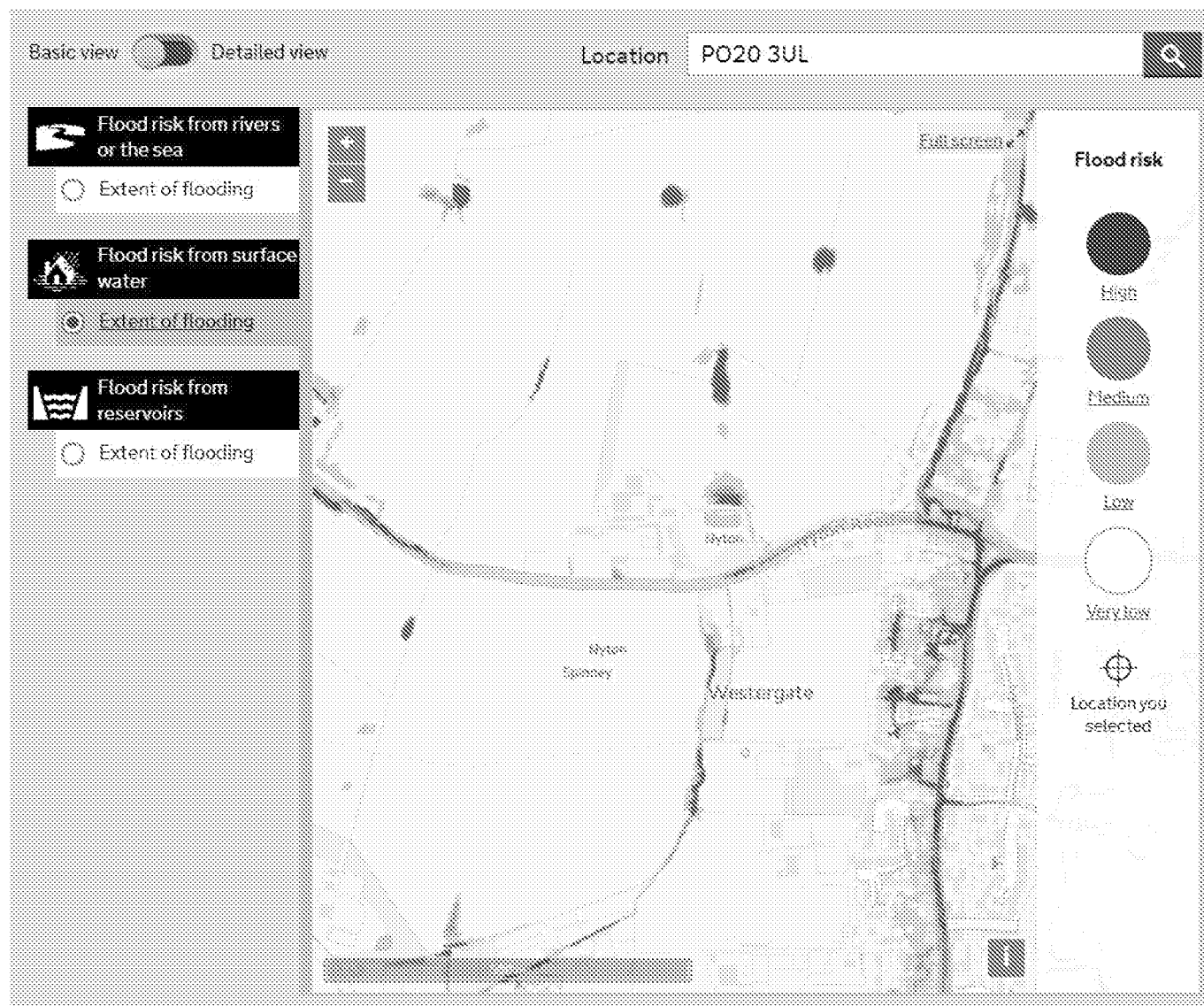
Flood Risk Assessment Report

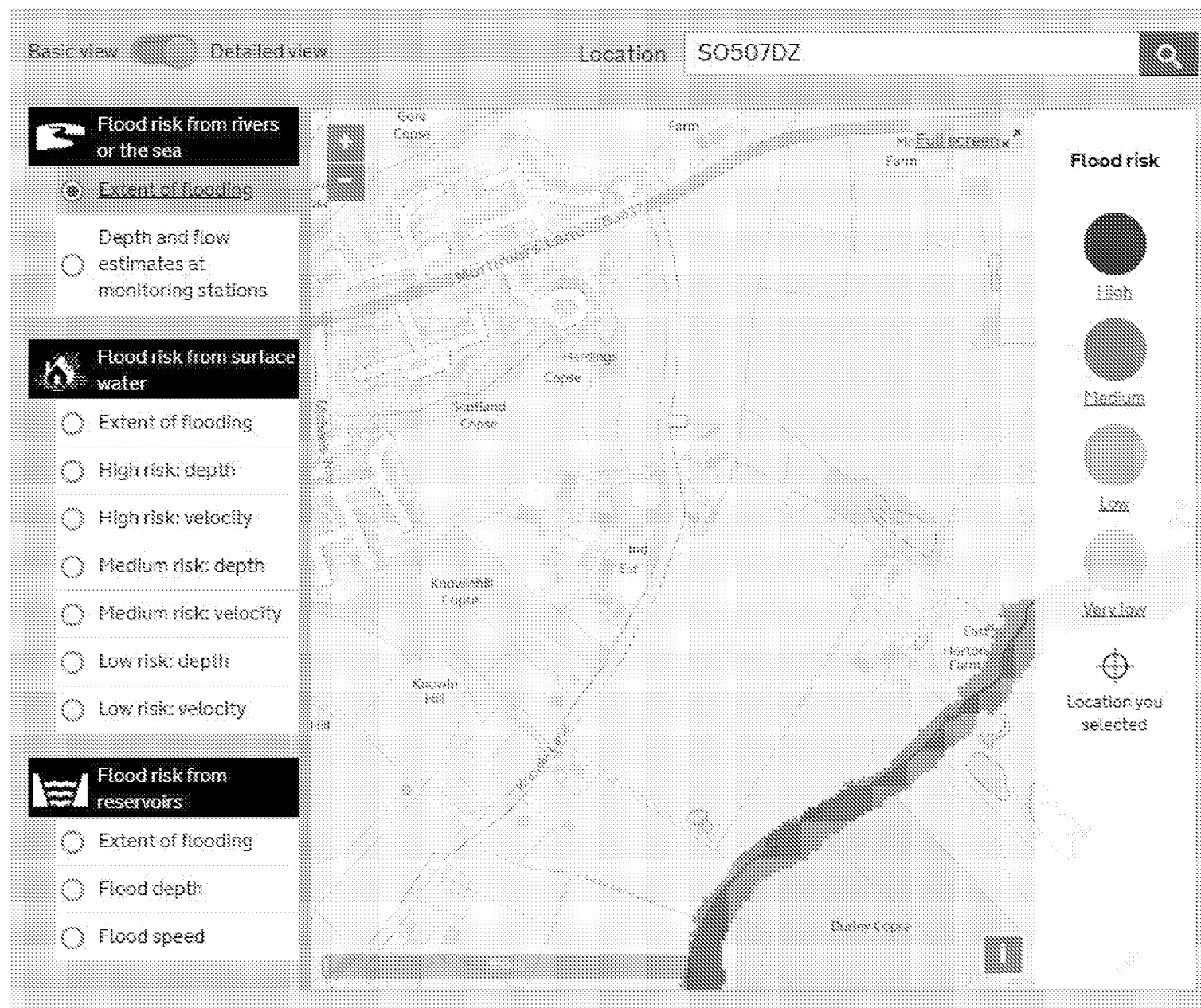
22 March 2019



D. Flood Risk Mapping







E. Storm water run off calculations - Existing

STORM WATER - EXISTING SITE RUN-OFFS

Document A

(Using guidance from BRE 365)

Job No.: **404100**
 Job Name: **Nyton House**

Total site Area	8906	m2
Surface	Area (m2)	Run-off coeff
Existing buildings roof	570	1.00
Pathways + patios	471	0.50
Gravel Driveway / parking	376	0.50
Pool area	143	1.00
Garage	33	1.00
Remainder	2641	0.00
Sum	4234	

Eff Area (m2)
 570 Roof and paved impermeable areas
 235.5 Wall occupied gravel (2.5 permeable)
 188 Well compacted gravel (2.5 permeable)
 143 Roof and hard paved impermeable areas
 33 Roof and hard paved impermeable areas
 0 Permeable areas, lawn etc.

1 in 100 year event + 40% climate change

Eff Area 1169.5 m2

100 year return period + climate change

R5	0.03242	m	5	0.08 hrs	0.18/30.3	0.1	0.03394
R10	0.04017	m	10	0.17 hrs	0.18/30.3	0.1	0.04169
R15	0.04546	m	15	0.25 hrs	0.18/30.3	0.1	0.04713
R30	0.05603	m	30	0.50 hrs	0.18/30.3	0.1	0.05802
R60	0.06809	m	60	1.00 hrs	0.18/30.3	0.1	0.07050
R120	0.08450	m	120	2.00 hrs	0.18/30.3	0.1	0.08735
R240	0.10348	m	240	4.00 hrs	0.18/30.3	0.1	0.10735
R360	0.11643	m	360	6.00 hrs	0.18/30.3	0.1	0.12422

Run-off from site during 6 Hour event

Volume of total run-off

I360 136.171 m3

Flow in Ltrs / second during event

Flow 6.304 L/s

Therefore total run off

136.2 m3 OR 6.304 L/s

1 in 1 year event

Eff Area 1169.5 m2

1 year return period + climate change

R5	0.01415	m	5	0.08 hrs	0.18/30.3	0.1	0.01482
R10	0.01792	m	10	0.17 hrs	0.18/30.3	0.1	0.01878
R15	0.02049	m	15	0.25 hrs	0.18/30.3	0.1	0.02124
R30	0.02562	m	30	0.50 hrs	0.18/30.3	0.1	0.02671
R60	0.03186	m	60	1.00 hrs	0.18/30.3	0.1	0.03308
R120	0.03944	m	120	2.00 hrs	0.18/30.3	0.1	0.04034
R240	0.04866	m	240	4.00 hrs	0.18/30.3	0.1	0.04953
R360	0.05494	m	360	6.00 hrs	0.18/30.3	0.1	0.05822

Run-off from site during 6 Hour event

Volume of total run-off

I360 64.258 m3

Flow in Ltrs / second during event

Flow 2.975 L/s

Therefore total run off

64.3 m3 OR 2.975 L/s

Storm water run off calculations – Proposed

STORM WATER - PROPOSED SITE RUN-OFFS				Document IS			
(Using guidance from BS7558:2003)							
Job No.:	404100						
Job Name:	Nyton House						
Total site Area		8906	m2				
Surface	Area (m2)	Run-off coeff	Eff Area (m2)				
Existing house (some areas removed)	570	1.00	570	Roof and hard paved impermeable areas			
		1.00	0	Paved and hard paved impermeable areas			
Pathways + patios	471	0.50	235.5	Well compacted gravel (Conservation)			
Gravel Driveway / parking	376	0.50	188	Well compacted gravel (Conservation)			
New build wing	350	1.00	350	Roof and hard paved impermeable areas			
Garage	33	1.00	33	Roof and hard paved impermeable areas			
Remainder	2434	0.00	0	Permeable areas, lawn etc			
Sum:	4234		1000				
1 in 100 year event + 40% climate change				1 in 1 year event			
Eff Area	1376.5	m2		Eff Area	1376.5	m2	
100 year return period + climate change			Storm duration (Min.)	T	S ₁	S ₂	Climate allowance 40%
R5	0.03242 m	5	0.05 hrs	0.25	0.25	1	0.03242
R10	0.04017 m	10	0.1 hrs	0.188	0.1	1	0.04017
R15	0.04546 m	15	0.08 hrs	0.15	0.1	1	0.04546
R30	0.05603 m	30	0.05 hrs	0.1	0.1	1	0.05603
R60	0.06888 m	60	0.03 hrs	0.1	0.1	1	0.06888
R120	0.08450 m	120	0.02 hrs	0.1	0.1	1	0.08450
R240	0.10348 m	240	0.01 hrs	0.1	0.1	1	0.10348
R360	0.11643 m	360	0.00 hrs	0.1	0.1	1	0.11643
Run-off from site during 6 hour event				Run-off from site during 6 hour event			
Volume of total run-off			Flow in Ltrs / second during event	Volume of total run-off			Flow in Ltrs / second during event
1360	160.273	m3	Flow 7.420 L/s	1360	75.632	m3	Flow 3.501 L/s

The above run-off volumes will be contained on site and not run-off, see below:

Soakaway check for house roofs and permeable driveways for 1in100 yr + 40% climate change 6 hour event

New Demntia Wing						
Inflow to soakaway system						
I360	40.752	m3				
Outflow from Tank						
f	4.00E-05	m3/s	(Assumed soil infiltration rate TBC in due course) (Sandy Gravel)			
Soakaway dims:						
L	6.0	m		No. of soakaways		1 No.
W	3.0	m				
Depth	1.2	m (below invert depth of inlet pipe)				
As50	28.8	(50% effective depth + base area as BRE 365)				
Void ratio	95.0	%				
Outflow from Tanks:						
Q360	24.88	m3				
Storage required:			Time to drain:			
S360	15.87	m3	ts50	1.91	hours	
Storage provided:	20.5	m3				
Critical storm =	S360					
Storage required =	15.87					
Time to discharge=	1.91	Hours				
Soakaway size proposed is satisfactory						

SEWER RECORDS PAGE 1 OF 2

